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Health Status and Short- and Long-term Outcomes of COVID-19 and Influenza Hospitalized Patients and Corresponding Population Controls: A Retrospective Nationwide Study in Austria

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Statement

This thesis is subordinate to the AUTCOV-Study, which was planned to evaluate the COVID-19 impact on the Austrian population with authorized access to data provided by the Austrian Health Insurance Fund.

Alongside Alexandra Christine Graf, Hendrik J. Ankersmit, Ralph Wendt, Berthold Reichardt, Clemens Aigner, Denise Traxler-Weidenauer, Michael Mildner, Julia Mascherbauer, and Johann Auer, I have contributed to research projects of the AUTCOV-Study mainly responsible for data management, data cleaning, and statistical analyses. Definitions of methods, variables as well as results in this thesis, are partially based on the already published works by this team (Graf et al., 2025; Wagenlechner et al., 2025) where I was acting as leading or co-author. Moreover, a third publication ("Short- and Long-Term Outcomes following COVID-19 or Influenza Hospitalization in Adults: Results of the AUTCOV-Study") with me acting as leading author was recently submitted. I am permitted to expand this research for my master's thesis.

Furthermore, to improve the readability and phrasing of this thesis, ChatGPT (OpenAI) and DeepL Write were used exclusively for language refinement. Research, programming, data analysis and interpretation were solely conducted by myself under the supervision of Alexandra Christine Graf.

Abstract

Using nationwide insurance registry data from Austria, this thesis compared patients hospitalized with COVID-19 (admissions 1 January 2020 to 31 December 2021) and seasonal Influenza (1 December 2015 to 31 Dec 2021) with respective sex-, age-, and region- (insurance carrier) assigned population controls and followed outcomes until 30 June 2022. Across age-stratified descriptive and time-to-event analyses, including propensity score matched patient comparisons, specific patterns were consistent. In comparison to control groups from the general population, both COVID-19 and Influenza hospitalized patients had substantially higher numbers of prior medication prescriptions, indicating a more morbid baseline health status than the general population. Women had lower probabilities of severe outcomes than men, although sex differences often attenuated with increasing age. Among adult patients, the presence and number of medication prescriptions indicated an increased risk for both negative short- and long-term outcomes. Among patients aged ≥41 years, COVID-19 was associated with higher all-cause in-hospital and post-admission mortality, and longer hospital stay than Influenza, whereas Influenza patients showed higher risk of re-hospitalization.

Zusammenfassung

Anhand von Daten der österreichischen Sozialversicherungsregister wurden in dieser Masterarbeit Patient:innen, die mit COVID-19 (Aufnahmen vom 1. Januar 2020 bis 31. Dezember 2021) und saisonaler Influenza (1. Dezember 2015 bis 31. Dezember 2021) hospitalisiert wurden, mit einer jeweils nach Geschlecht, Alter und Region (Versicherungsträger) zugeordneten Kontrollgruppe der allgemeinen Österreichischen Bevölkerung verglichen und bis zum 30. Juni 2022 nachverfolgt. In nach Alter stratifizierten explorativen Analysen und Überlebenszeitanalysen, einschließlich Propensity-Score-Matched Vergleiche, zeigten sich konsistente spezifische Muster. Im Vergleich zur Kontrollgruppe wiesen beide hospitalisierten Patient:innengruppen eine deutlich höhere vorhandene Medikamentenverschreibung auf, was auf einen schlechteren allgemeinen Gesundheitszustand zu Beginn der Studie als in der Allgemeinbevölkerung hindeutet. Bei erwachsenen Patient:innen deuteten das Vorliegen und die Anzahl von Medikamentenverschreibungen auf ein erhöhtes Risiko für schlechtere kurz- und langfristige Krankheitsverläufe hin. Frauen hatten eine geringere Wahrscheinlichkeit für schlechtere Krankheitsverläufe als Männer, obwohl die geschlechtsspezifischen Unterschiede in der ältesten Kohorte oft geringfügig abgeschwächt waren. COVID-19 Patient:innen im Alter von ≥41 Jahren waren mit einer höheren Spitalsmortalität und Gesamtmortalität sowie einer längeren Spitalsaufenthaltsdauer als Influenza-Patient:innen assoziiert, während Influenza Patient:innen ein höheres Risiko für eine erneute Krankenhausaufnahme aufwiesen.

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List of Abbreviations

ATC Anatomical Therapeutic Chemical classification

CI Confidence interval

HR Hazard ratio

ICD International Classification of Diseases

IQR interquartile range

MG Medication group

PSM Propensity Score matching

RCT Randomized controlled trial

1 Introduction and Background

The outbreak of SARS-CoV-2, which causes Coronavirus Disease 19 (COVID-19), marked the start of a global health crisis which has been associated with a substantial increase in morbidity and mortality, putting great strain on hospitals and health-care systems.

The study of pandemics is generally considered to be the domain of epidemiology. However, pandemics are closely related to public health and the field of mortality, one of the domains of demography alongside fertility and migration. This connection was evident during the recent COVID-19 pandemic, when policy interventions in the form of public health measures were taken to mitigate excess mortality and the demand for hospital resources. These public health measures were based on the assumed resemblance to the Influenza virus. Austria's main approach to the pandemic were lock-downs, social distancing, polymerase chain reaction (PCR) and antigen testing and contact tracing like in many other European countries (Desson et al., 2020). The first lock-down was declared on a press conference on 16 March 2020. This included the closing of restaurants and other businesses, the implementation of distance learning for students, and the request that individuals whose jobs were not considered essential stay at home. Further, visits of hospitals, nursing homes and other care facilities were banned. A mandatory wearing of face masks in shops and public transfer followed.

These strategies aimed to protect at-risk groups, who were thought to be most vulnerable to the virus, by the means of social cohesion. The Austrian government could mostly mitigate the spread of the virus with their policy interventions in the first stages of the pandemic (Moshammer et al., 2020). They could not, however, fully and sustainably combat infections, hospitalizations and increased mortality. Lock-downs and social distancing were even observed to have had other adverse outcomes in terms of mental health conditions (Akkaya-Kalayci et al., 2020; Dale et al., 2021; Niederkrotenthaler et al., 2022; Pieh et al., 2021), loneliness (Stolz et al., 2021) and financial well-being (Steiber et al., 2022). Moreover, in times of lock-downs and restrictions, a possible decline in health status due to less physical exercise, and late diagnoses because of delayed doctor appointments or avoidance to visit health-care facilities could also have shaped outcomes (Dey & Davidson, 2021).

The influence of health-related vulnerability on disease outcomes, both individually and on a population level, is a subject of crucial interest. In the case of the COVID-19 pandemic older age and high comorbidity status, which are often correlated, were more susceptible to a severe disease progression. Consequently, protective measures were directed towards these groups.

This topic is relevant because individuals with poor health and other risk factors are more likely to experience severe outcomes from viral respiratory infections (and possibly other diseases), and are therefore more likely to overburden health-care resources. Said higher health-care demand was apparent during the pandemic but is also a plausible scenario for other potential future crises. Given that population aging is already underway in many Western countries, promoting health could play a crucial role in mitigating the impact of future health crises. These considerations are further emphasized by the extended epidemiological transition theory proposed by Barrett et al., 1998 and further explored by Harper and Armelagos, 2010, which contextualizes the resurgence of infectious diseases within the broader framework of global health transformations. According to their argument, we are currently experiencing a third epidemiological transition, characterized by the reemergence of infectious diseases alongside increasing numbers of non-communicable chronic disease burden and accelerated globalization. Addressing health vulnerabilities and promoting resilience in aging populations is an important implication in this context (Mercer, 2018).

Associations of clinical and demographic characteristics on outcomes of SARS-CoV-2 (including mortality, hospital stay and re-hospitalization) have been researched internationally, including in the Austrian population. Children were assumed to experience less severe infections than adults (Harman et al., 2020; Ludvigsson, 2020), with a possible explanation of differences in immune response (Dhochak et al., 2020). In adults, older age, male sex, certain comorbidities, baseline medication status and lifestyle choices were found to have negative relationships with outcomes of COVID-19 infections (Bauer et al., 2021; Bliek-Bueno et al., 2021; Graf et al., 2025; Ssentongo et al., 2020; Williamson et al., 2020; Zajic et al., 2023; Zheng et al., 2020). Said comorbidities included, among many others, diabetes (Scheen et al., 2020), hypertension (Ayoubkhani et al., 2021; Ssentongo et al., 2020) and cardiovascular diseases (Graf et al., 2025; Ssentongo et al., 2020). Overall, mortality related to COVID-19 should not be viewed as a distinct cause of death, since it is likely to interact with other causes of morbidity and mortality (Castro et al., 2023). Furthermore, the comparison to the Influenza virus has also been of interest due to the aforementioned assumed similarity in terms of respiratory result and infection mode. Studies generally found higher risk of adverse outcomes for COVID-19 in comparison to Influenza (Bhaskaran et al., 2022; Brigadoi et al., 2024; Chong et al., 2021; Delahoy et al., 2023; Donnino et al., 2021; Fröhlich et al., 2022) and to the general population (Ayoubkhani et al., 2021; Bhaskaran et al., 2022; Ghasemi et al., 2022; Ko et al., 2021).

Risk factors for COVID-19 outcomes were often observed for short observation periods or limited sample sizes (Donnino et al., 2021; Fröhlich et al., 2022; Nersesjan et al., 2020; Pawelka et al., 2021; Piroth et al., 2021; Verma et al., 2021). Still, large scale studies were also conducted (Bhaskaran et al., 2022; Oseran et al., 2023; Woodcock et al., 2023; Xie et al., 2024). Reevaluation of short- as well as long-term outcomes of severe COVID-19 cases with a broad data collection and extensive set of characteristics might still be of interest. Additionally, examining Influenza in comparison to COVID-19 as a benchmark might be of interest, to reevaluate the initial comparison and to avoid underestimating Influenza. This also enables comparisons within a similarly vulnerable subset of the general population.

As previously reviewed, the recent literature suggests that besides age, sex, and other socioeconomic factors, health status is an important risk factor for severe short- and long-term COVID-19 (and Influenza) outcomes. This implies that encouraging healthy aging may be important to mitigate viral respiratory infections, especially in times of high health-care demand.

Therefore, the aim of this thesis is to focus on COVID-19 and Influenza hospitalized patients, also in comparison to the general population, to reevaluate established demographic risk factors as well as health status. The objectives include analyzing group comparisons and risk factors associated with short- and long-term outcomes using real-world population data over a broad observation period. These outcomes are conceptualized by the following defined study endpoints: time to hospital discharge and to in-hospital mortality (short-term), and time to all-cause mortality after hospital admission and after hospital discharge as well as to (re-)hospitalization (long-term). The research questions of interest are as follows:

1. *How do pre-existing health profiles, all-cause mortality and (re-)hospitalization risk of COVID-19 or Influenza hospitalized patients compare to corresponding population control groups from the general Austrian population?*

2. *How do pre-existing health profiles and demographic characteristics relate to short- and long-term outcomes after hospital-admission for COVID-19 or Influenza hospitalized patients in Austria?*

3. *How do COVID-19 and Influenza hospitalized patients in Austria compare in terms of short- and long-term outcomes?*

This study proceeds as follows: First, hospitalized patients with a COVID-19 or Influenza diagnosis will be compared to a respective control group from the general Austrian population without a COVID-19 or Influenza diagnosis. One COVID-19 or Influenza patient has approximately 10 assigned (age-, sex- and region/insurance carrier matched) controls, respectively.

A comparison of baseline health profiles, measured by medication prescriptions, will be conducted, along with an analysis of all-cause mortality. Second, short- and long-term outcomes of COVID-19 and Influenza patients will be separately evaluated in terms of age, sex, health burden measured by medication profiles, and adjustment for other important confounders. Finally, the same short- and long-term outcomes will be compared in an appropriate analysis between the COVID-19 and Influenza cohorts.

2 Theoretical Framework

2.1 Kaplan-Meier Estimator

A survival function describes the probability that an observation will survive an event past a given point in time. The Kaplan–Meier estimator is a nonparametric method used to estimate the survival function from time-to-event data. It provides a stepwise estimate of the survival probability, $S(t)$, which is defined as the probability that the event of interest has not occurred by time t. It is particularly useful for visualization of how the survival probability of an event changes over time. This method is widely used for comparing survival rates among groups that are defined by categorical variables, such as treatment condition, demographic subgroup, or exposure level. A key feature of the Kaplan–Meier approach is its ability to incorporate right-censored data. Right-censored data refers to observations which did not experience the event of interest within the study period because the individual was lost to follow-up or the study ended before the event occurred. Instead of excluding these censored observations, the Kaplan–Meier method adjusts the survival probability estimates by including only individuals who are still at risk at each event time (Kaplan & Meier, 1958). Formally, the Kaplan–Meier survival function estimate is given by:

$$\hat{S}(t) = \prod_{t_i \leq t} \left(1 - \frac{d_i}{n_i}\right),$$

where t_i denotes a distinct time point at which at least one event occurs, d_i is the number of events at time t_i, and n_i is the number of individuals at risk just prior to t_i. The product is taken over all event times less than or equal to t (Aalen et al., 2008). The resulting Kaplan-Meier survival curve is a step function that decreases only at observed event times. This curve allows for an intuitive comparison of survival experiences across groups and is often complemented by statistical tests. The log-rank test is most commonly used to statistically assess whether the observed survival curves differ significantly across groups. This test compares the observed number of events to the expected number under the null hypothesis of equal survival functions and is sensitive to consistent differences in hazard rates over time (Kleinbaum & Klein, 2006). Although the Kaplan–Meier method is descriptive and has limited ability to control for covariates, it remains a key method in exploratory survival analysis, especially in the early stages of modeling or when illustrating basic survival patterns.

2.2 Cox proportional hazards Regression

While the probability of surviving an event beyond a given time is described by the survival function, the hazard function defines the instantaneous risk of the event occurring at that time,

given survival up to that point. This distinction is important because, unlike Kaplan–Meier estimation which focuses on the survival function, the Cox proportional hazards model directly models the hazard function and how it changes with covariates. The Cox proportional hazards model is a widely used method in survival analysis to investigate the relationship between the time to an event (also known as survival time or time-to-failure) and one or more covariates $x_i = (x_{i1}, ..., x_{ip})'$ associated with each observation i. These covariates are typically measured at baseline time (t_0), and are assumed to remain constant over time unless modeled otherwise. The Cox model is semi-parametric because it does not require specifying the form (= non-parametric) for the baseline hazard function $\lambda_0(t)$, which is shared across all individuals, while simultaneously modeling the effect of covariates parametrically through a log-linear function (Cox, 1972). The hazard function $\lambda(t, x_i)$, which denotes the instantaneous risk of the event occurring at time t, conditional on survival until that time and on the covariates x_i, is given by

$$\lambda(t, x_i) = \lambda_0(t) exp(\beta' x_i)$$

where β is the vector of regression coefficients, each representing the log hazard ratio associated with a one-unit change in the corresponding covariate. The hazard ratio (HR) compares hazards across covariate profiles. This HR is given by:

$$\frac{\lambda(t|x_i)}{\lambda(t|x_j)} = \frac{\lambda_0(t) exp(\beta' x_i)}{\lambda_0(t) exp(\beta' x_j)} = exp[\beta'(x_i - x_j)].$$

The $\lambda_0(t)$ cancels out, so what remains is a ratio independent of time, which defines the proportional hazards assumption (Therneau & Grambsch, 2000). The effect of covariates on the hazard is multiplicative and constant over time. Violations of this assumption, which can be tested using Schoenfeld residuals, suggest that covariate effects vary with time and that the model may need to be extended (Grambsch & Therneau, 1994), e.g., by including time-varying coefficients or stratification (Hastie & Tibshirani, 1993). Interpretation of hazard ratios $exp(\beta_j)$ depends on the scale level of the covariate. For continuous variables, the hazard ratio represents the multiplicative change in hazard for a one-unit increase in the respective covariate. For categorical variables, the hazard ratio compares the hazard ratio in one category to that in the reference category.

A key strength of the Cox proportional hazards model is its ability to account for right-censored data, a characteristic shared with the Kaplan–Meier estimator. These censored observations contribute to the partial likelihood estimation of β without the need to impute their survival times (Efron, 1977). However, the Cox model is only appropriate when every subject is theoretically at risk of experiencing the event of interest during follow-up. If some subjects may

experience a competing event (e.g., death from another cause) that precludes the event of interest, then appropriate methods such as a competing risks regression model should be used instead (Schuster et al., 2020).

2.3 Cumulative Incidence Estimation

In some time-to-event analyses, the event of interest may not occur for every observation because other, mutually exclusive events may occur first, preventing the main event from happening. For example, in medical studies, death from other causes may preclude disease-specific death. These are known as competing risks (Kalbfleisch & Prentice, 2002; Putter et al., 2007). In survival analysis with competing risks the cumulative incidence function is the appropriate measure of event probability, rather than the overall survival function. Similar to the Kaplan-Meier estimator of the survival function, the cumulative incidence function can be estimated with a non-parametric estimator, most commonly with the Aalen-Johansen estimator (Andersen et al., 2012). The Kaplan-Meier estimator assumes non-informative censoring and treats competing events as censored observations, which can result in an overestimation of the event-probability, since it does not account for the fact that competing events remove observations from the risk-set of the event of interest (Putter et al., 2007). The estimation of the cumulative incidence function (CIF) explicitly accounts for competing events as distinct outcomes and describes event probabilities of each defined event type over time (Pintilie, 2017; Zhang, 2017). The CIF for event type k up to time t is defined as:

$$\text{CIF}_k(t) = \mathbb{P}(T \leq t, \text{ event type} = k),$$

where T denotes the time to the first event. This represents the probability that an individual will experience event k by time t. The cumulative incidence function naturally increases over time and can be visualized using cumulative incidence curves, which visualize the progression of event probabilities for each outcome. These curves provide a visual summary of absolute risks, and allow interpretable comparisons across groups and are widely used in medical, epidemiological, and sociological research. Beyond descriptive analysis, cumulative incidence estimation forms the basis for inferential approaches such as Fine and Gray regression (Fine & Gray, 1999), which extend the CIF framework by incorporating covariates into the modeling of subdistribution hazards.

2.4 Competing risk Fine and Gray regression

While the cumulative incidence function describes the probability of experiencing a particular event type by a given time in the presence of competing risks, the subdistribution hazard defines

the instantaneous rate at which that probability accumulates. Using Cox proportional hazards regression and treating competing events as censored can result in biased and inflated hazard estimates for the event of interest (Austin & Fine, 2017). To address this, Fine and Gray (Fine and Gray, 1999) proposed the proportional subdistribution hazards model, which directly models the subdistribution hazard as a function of covariates, linking covariate effects to the cumulative incidence of the event of interest. The subdistribution hazard is estimated by adjusting the risk set so that individuals who experience a competing event are not censored, but remain in the risk set with appropriate weighting (Geskus, 2011; Kalbfleisch & Prentice, 2002). This approach allows estimation of the marginal probability of experiencing a specific event type in the presence of competing risks and thus provides inference on the cumulative probability of the event of interest over time. The subdistribution hazard for cause k is defined as

$$\tilde{\lambda}_k(t \mid x_i) = \lim_{\Delta t \to 0} \frac{\mathbb{P}(t \leq T < t + \Delta t,\ \text{event } = k \mid T \geq t \cup (T \leq t \wedge \text{event} \neq k), x_i)}{\Delta t}.$$

Fine and Gray specify a proportional hazards structure for this subdistribution hazard:

$$\tilde{\lambda}_k(t \mid x_i) = \tilde{\lambda}_{0k}(t) \cdot \exp(\beta' x_i),$$

where $\tilde{\lambda}_{0k}(t)$ is the baseline subdistribution hazard for event type k, T denotes the time to the first event, t is a distinct time point of evaluation, β is the vector of regression coefficients, and x_i is the covariate vector for individual i. As with the Cox model, the regression coefficients are typically presented as exponentiated values, $\exp(\beta_j)$, interpreted as subdistribution hazard ratios (Austin & Fine, 2017; Fine & Gray, 1999). For a continuous covariate, this ratio represents the relative change in the subdistribution hazard associated with a one-unit increase in the covariate. For a categorical covariate, it compares the subdistribution hazard between a specific category and the reference group. These hazard ratios reflect changes in the cumulative incidence of the event of interest over time, and not changes in cause-specific hazards. Fine and Gray's approach thus provides direct inference about the marginal probability of an event due to a specific cause, which is relevant in the presence of competing events.

2.5 Propensity Score Matching

A common limitation of observational studies is that individuals may self-select into groups (e.g. treatment groups) based on certain characteristics. This might lead to confounding bias, meaning unobserved variables that influence both the independent and dependent variables, distort the true effect on the outcome, when those groups are compared. For example, in retrospective observational data, patients in one treatment group may be healthier and younger on average than the individuals in the other treatment group, potentially influencing outcomes and

introducing systematic differences which undermine causal inference. In contrast, randomized controlled trials (RCTs) eliminate this bias by randomly assigning treatment, ensuring that both observed and unobserved characteristics are, on expectation, evenly distributed across groups (Austin, 2011). By using propensity score matching (PSM), this possible source of bias can be reduced (Kurz et al., 2024). This method involves estimating the probability that a unit belongs to a specific group or receives a certain treatment conditional on a set of observed covariates. This probability is known as the propensity score, and it is defined as:

$$e(x_i) = \mathbb{P}(Z_i = 1 \mid x_i),$$

where Z_i indicates treatment assignment and x_i is the vector of observed covariates for individual i (Rosenbaum & Rubin, 1983). The propensity score is most commonly estimated using logistic regression, which models the probability of group or treatment assignment as a function of observed covariates. Once the scores are estimated, individuals in the groups (e.g. treatment and control group) are matched based on their proximity in propensity score space. Matching is commonly performed using the nearest neighbor method, in which each treated individual is paired with the control individual whose propensity score is closest. To improve the quality of matches and avoid poor pairings, a caliper width is often imposed. A caliper is a predefined maximum allowable difference in propensity scores between matched observations. If no match falls within the specified caliper, the individual is excluded from the matched sample. This restriction helps to ensure that matched observations are adequately comparable in terms of observed covariates and prevents substantial imbalance (Austin, 2011; Rosenbaum & Rubin, 1985). After matching, only those observations that meet the matching criteria are retained. This process reduces bias by improving covariate balance. However, it can lead to a loss of sample size, especially when the distributions of propensity scores differ substantially between comparison groups. Nevertheless, when implemented appropriately, PSM with nearest neighbor matching and caliper thresholds enhances the internal validity of causal estimates drawn from observational data (Kurz et al., 2024; Stuart, 2010).

3 Methods

3.1 Data Preparation

This retrospective nationwide study is based on data from 11 insurance carriers from the nine Austrian Regions (BVA, SVA, SVB, WGKK, NOEGKK, BGKK, OOEGKK, STGKK, KGKK, TGKK, VGKK) and were obtained from the Austrian Health Insurance Fund. Austria has a universal social health insurance system characterized by broad coverage and high physician accessibility (Hofmarcher & Quentin, 2013). The dataset includes all patients hospitalized in Austria from 1 January 2020 to 31 December 2021 due to COVID-19 and from 31 December 2015 to 31 December 2021 due to seasonal Influenza, with corresponding hospital admission and discharge dates and information on region of the hospitalization. COVID-19 and Influenza hospital admissions are documented based on diagnosis codes of the International Statistical Classification of Diseases and Related Health Problems (ICD-10; World Health Organization, 2019), listed in Table 3.1.

Additionally, respective controls were randomly assigned to both patient groups (COVID-19 and Influenza hospitalized patients) in a 1:10 ratio, based on age, sex, and insurance carrier correspondence. The Austrian Health Insurance Fund randomly selected the control population, which consists of individuals from the general Austrian population who were not hospitalized due to COVID-19 in the years 2020 and 2021 (COVID-19 control) or Influenza in the years 2016 to 2021 (Influenza control). All individuals in the dataset include information on demographic characteristics (i.e. biological sex [1] and age), and date of death (if applicable), with follow-up until the end of the study with cut-off 30 June 2022. Health-related data included medical profiles that were recorded with Anatomical Therapeutic Chemical classification system (ATC; World Health Organization, n.d.) and International Classification of Diseases (ICD) codes. For the patient groups, the medical profiles were available from one year before their COVID-19 or Influenza hospitalization date until the study cut-off. For the control groups, the data were available from one year prior to the first recorded hospitalization date of COVID-19 or Influenza in the insurance billing system until the study cut-off. Furthermore, Information on additional hospitalizations for any cause was available, including the dates of admission and discharge, as well as the corresponding diagnoses.

The exclusion criteria were individuals with data errors or implausible data.

[1] When presenting data and results on sex, biological sex is addressed with the categories ”male” and ”female” and not gender identity, which may differ from biological sex.

Table 3.1. ICD-Codes of included patients.

Disease	**ICD-10 Codes**
COVID-19	U071, U072, U049
Influenza	J09, J100, J101, J108, J110, J111, J118, J10

3.2 Outcomes and Objectives

The primary endpoint of this thesis was all-cause mortality. The dataset includes dates of death, but not information on the cause of death. For patients, mortality data were derived from COVID-19 and Influenza hospitalization records, with the observation period defined as the time from hospital admission to the date of death, as recorded in the insurance billing system. For controls, mortality data were aligned to the admission dates of their assigned COVID-19 or Influenza patients, with the observation period extending from the assigned admission date to the date of death. If no death occurred, the follow-up was censored at the end of the study period. The secondary outcomes included all-cause in-hospital mortality, hospital discharge and all-cause mortality and re-hospitalization for hospital survivors. In-hospital mortality was defined as death occurring after the date of hospital admission but before hospital discharge. All-cause mortality after hospital discharge (only available for hospital survivors), was measured from the date of hospital discharge until the date of death. Hospital discharge, was defined as alive discharge from hospital measured from hospital admission to discharge. Re-hospitalization for any cause (only available for hospital survivors), was defined as the first hospitalization occurring after hospital discharge for patients and as the first hospitalization after an assigned discharge date for controls. Censoring for in-hospital mortality occurred at discharge if no death was documented. Censoring for post-discharge mortality and re-hospitalization occurred at the end of the study period. A summary of the outcomes is provided in Table 3.2.

Table 3.2. Definitions of primary and secondary outcomes.

Outcome	**Definition**
All-cause mortality (primary outcome)	all-cause mortality based on death date: time from COVID-19/Influenza hospital admission to death or last follow-up
In-hospital mortality (secondary outcome)	based on death date: time from index COVID-19/Influenza hospital admission to death or hospital discharge.
All-cause mortality after hospital survival (secondary outcome)	all-cause mortality based on death date for the subgroup of patients surviving hospital stay: time from (alive) COVID-19/Influenza hospital discharge to death or last follow-up

Outcome	Definition
Readmission due to any reason (secondary outcome)	based on billing information (MEL-Code): time from (alive) COVID-19/Influenza hospital discharge to the first hospital admission (due to any reason) after index hospital stay
Hospital discharge (secondary outcome)	based on date of hospital discharge: time from COVID-19/Influenza hospital admission to hospital discharge or death

3.3 Confounders

Age was categorized into age subgroups and analyzed within predefined age cohorts (Table 3.3). For adults, individuals with older age were assumed to be at a higher risk of the defined outcomes (Table 3.2). For children, however, younger individuals were assumed to be more vulnerable to the outcomes of interest in this study. Therefore, the reference groups for the age subgroups used in the regression analyses were defined accordingly and are labeled AG-R in Table 3.3.

Table 3.3. Categorization of age subgroups and within age cohorts.

Age Cohort	Age Subgroup
0-18	AG1: 6-10, AG2: 11-15, AG3: 16-18, AG-R: 0-5 (reference)
19-40	AG1: 19-25, AG2: 26-35, AG3: 31-35, AG-R: 36-40 (reference)
41-64	AG1: 41-45, AG2: 46-50, AG3: 51-55, AG4: 56-60, AG-R: 61-64 (reference)
65-74	AG1: 65-70, AG-R: 71-74 (reference)
$\geq$75	AG1: 75-80, AG2: 81-85, AG3: 86-90, AG-R: >90 (reference)

To evaluate pre-existing health burden, ATC-coded drug prescriptions were examined during the year prior to hospital admission. For COVID-19 and Influenza patients, the index date corresponded to the date of hospitalization. For control subjects, the index date corresponded to the admission date of the assigned patient. These prescriptions were assumed to serve as proxies for the health conditions for which the medications were prescribed. Only prescriptions of interest were evaluated and were grouped into 30 predefined medications group categories. The medical team of the AUTCOV study selected these categories based on their clinical relevance to viral respiratory diseases and the risk of mortality and other outcomes. The medication groups were labeled MG 1 to MG 30 and are listed in Table 3.4.

Table 3.4. Numbers and categories of medication groups.

Group Nr.	Medication Group Category
MG 1	Anticoagulants

MG 2	Antibiotics, Antivirals, Antiprotozoals or Anthelmintics
MG 3	Insulins and other Antidiabetics
MG 4	heart drugs
MG 5	Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors
MG 6	Beta Blockers
MG 7	Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran
MG 8	Immunosuppressants and Immunomodulators
MG 9	Systemic Steroids
MG 10	Chemotherapy
MG 11	Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid
MG 12	Antacids incl. Antihistamines
MG 13	Vitamin D and other Vitamin supplements
MG 14	Caplacizumab
MG 15	Systemic Hemostatics
MG 16	Hereditary angioedema Therapeutics
MG 17	Peripheral Vasodilators
MG 18	Hormonal contraceptives and similar hormone preparations
MG 19	Immunoglobulins
MG 20	Interferons and CSF
MG 21	NSAR and other antiinflammatory drugs
MG 22	Gout medications
MG 23	Antiepileptics
MG 24	Antipsychotics
MG 25	Rhinological and throat antiseptics
MG 26	inhaled anti-obstructive drugs
MG 27	inhaled steroids
MG 28	other COPD drugs
MG 29	Cold and Cough preparations
MG 30	Systemic Antihistamines.

Each group was coded as a binary variable indicating whether the individual received at least one prescription from the corresponding group during the defined period. Information on the included ATC-Codes for each medication group in Table 3.4 can be found in Table A.2. Furthermore, all medication groups were summed as the total number of medication groups for which at least one prescription of the defined medication groups was documented. However, the following groups were excluded: MG 18: Hormonal contraceptives and similar hormone prepara-

tions; MG 25: Rhinological and throat antiseptics; and MG 29: Cold and cough preparations, as these were not assumed to be associated with comorbidity from severe underlying diseases that could influence outcomes. The resulting total number of medication groups was further categorized into polypharmacy groups, where the categories of ≥ 2 medication groups were regarded as polypharmacy. The polypharmacy groups were categorized appropriately for the specific age cohorts and can be viewed in Table A.1. The confounder "infection wave" indicates the period during which the patients were hospitalized. For COVID-19 patients the infection waves were defined as January to December 2020, January to June 2021, or July to December 2021. For Influenza patients, the infection waves were defined as, December 2015 to June 2016, July 2016 to June 2017, July 2017 to June 2018, July 2018 to June 2019, July 2019 to June 2020, or July 2020 to December 2021. For the outcomes conditional on hospital survival, the confounding variable length of hospital stay was defined as the number of days spent in hospital, measured from admission to alive discharge.

3.4 Statistical Methods

3.4.1 General Approach

All analyses were performed separately for the following age cohorts: 0–18, 19–40, 41–64, 65–74, and 75 and older (see Table 3.3). For descriptive analyses, categorical variables were summarized using absolute frequencies and percentages, and continuous variables were described using medians and interquartile ranges (IQRs). All statistical analyses were performed in *R* version 4.3.2 (R Core Team, 2023). The following packages were used for data management and analysis: `tidyverse` for data manipulation and visualization (Wickham et al., 2019), `survival`, and `survminer` for Cox proportional hazards and Kaplan–Meier analyses (Kassambara et al., 2024; Therneau, 2024), `cmprsk` and `ggsurvfit` for competing risk analysis (Gray, 2024; Sjoberg et al., 2024), and `MatchIt` for propensity score matching (Ho et al., 2011).

3.4.2 Children and Adolescents (Age Cohort 0-18 years)

Comparison to control group:

For children and adolescents, health burden was evaluated by comparing frequencies of medication groups between COVID-19/Influenza patients and their respective control groups. Due to the limited sample sizes, Fisher's exact tests were used to evaluate differences. All-cause post-admission mortality was examined by calculating one-year mortality rates for each medication group and overall. Further, to provide a descriptive overview of post-admission mortality between patients and controls, the overall one-year mortality rates and absolute numbers of

deaths within one year were visualized for each age subgroup using bar charts. In addition, frequency tables for deaths stratified by sex and by age subgroup (as defined in Table 3.3) were constructed for the specific follow-up intervals: in-hospital, 30 days, 180 days, 1 year, and 1.5 years. These were further stratified by polypharmacy status to explore associations between medication burden and mortality. For individuals who survived their initial COVID-19 or Influenza hospitalization (for controls, their assigned hospitalization period), re-hospitalization frequencies were reported for the same follow-up intervals, stratified by sex and age group.

Within COVID-19/Influenza patient group:

The timeline of hospitalizations in the study period were visualized within all COVID-19 and within all Influenza patients for each age subgroups. The number of prescribed medication groups was summed and categorized as 0, 1 or $\geq$2 medication groups, and were reported in absolute and relative frequencies across the age subgroups. As described in section 3.3, a number of $\geq$2 medication groups was considered as polypharmacy. Further descriptive characteristics, including length of hospital stay, follow-up time, time to death, and sex, were summarized. Due to the low number of deaths in this age cohort, no regression models for mortality outcomes could be performed. Kaplan-Meier curves were used to visualize hospital discharge and re-hospitalization probabilities within the patient groups by polypharmacy status. To further evaluate time to hospital discharge and re-hospitalization, Cox proportional hazards regression was used. Since deaths were rare in this age cohort, they were censored at time of death and not regarded as competing risks. The Cox proportional hazard regression models included the baseline variables age, sex, infection wave (to reflect pandemic waves and Influenza seasons), and polypharmacy status. Regional variation was addressed using a cluster term for region (i.e. federal state). For variable selection, simple Cox models were first calculated for each medication group with the baseline covariables, and medication groups with $p < 0.1$ were then included in multivariable Cox models. Medication groups prescribed to fewer than five individuals were excluded to reduce the risk of model instability due to complete separation. For outcome re-hospitalization the covariable length of hospital stay in days was included in the set of baseline variables.

Comparison between COVID-19 and Influenza patient groups:

To adjust for bias in the patient group comparison, propensity score matching (PSM) was used to estimate the likelihood of receiving a COVID-19 or Influenza diagnosis based on observed covariates. The logistic regression model for the calculation of the propensity score included the

covariates sex, age at diagnosis, region, and medication groups. Medication groups were included if their comparison between the patient groups yielded a p-value of < 0.05 using Fisher's exact tests. Given the limited sample size in this cohort, 1:1 nearest-neighbor matching with a caliper width of 0.001 was used. The propensity score matching was implemented for all patients for the comparison of the endpoints hospital discharge and re-hospitalization. Since in-hospital deaths were markedly low, the subgroup of hospital survivors did not receive a separate matching for the endpoint re-hospitalization.

Frequencies of medication groups were also evaluated for the propensity score matched COVID-19 and Influenza patients and tested using the Fisher's exact test to observe if the groups have comparable health profiles after the matching process. To provide a descriptive overview of post-admission all-cause mortality outcomes between the PSM patients, frequency tables of deaths were created and stratified by patient group, sex and age subgroup (Definition in Table 3.3) at the specific follow-up intervals: in-hospital, 30 days, 180 days, 1 year, and 1.5 years. These were further stratified by polypharmacy status to explore associations between medication burden and mortality. Kaplan-Meier curves were used to visually asses differences of post-admission mortality probabilities between the propensity score matched patient groups. All-cause mortality after hospital admission was examined using the log-rank test, and all-cause in-hospital mortality was exploratory compared using Fisher' exact test. Due to the low number of deaths in this age cohort, no regression models for mortality outcomes could be calculated. For the subgroup of propensity score matched individuals who survived their initial COVID-19 or Influenza hospital stay, re-hospitalization events were reported for the specific follow-up intervals: in-hospital, 30 days, 180 days, 1 year, and 1.5 years, stratified by sex and age group. Kaplan-Meier curves were created to asses hospital discharge and re-hospitalization probabilities between patient groups for the respective PSM groups (all patients and hospital survivors). Due to the low numbers of deaths, they were censored at time of death. To further evaluate the endpoints hospital discharge and re-hospitalization between corresponding propensity score matched patients, Cox proportional hazards regression was used. The Cox models included the baseline variables age, sex, and polypharmacy status. Regional variation was addressed using a cluster term for federal state. For variable selection, simple Cox models were first calculated with each medication group and the baseline covariates, and medication groups with $p < 0.1$ were then included in multivariable Cox analyses. Medication groups prescribed to fewer than five individuals were excluded to reduce the risk of model instability due to complete separation. For outcome re-hospitalization the covariable length of hospital stay in days was included in the set of baseline variables.

3.4.3 Adults (Age Cohorts >18 years)

The same analytical framework was applied to adult cohorts, with modifications suited to the larger and more heterogeneous sample.

Comparison to control group:

Medication burden was assessed by comparing medication group frequencies between COVID-19/Influenza patients and their respective control groups and using Chi-squared tests or for frequencies below 5 counts Fisher's exact tests. One-year all-cause mortality rates were calculated for each medication group and overall. Further, to provide a descriptive overview of post-admission mortality between patients and controls, the overall one-year mortality rates and absolute numbers of deaths within one year were visualized for each age subgroup using bar charts. Additionally, as for the children and adolescent cohort, descriptive frequency tables for death, were calculated and stratified by sex and age group for the specific follow-up intervals: in-hospital, 30 days, 180 days, 1 year, and 1.5 years. Further stratification was conducted by polypharmacy status to explore variation in mortality risk by medication burden. Re-hospitalization frequencies for individuals who survived their initial hospital stay (for controls, their assigned hospitalization period), were also descriptively analyzed across the the specific follow-up intervals: in-hospital, 30 days, 180 days, 1 year, and 1.5 years, and stratification by sex and age group, with death treated as a competing event.

Within COVID-19/Influenza patient group:

The timeline of hospitalizations in the study period were visualized within all COVID-19 and within all Influenza patients for each adult age cohort. The number of prescribed medication groups were categorized as 0–1, 2–5, 6–10, and $\geq$11 medication groups for individuals aged 41 and older, (and for time-to-event analysis into 0–1, 2–5, and $\geq$6 medication groups for those aged 19–40), and were reported in absolute and relative frequencies across the age cohorts. As described in section 3.3, a number of $\geq$2 medication groups was considered as polypharmacy. Further descriptive characteristics, including length of hospital stay, follow-up time, time to death in days, and sex, were summarized. Kaplan-Meier curves were used to visualize all-cause post-admission and in-hospital mortality by polypharmacy status, and post-discharge mortality for hospital survivors by polypharmacy status. Cumulative incidence curves, with accounting for the competing risk of death, were used for visualization of hospital discharge probabilities by polypharmacy status and re-hospitalization probabilities by polypharmacy status for the patients who survived their hospital stay. Cox proportional hazards regression was used to evaluate

associations between baseline variables and the outcomes all-cause mortality post-admission and in-hospital and the outcome all-cause mortality post-discharge for hospital survivors. Baseline covariates included age, sex, infection wave, and polypharmacy status. Regional clustering was accounted for as in the children cohort described regression models. For medication variables, simple Cox regressions were first estimated, with baseline covariates, and only medication groups with a p-value$<$ 0.1 were selected into multivariable Cox models. For hospital discharge and re-hospitalization outcomes (conditional on hospital survival), competing risk regression models were used, accounting for all-cause death as a competing risk. The same covariates as in the mortality models were included. For the outcomes all-cause mortality post-discharge and re-hospitalization the covariable length of hospital stay in days was included in the set of baseline variables.

Comparison between COVID-19 and Influenza patient groups:

To reduce confounding PSM was employed separately for all patients and for hospital survivors for the outcomes conditional on hospital-survival. The logistic regression model for the calculation of the propensity score included the covariates sex, age at diagnosis, region, and medication groups with COVID-19 versus Influenza as the binary endpoint. Medication groups were included if their comparison between the patient groups yielded a p-value of < 0.05 using the Chi-squared test or the Fisher's exact tests. A 1:2 nearest-neighbor matching with caliper width 0.001 was used. Frequencies of medication groups were also evaluated for the propensity score matched COVID-19 and Influenza patients and differences were tested the Chi-squared test or the Fisher's exact to observe if the groups have comparable health profiles after the matching process. Descriptive frequency tables, were calculated for deaths of the propensity score matched patients stratified by patient group, sex and age cohort at the specific follow-up intervals: in-hospital, 30 days, 180 days, 1 year, and 1.5 years. Further stratification by polypharmacy status was performed to explore variation in mortality risk by medication burden. Re-hospitalization frequencies for the propensity score matched groups of hospital survivors were also descriptively analyzed across the the specific follow-up intervals: in-hospital, 30 days, 180 days, 1 year, and 1.5 years, stratified by patient group, sex and age cohort, with death as a competing event. Kaplan-Meier curves were used to visualize all-cause mortality post-admission, in-hospital and post-admission between the corresponding propensity score matched patient groups (all patients and hospital survivors). Cumulative incidence curves, with accounting for the competing risk of death, were used for visualization of hospital discharge probabilities between propensity score matched patient cohorts and re-hospitalization probabilities for the propensity score matched

patients who survived their first hospital stay. Cox proportional hazards regression was used to evaluate differences in mortality outcomes between propensity score matched COVID-19 and Influenza patients for the all-cause mortality outcomes with adjustment of baseline variables. Baseline covariates included age, sex, infection wave, and polypharmacy status. Regional clustering was accounted for as in the previous regression models. For each medication group, simple Cox regressions were first estimated with the baseline covariates, and only medication groups with p-values < 0.1 were selected for the multivariable models. For hospital discharge and re-hospitalization outcomes, competing risk regression models were used, treating death as a competing event. The same baseline covariates and medication groups process as for the mortality outcomes models were used. For the regression models of re-hospitalization and post-discharge mortality the propensity score matched cohorts of hospital survivors were used and additionally, length of hospital stay during the index admission was included in the baseline covariates.

The proportional hazards assumption was assessed for all regression models, and multicollinearity among covariates was evaluated using variance inflation factors. Given the large number of variables and hypothesis tests, and the large sample size, an adjusted significance level of $\alpha = 0.001$ was applied to reduce the probability of Type I error. A strict Bonferroni-correction for 30 covariables for the primary parameter was applied. The same significance level was used for secondary endpoints. However, due to the large number of subgroups results might be interpreted with caution.

4 Results

4.1 Children and Adolescents (Age Cohort 0-18)

4.1.1 Demographic Characteristics and Hospitalizations

A summary of the demographic characteristics for the patient groups can be viewed in Table 4.1 and Figure 4.1.

The children and adolescents cohort, defined as individuals aged 0 to 18, included 1,063 COVID-19-hospitalized patients with 10,626 age-, sex-, and region-assigned controls, as well as 2,781 Influenza-hospitalized patients with 27,634 age-, sex-, and region-assigned controls. Among COVID-19 patients aged 0–18 years, the median follow-up time was 430 days (IQR: 245–551.5) (Table 4.1). The sex distribution in the COVID-19 group was balanced, with 532 male and 531 female patients. COVID-19 hospitalizations in children and adolescents peaked during the autumn and winter seasons of 2020/2021 and again in 2021/2022. The highest hospitalization frequencies occurred among children aged 0-5 years. Among Influenza patients aged 0–18 years, the median follow-up time was 1221 days (IQR: 881-1,599). This cohort had a higher proportion of male patients with 1,512 compared to 1,269 female patients (Table 4.1). Influenza hospitalizations followed the expected seasonal winter peaks, across each year in the observation period. A notable increase in hospitalization-peaks was observed across all pediatric age subgroups over the years (Figure 4.1). The highest hospitalization frequencies occurred among children aged 0-5 years. Pediatric Influenza patients were generally younger than COVID-19 patients (Table 4.1).

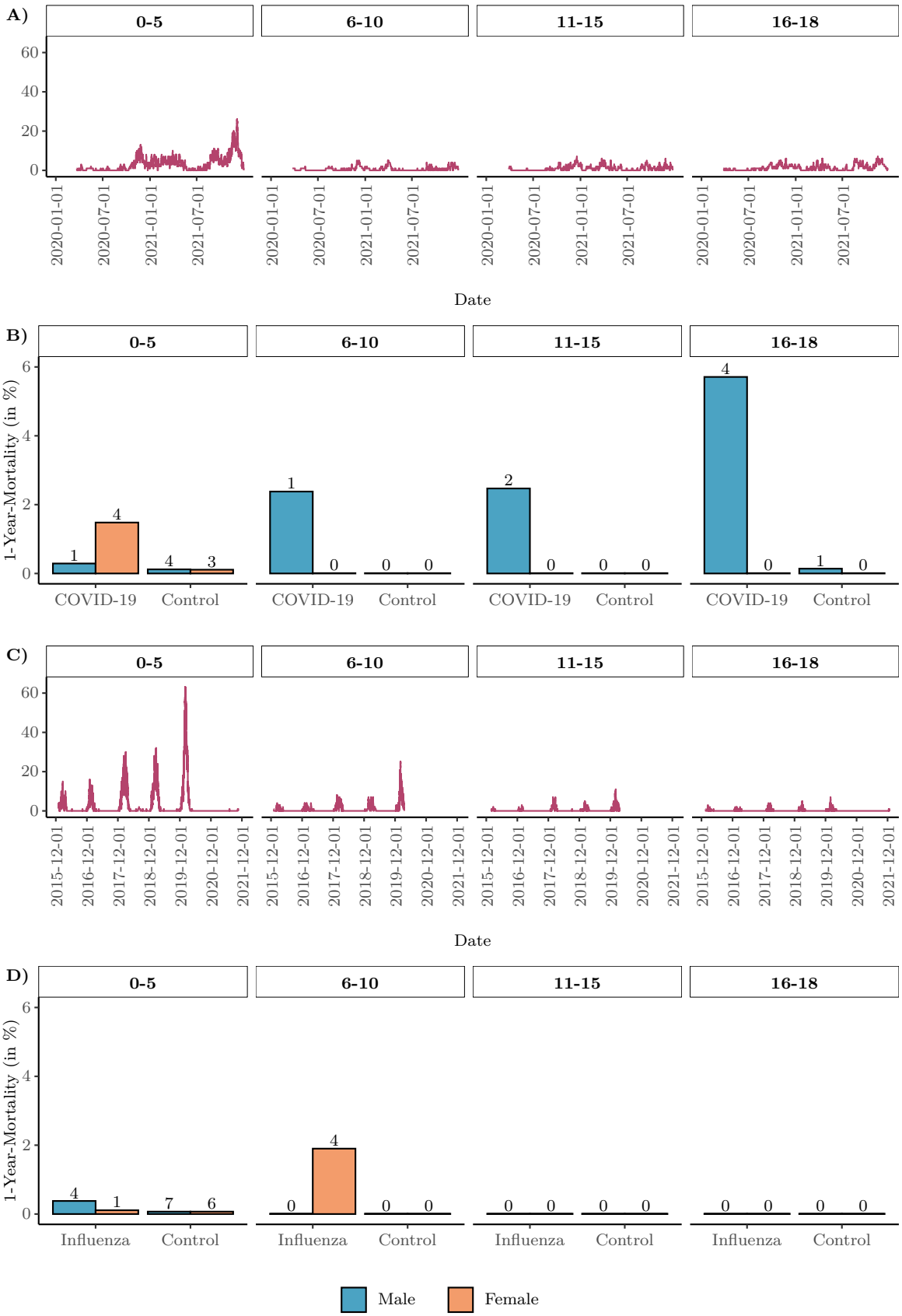

Figure 4.1. Timeline of hospitalizations for A) COVID-19 and C) Influenza patients aged 0–18, stratified by age subgroup. Bar charts compare one-year mortality between male and female patients and their respective control groups for B) COVID-19 and D) Influenza, stratified by age subgroup.

Table 4.1. Summary statistics for COVID-19 and Influenza patients aged 0–18 years.

COVID-19 Patients										
Age	0–5		6–10		11–15		16–18		Overall	
	$n = 609$		$n = 98$		$n = 167$		$n = 189$		$n = 1063$	
Sex: Male	339	55.67%	42	42.86%	81	48.5%	70	37.04%	532	50.05%
Sex: Female	270	44.33%	56	57.14%	86	51.5%	119	62.96%	531	49.95%
Med groups 0	485	79.64%	43	43.88%	84	50.3%	93	49.21%	705	66.32%
Med groups 1	78	12.81%	29	29.59%	40	23.95%	47	24.87%	194	18.25%
Med groups ≥ 2	46	7.55%	26	26.53%	43	25.75%	49	25.93%	164	15.43%
Follow-up (days) Median (IQR)	366 (232.75–528.25)		441 (260–576)		453 (278–567)		450 (298–588)		430 (245–551.5)	
Time to death Median (IQR)	6 (2–21)		201 (201–201)		8 (4–12)		32.5 (22.25–64.25)		18.5 (4.25–35.5)	
Length of hospital stay Median (IQR)	3 (2–5)		3 (2–6)		3 (2–6)		3 (2–6)		3 (2–5)	
Influenza Patients										
Age	0–5		6–10		11–15		16–18		Overall	
	$n = 1961$		$n = 480$		$n = 207$		$n = 133$		$n = 2781$	
Sex: Male	1063	54.21%	270	56.25%	116	56.04%	63	47.37%	1512	54.37%
Sex: Female	898	45.79%	210	43.75%	91	43.96%	70	52.63%	1269	45.63%
Med groups 0	1023	52.17%	211	43.96%	88	42.51%	38	28.57%	1360	48.9%
Med groups 1	570	29.07%	161	33.54%	62	29.95%	48	36.09%	841	30.24%
Med groups ≥ 2	368	18.77%	108	22.5%	57	27.54%	47	35.34%	580	20.86%
Follow-up (days) Median (IQR)	1223 (883–1593)		1208 (879–1609)		915 (878–1592)		1223.5 (884–1621)		1221 (881–1599)	
Time to death Median (IQR)	185 (29–359)		196.5 (8.75–726.5)		948.5 (661.75–1235.25)		709 (709–709)		336 (10.5–596.25)	
Length of hospital stay Median (IQR)	3 (3–5)		3 (2–4)		3 (2–4)		3 (2–4)		3 (2–4)	

4.1.2 Medication Profile

Comparison to control group:

Frequencies of the examined medication groups (MG 1–MG 30) prescribed to children and adolescents in the year prior to COVID-19 or Influenza hospitalization—or, for control groups prior to their assigned hospitalization dates, were generally low. The most commonly prescribed medication group was MG 2: Antibitiotics, Antivirals, Antipotozoals or Antidiabetics, with 21.00% of COVID-19 patients and 15.86% of their controls having a documented prescription in this cohort (Table A.3). Among Influenza patients, 41.32% received MG 2 prescriptions compared to 27.98% in their control group (Table A.4).

Within COVID-19 patient group:

In the year prior to hospitalization, 66.32% of COVID-19 patients received no medication of the observed prescribed medication groups, and 15.43% of COVID-19 patients had polypharmacy, which was defined as prescriptions in $\geq$2 medication groups. Among COVID-19 patients, polypharmacy was low in children aged 0–5 years and was similar among those aged 6–18 years at around 25-27% (Table 4.1).

Within Influenza patient group:

In the year prior to hospitalization, 48.90% of Influenza patients received no medication of the observed prescribed medication groups, and 20.86% of Influenza patients had polypharmacy. Among Influenza patients, the proportion with polypharmacy increased with age (Table 4.1).

Comparison between COVID-19 and Influenza patient groups:

Fisher's exact test was used to evaluate between the two patient groups. Statistically significant differences were found for several medication groups and can be viewed in Tables A.3, A.4, and A.5. The results of the statistically significant differences of medication groups with p-values below < 0.05 in Table A.5 were included for propensity score calculation to reduce bias based on differences in health burden i.e. medical profiles. The matching on the propensity score resulted in 896 patients in each patient group, with more balanced medication profiles, which were tested and presented in Table A.6. Notably, in the propensity score matched cohorts, 20.42% of COVID-19 patients and 18.19% of Influenza patients had prescriptions in MG 2. This propensity score matched patient sample was used in subsequent regression analyses for comparisons of the patient groups.

4.1.3 All-Cause Mortality

In the 0-18 years age cohort, deaths from any cause were rare during the observation period. Due to this low event rate, mortality analysis in this age cohort was limited to descriptive statistics and for the propensity score matched patient group a comparison using log-rank tests and Fisher's exact test without multivariable modeling. The results should therefore be interpreted with care.

Comparison to control group:

Figure 4.1 B) and D) present one-year mortality following hospital admission for COVID-19 and Influenza patients, and following the assigned hospital admission date for their respective control groups. In the COVID-19 group, 12 children died within one year of admission, compared to 8 deaths in the corresponding control group. Among controls, most deaths occurred in children aged 0-5 years. In the COVID-19 group, one-year-mortality was higher among male children, particularly in the 16-18 age subgroup, whereas in the youngest age subgroup (0-5 years), deaths were more frequent among female children. Among Influenza hospitalized children, 9 deaths occurred within one year of hospital admission, while the corresponding control group had 13 deaths. All deaths of one year after admission in Influenza patients occurred in children aged

0-10 years. In the Influenza control group, deaths were limited to the 0-5 age group and were balanced between sexes. Among Influenza patients, male deaths occurred only in the 0–5 age group, whereas female deaths mostly occurred in children aged 6–10 years. Among COVID-19 patients, male patients aged 11 years and older appeared at higher risk in-hospital and over long-term follow-up, while polypharmacy showed no consistent association (Table A.7). In contrast, female patients had deaths at very young ages, particularly if polypharmacy was present. In the COVID-19 control group, mortality was primarily observed in children aged 0–5 years, with no observed relationship to polypharmacy for either sex. One-year mortality was elevated for COVID-19 hospitalized children with certain prescribed medication groups in the year prior to hospitalization but not for their respective controls (Table A.3). The same connection could be observed for Influenza hospitalized children in comparison to their control group (Table A.4). Among Influenza patients, mortality was more frequent in those with at least one prescribed medication group. For female Influenza patients, deaths occurred almost exclusively in-hospital and within 30 days of admission. In contrast, male Influenza patient deaths occurred later, with most events taking place more than one year after hospital admission. In the Influenza control group, deaths were only observed in children aged 0–5 years, none of whom had observed polypharmacy (Table A.8). Fortunately, deaths in children were rare overall and can be considered exceptional cases, with one-year mortality remaining below 6.00% across all age subgroups in all patient and control cohorts (Figure 4.1B, D).

Within COVID-19 patient group:
Most deaths in the COVID-19 group occurred in-hospital and within 30 days of admission (Table A.7). Further results for the outcome all-cause mortality of COVID-19 patients were summarized in the comparison to the COVID-19-assigned control group.

Within Influenza patient group:
Most deaths in the followup period of 1.5 years occurred in ages $\leq$10 and during hospital stay in the Influenza cohort. Further results for the outcome all-cause mortality of Influenza patients were summarized in the comparison to the Influenza-assigned control group.

Comparison between COVID-19 and Influenza patient groups:
A comparison of all-cause mortality between propensity score matched COVID-19 and Influenza patients using the log-rank test indicated a trend toward higher mortality among COVID-19 patients. However, this result did not reach statistical significance under the corrected significance

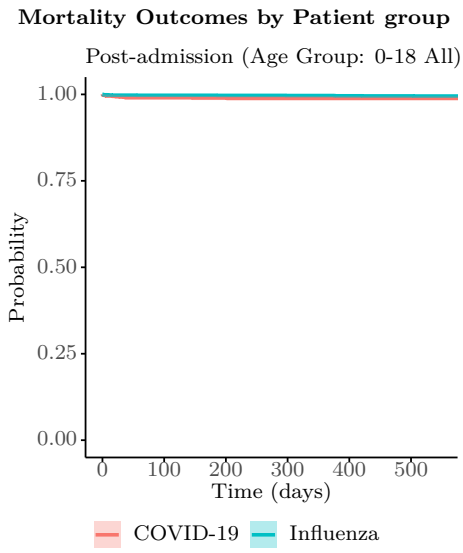

Figure 4.2. Kaplan–Meier curves for the comparison of all-cause mortality between propensity score matched COVID-19 and Influenza patients aged 0–18 years.

level of 0.001 ($p = 0.009$, Figure 4.2). Fisher's exact test for analyzing differences in in-hospital mortality did not observe a statistically significant difference in mortality risk ($p = 0.004$). Descriptive deaths of the propensity score matched patient cohorts stratified by patient group, age, sex, and number of medication groups for the time points in-hospital, 30 days, 180 days, 1 year and 1.5 years showed a low number of events. Influenza matched children had four deaths with at least one prescribed medication group, while two deaths for COVID hospitalized children with no prescribed medication group could be observed (Table A.9). These results may be interpreted with caution due to the low number of cases.

4.1.4 Hospital Discharge

Within COVID-19 patient group:

The median length of hospital stay was 3 days across all pediatric age subgroups in the COVID-19 group (Table 4.1). In the COVID-19 cohort, both simple and multivariable Cox proportional hazards models showed a statistically significant effect of age on time to hospital discharge. Specifically, children aged 6–10 years had a longer time to discharge than children aged 0–5 years (simple model: $HR = 0.85$, 95%CI = (0.80–0.91), $p < 0.001$; multivariable model: $HR = 0.84$, 95%CI = (0.78–0.91), $p < 0.001$). No other age subgroup differences or the effect of sex were found to be statistical significant (Table A.10). Polypharmacy showed lower discharge probabilities over time in the Kaplan-Meier curves (Figure 4.3A). Further, polypharmacy was associated with a lower discharge probability in the unadjusted Cox model ($HR = 0.76$, $95\%CI = 0.63 - 0.91$, $p = 0.003$), and after adjustment for medica-

tion groups in the multivariable model ($HR = 0.95,\ 95\%CI = 0.74 - 1.23,\ p = 0.716$), but this association was not statistically significant (Table A.10). Among the 30 predefined medication groups, some showed statistically significant associations with longer time to hospital discharge in the adjusted regression models. Specifically, prescriptions of MG 13: Vitamin D and other Vitamin supplements ($HR = 0.82, 95\%CI = 0.74 - 0.92,\ p < 0.001$), MG 20: Interferons and CSF ($HR = 0.69, 95\%CI = 0.56 - 0.85,\ p < 0.001$), and MG 23: Antiepileptics ($HR = 0.58, 95\%CI = 0.41 - 0.80,\ p < 0.001$) (Table A.10, Figure 4.6).
Hazard ratios from the multivariable regression models are visualized in Figure 4.6, where a hazard ratio greater than 1 indicates a higher probability of discharge (i.e., shorter hospital stay), and a hazard ratio below 1 indicates a longer hospitalization time.

Within Influenza patient group:
The median length of hospital stay was 3 days across all pediatric age subgroups in the Influenza cohort (Table 4.1). In the Influenza cohort, both the unadjusted and adjusted models observed significantly lower discharge probabilities for older children (ages 6-10 and 16-18 years) compared to those aged 0-5 years (Table A.11). Again, sex showed no significant association. Polypharmacy showed a longer hospital stay than no polypharmacy in the Kaplan-Meier curves (Figure 4.3B), also showing this trend in both the simple model ($HR = 0.63,\ 95\%CI = 0.54 - 0.73,\ p < 0.001$) and the multivariable model ($HR = 0.80,\ 95\%CI = 0.69 - 0.93,\ p = 0.003$). However, only the unadjusted model was found to be statistically significant for the association to polypharmacy. Significant associations with longer hospital stay were also found for specific medication groups. Specifically, MG 12: Antacids incl. Antihistamines ($HR = 0.51,\ 95\%CI = 0.38 - 0.68,\ p < 0.001$), MG 13: Vitamin D and other Vitamin supplements ($HR = 0.76,\ 95\%CI = 0.66 - 0.87,\ p < 0.001$) and MG 23: Antiepileptics ($HR = 0.55,\ 95\%CI = 0.45 - 0.68,\ p < 0.001$) showed negative effects on hospital discharge probabilities (Table A.11).

Comparison between COVID-19 and Influenza patient groups:
The Kaplan-Meier curves comparing time to discharge between propensity score matched patient groups (Figure 4.4A) showed a slightly longer hospital stay among COVID-19 patients beyond day 4, although the curves intersected prior to that point. In the regression analysis of propensity score matched comparison of COVID-19 and Influenza patients, Influenza was associated with a higher probability of discharge in both the unadjusted ($HR = 1.23,\ 95\%CI = 0.95 - 1.57,\ p = 0.111$) and the adjusted model ($HR = 1.22,\ 95\%CI = 0.97 - 1.55,\ p = 0.093$).

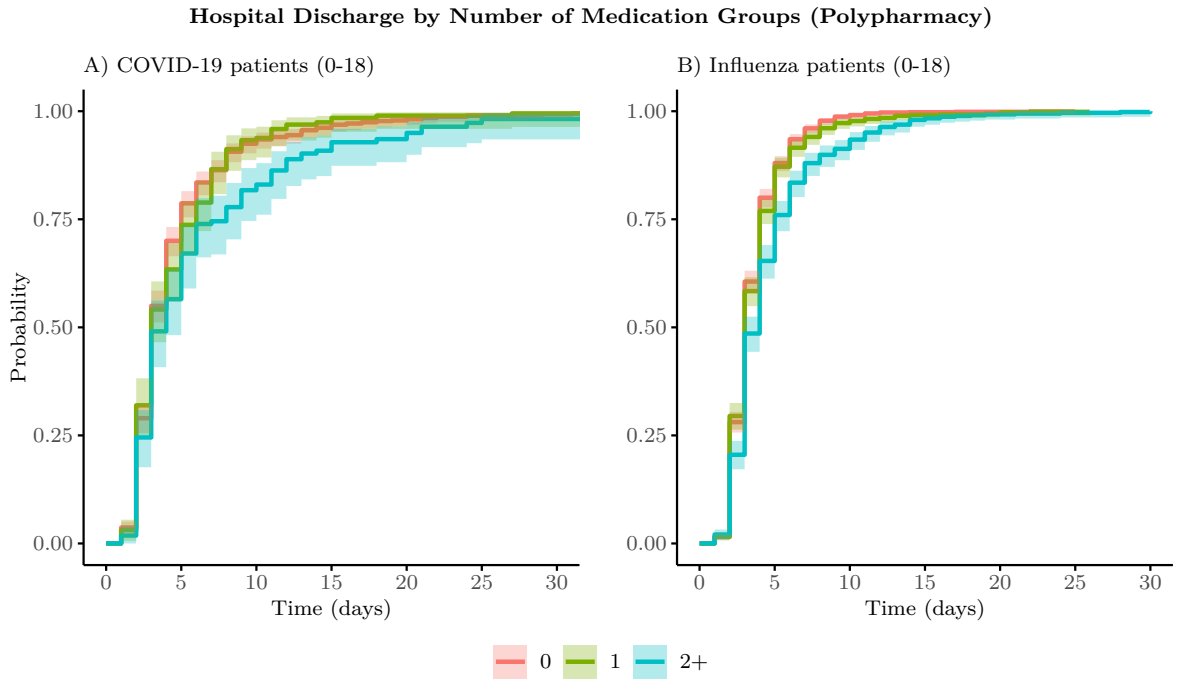

Figure 4.3. Kaplan–Meier curves for time to hospital discharge in patients aged 0–18 years, stratified by number of prescribed medication groups one year prior to hospitalization for A) COVID-19 patients and B) Influenza patients.

However, these differences were not statistically significant (Table A.12).

4.1.5 Re-hospitalization Due to Any Reason

Comparison to control group:

Absolute and relative frequencies of re-hospitalizations within 30, 180, 365, and 548 days across sex, age and patient/control groups were low, therefore the results should be interpreted with caution. Compared to their respective control groups, the proportions of readmissions to hospital in comparison to no event (for controls the first hospital-admission after assigned hospitalization date) were notably higher in both, the COVID-19 and the Influenza patient cohort. Especially for age groups ≥6 years, the COVID-19 group showed elevated relative frequencies for both sexes, compared to their control group. For Influenza patients, all age groups had markedly higher proportions of re-hospitalizations compared to their controls group. However, within the Influenza children cohort, Influenza showed higher re-hospitalizations for female children and adolescents aged >10 years. For male children the proportions were higher in ages ≤10. For controls no such trend between the age subgroups could be observed (Tables A.13, A.14).

Within COVID-19 patient group:

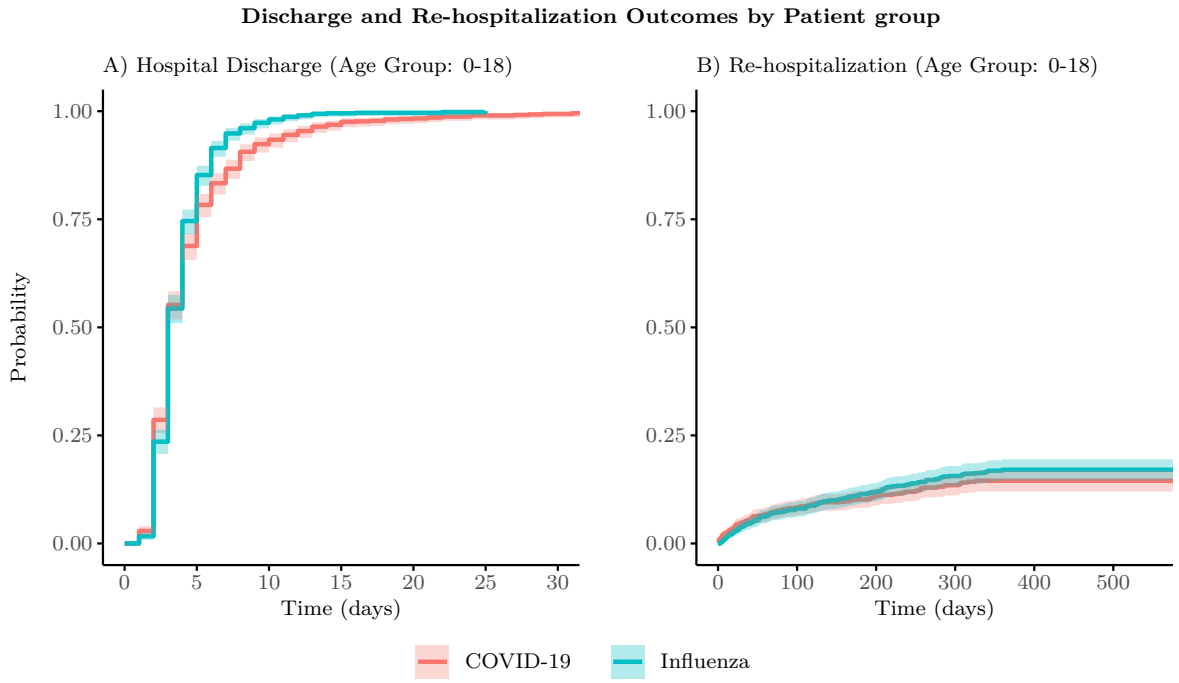

Figure 4.4. Kaplan–Meier curves comparing A) time to hospital discharge and B) time to re-hospitalization between propensity score matched COVID-19 and Influenza patients aged 0–18 years.

In the COVID-19 group, neither age nor sex were significantly associated with re-hospitalization in the simple and multivariable Cox models. However, polypharmacy showed a statistically significant association with increased re-hospitalization risk in both models (simple: $HR = 2.93, 95\%CI = 2.04 - 4.21,\ p < 0.001$; multivariable: $HR = 1.96, 95\%CI = 1.39 - 2.78,\ p < 0.001$) indicating that polypharmacy was a risk factor that could not be explained by the adjustment of certain medication groups. However, confidence intervals were wide (Table A.16). Also, the Kaplan-Meier curves (Figure 4.5A) showed increased re-hospitalization rates for polypharmacy compared to no or only one medication group prescription. Length of hospital stay of the index COVID-19 admission was also significantly associated with re-hospitalization risk (simple: $HR = 1.03, 95\%CI = 1.02 - 1.04,\ p < 0.001$; multivariable: $HR = 1.03, 95\%CI = 1.02 - 1.03,\ p < 0.001$), with each additional day linked to higher hazard of all-cause readmission. Medication group 18: Hormonal contraceptives and similar hormone preparations was significantly associated with increased hazard of readmission, in the adjusted Cox model($HR = 2.53, 95\%CI = 1.48 - 4.33,\ p < 0.001$), but the confidence interval was wide (Table A.16).

Within Influenza patient group:

In the Influenza group (Table A.17), the simple and multivariable models found no significant effects for age and sex. Polypharmacy was significantly associated with re-hospitalization risk

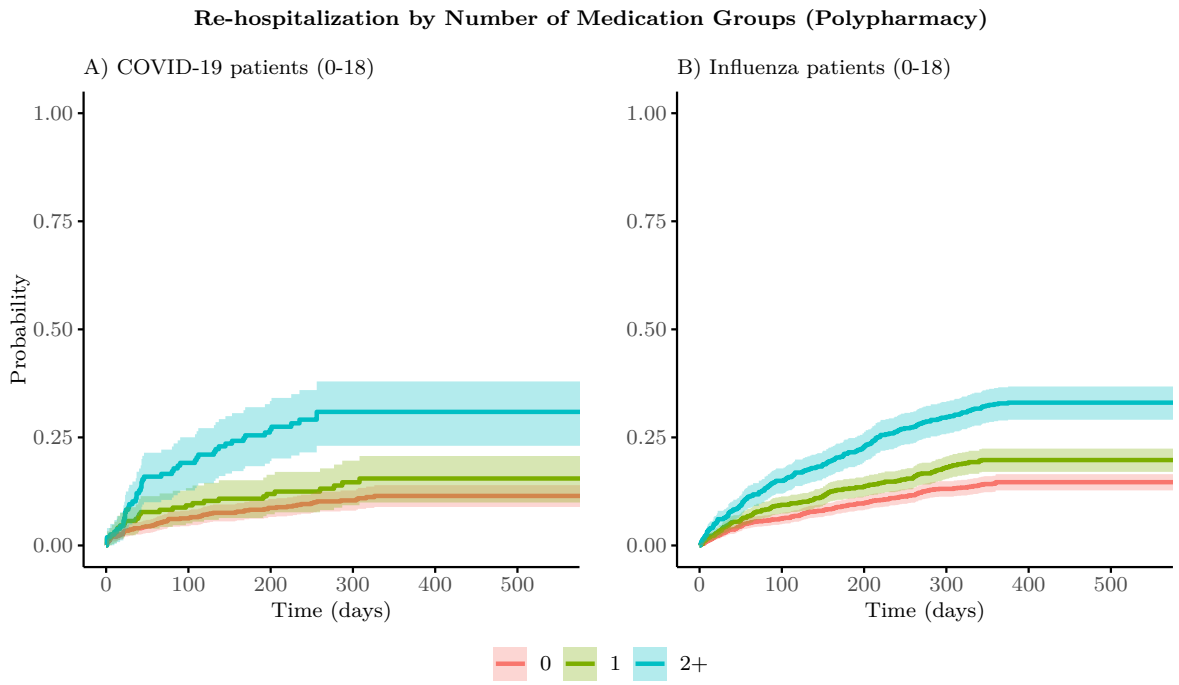

Figure 4.5. Kaplan–Meier curves for time to re-hospitalization due to any reason in patients aged 0–18 years, stratified by number of prescribed medication groups one year prior to hospitalization for A) COVID-19 patients and B) Influenza patients.

in the simple ($HR = 2.15,\ 95\%CI = 1.89 - 2.45,\ p < 0.001$) and multivariable model ($HR = 1.57,\ 95\%CI = 1.23 - 2.02,\ p < 0.001$), although the effect size was attenuated after adjusting for medication groups. Kaplan-Meier curves showed increased risk of readmission for patients with polypharmacy, compared to no or one medication group prescribed prior to hospitalization (Figure 4.5B). Length of hospital stay during the Influenza admission was also significantly associated with re-hospitalization risk, with longer hospital stay increasing the probability of subsequent re-hospitalization (simple: $HR = 1.11,\ 95\%CI = 1.09 - 1.13,\ p < 0.001$; multivariable: $HR = 1.10,\ 95\%CI = 1.08 - 1.12,\ p < 0.001$) (A.17). Several medication groups were significantly associated with increased re-hospitalization hazard in the adjusted model. Precisely, MG 11: Chemotherapy ($HR = 6.33,\ 95\%CI = 4.39 - 9.13,\ p < 0.001$) but the confidence interval was wide, MG 12: Antacids incl. Antihistamines ($HR = 1.77,\ 95\%CI = 1.28 - 2.44,\ p < 0.001$), MG 23: Antiepileptics ($HR = 2.09,\ 95\%CI = 1.73 - 2.53,\ p < 0.001$), MG 24: Antipsychotics ($HR = 1.44,\ 95\%CI = 1.44(1.29 - 1.61,\ p < 0.001$), and MG 26: inhaled anti-obstructive drugs ($HR = 1.51,\ 95\%CI = 1.20 - 1.90,\ p < 0.001$) (Figure 4.6).

Comparison between COVID-19 and Influenza patient groups:

The propensity score matched regression analysis comparison, observed a higher probability

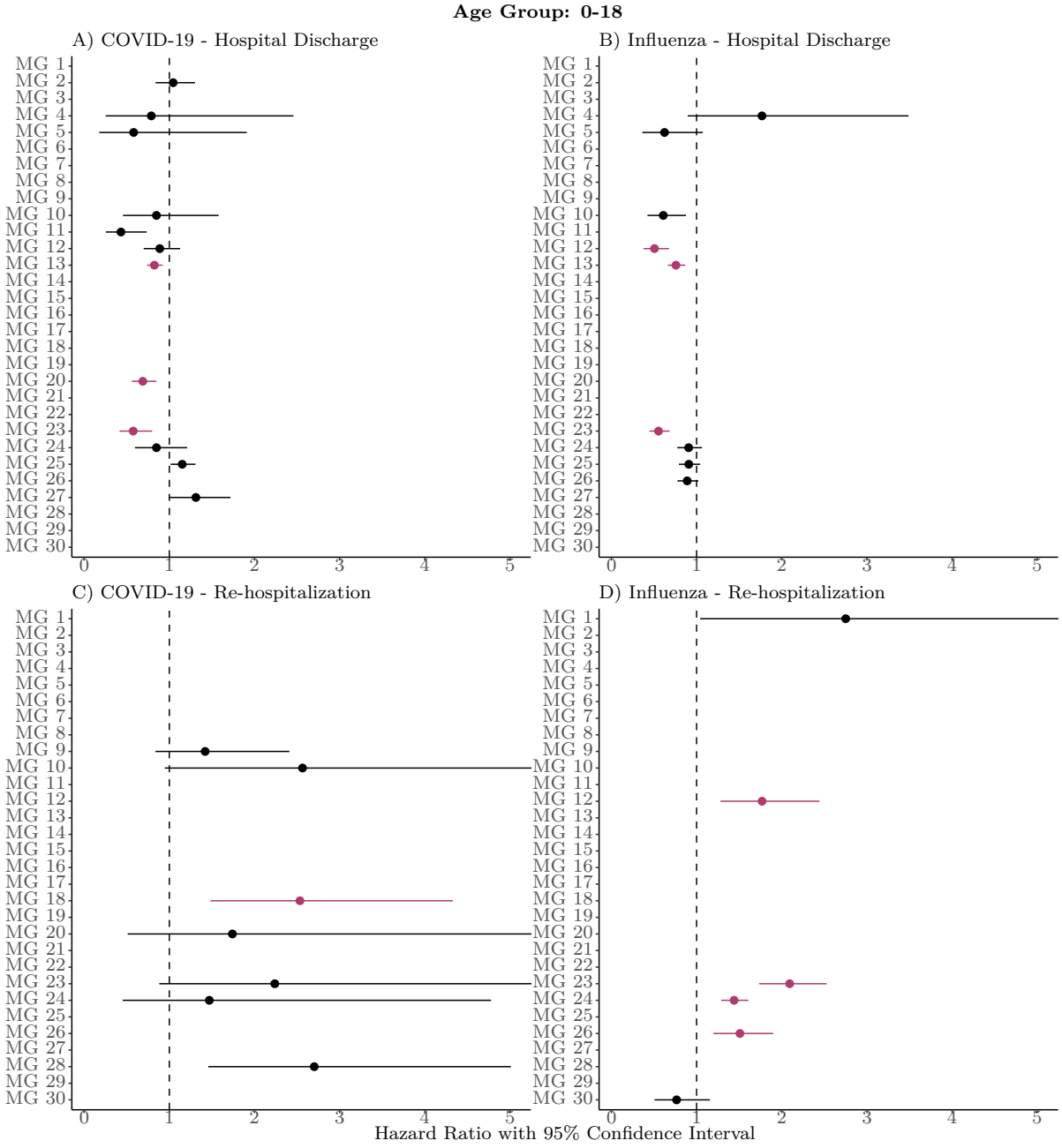

Figure 4.6. Visualizations of Cox proportional hazards regression results showing hazard ratios and 95% confidence intervals for medication groups—definitions provided in Table 3.4—associated with A) hospital discharge among COVID-19 patients, B) hospital discharge among Influenza patients, C) re-hospitalization for any reason among COVID-19 patients, and D) re-hospitalization for any reason among Influenza patients. Hazard ratios are colored if statistically significant ($p < 0.001$).

of re-hospitalization for Influenza patients compared to COVID-19 patients in both the unadjusted and adjusted models (simple: $HR = 1.24,\ 95\%CI = 1.04-1.47,\ p = 0.016$; multivariable: $HR = 1.23,\ 95\%CI = 1.02-1.48,\ p = 0.029$; Table A.18, Figure 4.4B). However, these findings were not statistically significant.

4.2 Adults (Age Cohorts >18 years)

4.2.1 Demographic Characteristics and Hospitalizations

In 2020 and 2021, a total of 52,015 adults were hospitalized with a diagnosis of COVID-19, and this study included a corresponding control of 501,516 insured persons in Austria. Of these, 3,941 were aged 19-40 years with 39,214 controls, 16,481 were aged 41-64 years with 161,718 controls, 10,140 were aged 65-74 years with 97,946 controls, and 21,453 were aged 75 years and older with 202,638 controls. In comparison, the group of hospitalized Influenza patients included 925 individuals aged 19-40 years with 9,253 controls, 2,342 aged 41-64 years with 23,330 controls, 2,272 aged 65-74 years with 22,365 controls, and 5,257 aged 75 years and older with 49,894 controls, making a total of 10,796 adult Influenza patients from December 2015 to December 2021 and a control population of 104,842 individuals. The median follow-up times for COVID-19 patients were 448, 470, 513, and 539 days for the age groups 19–40, 41–64, 65–74, and ≥75, respectively. Among COVID-19 hospitalized patients aged 19 to 74, men accounted for a higher number of cases compared to women. The most pronounced sex imbalance was observed in the 41–64 age cohort, where 60.63% of patients were male. In contrast, in the ≥75 age group, a higher proportion of hospitalized COVID-19 patients were female. COVID-19 hospital admissions showed distinct peaks during the winter of 2020/2021, again in April 2021, and toward the end of 2021. The highest frequency of hospitalizations occurred among patients aged 75 and older. The most pronounced peak in COVID-19 hospitalizations occurred in the winter of 2020/2021 (Figure 4.7). Influenza patients had longer follow-up times, with medians of 1240, 1257, 1259, and 1263 days across the age cohorts, due to the earlier start of the observation period. Among hospitalized patients, women accounted for a higher proportion in the youngest group (19–40 years old) with 57.19%, and the oldest group (≥75 years old), with 54.88%. Meanwhile, the middle-aged patient groups (41–64 and 65–74 years) showed a higher proportion of male patients, with 55.29% and 52.77%, respectively. Influenza hospitalizations followed the typical seasonal pattern, with clear winter peaks, as observed in the children and adolescent cohort. The highest frequencies of hospitalizations occurred among patients aged 75 and older. Notably, Influenza hospitalizations peaked during the winter of 2017-2018 (Figure 4.7).

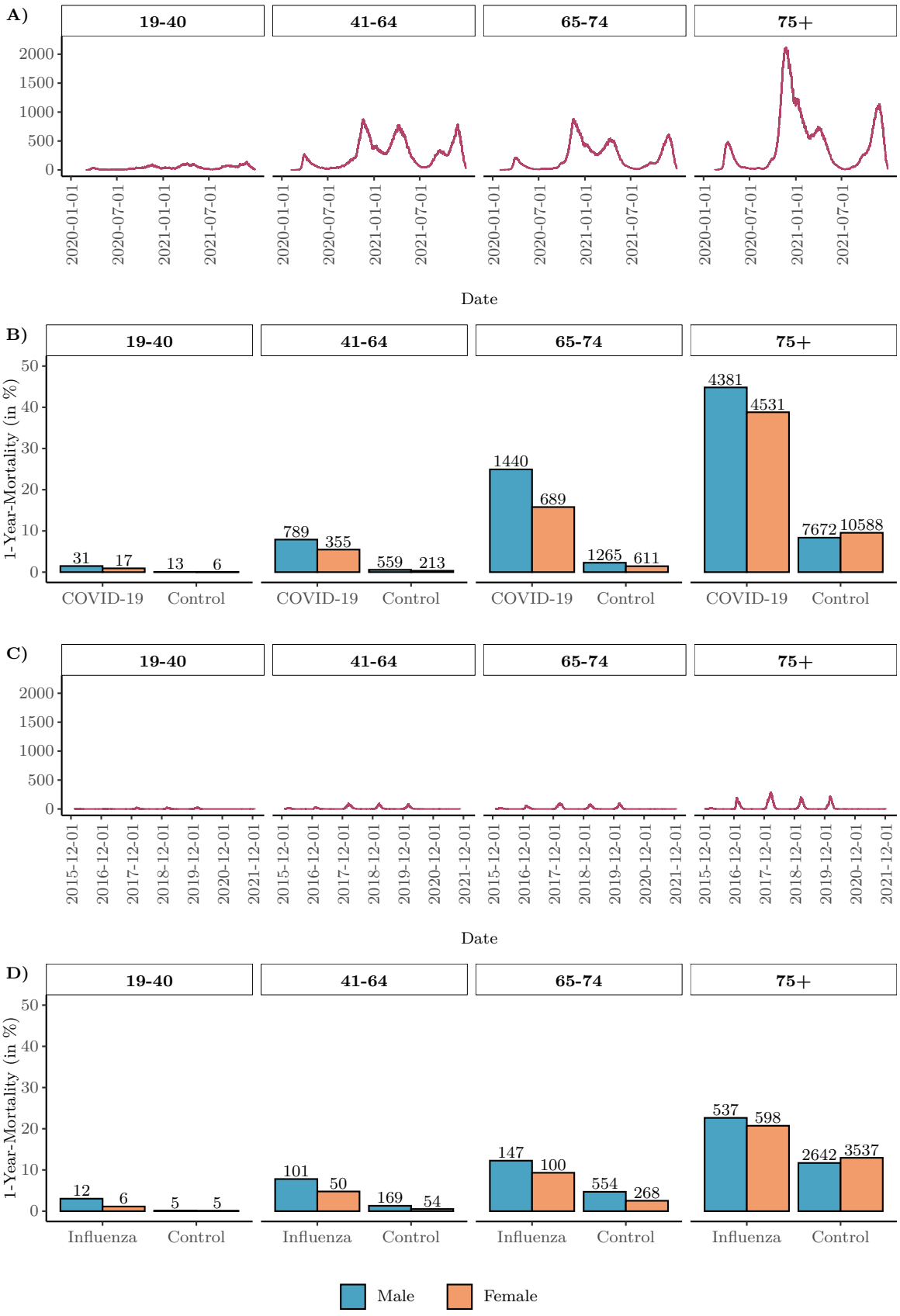

Figure 4.7. Timeline of hospitalizations for adult A) COVID-19 and C) Influenza patients, stratified by age cohorts. Bar charts compare one-year mortality between male and female patients and their respective control groups for B) COVID-19 and D) Influenza, stratified by age subgroup.

Table 4.2. Summary statistics for adult COVID-19 and Influenza patients by age cohort.

COVID-19 Patients								
Age	19–40		41–64		65–74		≥75	
	$n = 3941$		$n = 16481$		$n = 10140$		$n = 21453$	
Sex: Male	2092	53.08%	9992	60.63%	5776	56.96%	9774	45.56%
Sex: Female	1849	46.92%	6489	39.37%	4364	43.04%	11679	54.44%
Med groups 0-1	2382	60.44%	5996	36.38%	1623	16.01%	2475	11.54%
Med groups 2-5	1386	35.17%	7859	47.69%	4955	48.87%	10297	48.00%
Med groups 6-10	160	4.06%	2374	14.40%	3052	30.10%	7852	36.60%
Med groups ≥11	13	0.33%	252	1.53%	510	5.03%	829	3.86%
Follow-up (days) Median (IQR)	448.0 (280.0–581.00)		470 (298–587)		513 (377.5–593)		539 (316–592)	
Time to death Median (IQR)	19.5 (8.25–50.25)		23 (11–55)		19.5 (9–52)		15 (7–52)	
Length of hospital stay Median (IQR)	6 (3–9)		9 (5–14)		11 (7–19)		12 (7–20)	
Influenza Patients								
Age	19–40		41–64		65–74		≥75	
	$n = 925$		$n = 2342$		$n = 2272$		$n = 5257$	
Sex: Male	396	42.81%	1295	55.29%	1199	52.77%	2372	45.12%
Sex: Female	529	57.19%	1047	44.71%	1073	47.23%	2885	54.88%
Med groups 0-1	503	54.38%	591	25.23%	301	13.25%	565	10.75%
Med groups 2-5	359	38.81%	1063	45.39%	983	43.27%	2604	49.53%
Med groups 6-10	60	6.49%	587	25.06%	830	36.53%	1859	35.36%
Med groups ≥11	3	0.32%	101	4.31%	158	6.95%	229	4.36%
Follow-up (days) Median (IQR)	1240 (896–1608)		1257 (925.25–1608)		1259 (918–1614)		1263 (901–1612)	
Time to death Median (IQR)	302.5 (105.5–674.5)		410 (95–848)		539 (167.5–990)		470 (92–967)	
Length of hospital stay Median (IQR)	4 (3–6)		6 (4–8)		7 (5–9)		8 (6–11)	

4.2.2 Medication Profile

Comparison to control group:

Across all adult age cohorts, COVID-19 patients had higher percentages of almost all medication groups prescribed within the year before hospital admission compared to their age-, sex-, and region-assigned control groups. Chi-squared tests indicated that these differences were statistically significant ($p < 0.001$) for the majority of medication groups highlighting differences in pre-existing medical burden (Tables A.19, A.20, A.21 and A.22).

Among COVID-19 patients aged 19–40 years, the most pronounced differences in medication prescriptions compared to their controls were observed for MG 1: Anticoagulants with 8.15% compared to 1.9%, MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics with 42.38% compared to 17.99%. Further notable differences were observed for MG 12: Antacids incl. Antihistamines showing 9.59% for patients against 1.86% for controls, MG 21: NSAR and other anti-inflammatory drugs with 23.62% and 8.92%, MG 24: Antipsychotics with 12.56% compared to 4.00%, and MG 26: Inhaled anti-obstructive drugs for 12.76% of COVID-19 patients and for 2.57% of the control group (Table A.19).

In the 41–64 age group, the differences in medication burden became even more marked. COVID-19 patients showed substantially higher relative frequencies of prescriptions than controls for several medication groups. For example, MG 1: Anticoagulants were prescribed in 19.37% of patients compared to 5.02% of controls, and MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics in 42.58% vs. 17.43%. Prescription of MG 3: Insulins and other Antidiabetics was reported in 13.11% of patients versus 2.49% of controls, further MG 5: Antihypertensives including Diuretics and Renin-angiotensin-aldosterone system inhibitors were prescribed to 30.27% of patients compared to 8.76% of controls. Moreover, MG 7: Statins, Fibrates including PCSK9 inhibitors and Inclisiran were used by 20.44% of patients and only 6.68% of controls. Other notable disparities were observed for MG 9: Systemic Steroids with 12.15% compared to 3.73%, MG 12: Antacids including Antihistamines observed 18.32% of prescriptions against 4.34%, MG 21: NSAR and other anti-inflammatory drugs with 34.15% compared to 14.54% of prescriptions, MG 24: Antipsychotics with 21.93% for COVID-19 patients and 7.34% for their control group, and MG 26: Inhaled anti-obstructive drugs with 18.97% for patients compared to 4.42% of prescriptions for the controls (Table A.20).

Among patients aged 65 to 74 years, the most substantial differences in medication prescriptions between individuals diagnosed with COVID-19 and their respective controls were again observed in several specific medication groups. The highest disparity was seen in MG 1: Anticoagulants, which were used by 40.56% of COVID-19 patients in this age category, in contrast to only 13.34% of controls. Similarly, a marked difference was observed in MG 2: Antibiotics, Antivirals, Antiprotozoals, or Anthelmintics, where usage rates were 43.36% for COVID-19 patients compared to 21.41% among controls. Further differences were noted in MG 3: Insulins and other Antidiabetics, with 26.48% usage among COVID-19 patients versus 7.14% in the control group. In MG 5: Antihypertensives including Diuretics and Renin-angiotensin-aldosterone system inhibitors, the rate of usage was 58.61% among COVID-19 patients, significantly higher than the 23.19% observed in controls. MG 6: Beta Blockers were prescribed to 30.51% of COVID-19 patients, in contrast to 10.51% among matched controls. In MG 7: Statins, Fibrates including Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran, 41.84% of COVID-19 patients received prescriptions for these medications, while only 18.56% of controls did. MG 9: Systemic Steroids were used by 17.06% of the COVID-19 cohort, whereas usage among controls was 6.57%. In the case of MG 12: Antacids including Antihistamines, 31.79% of COVID-19 patients received these drugs compared to 9.3% in the control group. For MG 23: Antiepileptics, prescription rates were 12.99% among COVID-19 patients, contrasting with just 3.6% in controls. MG 24: Antipsychotics were administered to 34.84% of patients with COVID-19, compared to

only 12.68% in the control group. Finally, MG 26: Inhaled anti-obstructive drugs were used by 24.92% of COVID-19 patients aged 65 to 74, in comparison to 7.52% among their corresponding control group (Table A.21).

Among individuals aged 75 years and older, the prevalence of pre-hospitalization medication prescriptions was also consistently higher in the COVID-19 cohort across several medication groups when compared to controls. In MG 1: Anticoagulants, 55.88% of COVID-19 patients received these medications, while the corresponding figure in the control group was 29.1%. In MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics, 43.29% of COVID-19 patients used these agents versus 29.02% of controls. Prescription of MG 3: Insulins and other Antidiabetics was observed in 21.43% of COVID-19 patients, whereas only 9.32% of control patients used them. For MG 5: Antihypertensives including Diuretics and Renin-angiotensin-aldosterone system inhibitors, the COVID-19 group had a usage rate of 67.45%, compared to 39.47% in the control group. In MG 6: Beta Blockers, 35.31% of COVID-19 patients received these medications, in contrast to 19.64% among controls. In MG 7: Statins, Fibrates including Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran, medication prescriptions reached 38.21% in COVID-19 patients and 25.12% in controls. For MG 12: Antacids including Antihistamines, prescriptions were 33.65% among the COVID-19 cohort versus 16.18% in the control group. In MG 13: Vitamin D and other Vitamin supplements, 23.61% of COVID-19 patients had prescriptions compared to 13.43% of controls. Notable differences also appeared in MG 24: Antipsychotics, with 52.2% of COVID-19 patients receiving such medications, compared to 27.22% in the control group. Finally, for MG 26: Inhaled anti-obstructive drugs, prescription rates were 19.78% among COVID-19 patients aged 75 and above, compared to 9.56% among control individuals (Table A.22).

Similarly, individuals diagnosed with Influenza exhibited consistently higher frequencies of recorded medication prescriptions across numerous medication groups when compared to their matched control counterparts. In the 19 to 40-year age group, the most pronounced differences were observed in MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics, where 51.24% of Influenza patients had a recorded prescription, compared to 22.9% of individuals in the control group. In MG 5: Antihypertensives including Diuretics and Renin-angiotensin-aldosterone system inhibitors, 6.81% of Influenza patients had prior prescriptions, in contrast to 0.8% of controls. In MG 12: Antacids including Antihistamines, 12.32% of Influenza patients had documentation, whereas 3.13% of controls did. For MG 21: NSAR and other anti-inflammatory drugs, 21.95% of Influenza patients had prior prescriptions compared to 11.02% in the control group. MG 23: Antiepileptics were recorded in 7.03% of Influenza cases versus 0.89% among

controls. Differences were also evident for MG 24: Antipsychotics, with 15.35% of Influenza patients having documented prior prescription compared to 4.03% of controls. Lastly, for MG 26: Inhaled anti-obstructive drugs, 13.59% of Influenza patients had a prescription record, compared to 3.01% among matched controls (Table A.23).

Also in the 41–64 age group, differences between Influenza patients and their corresponding controls were notable across multiple medication groups. In MG 1: Anticoagulants, 23.57% of Influenza patients had records, compared to 6.31% in the control group. For MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics, the proportion was 54.82% in Influenza patients versus 22.15% in controls. In MG 3: Insulins and other Antidiabetics, the percentages were 17.81% and 2.98%, respectively. Further differences appeared in MG 5: Antihypertensives including Diuretics and Renin-angiotensin-aldosterone system inhibitors, with 39.2% in the Influenza group compared to 10.25% in controls. In MG 6: Beta Blockers, 22.12% of patients with Influenza had prior prescription, whereas 4.57% of controls did. MG 7: Statins, Fibrates including Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran showed 26.6% in Influenza patients compared to 7.67% in controls. For MG 9: Systemic steroids, 20.41% of inluenza patients had recorded prescriptions compared to to 4.86% in the control group. MG 12: Antacids incl. Antihistamines were observed in 31% of inluenza patients and 7.46% of controls. For MG 13: Vitamin D and other Vitamin supplements the respective proportions were 17.63% compared to 4.17%. Further, considerable differences were observed for MG 21: NSAR and other anti-inflammatory drugs with 39.62% in the Influenza cohort compared to 18.42% in the control cohort. In MG 23: Antiepileptics, the proportion was 13.54% in the Influenza group and 2.25% in the control group. MG 24: Antipsychotics were recorded in 33.6% of inluenza patients versus 8.62% in controls. L astly, MG 26: inhaled anti-obstructive drugs were observed in 29.38% patients compared to 5.43% matched controls (Table A.24).

In the older age groups (65–74 and $\geq$75 years), similar patterns of higher medication prescriptions among Influenza patients compared to controls were observed across a broad range of medication groups. In MG 1: Anticoagulants, 43.88% of Influenza patients aged 65–74 and 53.79% of those aged 75 and older had recorded prescription, compared to 14.43% and 27.78% in the respective control groups. In MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics, the proportions were 50.7% for the 65–74 group and 47.19% for the $\geq$75 group, while controls in these age cohorts showed 25.44% and 31.58%, respectively. In MG 3: Insulins and other Antidiabetics the 65–74 Influenza group showed 25.4% compared to 7.38% in controls, and the $\geq$75 group had 19.21% compared to 8.87%. Prescriptions of MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors were also higher in Influenza patients, with

61.66% and 66.67% in the two age groups, compared to 24.49% and 37.81% in the corresponding controls. MG 6: Beta Blockers showed proportions of 35.56% and 34.56% among Influenza patients aged 65–74 and ≥75, respectively, versus 11.81% and 19.34% in controls. In MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran, 44.1% of patients aged 65-74 and 38.84% of those aged 75 or older has recored prescriptions, compared to 18.77% and 22.48% in their respective control groups. MG 9: Systemic Steroids were documented in 22.01% of Influenza patients in the 65-74 age group and 14.88% in the ≥75 cohort, while controls showed 8.03% and 10.021%. In MG 12: Antacids incl. Antihistamines, 37.72% and 31.88% of Influenza patients had prescriptions, compared to 14.2% and 21.66% controls. In MG 13: Vitamin D and other Vitamin supplements, proportions were 21.13% for the 65–74 Influenza group and 22.08% for the ≥75 group, while the control groups showed 7.71% and 13.06%. MG 23: Antiepileptics were documented by 16.73% and 14.67% of Influenza patients in the two older age categories, compared to 3.68% and 6.42% in their respective control groups. MG 24: Antipsychotics showed a difference of 39.82% and 51.61% among Influenza patients compared to 13.61% and 26.86% in controls. Lastly, MG 26: Inhaled anti-obstructive drugs were observed in 36.8% of patients aged 65–74 and 23.91% in those aged ≥75, whereas 13.61% and 10.25% of controls in those age groups had recorded prescriptions (Tables A.25, A.26).

Within COVID-19 patient group:

In the 19–40 age cohort, 60.44% of COVID-19 hospitalized patients had no polypharmacy, which was defined as the prescription of at least two medication groups, in the year preceding their admission. This proportion decreased steadily with increasing age, in patients aged 41-64 only 36.38% had no polypharmacy, in age cohort 65-74 it was 16.01%, and in age cohort 75 and older only 11.54% had no polypharmacy prior to COVID-19-hospitalization. In the age groups 41–64, 65–74, and ≥75, the most common medication burden category was the intake of 2–5 medication groups, indicating higher baseline morbidity prior to hospitalization (Table 4.2).

Within Influenza patient group:

In the 19-40 age cohort 54.38% of patients had no polypharmacy prior to their Influenza hospitalization. Again, the proportion of no polypharmacy decreased with increasing age. For age cohort 41-64 25.23%, for age cohort 65-74 13.25% and for age cohort 75 and older only 10.75% of patients had no polypharmacy in the year prior to hospitalization. The most frequent category of number of medication groups was 2-5 medication groups (Table 4.2).

Comparison between COVID-19 and Influenza patient groups:

Differences in medication group distributions were observed between all Influenza and COVID-19 patients across all age cohorts and can be viewed in Tables A.27, A.28, A.29, and A.30. These observed significant differences were used for propensity score matching, which aimed to reduce bias and enhance comparability between the patient groups by balance of the observed covariates. Propensity score matching based on medication group distributions resulted in the following COVID-19 versus Influenza sample sizes: 1,266 versus 710 for patients aged 19–40, 3,978 versus 2,124 for patients aged 41–64, 3,666 versus 2,015 for patients aged 65–74, and 9,579 versus 5,005 for patients aged 75 and older. After matching, the patient group comparison indicated comparable levels of medical burden between COVDI-19 and Influenza patients. These comparisons can be viewed in Tables A.31, A.32, A.33, and A.34.

4.2.3 All-Cause Mortality Post-Admission

Comparison to control group:

The one-year mortality rate was substantially higher among COVID-19 patients compared to their respective control groups across all age cohorts (Figure 4.7B). Among Influenza patients, one-year mortality was also elevated in contrast to their controls, though differences were less pronounced (Figure 4.7D). One-year mortality after hospitalization (or assigned hospitalization) was elevated for COVID-19 patients within certain prescribed medication groups in the year prior to hospitalization when comparing with their respective control groups across all adult age cohorts, also, the differences increased with increasing age (Tables A.19, A.20, A.21, A.22). A similar connection could be observed for Influenza hospitalized patients in comparison to their control group across all age cohorts but to a lesser degree (Tables A.23, A.24, A.25, A.26). Deaths stratified by polypharmacy status, sex, and age could also observe a higher rate of mortality within 1.5 years in the COVID and the Influenza patient groups than in the corresponding control groups. For the patient and the control groups, increasing probabilities of death with increasing numbers of prescribed medication groups could be observed. Furthermore, deaths for female individuals were consistently lower than for the male individuals in the patient and the control groups within the polypharmacy categories. The exception were the two control groups in age cohort $\geq$75, here females slightly exceeded male deaths, mostly with no polypharmacy i.e. 0-1 prescribed medication groups in the year prior to assigned hospitalization date (Tables A.35 and A.36).

Within COVID-19 patient group:

Kaplan-Meier curves showed that, for patients with COVID-19, most deaths occurred within the first 50 days of hospitalization. After that, mortality rates decreased more gradually. Across both patient cohorts, male patients consistently exhibited higher one-year mortality rates than female patients (Figure 4.7B, D). Among COVID-19 patients aged 19–40 years, Cox regression models indicated a significantly higher hazard of death among men compared to women in both simple and multivariable analyses (simple: $HR = 0.55,\ 95\%CI = 0.43\text{–}0.70,\ p < 0.001$; multivariable: $HR = 0.54,\ 95\%CI = 0.43\text{–}0.68,\ p < 0.001$). No significant association with age was observed in this cohort. Prescription of six or more medication groups showed differencing survival rates in the Kaplan-Meier curves (Figure 4.8A) and was associated with an increased hazard of death in the simple model. However, this effect did not remain significant in the multivariable analysis, likely due to adjustment for individual medication groups. Among patients aged 41–64, 65–74, and ≥75 years, unadjusted regression results showed statistically significant associations with sex. Female patients had a consistently lower hazard of death than males across these age cohorts ($HR = 0.64,\ 95\%CI = 0.57 - 0.72,\ p < 0.001$; $HR = 0.58,\ 95\%CI = 0.54 - 0.62,\ p < 0.001$ and $HR = 0.73,\ 95\%CI = 0.70 - 0.75,\ p < 0.001$, respectively). Age was also significantly associated with mortality in age cohorts ≥41 years ($p < 0.001$), with all age subgroups showing hazard ratios below one relative to the oldest subgroup. Additionally, higher numbers of medication groups showed lower survival probabilities in the Kaplan-Meier curves, especially for 6-10 and ≥11 medication groups compared to categories 0-1 and 2-5 (Figure 4.8 C, E, G). Further, polypharmacy was significantly associated with an increased risk of mortality in the simple models ($p < 0.001$, Tables A.38, A.41, A.44, and A.47). In the multivariable Cox regression models, sex remained significantly associated with time to death across the 41–64, 65–74, and ≥75 age cohorts. Female patients continued to exhibit a lower hazard of death than men ($HR = 0.60,\ 95\%CI = 0.54\text{–}0.67$; $HR = 0.56,\ 95\%CI = 0.51\text{–}0.61$; and $HR = 0.69,\ 95\%CI = 0.66\text{–}0.72$, respectively; all $p < 0.001$). Further, again, in patient cohorts older than 40 years, age remained significantly associated with the outcome across all models ($p < 0.001$), with each younger subgroup having hazard ratios below 1 in reference to the oldest subgroup. A significant association was found for patients aged 41–64 after adjustment of medicament groups. In patients aged 41-64, individuals with 2–5 prescribed medication groups had a higher hazard of death compared to those with 0–1 groups ($HR = 1.64,\ 95\%CI = 1.43\text{–}1.88,\ p < 0.001$). The risk increased further for those prescribed 6–10 groups ($HR = 2.57,\ 95\%CI = 2.03\text{–}3.24,\ p < 0.001$) and ≥11 groups ($HR = 2.34,\ 95\%CI = 1.50\text{–}3.64,\ p < 0.001$). For age cohorts 65-74 and ≥75 no significant effect of polypharmacy could be observed in the adjusted mod-

els. In the multivariable models, specific baseline medication groups were significantly associated with an increased hazard of death. Among patients aged 19–40, MG 3: Insulins and other Antidiabetics ($HR = 5.57,\ 95\%CI = 2.14 - 14.48,\ p < 0.001$) and MG 9: Systemic Steroids ($HR = 2.49,\ 95\%CI = 1.45 - 4.26,\ p < 0.001$) were associated with elevated risk, although wide confidence intervals should be noted for MG 3 (Table A.38, Figure 4.12A). For the 41–64 age group, significant effects of higher mortality risk were observed for MG 9: Systemic Steroids ($HR = 1.31,\ 95\%CI = 1.19 - 1.44,\ p < 0.001$), MG 10: Chemotherapy ($HR = 1.97,\ 95\%CI = 1.59 - 2.45,\ p < 0.001$), MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid ($HR = 1.53,\ 95\%CI = 1.27 - 1.87,\ p < 0.001$), MG 20: Interferons and CSF ($HR = 2.18,\ 95\%CI = 1.79 - 2.65,\ p < 0.001$), MG 23: Antiepileptics ($HR = 1.61,\ 95\%CI = 1.41 - 1.83,\ p < 0.001$) and MG 24: Antipsychotics ($HR = 1.31,\ 95\%CI = 1.16 - 1.48,\ p < 0.001$) (Table A.41, Figure 4.13A). In patients aged 65–74, mortality was significantly associated with prescriptions of MG 3: Insulins and other Antidiabetics ($HR = 1.27,\ 95\%CI = 1.17 - 1.39,\ p < 0.001$), MG 6: Beta Blockers ($HR = 1.14,\ 95\%CI = 1.08 - 1.21,\ p < 0.001$), MG 9: Systemic Steroids ($HR = 1.20,\ 95\%CI = 1.10 - 1.31,\ p < 0.001$), MG 10: Chemotherapy ($HR = 1.65,\ 95\%CI = 1.36 - 2.00,\ p < 0.001$), MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid ($HR = 1.48,\ 95\%CI = 1.26 - 1.74,\ p < 0.001$), MG 12: Antacids incl. Antihistamines ($HR = 1.14,\ 95\%CI = 1.06 - 1.22,\ p < 0.001$), MG 20: Interferons and CSF ($HR = 1.62,\ 95\%CI = 1.41 - 1.87,\ p < 0.001$), MG 23: Antiepileptics ($HR = 1.28,\ 95\%CI = 1.14 - 1.44,\ p < 0.001$), MG 24: Antipsychotics ($HR = 1.32,\ 95\%CI = 1.22 - 1.42,\ p < 0.001$) (Table A.44, Figure 4.14A). For the age group $\geq$75, also multiple baseline medication groups were associated with a significantly increased hazard of death in the multivariable Cox regression model. Here, the following were identified as having statistically significant associations with increased risk; MG 1: Anticoagulants ($HR = 1.15,\ 95\%CI = 1.11 - 1.18,\ p < 0.001$), MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics ($HR = 1.15,\ 95\%CI = 1.06 - 1.25,\ p < 0.001$), MG 3: Insulins and other Antidiabetics ($HR = 1.15,\ 95\%CI = 1.09 - 1.21,\ p < 0.001$), MG 4: Heart drugs ($HR = 1.08,\ 95\%CI = 1.05 - 1.12,\ p < 0.001$), MG 6: Beta Blockers ($HR = 1.07,\ 95\%CI = 1.03 - 1.11,\ p < 0.001$), MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid ($HR = 1.36,\ 95\%CI = 1.30 - 1.44,\ p < 0.001$), MG 12: Antacids incl. Antihistamines ($HR = 1.03,\ 95\%CI = 1.01 - 1.05,\ p < 0.001$), MG 19: Immunglobulins ($HR = 3.19,\ 95\%CI = 2.30 - 4.43,\ p < 0.001$), MG 20: Interferons and CSF ($HR = 1.26,\ 95\%CI = 1.17 - 1.36,\ p < 0.001$), and MG 24: Antipsychotics ($HR = 1.34,\ 95\%CI = 1.30 - 1.39,\ p < 0.001$) (Table A.47, Figure 4.15A).

Within Influenza patient group:

For Influenza hospitalized patients, no comparable drop in survival rates at the beginning of hospitalization could be observed as among the COVID-19 patient cohort in the Kaplan-Meier curves (Figures 4.8 and 4.11). Within Influenza patients, simple Cox regression models for patient cohorts aged ≥41 years consistently showed that female patients had significantly lower hazard ratios for all-cause mortality compared to male patients (41-64: $HR = 0.50,\ 95\%CI = 0.42 - 0.60,\ p < 0.001$, 65-74: $HR = 0.66,\ 95\%CI = 0.54 - 0.80,\ p < 0.001$, ≥75: $HR = 0.71,\ 95\%CI = 0.66 - 0.77,\ p < 0.001$). The magnitude of the difference appeared to decrease with increasing age. In addition, higher age was significantly associated in the simple Cox regression models with higher mortality risk in the 41-64 (Table A.42), 65-74 (Table A.45), and ≥75 (Table A.48) age cohorts. Higher number of medication groups showed lower survival rates in the Kaplan-Meier curves (Figure 4.8B, D, F, and H) and showed significant associations of polypharmacy in reference to no polypharmacy in the unadjusted regression models. No meaningful associations for increased mortality risk could be found for age cohort 19-40, possibly due to a low number of deaths (Table A.39). In the multivariable models, the effects (significance and magnitude) of sex remained for age cohorts ≥ 41 years (41-64: $HR = 0.46,\ 95\%CI = 0.37 - 0.57,\ p < 0.001$, 65-74: $HR = 0.64,\ 95\%CI = 0.49 - 0.84,\ p < 0.001$, ≥75: $HR = 0.68,\ 95\%CI = 0.65 - 0.72,\ p < 0.001$). The effects of age were also found to be significant in the 41-64 and ≥75 age group but not for the 65-74 age cohort. Effects of polypharmacy were partially found to be significant in the age sub-categories but hazard ratios and respective confidence intervals diminished with adjustment of the full set of selected medication group confounders. Alongside the baseline variables, several medication groups prescribed prior to hospital stay were found significant in the multivariable regression models indicating increased risk of death. For age cohort 19-40, no significant associations with specific medication groups were found in the adjusted model (Figure 4.12B). For age group 41-64 MG 1: Anticoagulants ($HR = 1.46,\ 95\%CI =, 1.20 - 1.79\ p < 0.001$), MG 10: Chemotherapy ($HR = 2.92,\ 95\%CI = 1.83 - 4.66,\ p < 0.001$), MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid ($HR = 1.79,\ 95\%CI = 1.29 - 2.48,\ p < 0.001$) and MG 23: Antiepileptics ($HR = 1.66,\ 95\%CI = 1.28 - 2.16,\ p < 0.001$) showed significant differences in the risk of time to death (Table A.42, Figure 4.13B). For age group 65-74 MG 3: Insulins and other Antidiabetics ($HR = 1.41,\ 95\%CI = 1.24 - 1.61,\ p < 0.001$), MG 10: Chemotherapy ($HR = 2.46,\ 95\%CI = 1.54 - 3.91,\ p < 0.001$), MG 20: Interferons and CSF ($HR = 2.07,\ 95\%CI = 1.70 - 2.53,\ p < 0.001$), MG 23: Antiepilep-

tics ($HR = 1.28,\ 95\%CI = 1.13 - 1.45,\ p < 0.001$) and MG 24: Antipsychotics ($HR = 1.39,\ 95\%CI = 1.39,\ p < 0.001$) were found to significantly relate to increased hazard of death (Table A.45, Figure 4.14B). For age group ≥75 MG 3: Insulins and other Antidiabetics ($HR = 1.19,\ 95\%CI = 1.10 - 1.28,\ p < 0.001$), MG 11: ron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid ($HR = 1.30,\ 95\%CI = 1.18 - 1.44,\ p < 0.001$), MG 12: Antacids incl. Antihistamines ($HR = 1.14,\ 95\%CI = 1.09 - 1.19,\ p < 0.001$), MG 22: Gout medications ($HR = 1.13,\ 95\%CI = 1.06 - 1.22,\ p < 0.001$), MG 24: Antipsychotics ($HR = 1.42,\ 95\%CI = 1.37 - 1.48,\ p < 0.001$), and MG 26: inhaled anti-obstructive drugs ($HR = 1.16,\ 95\%CI = 1.07 - 1.25,\ p < 0.001$) a significantly increased risk of death was observed (Table A.48, Figure 4.15B).

Regression analysis for the youngest adult age cohort (19-41) may not be meaningful due to low numbers of events (Tables A.38, A.39, A.40).

Comparison between COVID-19 and Influenza patient groups:

Examination of the group comparison between propensity score matched COVID and Influenza patients, differences in survival rates of the Kaplan-Meier curves for age cohorts 65-74 and ≥75 (Figure 4.11G, J) but not for age cohorts 19-40 and 41-64 (Figure 4.11A, D) could be observed, where the COVID cohorts showed lower survival probabilities compared to the Influenza cohort. The same trends could be observed through frequencies of deaths with stratification by sex, age and number of medication groups. Compared to the Influenza group, the percentage of deaths within the number of medication group categories was higher for COVID-19 patients across all age cohorts and for both sexes (Table A.37). The number of deaths was low among patients aged 19-64, in the polypharmacy category ≥11, and should therefore be viewed with caution. Further, Cox proportional hazards regression results showed significant effects for patient group with the Influenza group having significantly lower hazard of all-cause death after hospital admission, in reference to COVID-hospitalized patients (Figure 4.23), in the age cohorts 65-74 (simple: $HR = 0.51,\ 95\%CI = 0.42 - 0.61,\ p < 0.001$; multivariable: $HR = 0.5,\ 95\%CI = 0.41 - 0.60,\ p < 0.001$, Table A.46), and ≥75 (simple: $HR = 0.51,\ 95\%CI = 0.49 - 0.54,\ p < 0.001$; multivariable: $HR = 0.51,\ 95\%CI = 0.49 - 0.53,\ p < 0.001$, Table A.49), however, not in age cohorts 19-40 (Table A.40) and 41-64 (Table A.43).

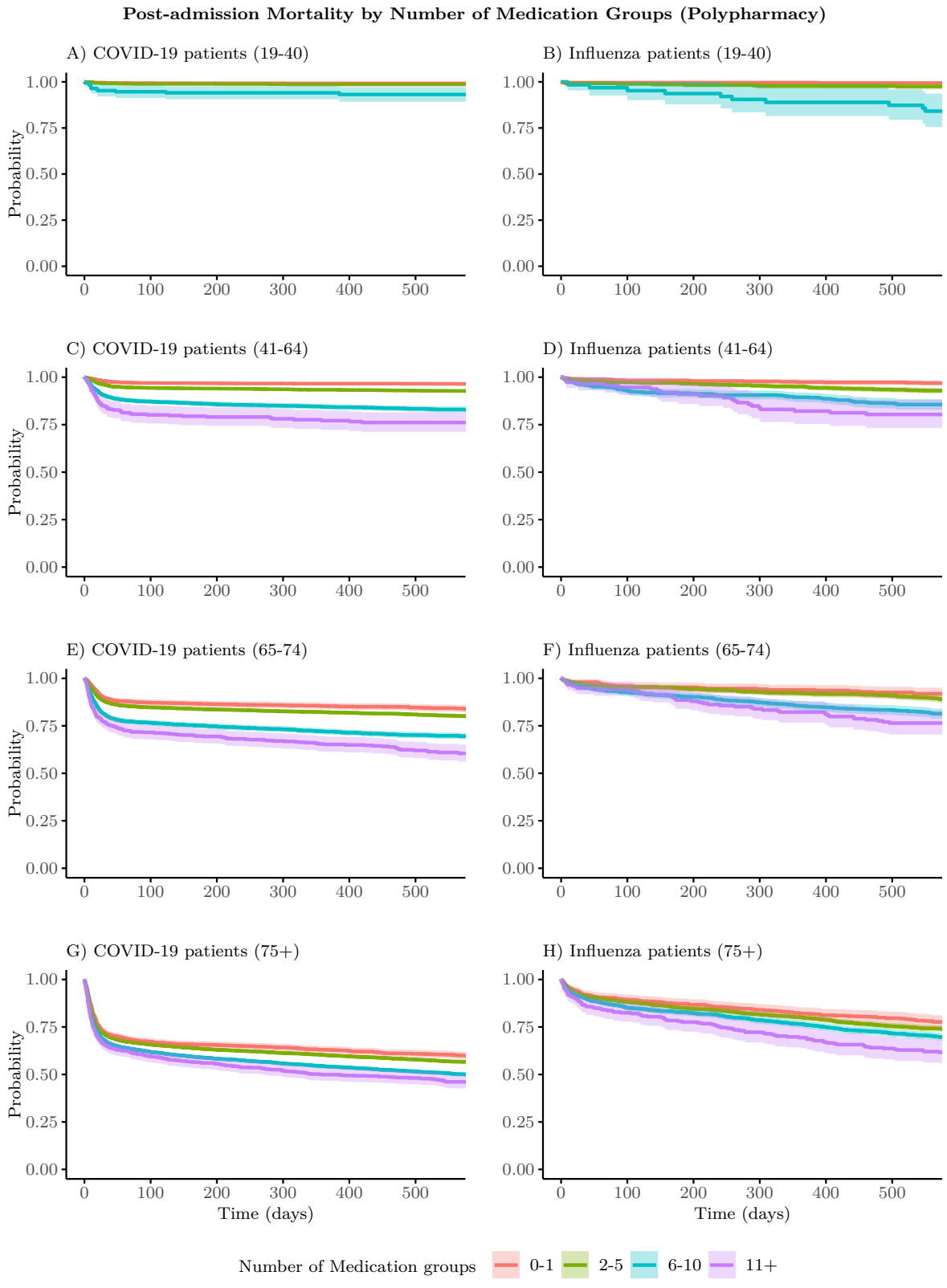

Figure 4.8. Kaplan–Meier curves for time to all-cause mortality after hospital admission, stratified by the number of prescribed medication groups. Panel-specific patient groups and age cohorts are indicated in the plot titles.

4.2.4 All-Cause Mortality In-Hospital

Within COVID-19 patient group:

Stratification by age, sex, and number of prescribed medication groups indicated that in the COVID-19 group, most deaths occurred in-hospital. Sex showed a significant relationship with risk of in-hospital death with women having lower risk of in-hospital death in the age groups 65-74 ($HR = 0.64,\ 95\%CI = 0.58 - 0.71,\ p < 0.001$, Table A.56) and ≥75 ($HR = 0.70,\ 95\%CI = 0.66 - 0.74,\ p < 0.001$, Table A.59) in the simple regressions. For age cohorts 19-40 and 41-64 no significant effects for sex were found in this analysis (Table A.50 and A.53). Moreover, results of regression models for in-hospital death for COVID patients observed significant effects for older age for age cohorts 41-64, 65-74 and ≥75 in the simple models. The Kaplan-Meier visualization for in-hospital mortality rates could not show a clear distinction of survival by the number of medication groups prescribed in the year prior to hospitalization. Rather, the rates overlapped for all adult age cohorts over time (Figure 4.9A, C, E, and G). But with addition of the baseline variables in the multivariable models, the number of medication group categories 6-10 groups compared to 0-1 medication groups and ≥11 compared to 0-1 groups for patients age ≥41 were found to be significant (Tables A.53, A.56 and A.59). Multivariable regression results for COVID patients showed consistent directions and similar magnitudes of hazard ratios in the age cohorts 41-64, 65-74, and ≥75 for sex and age, while the effect of polypharmacy decreased in magnitude and was not consistently significant across the different number of medication group categories (Tables A.53, A.56 and A.59). This might be due to a common high health burden/medication prescriptions in older ages, and certain medication groups can explain the impact on the increasing hazard of in-hospital mortality. For COVID patients aged 19-40 no significant associations of in-hospital mortality risk with medication groups could be observed (Figure 4.12C). Medication groups which showed a significant increase in risk of in-hospital death were for age group 41-64 MG 9: Systemic Steroids ($HR = 1.31,\ 95\%CI = 1.15 - 1.49,\ p < 0.001$), and MG 30: Systemic Antihistamines ($HR = 1.31,\ 95\%CI = 1.12 - 1.53,\ p < 0.001$) (Table A.53, Figure 4.13C), for age group 65-74 MG 6: Beta Blockers ($HR = 1.08,\ 95\%CI = 1.04 - 1.13,\ p < 0.001$), and MG 10: Chemotherapy ($HR = 1.35,\ 95\%CI = 1.21 - 1.52,\ p < 0.001$) (Table A.56, Figure 4.14C), for age group ≥75 MG 1: Anticoagulants ($HR = 1.12,\ 95\%CI = 1.10 - 1.15,\ p < 0.001$), MG 3: Insulins and other Antidiabetics ($HR = 1.13,\ 95\%CI = 1.07 - 1.20,\ p < 0.001$), MG 4: Heart drugs ($HR = 1.05,\ 95\%CI = 1.02 - 1.09,\ p = 0.001$), MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid ($HR = 1.17,\ 95\%CI = 1.08 - 1.28,\ p < 0.001$), MG 19: Immunoglobulins ($HR = 2.40,\ 95\%CI = 1.47 - 3.92,\ p < 0.001$), and MG 24: Antipsychotics ($HR = 1.22,\ 95\%CI = 1.14 - 1.30,\ p < 0.001$) (Table A.59, Figure 4.15C). Results for

age group 19-40 may not be meaningful due to low numbers of events (Table A.35).

Within Influenza patient group:

Stratification by age, sex, and number of prescribed medication groups observed among Influenza patients, that a large proportion of deaths occurred after hospital discharge. Kaplan-Meier curves could not detect reliable differences for in-hospital survival by polypharmacy across all age cohorts (Figure 4.9B, D, F, and H). Regression analysis of Influenza patients found no significant effects of age, sex, or polypharmacy in the 41-64 age cohort (Table A.51) and no reliable estimates in age cohort 19-40 years (Table A.54) in either the simple or multivariable regression models. Regarding medication groups in the multivariable model which were significantly associated with in-hospital mortality risk in this age group, also no statistically significant relationships could be observed (Tables A.51 and A.54, Figure 4.12D and 4.13D). In the 65-74 age cohort of Influenza patients, sex was significantly associated with the risk of in-hospital death in unadjusted analysis, however no significant effect could be detected in multivariable analysis. Women were observed to have a lower risk compared to men (simple: $HR = 0.80,\ 95\%CI = 0.69 - 0.91,\ p < 0.001$, multivariable: $HR = 0.78,\ 95\%CI = 0.64 - 0.95,\ p = 0.014$). Further, only polypharmacy with 11 or more medication groups prescribed in the year before hospitalization had a significant hazard ratio compared to no polypharmacy, i.e. 0-1 medication groups prescribed, in the multivariable model. However, due to the wide confidence intervals, this effect should be interpreted with caution and may not be meaningful. The medication groups that were significantly associated with an increased probability of in-hospital mortality in this age cohort were MG 10: Chemotherapy ($HR = 2.08,\ 95\%CI = 1.38 - 3.15,\ p < 0.001$), and MG 28: other COPD drugs ($HR = 2.48,\ 95\%CI = 1.73 - 3.55,\ p < 0.001$) in the multivariable model (Table A.57, Figure 4.14D). In the age cohort of 75 and older, older age and sex (with men having a higher hazard rate than women) were significantly associated with an increased risk of in-hospital death. Additionally, 11 or more medication groups, compared to no polypharmacy, found a significantly increased risk of in-hospital death. Further, MG 24: Antipsychotics ($HR = 1.44,\ 95\%CI = 1.22 - 1.71,\ p < 0.001$) and MG 28: other COPD drugs ($HR = 1.80,\ 95\%CI = 1.40 - 2.32,\ p < 0.001$) were associated with an increased risk of in-hospital mortality in the multivariable model (Table A.60, Figure 4.15D). As before, results for the 19-40 age cohort of COVID-19 patients as well of Influenza patients on the outcome of in-hospital mortality may not be representative due to the low number of deaths in-hospital (Table A.51).

Comparison between COVID-19 and Influenza patient groups:

Visual comparison of the propensity score matched sample of the Kaplan-Meier curves did not show marked differences for age cohorts 19-40 and 41-64, and confidence intervals were wide (Figure 4.11B and E). However, for age cohorts 65-74 and ≥75 the curves showed a divergence of survival probability in the first 50 days of admission, with an increased mortality risk for COVID-19 patients (Figure 4.11H and K). But after 50 days the difference decreases, but confidence intervals are wide. The results of simple and multivariable regressions comparing in-hospital mortality rates between COVID-19 and Influenza patients supported this trend and showed significant differences in the age cohorts 65–74 (simple: $HR = 0.39,\ 95\%CI = 0.28 - 0.53,\ p < 0.001$, multivariable: $HR = 0.38,\ 95\%CI = 0.28 - 0.52,\ p < 0.001$; Table A.58), and ≥75 years (simple: $HR = 0.38,\ 95\%CI = 0.35 - 0.42,\ p < 0.001$, multivariable: $HR = 0.38,\ 95\%CI = 0.35 - 0.42,\ p < 0.001$; Table A.61), however, not for age cohorts 19-40 and 41-64 years (Tables A.52, A.55, A.58, and A.61, Figure 4.23).

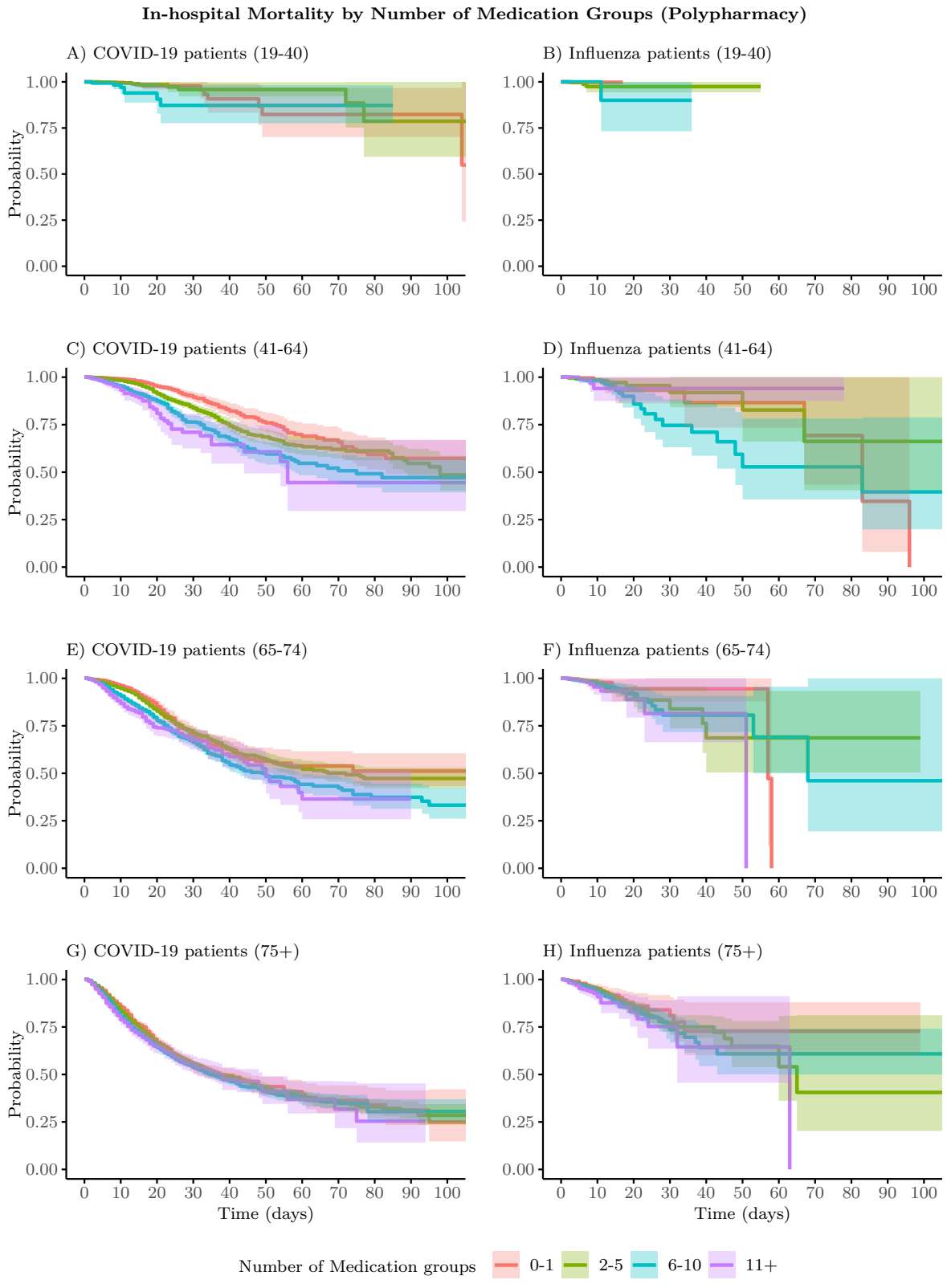

Figure 4.9. Kaplan–Meier curves for time to all-cause in-hospital mortality, stratified by the number of prescribed medication groups. Panel-specific patient groups and age cohorts are indicated in the plot titles.

4.2.5 All-Cause Mortality Post-Discharge

Within COVID-19 patient group:

Regression analysis for time to death after hospital discharge within COVID-19 patients showed considerably higher instantaneous hazard for men compared to women in the simple and multivariable Cox regression models across the age groups 41-64 (simple: $HR = 0.68,\ 95\%CI = 0.58 - 0.80,\ p < 0.001$, multivariable: $HR = 0.64,\ 95\%CI = 0.54 - 0.76,\ p < 0.001$; Table A.65), 65-74 (simple: $HR = 0.61,\ 95\%CI = 0.55 - 0.67,\ p < 0.001$, multivariable: $HR = 0.57,\ 95\%CI = 0.52 - 0.62,\ p < 0.001$ Table A.68), and ≥75 (simple: $HR = 0.83,\ 95\%CI = 0.78 - 0.87,\ p < 0.001$, multivariable: $HR = 0.78,\ 95\%CI = 0.74 - 0.82,\ p < 0.001$ Table A.71). Older age was also found to be significant risk factor among COVID patients aged 41-64 (Table A.65), 65-74 (Table A.68) and ≥75 (Table A.71). Among COVID-19 patients no pronounced pattern of distinctive survival by number of medication groups could be observed in the Kaplan-Meier curves across all age cohorts (Figure 4.10A, C, E, and G). However a slight difference of survival rates for ≥6 medication groups after 100 days of hospital discharge might be visible for age cohorts aged ≥41 years (Figure 4.10 C, E, and G). The simple Cox regressions showed significant associations for 6-10 and ≥11 prescribed medication groups compared to no polypharmacy in the 41-64 (Table A.65, the 65-74 (Table A.68) and the ≥75 age cohort (Table A.71). Multivariable models did not prevail these associations, except in the 41-64 group, for 6-10 medication groups in comparison to no polypharmacy found a significant association. Besides, length of hospital stay was consistently associated with greater risk of post-discharge mortality. Medication groups that were observed as significantly associated with mortality after hospital discharge can be viewed in Figures 4.12E, 4.13E, 4.14E, and 4.15E and Tables A.62, A.65,A.68, and A.71.

Within Influenza patient group:

Within Influenza patients, similar effects for sex, as in the COVID-19 cohort, in the age groups 41-64 (simple: $HR = 0.44,\ 95\%CI = 0.34 - 0.57,\ p < 0.001$, multivariable: $HR = 0.38,\ 95\%CI = 0.29 - 0.50,\ p < 0.001$ A.66), 65-74 (simple: $HR = 0.64,\ 95\%CI = 0.51 - 0.80,\ p < 0.001$, multivariable: $HR = 0.63,\ 95\%CI = 0.47 - 0.84,\ p = 0.001$ A.69), and ≥75 (simple: $HR = 0.70,\ 95\%CI = 0.65 - 0.77,\ p < 0.001$, multivariable: $HR = 0.68,\ 95\%CI = 0.63 - 0.73,\ p < 0.001$ A.72) were observed. Further older age was also found to be significant risk factor and among Influenza patients aged 41-64 (Table A.66), 65-74 (Table A.69), and ≥75 (Table A.72) in the simple and multivariable regression analysis. Within the Influenza patient population, as for the COVID-19 cohort, no pattern of distinctive survival by number of medi-

cation groups could be observed in the Kaplan-Meier curves except a slight difference of survival rates for ≥6 medication groups after 200 days of hospital for age cohorts aged ≥41 years (Figure 4.10 D, F, and H). In the age cohort 19-40 years, for patients with 6 or more prescribed medication groups a clear trend for lower survival rates in the Kaplan-Meier curves compared to lower numbers of medication groups was visible (Figure 4.10 B). Simple regression showed significant associations of polypharmacy with ≥6 prescribed medication groups compared to no polypharmacy in all age groups, but confidence intervals suggest no robust estimation for patients aged <65. Multivariable models also showed wide confidence intervals of the hazard ratios for the polypharmacy subgroups in patients aged <65, and for age group 65-74 6-10 medication groups and for age group ≥75 11 ore more medication groups showed significant associations compared to no polypharmacy. The confounder length of hospital stay was observed to be consistently associated with higher risk of post-discharge mortality for more days spent in hospital. Medication groups that were observed as significantly associated with increased mortality risk after hospital discharge can be viewed in Figures 4.12F, 4.13F, 4.14F, and 4.15F and Tables A.63, A.66,A.69, and A.72.

Comparison between COVID-19 and Influenza patient groups:

Cox regressions for comparing mortality hazard of hospital survivors between propensity score matched COVID and Influenza patients showed no significant effect between Influenza and COVID-19 patients (Tables A.64, A.67, A.70, and A.73, Figure 4.23, and 4.11C, F, I, and L).

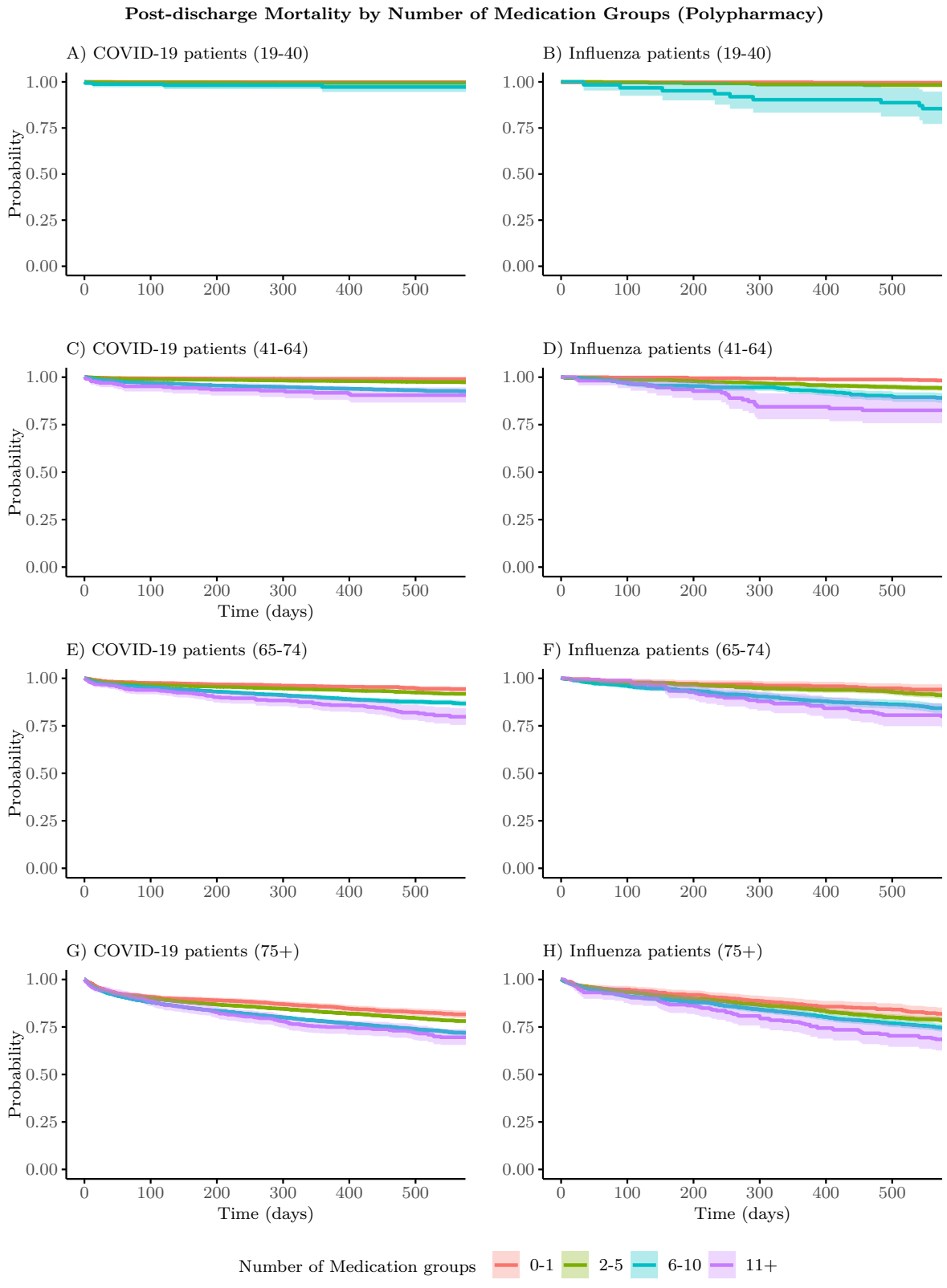

Figure 4.10. Kaplan–Meier curves for time to all-cause mortality after hospital discharge, stratified by the number of prescribed medication groups. Panel-specific patient groups and age cohorts are indicated in the plot titles.

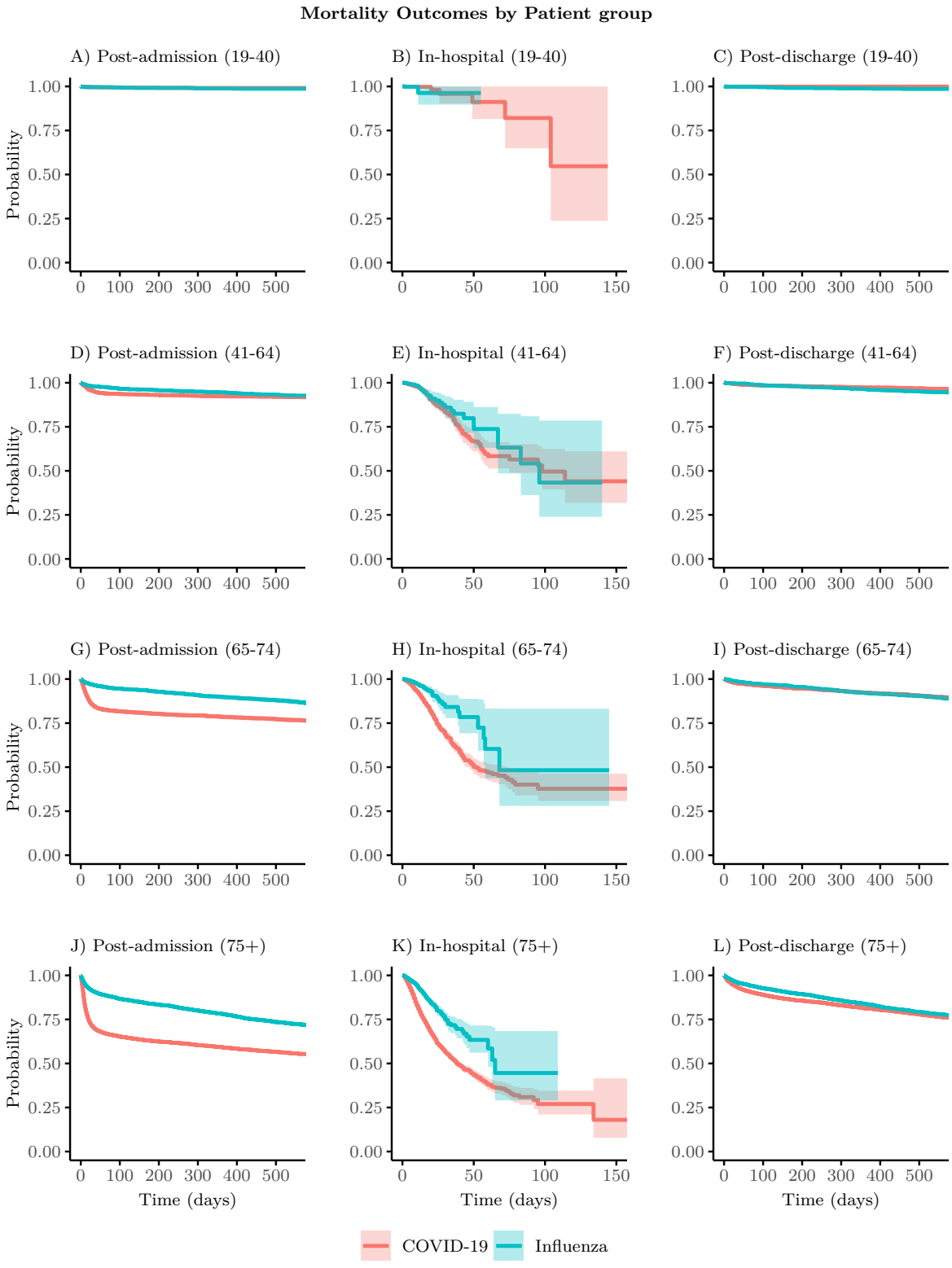

Figure 4.11. Kaplan–Meier curves comparing time to all-cause mortality after hospital admission, in-hospital, and post-discharge between propensity score matched adult COVID-19 and Influenza patients. Panel-specific age cohorts and outcomes are indicated in the plot titles.

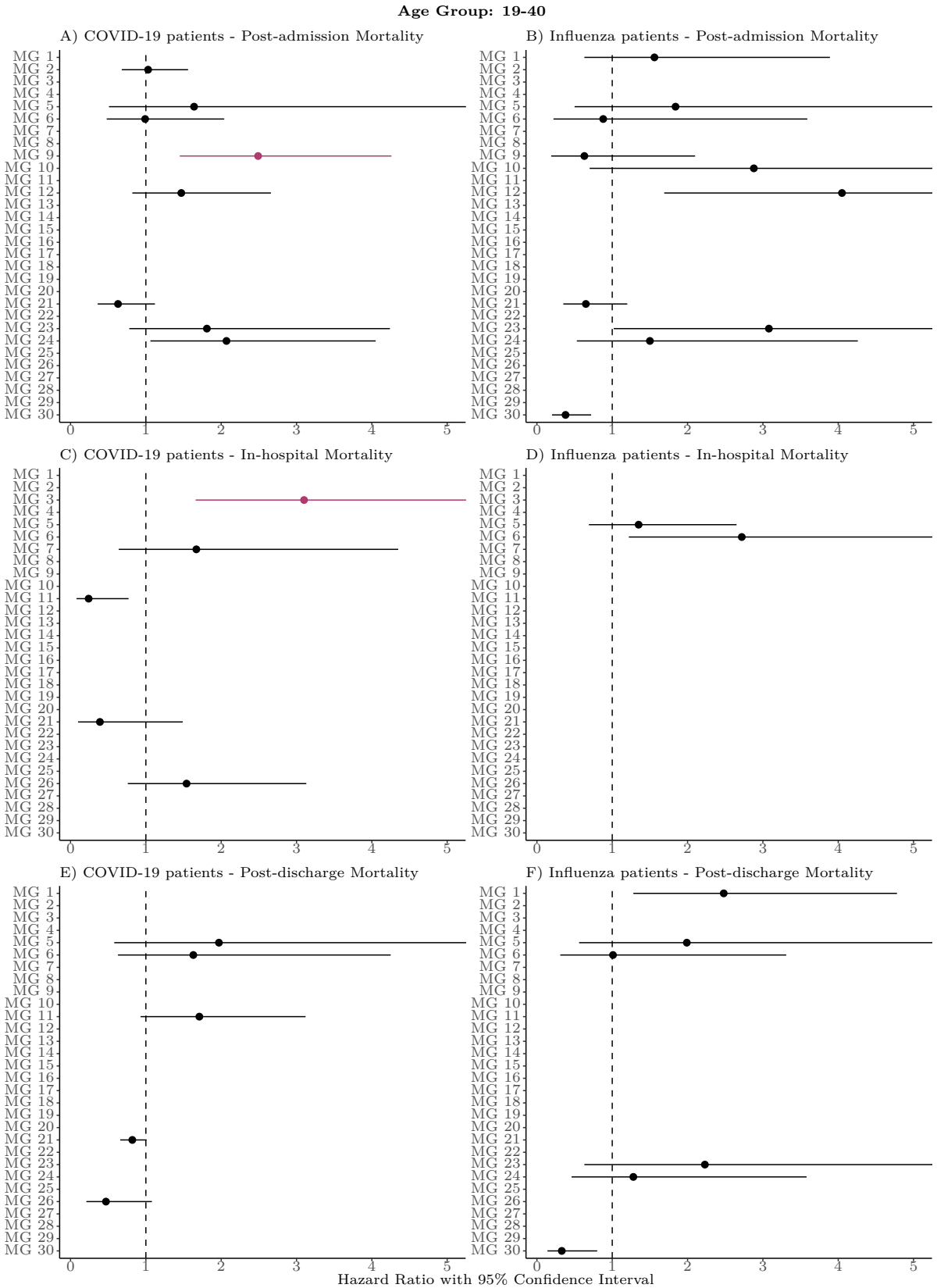

Figure 4.12. Visualizations of Cox proportional hazards regression results for all-cause mortality (post-admission, in-hospital, and post-discharge) among COVID-19 and Influenza patients aged 19–40. Hazard ratios and 95% confidence intervals are shown for medication groups (defined in Table 3.4). Panel titles indicate patient groups and outcomes. Statistically significant hazard ratios ($p < 0.001$) are highlighted.

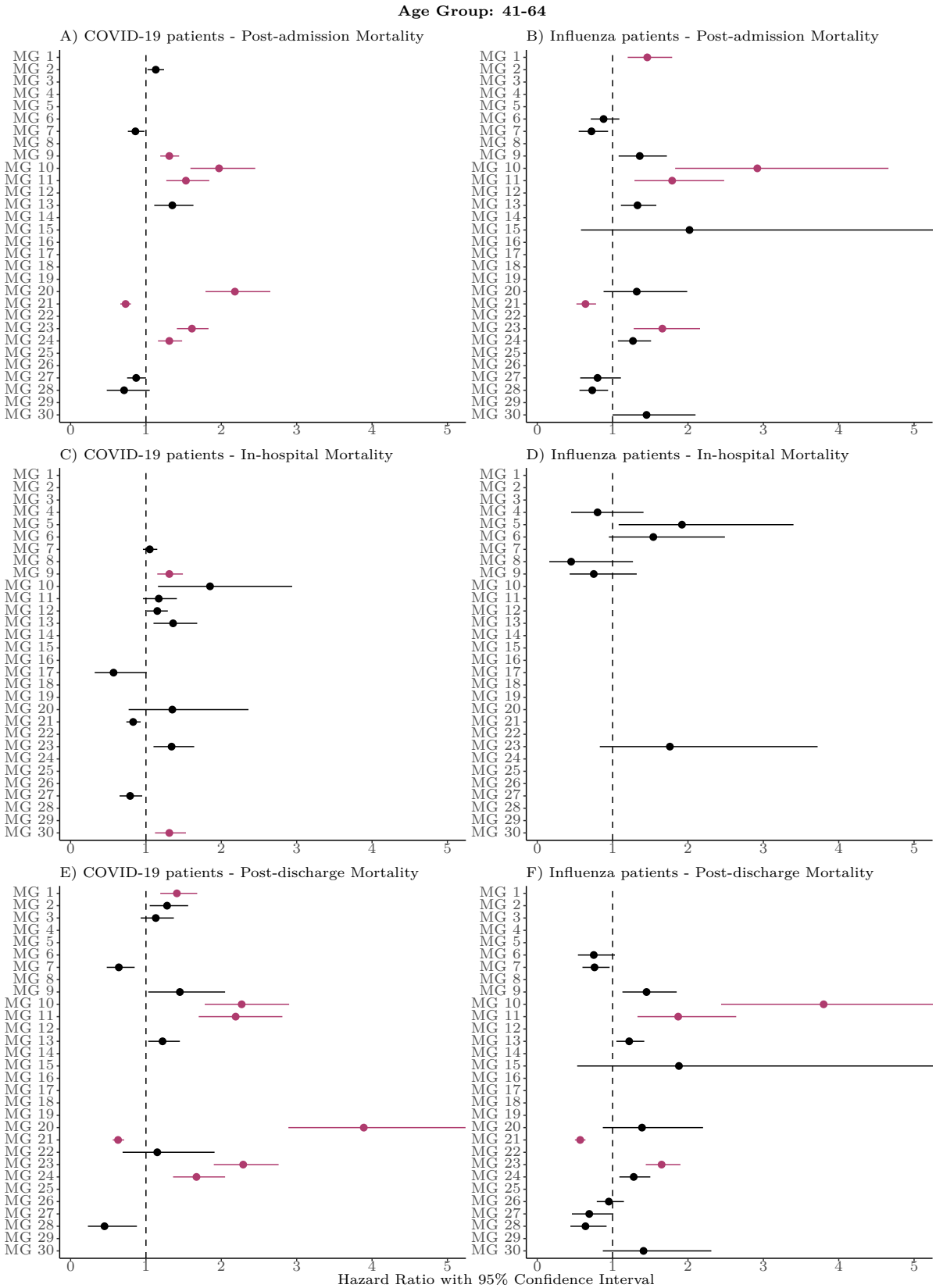

Figure 4.13. Visualizations of Cox proportional hazards regression results for all-cause mortality (post-admission, in-hospital, and post-discharge) among COVID-19 and Influenza patients aged 41–64. Hazard ratios and 95% confidence intervals are shown for medication groups (defined in Table 3.4). Panel titles indicate patient groups and outcomes. Statistically significant hazard ratios ($p < 0.001$) are highlighted.

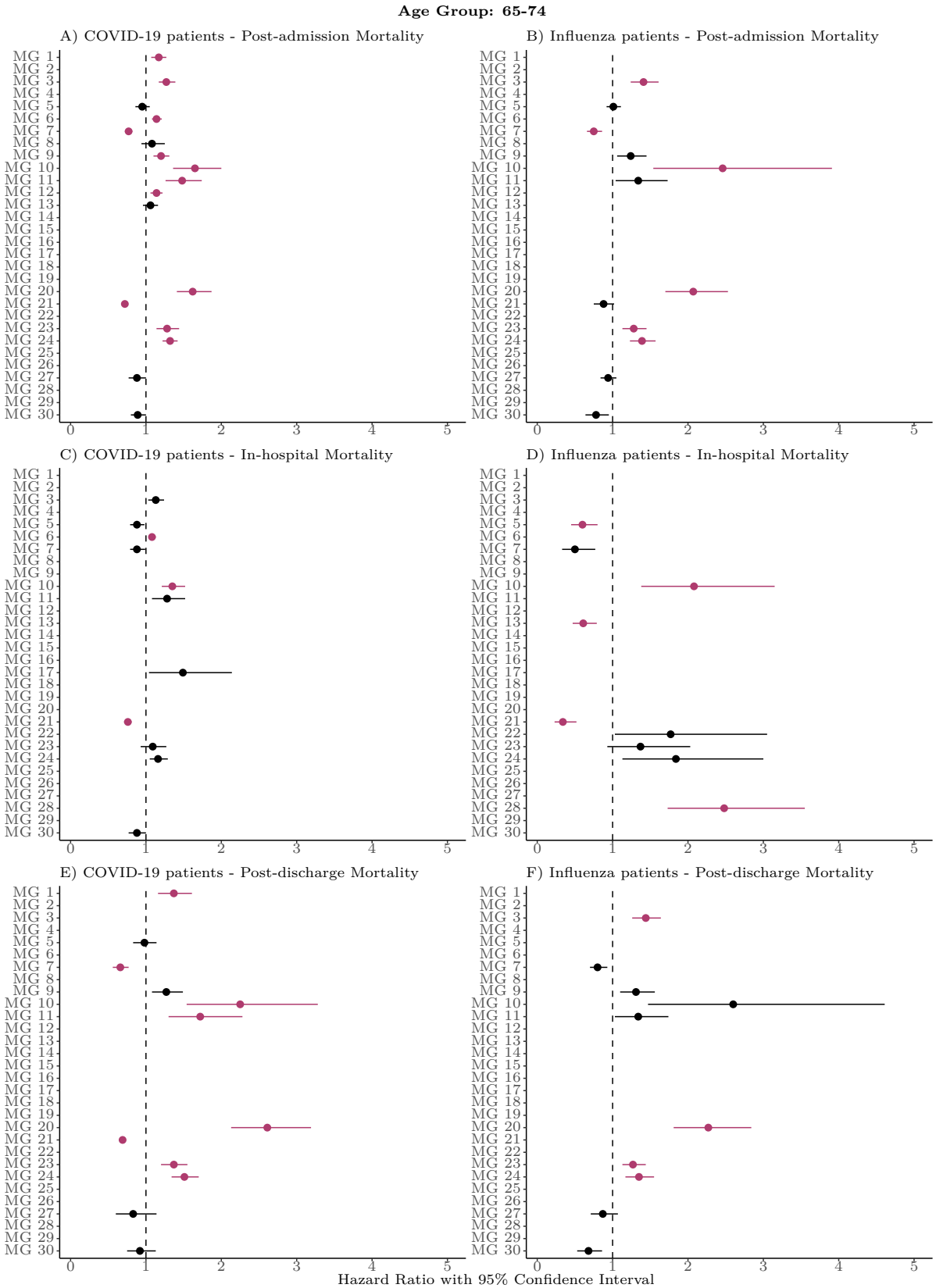

Figure 4.14. Visualizations of Cox proportional hazards regression results for all-cause mortality (post-admission, in-hospital, and post-discharge) among COVID-19 and Influenza patients aged 65–75. Hazard ratios and 95% confidence intervals are shown for medication groups (defined in Table 3.4). Panel titles indicate patient groups and outcomes. Statistically significant hazard ratios ($p < 0.001$) are highlighted.

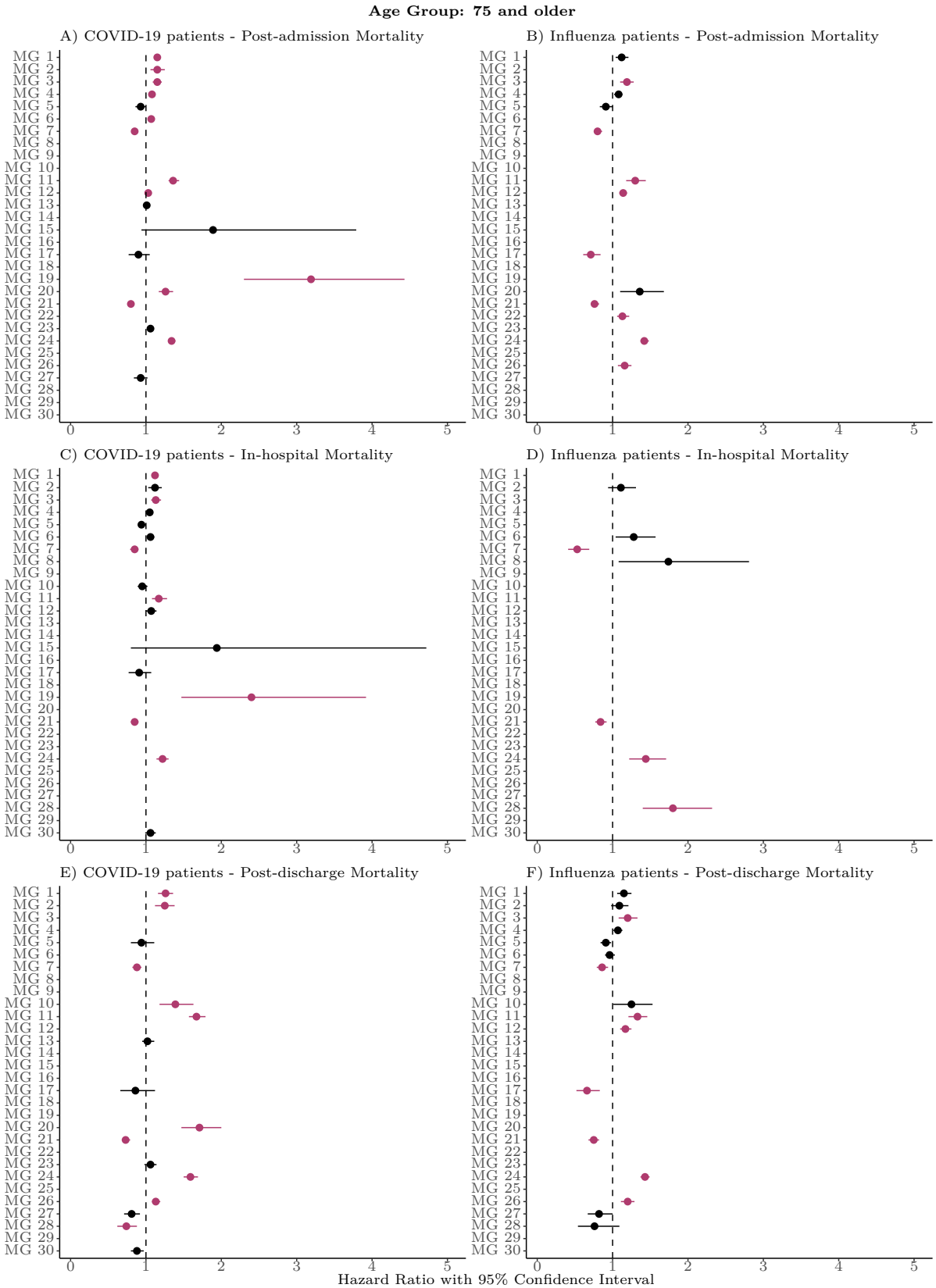

Figure 4.15. Visualizations of Cox proportional hazards regression results for all-cause mortality (post-admission, in-hospital, and post-discharge) among COVID-19 and Influenza patients aged 75 and older. Hazard ratios and 95% confidence intervals are shown for medication groups (defined in Table 3.4). Panel titles indicate patient groups and outcomes. Statistically significant hazard ratios ($p < 0.001$) are highlighted.

4.2.6 Hospital Discharge

Within COVID-19 patient group:

Analysis of the outcome time to hospital discharge, accounting for the competing risk of in-hospital death, showed a significantly shorter time to discharge for women compared to men across all age cohorts of COVID-19 patients. The association remained consistent in both unadjusted (simple) and multivariable models, with hazard ratios for sex ranging between 1.2 and 1.3 ($p < 0.001$) (Tables A.74, A.77, A.80 and A.83). Among COVID-19 patients age had a statistically significant relationship with discharge times, showing younger COVID-19 patients spend significantly less time in hospital across all age groups (Tables A.74, A.77, A.80 and A.83). The impact of polypharmacy on discharge probabilities over time, showed for COVID-19 patients pronounced shorter discharge times for lower numbers of medication groups in the cumulative incidence curves across all age cohorts. Especially the cut-off of $\geq$6 prescribed medication groups could be observed (Figure 4.16A, C, E, and G). Also, a significantly longer hospital stay across all age cohorts (for age group $\geq$75 for 6 or more prescribed medication groups) compared to no polypharmacy was found in the simple models. However, in multivariable models, this association only remained significant in the 19–40 age cohort for all categories of polypharmacy (Table A.74). For COVID-19 patients 41-74 years old, the effect of polypharmacy observed a significant effect for 6-10 medication groups compared to no polypharmacy (Tables A.77 and A.80) and no significant effect of polypharmacy in the COVID patient group aged $\geq$75 (Table A.83). Medication groups associated with significantly longer hospital stay in the COVID patient group were, MG 14: Caplacizumab ($HR = 0.78,\ 95\%CI = 0.68-0.9,\ p < 0.001$) and MG 24: Antipsychotics ($HR = 0.83,\ 95\%CI = 0.75-0.93,\ p < 0.001$) for age cohort 19-40 (Table A.74, Figure 4.18A), MG 3: Insulins and other Antidiabetics ($HR = 0.84,\ 95\%CI = 0.80 - 0.84,\ p < 0.001$), MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors ($HR = 0.93,\ 95\%CI = 0.89-0.97,\ p < 0.001$), MG 9: Systemic Steroids ($HR = 0.90,\ 95\%CI = 0.86 - 0.95,\ p < 0.001$), MG 10: Chemotherapy ($HR = 0.75,\ 95\%CI = 0.65 - 0.86,\ p < 0.001$), MG 13: Vitamin D and other Vitamin supplements ($HR = 0.89,\ 95\%CI = 0.84 - 0.94,\ p < 0.001$), MG 23: Antiepileptics ($HR = 0.89,\ 95\%CI = 0.84 - 0.95,\ p < 0.001$), and MG 24: Antipsychotics ($HR = 0.91,\ 95\%CI = 0.87 - 0.95,\ p < 0.001$) for age group 41-64 (Table A.77, Figure 4.19A), MG 3: Insulins and other Antidiabetics ($HR = 0.86,\ 95\%CI = 0.81 - 0.90,\ p < 0.001$), MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid ($HR = 0.85,\ 95\%CI = 0.78 - 0.93,\ p < 0.001$), MG 23: Antiepileptics ($HR = 0.86,\ 95\%CI = 0.80 - 0.92,\ p < 0.001$), and MG 24: Antipsychotics ($HR = 0.91,\ 95\%CI = 0.87 - 0.96,\ p < 0.001$) for age cohort 65-74

(Table A.80, Figure 4.20A) and MG 3: Insulins and other Antidiabetics ($HR = 0.90,\ 95\%CI = 0.86 - 0.94,\ p < 0.001$), MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid ($HR = 0.87,\ 95\%CI = 0.83 - 0.92,\ p < 0.001$), and MG 24: Antipsychotics ($HR = 0.88,\ 95\%CI = 0.85 - 0.92,\ p < 0.001$) for age cohort ≥75 (Table A.83, Figure 4.21A).

Within Influenza patient group:

For Influenza patients, across all age cohorts, sex did not show a significant relationship with time to hospital discharge in the simple and multivariable competing risk regressions (Tables A.75, A.78, A.81 and A.84). Further, among Influenza patients no significant relationship between age and time to discharge in the 19–40 and 65-74 age group was found (Table A.75, A.81). Only a partial effects for age were observed in the 41–64 group, specifically among those aged 41 to 55 compared to age subgroup 61–64 (Table A.78), and in the ≥75 age cohort, among the 81-85 and 75-80 years compared to the age subgroup of >90 years (Table A.84). The impact of polypharmacy on discharge probabilities, for the Influenza cohort observed notable higher discharge probabilities for lower numbers of medication groups in the cumulative incidence curves across all age cohorts. As among the COVID patients, the greater distinction in discharge times could be observed for ≥6 prescribed medication groups compared to less than 6 medication groups. However, this difference decreased for patients aged 75 or older (Figure 4.16B, D, F, and H). The age cohort 19-40 of Influenza hospitalized patients found effects of all polypharmacy categories compared to no polypharmacy on significantly lower hazard of discharge in the simple regression analysis but not in the adjusted models (Table A.75). For age group 41-65, effects of polypharmacy were significant in the simple model but diminished and only remained significant for 2-5 prescribed medication groups compared to no polypharmacy in the multivariable competing risk regression (Table A.78). Patients aged 65 and older showed significant effects for polypharmacy categories in the unadjusted regression analysis but no significant association was found in the multivariable models (Tables A.81 and A.84).

Medication groups that were found significantly associated with longer hospital stays among Influenza patients were MG 19: Immunoglobulins ($HR = 0.47,\ 95\%CI = 0.34 - 0.65,\ p < 0.001$), and MG 23: Antiepileptics ($HR = 0.61,\ 95\%CI = 0.47 - 0.79,\ p < 0.001$) for age cohort 19-40 (Table A.75, Figure 4.18B), MG 3: Insulins and other Antidiabetics ($HR = 0.82,\ 95\%CI = 0.73 - 0.92,\ p < 0.001$), MG 13: Vitamin D and other Vitamin supplements ($HR = 0.83,\ 95\%CI = 0.75 - 0.93,\ p < 0.001$), MG 23: Antiepileptics ($HR = 0.82,\ 95\%CI = 0.73 - 0.93,\ p = 0.001$), and MG 26: inhaled anti-obstructive drugs ($HR = 0.84,\ 95\%CI = 0.77 - 0.92,\ p < 0.001$) for age cohort 41-64 (Table A.78, Figure 4.19B), and MG 3: Insulins

and other Antidiabetics ($HR = 0.85,\ 95\%CI = 0.77 - 0.93,\ p < 0.001$), and MG 28: other COPD drugs ($HR = 0.70,\ 95\%CI = 0.57 - 0.87,\ p = 0.001$) for age cohort 65-74 (Table A.81, Figure 4.20B). For age cohort 75 and older no significant effect for longer hospital stay under the defined significance level could be found (Table A.84, Figure 4.21B).

Comparison between COVID-19 and Influenza patient groups:

Across all age cohorts, the median length of hospital stay was consistently longer for COVID-19 patients than for those hospitalized with Influenza (Table 4.2), but these cohorts were not propensity score matched. This divergence can be clearly viewed in the cumulative incidence curves in Figure 4.17 A, C, E, and G when comparing the propensity score matched patient cohorts across the adult age cohorts. The comparisons in regression analyses also observed Influenza patients spent significantly less time in hospital compared to COVID patients across all age cohorts (Figure 4.23, Tables A.76, A.79, A.82 and A.85).

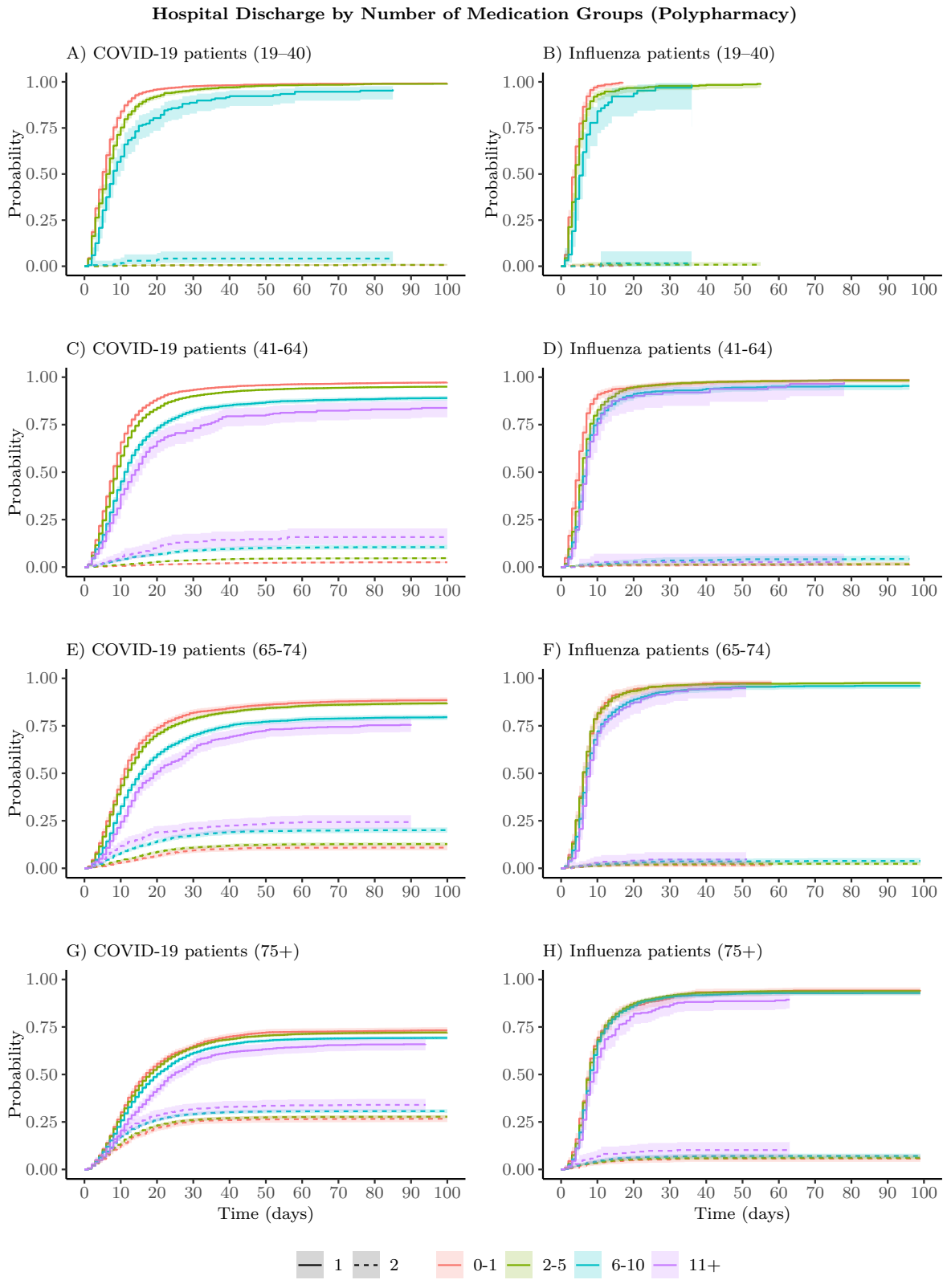

Figure 4.16. Cumulative incidence curves for time to hospital discharge (1 - solid) with competing risk death (2 - dashed) for COVID-19 and Influenza patients, stratified by the number of prescribed medication groups. Panel-specific patient groups and age cohorts are indicated in the plot titles.

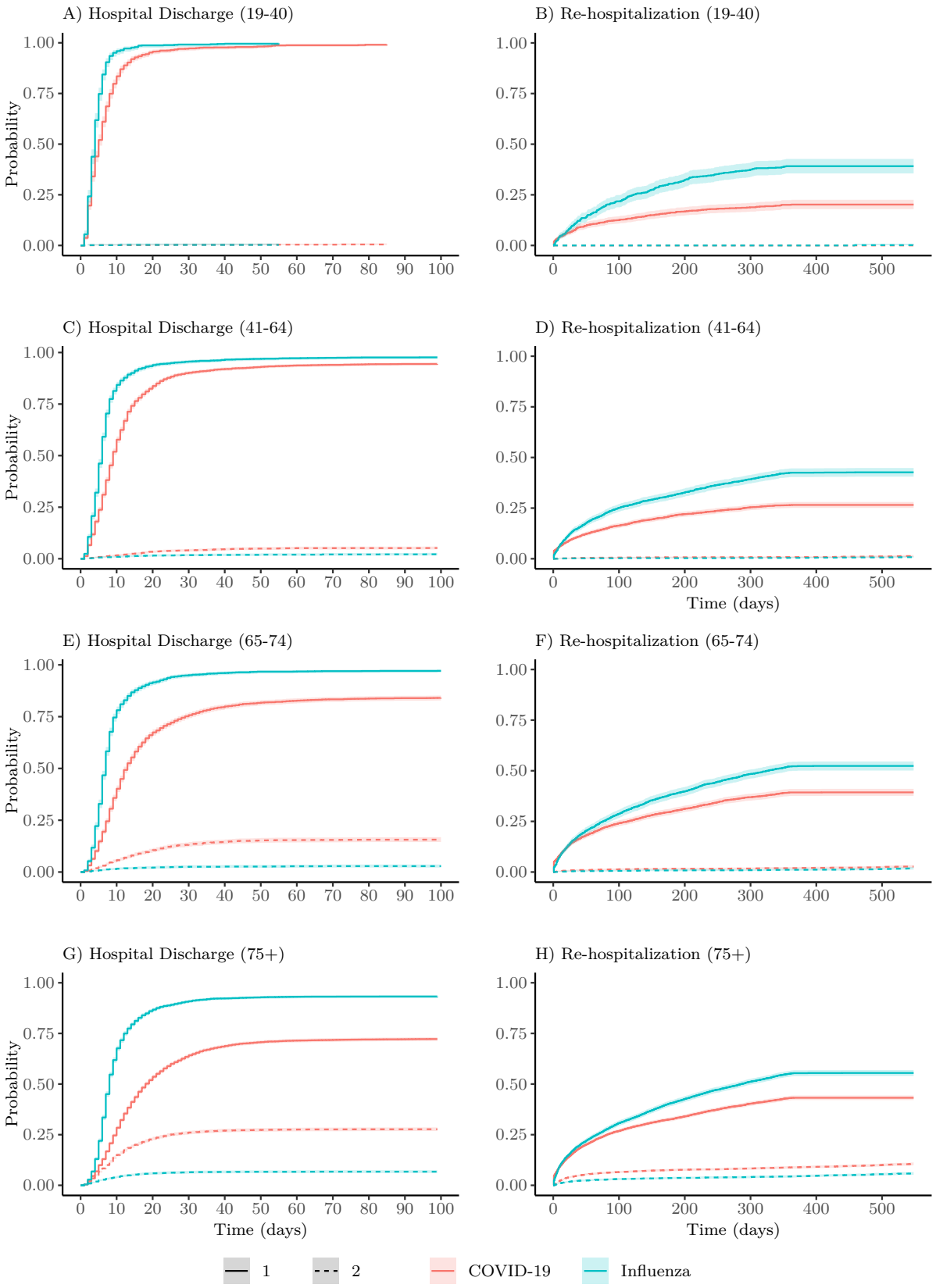

Figure 4.17. Cumulative incidence curves for time to hospital discharge and re-hospitalization (1 - solid) with competing risk death (2 - dashed), comparing propensity score matched COVID-19 and Influenza patients across adult age cohorts. Panel-specific age cohorts and outcomes are indicated in the plot titles.

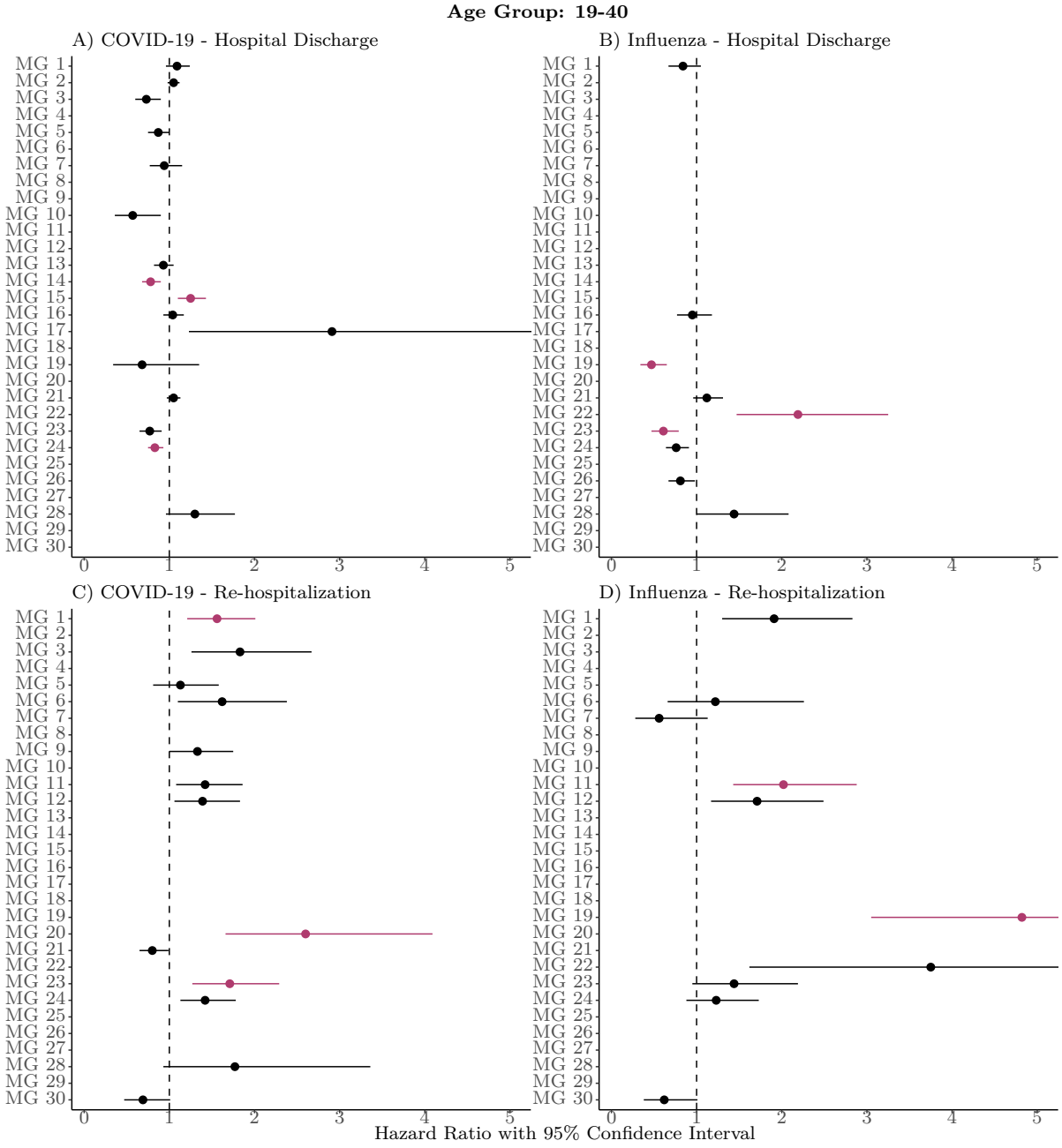

Figure 4.18. Visualizations of Cox proportional hazards regression results showing hazard ratios and 95% confidence intervals for medication groups—definitions provided in Table 3.4—associated with time to hospital discharge and re-hospitalization among COVID-19 and Influenza patients aged 19-40 years. Panel-specific patient groups and outcomes are indicated in the plot titles. Hazard ratios are colored if statistically significant ($p < 0.001$).

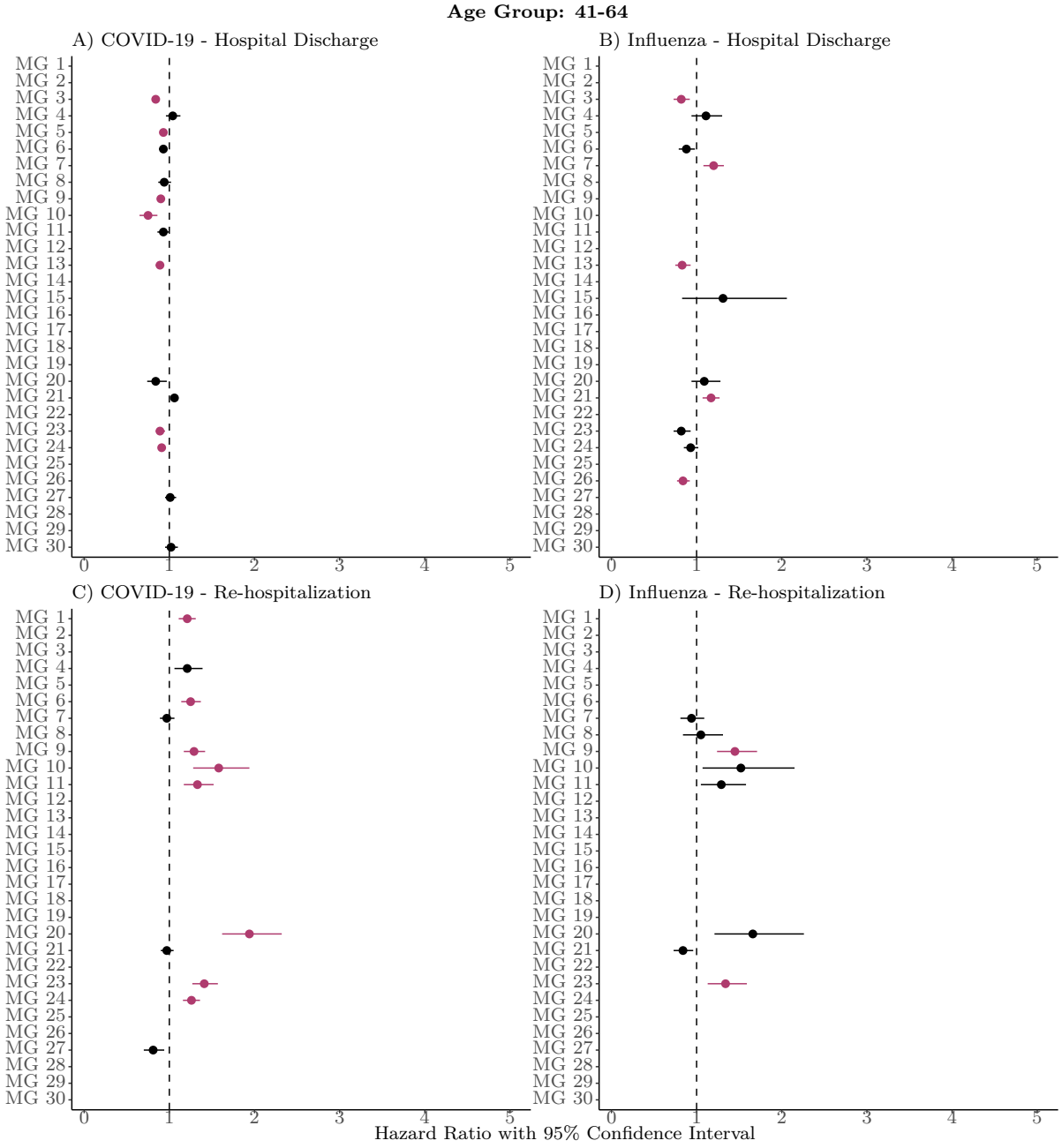

Figure 4.19. Visualizations of Cox proportional hazards regression results showing hazard ratios and 95% confidence intervals for medication groups—definitions provided in Table 3.4—associated with time to hospital discharge and re-hospitalization among COVID-19 and Influenza patients aged 41-64 years. Panel-specific patient groups and outcomes are indicated in the plot titles. Hazard ratios are colored if statistically significant ($p < 0.001$).

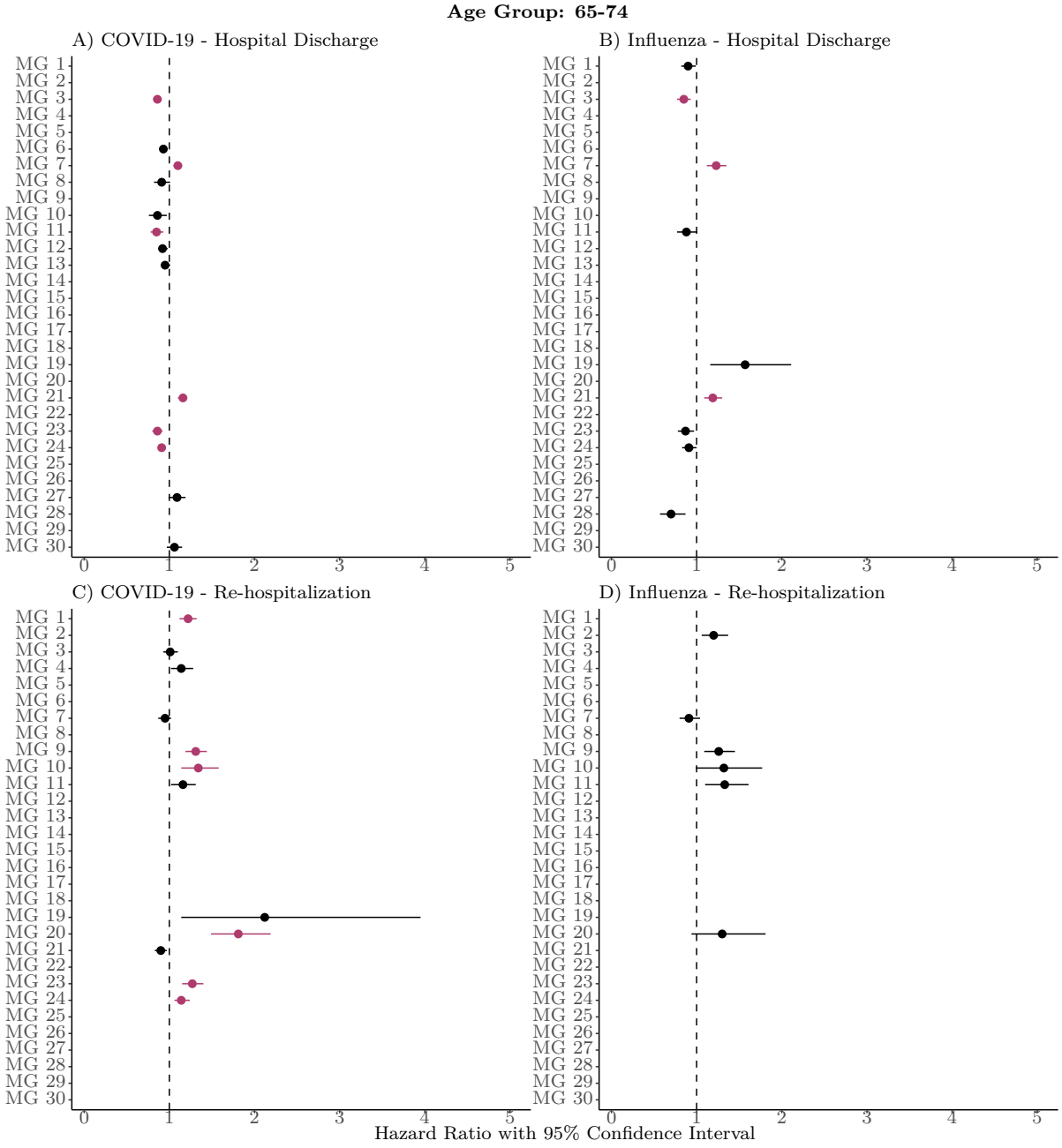

Figure 4.20. Visualizations of Cox proportional hazards regression results showing hazard ratios and 95% confidence intervals for medication groups—definitions provided in Table 3.4—associated with time to hospital discharge and re-hospitalization among COVID-19 and Influenza patients aged 41-65 years. Panel-specific patient groups and outcomes are indicated in the plot titles. Hazard ratios are colored if statistically significant ($p < 0.001$).

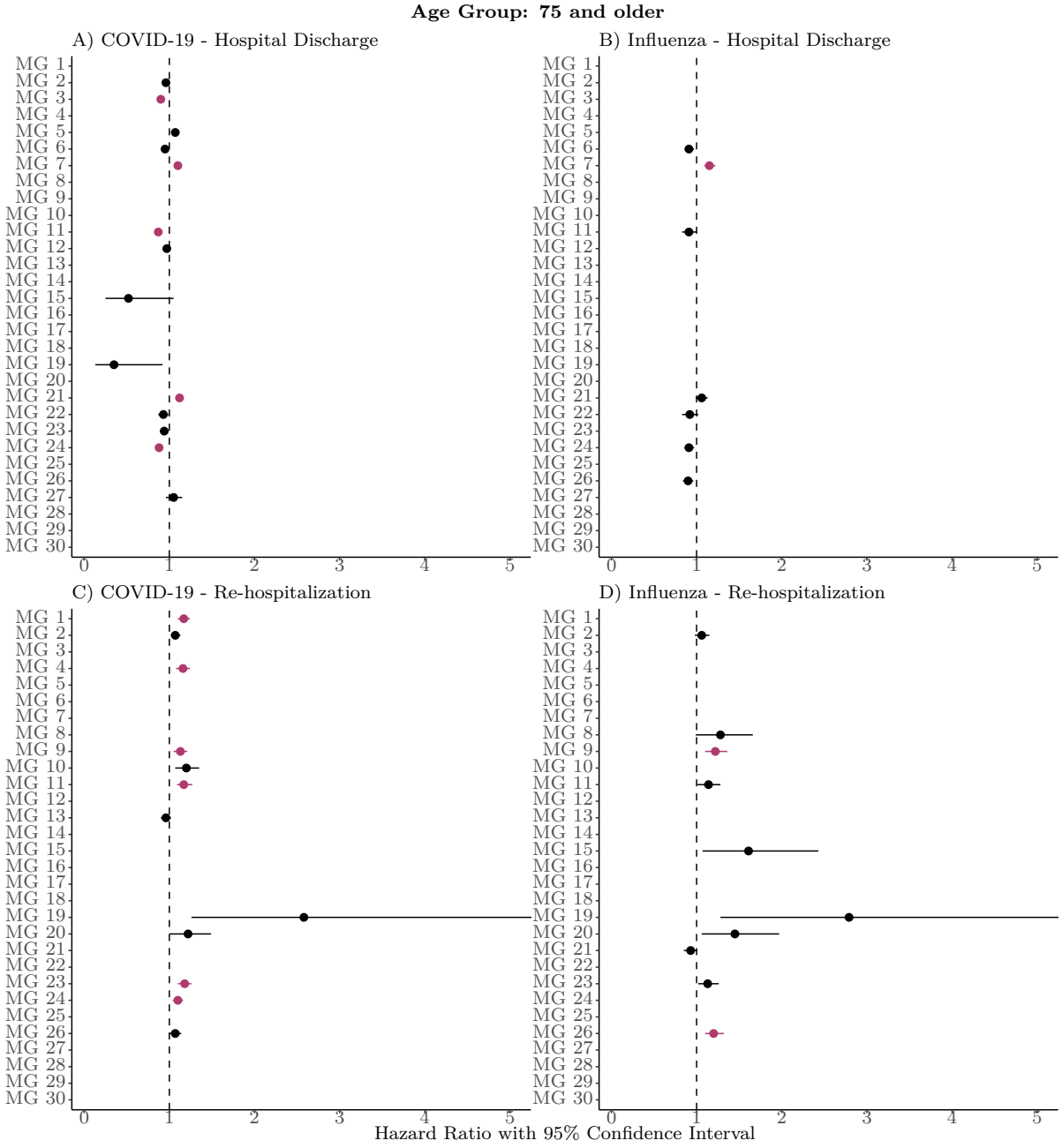

Figure 4.21. Visualizations of Cox proportional hazards regression results showing hazard ratios and 95% confidence intervals for medication groups—definitions provided in Table 3.4—associated with time to hospital discharge and re-hospitalization among COVID-19 and Influenza patients aged 75 years and older. Panel-specific patient groups and outcomes are indicated in the plot titles. Hazard ratios are colored if statistically significant ($p < 0.001$).

4.2.7 Re-hospitalization Due to Any Reason

Comparison to control group:

For both, the COVID-19 and the Influenza patient group in all age cohorts a higher number of re-hospitalizations than their respective control groups (the first hospitalization after assigned hospitalization date) could be observed with regard to the respective sample sizes in each cohort.

Within COVID-19 patient group:

Observed descriptive findings for the outcome of readmission to hospital due to any reason after a survived COVID or Influenza hospital stay with competing event death can be viewed in Table A.87. Re-hospitalizations were frequent for male and female COVID-19 patients, especially for over 180 days after discharge and an almost linear increasing rate over time (Figure 4.22, Table A.86). Simple regressions within COVID-19 patients observed significantly higher risk of re-hospitalization for women compared to men in the age group 19-40 ($HR = 1.86,\ 95\%CI = 1.60 - 2.16,\ p < 0.001$, Table A.88), whereas patients $\geq$41 were associated with male patients having significantly higher risk of readmission compared to female patients (41-64 years: $HR = 0.83,\ 95\%CI = 0.77 - 0.88,\ p < 0.001$, Table A.91; 65-74 $HR = 0.80,\ 95\%CI = 0.74 - 0.85,\ p < 0.001$, Table A.94 and $HR = 0.87,\ 95\%CI = 0.83 - 0.91,\ p < 0.001$, Table A.97). These effects for sex were also found in the multivariable regressions in the age cohort 19-40 ($HR = 1.80,\ 95\%CI = 1.54 - 2.10,\ p < 0.001$, Table A.88), in age cohort 41-64 ($HR = 0.81,\ 95\%CI = 0.75 - 0.86,\ p < 0.001$, Table A.91), in age cohort 65-74 $HR = 0.79,\ 95\%CI = 0.73 - 0.85,\ p < 0.001$, Table A.94 and age cohort $\geq$75 ($HR = 0.87,\ 95\%CI = 0.83 - 0.91,\ p < 0.001$, Table A.97). Significant effects of age were found across the 19-40, 41-64 and $\geq$75 age cohorts in the unadjusted and adjusted models. The number of prescribed medication groups showed elevated re-hospitalization rates in the cumulative incidence curves for COVID patients in all age cohorts (Figure 4.22 A, C, E, and G). The regression results of number of medication groups found significant effects of polypharmacy for increased hazard rates of re-hospitalization compared to no polypharmacy in the simple models, but not in the adjusted regressions. Medication groups significantly associated with higher hazard of readmission due to any reason among COVID patients in the full competing risk regressions were MG 20: Interferons and CSF ($HR = 2.37,\ 95\%CI = 1.50 - 3.74,\ p < 0.001$) in age cohort 19-40 (Table A.88, Figure 4.18C); MG 1: Anticoagulants ($HR = 1.22,\ 95\%CI = 1.12 - 1.32,\ p < 0.001$), MG 6: Beta Blockers ($HR = 1.21,\ 95\%CI = 1.10 - 1.34,\ p < 0.001$), MG 9: Systemic Steroids ($HR = 1.28,\ 95\%CI = 1.17 - 1.41,\ p < 0.001$), MG 10: Chemotherapy ($HR = 1.57,\ 95\%CI = 1.27 - 1.95,\ p < 0.001$), MG 11: Iron supplements, Erythropoietic stimulating agents, Vi-

tamin B12, folic acid ($HR = 1.30,\ 95\%CI = 1.12 - 1.50,\ p < 0.001$), MG 20: Interferons and CSF ($HR = 1.93,\ 95\%CI = 1.60 - 2.33,\ p < 0.001$), MG 23: Antiepileptics ($HR = 1.43,\ 95\%CI = 1.28 - 1.59,\ p < 0.001$), and MG 24: Antipsychotics ($HR = 1.21,\ 95\%CI = 1.12 - 1.32,\ p < 0.001$) for age cohort 41-64 (Table A.91, Figure 4.19C); MG 1: Anticoagulants ($HR = 1.21,\ 95\%CI = 1.12 - 1.31,\ p < 0.001$), MG 9: Systemic Steroids ($HR = 1.29,\ 95\%CI = 1.18 - 1.42,\ p < 0.001$), MG 10: Chemotherapy ($HR = 1.33,\ 95\%CI = 1.13 - 1.56,\ p < 0.001$), MG 20: Interferons and CSF ($HR = 1.81,\ 95\%CI = 1.48 - 2.20,\ p < 0.001$), and MG 23: Antiepileptics ($HR = 1.24,\ 95\%CI = 1.12 - 1.37,\ p < 0.001$) in age cohort 65-74 (Table A.94, Figure 4.20C); and MG 1: Anticoagulants ($HR = 1.17,\ 95\%CI = 1.11 - 1.24,\ p < 0.001$), MG 4: heart drugs ($HR = 1.15,\ 95\%CI = 1.08 - 1.23,\ p < 0.001$), MG 9: Systemic Steroids ($HR = 1.13,\ 95\%CI = 1.06 - 1.21,\ p < 0.001$), MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid ($HR = 1.17,\ 95\%CI = 1.08 - 1.26,\ p < 0.001$), MG 23: Antiepileptics ($HR = 1.17,\ 95\%CI = 1.10 - 1.25,\ p < 0.001$) and MG 24: Antipsychotics ($HR = 1.10,\ 95\%CI = 1.04 - 1.16,\ p < 0.001$) in age cohort $\geq$75 (Table A.97, Figure 4.21C).

Within Influenza patient group:

For Influenza patients, the relationship between readmission and sex showed similar trends to those observed in COVID-19 patients. Women had significantly higher risk of all-cause readmission to hospital than men in the 19-40 age group (simple: $HR = 1.98,\ 95\%CI = 1.59 - 2.46,\ p < 0.001$, multivariable: $HR = 2.09,\ 95\%CI = 1.67 - 2.61,\ p < 0.001$; Table A.89). In contrast, men had a significantly higher risk of readmission than women in the 41-64 age group (simple: $HR = 0.79,\ 95\%CI = 0.70 - 0.89,\ p < 0.001$, multivariable: $HR = 0.78,\ 95\%CI = 0.69 - 0.88,\ p < 0.001$; Table A.92), the 65-74 age group (simple: $HR = 0.81,\ 95\%CI = 0.73 - 0.91,\ p < 0.001$, multivariable: $HR = 0.78,\ 95\%CI = 0.69 - 0.88,\ p < 0.001$; Table A.95), and age the $\geq$75 age group (simple: $HR = 0.87,\ 95\%CI = 0.81 - 0.94,\ p < 0.001$, multivariable: $HR = 0.88,\ 95\%CI = 0.82 - 0.95,\ p = 0.001$; Table A.98). No significant relationship between age and readmission in patient cohorts older than 40 years of age was found. Among the 19-40 age cohort, patients from 26 to 35 had significantly lower hazards of readmission compared to patient aged 36 to 40. The cumulative incidence curves for the Influenza cohort in age group 19-40 showed no differences in re-hospitalization rates between the polypharmacy categories and no polypharmacy. The cumulative incidence visualization for age cohorts 41-64 and 65-74 found increased readmission rates but for $\geq$11 medication groups the confidence intervals were extended and no notable difference could be observed in comparison to 6-10 prescribed medication groups. Further, for age cohort $\geq$75 the differences between the polypharmacy categories were

smaller than for patients aged 41-74 (Figure 4.22 B, D, F, and H). Polypharmacy in reference to no polypharmacy was consistently significant in the simple and multivariable regressions of patients older than 40 years (for patients 75 and older only for ≥6 medication groups compared to no polypharmacy) (Table A.92, A.95 and A.98). Medication groups with significant elevating relationships to risk of readmission for Influenza patients were, MG 1: Anticoagulants ($HR = 1.91,\ 95\%CI = 1.29-2.83,\ p = 0.001$), MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid ($HR = 2.02,\ 95\%CI = 1.42--2.87,\ p < 0.001$), and MG 19: Immunglobulins ($HR = 4.73,\ 95\%CI = 2.93 - 7.63,\ p < 0.001$) in age cohort 19-40 (Table A.89, Figure 4.18D), MG 9: Systemic Steroids ($HR = 1.45,\ 95\%CI = 1.24 - 1.70,\ p < 0.001$), and MG 20: Interferons and CSF ($HR = 1.67,\ 95\%CI = 1.22 - 2.28,\ p < 0.001$) in age cohort 41-64 (Table A.92, Figure 4.19D), MG 9: Systemic Steroids ($HR = 1.30,\ 95\%CI = 1.12 - 1.49,\ p < 0.001$) in age cohort 65-74 (Table A.95, Figure 4.20D) and , MG 9: Systemic Steroids ($HR = 1.21,\ 95\%CI = 1.09 - 1.34,\ p < 0.001$), and MG 26: inhaled anti-obstructive drugs ($HR = 1.18,\ 95\%CI = 1.08 - 1.30,\ p < 0.001$) in age cohort ≥75 (Table A.98, Figure 4.21D).

Comparison between COVID-19 and Influenza patient groups:

The cumulative incidence curves for both groups of the propensity score matched COVID and Influenza hospital survivors showed consistently increasing re-hospitalization rates over the observation period. However, the Influenza cohort showed a higher readmission probability, especially after 100 days after hospital discharge (Figure 4.17B, D, F, and H). Absolute numbers across sex and age groups indicated the same patterns (Table A.87). Simple and multivariable regression results for comparing propensity score matched COVID and Influenza patients observed significantly higher risk of readmission for Influenza patients compared to COVID patients in age cohort 19-40 (simple: $HR = 2.35,\ 95\%CI = 1.97 - 2.80,\ p < 0.001$, multivariable: $HR = 2.35,\ 95\%CI = 1.96 - 2.81,\ p < 0.001$, Table A.90), age cohort 41-64 (simple: $HR = 1.84,\ 95\%CI = 1.67 - 2.02,\ p < 0.001$, multivariable: $HR = 1.83,\ 95\%CI = 1.66 - 2.01,\ p < 0.001$, Table A.93), age cohort 65-74 (simple: $HR = 1.51,\ 95\%CI = 1.39 - 1.65,\ p < 0.001$, multivariable: $HR = 1.51,\ 95\%CI = 1.39 - 1.65,\ p < 0.001$, Table A.96), and age cohort ≥75 (simple: $HR = 1.47,\ 95\%CI = 1.39 - 1.55,\ p < 0.001$, multivariable: $HR = 1.46,\ 95\%CI = , 1.39 - 1.54\ p < 0.001$, Table A.99) (Figure 4.23).

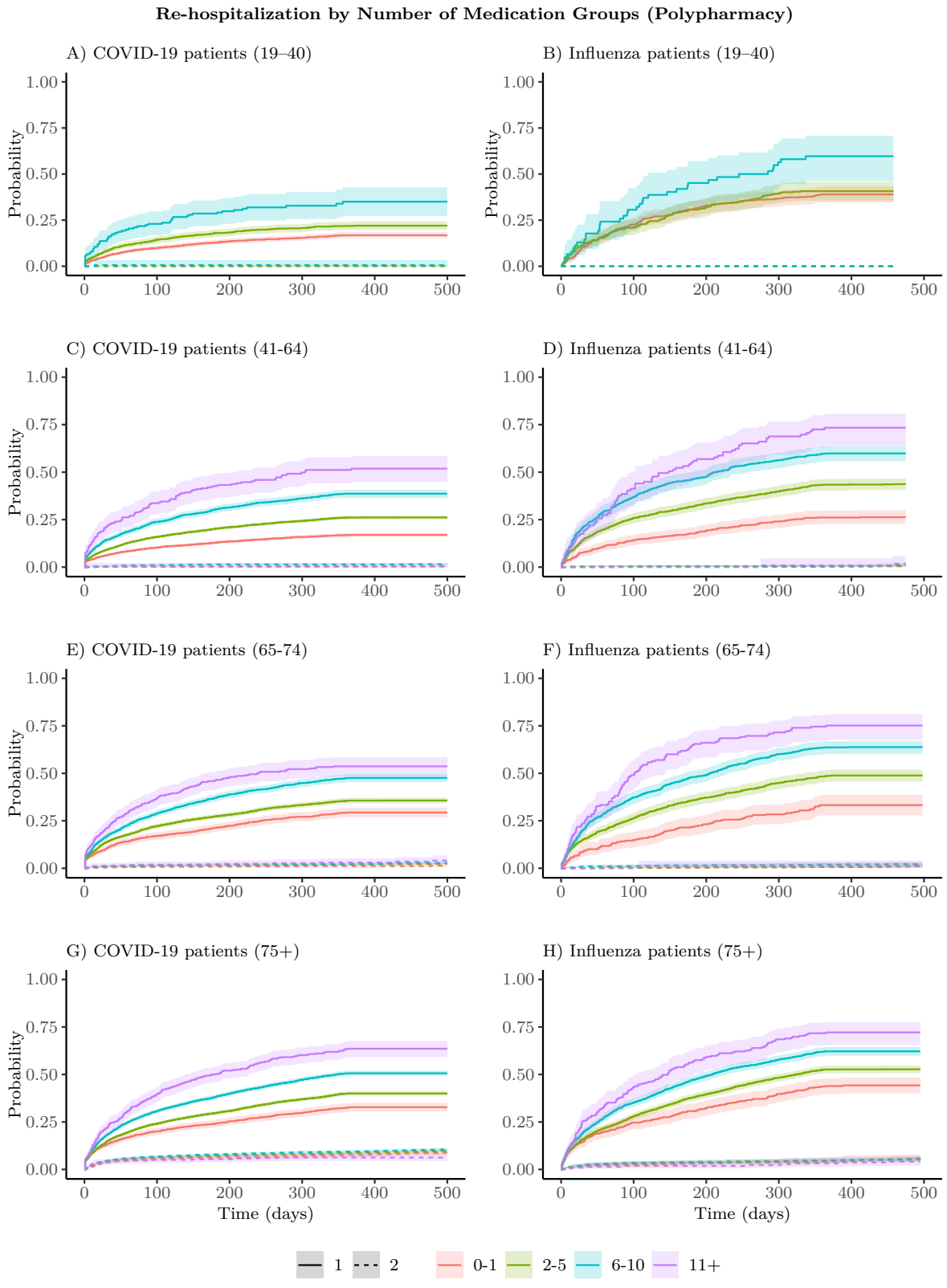

Figure 4.22. Cumulative incidence curves for time to re-hospitalization (1 - solid) with competing risk death (2 - dashed) for COVID-19 and Influenza patients, stratified by the number of prescribed medication groups. Panel-specific patient groups and age cohorts are indicated in the plot titles.

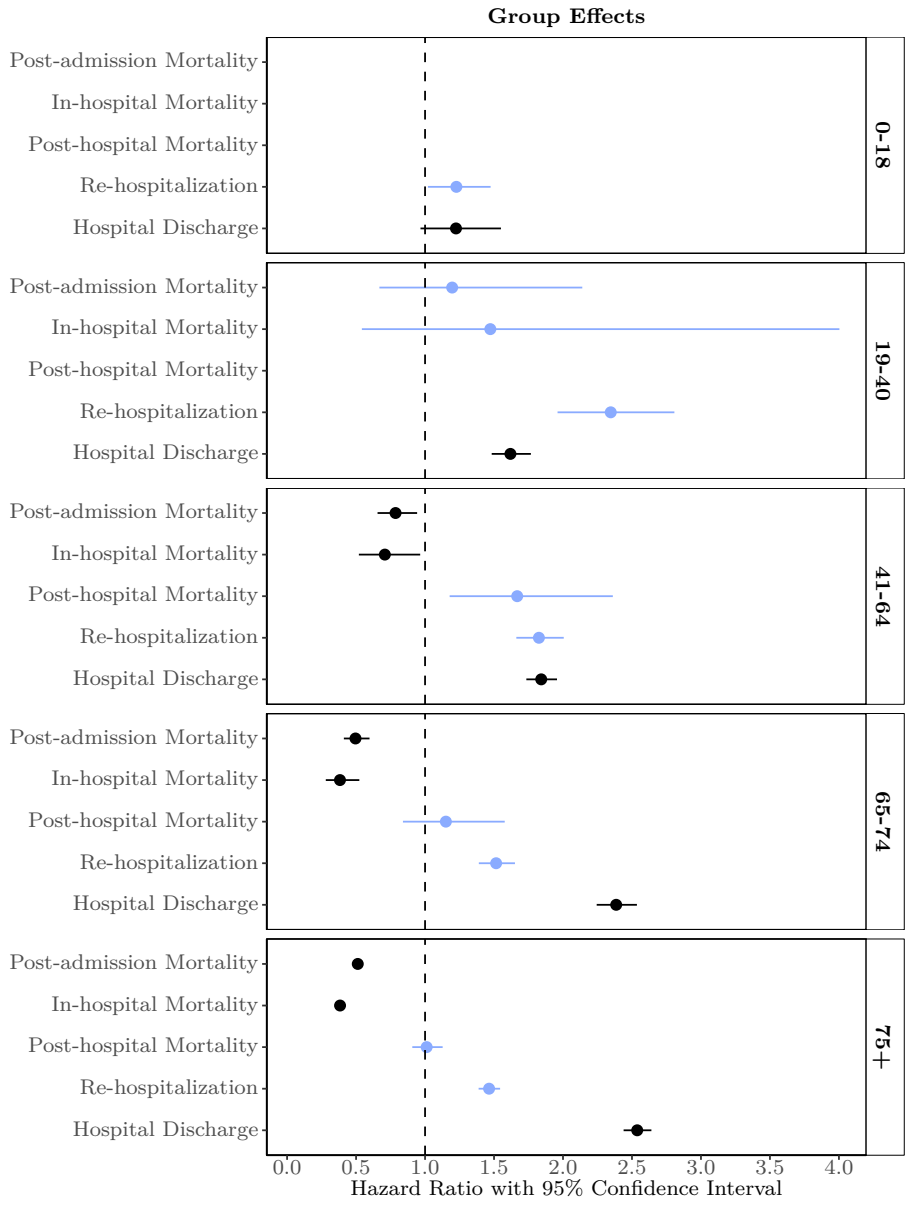

Figure 4.23. Visualizations of Cox proportional hazards regression results for mortality outcomes and of Fine and Gray competing risks regression results for the outcomes hospital discharge and re-hospitalization, showing hazard ratios and 95% confidence intervals for the effect of Influenza hospitalization in reference to COVID-19 hospitalization, in propensity score matched cohorts (0-18, 19-40, 41-64, 65-74, and ≥75 years). Blue-colored hazard ratios indicate adverse outcomes for Influenza patients (i.e., HR $>$ 1 for mortality and re-hospitalization; HR $<$ 1 for hospital discharge).

5 Discussion and Literature Review

This thesis compares patients hospitalized with COVID-19 (admissions 1 January 2020 to 31 December 2021) or seasonal Influenza (1 December 2015 to 31 Dec 2021) with sex-, age-, and insurance carrier-assigned population controls from the Austrian population. Outcomes were followed up until 30 June 2022 using nationwide insurance registry data from Austria. This study represents a remarkably large data collection including 711,273 individuals with the aim to provide insight into associations of demographic characteristics and comorbidity patterns with short- and long-term outcomes. These study results do not provide information about treatment or therapeutic strategies for COVID-19 or Influenza. Consistent patterns were observed in age-stratified analyses (0–18, 19–40, 41–64, 65–74, and $\geq$75 years) within the patient groups in comparison to controls, as well as between the propensity score matched patient cohorts. Both patient groups had higher frequencies in baseline medication prescriptions than the general population, indicating a poorer health status. Polypharmacy was generally higher for Influenza patients. Outcomes were more severe in older adults, particularly those over 65 years of age. Women had lower probabilities of severe outcomes than men, although this difference often became less pronounced in the oldest cohort. COVID-19 patients were associated with higher in-hospital and all-cause post-admission mortality than Influenza and spent longer time in-hospital, whereas Influenza patients showed higher risk of re-hospitalization.
A detailed discussion follows in the subsections.

5.1 Medication Profile

Comparison to control group:
Generally, the medication burden of the 0–18 age group was markedly lower than in adults. Still, hospitalized children and adolescents showed higher frequencies of certain medication groups compared to their respective controls from the general population. This suggests that even in younger populations, individuals with greater health burden are more vulnerable to severe viral respiratory infections. Pediatric studies comparing hospitalized COVID-19 and Influenza patients to non-hospitalized controls are limited. Across all adult age cohorts, the proportions of prescribed medication groups in the year prior to hospitalization were consistently higher among patients hospitalized with COVID-19 or Influenza compared to their respective control groups. These frequencies increased with age, indicating a general trend of higher (documented) medication prescriptions and therefore, a greater comorbidity burden among older adults. The results align with previous findings in literature such as the systematic review of Ghasemi et al.,

2022, which found high prevalence of polypharmacy when observing COVID-19 patient studies but with no comparison specification to a control group. The thesis results are also supported by the retrospective cohort study of Ayoubkhani et al., 2021. They found, when observing Post-COVID syndrome in England, that individuals with COVID-19 were also more likely to be comorbid than the general population, with a higher prevalence of previous admission to hospital and increased numbers in all observed pre-existing conditions (most notably hypertension, major adverse cardiovascular event, respiratory disease, and diabetes) before proceeding matching for balancing the cohorts. The same was found by Bhaskaran et al., 2022 for COVID-19 and Influenza patients in comparison to the general population in England. The authors observed pre-existing comorbidities were more common in both COVID-19 and Influenza-discharged patients than in general population controls. Further support comes from a U.S.-based study of Ko et al., 2021, who found that hospitalization risk increased substantially with the number of underlying conditions in a sample size of around 5,400 cases. With adjustment for age, sex, and race/ethnicity, they observed adults with three or more comorbidities had an increased hospitalization risk compared to those without. Also, specific conditions such as severe obesity, chronic kidney disease, diabetes, and hypertension were associated with significantly increased hospitalization risk in their research. Findings of Influenza hospitalization's connection with health status are supported by Near et al., 2022, who examined adults hospitalized in the United States with Influenza from Influenza seasons from 1 October 2014 to 1 March 2019. They reported that individuals with certain chronic conditions had two to three times greater odds of hospitalization compared to those without but no comparison in outcomes was made. In summary, this comparison between patient and control groups suggests that both the presence and number of comorbid conditions, might be influential in determining vulnerability and disease progression for viral respiratory infections such as COVID-19 and Influenza.

Within COVID-19 patient group:

Several medication groups were associated with increased mortality, re-hospitalization risk, and lower discharge probability in the regression analyses within the COVID-19 patient cohort. In the pediatric cohort, medication groups that were associated with the risk of re-hospitalization included only hormonal contraceptives and other hormonal preparations. For hospital-discharge, no significant association for longer hospital stay could be found. Studies that observed baseline comorbidities on outcomes after hospitalization of children and adolescents are rare to date. Minor support can be found in the publication of Harman et al., 2020. They prospectively followed children aged 0-16 years who were admitted to King's College Hospital in London be-

tween February and April in 2020. In a strongly limited sample size and study period they observed a wide range in severity of the COVID-19 infections by also regarding comorbidities. They suggest that the presence of pre-existing comorbidities might be independent risk factors for severe COVID-19 disease. Beyond the children cohort, adults aged 19-40 had a moderate number of deaths during the observation period. Therefore estimates for mortality endpoints might only be robust for age cohorts above 40 years.

Anticoagulants were linked to increased mortality particularly in older COVID-19 patients. For COVID-19 patients, Insulins and other Antidiabetics were mainly significantly associated with increased all-cause mortality after admission to hospital and in-hospital but also with longer hospital stay. Heart drugs showed associations with all-cause post-admission mortality and re-hospitalization in COVID-19 patients, as did systemic steroids. Chemotherapy was associated with short- and long-term mortality measured after hospital admission and for hospital survivors with mortality after discharge and re-hospitalization in age cohorts $\geq$41 years. Similarly, Iron supplements, Erythropoietic stimulating agents, Vitamin B12 and folic acid were associated with poor outcomes in all observed endpoints. Interferons and Colony-Stimulating Factors (CSF) showed significant associations almost exclusively in the study's long-term outcomes. Associations with Antiepileptics prescriptions could almost consistently be found for all endpoints in ages $\geq$41 years. Also, Antipsychotics were found to be significantly linked to all outcomes but mainly for the age cohort $\geq$75 years. These associations are in line with the research of Bliek-Bueno et al., 2021, who analyzed prescribed medication data from Spain and Italy and found that baseline prescriptions of Antipsychotics, Antithrombotic Agents, Vasodilators, Diuretics, Antiepileptics, Vitamin B12, and folic acid were significantly associated with increased COVID-19 mortality. Further, outcomes from Graf et al., 2025 of COVID-19 patients hospitalized in the year 2020 support these associations. Besides, the studies of Bliek-Bueno et al., 2021 and Graf et al., 2025 both used ATC Code documentation as a proxy for health status just as this master thesis did.

Within Influenza patient group:

Within the Influenza cohort, regression analyses also showed significant associations for several medication groups to the study endpoints. However, the number of significant associations was lower than in the COVID-19 cohort. For children, Antacids incl. Antihistamines and Antiepileptics were observed to have significant trends for increased risk of re-hospitalization and lower hospital discharge probability. For hospital discharge, a significant trend for longer time spent in-hospital was observed for Vitamin D and other Vitamin supplements and for readmission

associations with Chemotherapy, Antipsychotics and inhaled anti-obstructive drugs were additionally observed. Chemotherapy was also linked to an increased risk of all all-cause mortality outcomes, mainly in the adult cohorts aged 41 to 74. Insulins and other Antidiabetics were significantly associated with post-admission mortality risk, slower discharge rate and, for hospital survivors, with mortality after discharge. No association with heart drugs could be observed. For all age cohorts aged ≥41, Systemic Steroids showed significant effects for re-hospitalization risk but not for any other outcome. Iron supplements, Erythropoietic stimulating agents, Vitamin B12 and folic acid showed associations for long-term all-cause mortality post-admission and post-discharge for hospital survivors. Other COPD drugs were observed to be significantly associated with the short-term outcomes risk for in-hospital death and longer time to hospital discharge in older age (≥65 years). Antipsychotics were only associated with mortality outcomes and only in older age, Antiepileptics showed the same pattern for older age but were observed to be significant in all outcomes. Further, for age cohorts ≥41 years the number of prescribed medication groups were consistently associated with adverse outcomes. Beyond the children cohort, adults aged 19-40 had a low number of deaths during the observation period and regression results were not reliable. Therefore estimates for mortality endpoints might only be robust for age cohorts above 40 years.

In general the findings suggest that the number of medication groups might show increased vulnerability for severe outcomes. In contrast to the COVID cohort, the influence of specific medication groups and therefore the assumed underlying diseases on severe outcomes seemed to be comparatively less striking.

Comparison between COVID-19 and Influenza patient groups:

When comparing the COVID-19 and Influenza cohorts among children (without propensity score matching), both groups exhibited elevated medication burden. Children with Influenza were more likely to have polypharmacy than those with COVID-19. Adult Influenza patients were also more likely to have a higher number of medication groups (>5) than COVID-19 adults. Notably, no patient group showed a consistently higher medication burden across all medication classes in all age cohorts. The findings are supported by the study of Piroth et al., 2021, who compared nearly 90,000 hospitalized COVID-19 patients with over 45,000 Influenza patients in France and showed that both patient groups have different disease burden. They observed that COVID-19 patients more often had obesity, diabetes, hypertension, and dyslipidaemia, whereas Influenza patients more frequently had heart failure, chronic respiratory disease, cirrhosis, and deficiency anaemia. Moreover, they support the observation of higher polypharmacy as they

observed that Influenza patients had higher comorbidity scores than COVID-19 patients.

5.2 All-Cause Mortality Post-Admission

Comparison to control group:

A comparison of one-year mortality rates among COVID-19 and Influenza patients and their respective controls showed markedly lower mortality among the control groups in all age cohorts. However, as described in section 5.1, patient groups had higher descriptive medical burden. Therefore, the risk of mortality may be higher for patient groups due to a comparatively poorer health status.

Within COVID-19 patient group:

Among children, one-year mortality was primarily concentrated in infants across all groups. However, one-year mortality in ages >5 was only observed among boys. These patterns may suggest that sex-related differences in comorbidity burden begin to manifest at early ages. Case-level analysis could possibly help clarify these trends.

Beyond the findings in children, especially sex differences showed consistent patterns of mortality across the age cohorts. Male individuals consistently exhibited higher one-year mortality than females across all age cohorts. This finding is in line with existing literature on sex differences in comorbidity burden and health outcomes. Interestingly, in the oldest control cohorts, this sex disparity got smaller in the regression analysis, however, the attenuation of the differences was small. This may reflect survivor bias, where less healthy men die at younger ages, resulting in a comparably healthier older male population (Austad & Fischer, 2016). Such trends align with demographic theories like the disability paradox, in which women at old ages are more morbid than the male population, but due to a higher life expectancy compared to unhealthy men (Oksuzyan et al., 2008). Further analysis with adjustment of other variables in regression models showed similar patterns. Mortality outcomes in the regression analyses did not show statistically reliable results for individuals aged 19-40, due to a low number of events. Notably, among COVID-19 patients aged ≥41 years, male sex remained significantly associated with mortality risk even after adjusting for other variables, including medication group prescriptions. This aligns with the established risk factor of male sex in literature (Bauer et al., 2021; Williamson et al., 2020). The persistent effect for sex could be biased due to unmeasured confounding factors, such as smoking, socioeconomic status, and physical activity. Said factors were not available in the provided data and could reduce the significance of sex.

Higher age had a significant influence on mortality risk, particularly within the 41–64 and ≥75

age cohorts. The broader age range of the 41–64 group likely introduces heterogeneity in risk, as individuals near age 64 face higher mortality than those in their early 40s. In contrast, individuals aged 65 and older are already at elevated baseline risk due to reduced physiological reserves and proximity to life expectancy. The significant finding for age is supported in prior research on COVID-19 mortality (Hamilton et al., 2022; Mehraeen et al., 2020; Zheng et al., 2020). Polypharmacy status found differing effects across the age cohorts. In most age cohorts, polypharmacy did not emerge as a significant risk factor for mortality after model adjustment. The polypharmacy and medication group findings suggest that specific comorbid conditions, rather than the number of baseline medications, are associated with increased mortality risk. Still, the impact of polypharmacy on mortality was statistically significant only in the 41–64 age cohort. This suggests that having multiple comorbidities is more relevant to midlife mortality risk, and that certain comorbidities pose a greater risk to older adults. Alternatively, this pattern again indicates survivor-bias, whereby individuals with extensive comorbidities do not survive to older age.

Within Influenza patient group:

Among the Influenza children and adolescent cohort, one-year mortality was concentrated in ages <10. This is supported by Delahoy et al., 2023, who also observed for Influenza hospitalized children 0-4 years to have the highest proportion of deaths. They further observed decreasing cases with higher age, and found for COVID-19 hospitalized children in 0-4 and for 12-17 years peaks in deaths. It is important to note, however, that their study was restricted to in-hospital outcomes. Mortality outcomes in the regression analyses did not show statistically reliable results for individuals aged 19-40, due to a low number of events. For adult age cohorts, men consistently showed higher mortality than women across all age cohorts in the descriptive one-year rates and for age cohorts ≥41 years in the regression analyses. These observations are supported by Czaja et al., 2019. Higher age was significantly associated with all-cause mortality risk after admission, particularly within the 41–64 and 75+ age groups. The same interpretation as within the COVID cohort is assumed.

In Influenza patients, significant polypharmacy effects were observed in ages ≥41 years for specific numbers of medication groups compared to no polypharmacy. This could suggest a multi-morbidity risk for Influenza patients, but results may be interpreted with caution.

Comparison between COVID-19 and Influenza patient groups:

Deaths in children aged 0-18 were low and no reliable comparison may be drawn. Statistical

tests for all-cause mortality did not indicate meaningful differences in the children cohort. Only a few studies have directly compared mortality between COVID-19 and Influenza in pediatric populations, and those that do also report low absolute death rates for both patient groups (Halasa et al., 2023). Among adults, patients hospitalized with COVID-19 showed notably higher one-year mortality compared to those hospitalized with Influenza but only in age cohorts 65-74 and ≥75. Cox proportional hazard models of propensity score matched patients observed the same result. Several studies, including Bhaskaran et al., 2022; Xie et al., 2024, support findings of increased risk in mortality for COVID-19 samples compared to Influenza samples. However, Influenza has available studied treatment while COVID-19 just emerged in the year 2019 which possibly explains differences.

5.3 All-Cause Mortality In-Hospital

Within COVID-19 patient group:

Again, male sex was associated with increased risk among COVID-19 patients. But for the outcome in-hospital mortality this association was only observed in age cohorts 65 and older. This may suggest that in young and middle aged adults, other factors such as health status increase the mortality risk rather than sex. These findings further indicate that sex-related differences in adults aged 19-64 may be exposed in long-term mortality and that analyzing in-hospital mortality alone may not fully capture sex differences for all ages.

The results for age and sex align with literature, where higher age within was consistently associated with increased in-hospital mortality risk (Zajic et al., 2023). These patterns might indicate that COVID-19 is associated with more severe risk for older ages and for short-term mortality, where these high-risk individuals tend to experience early deterioration following admission. Effects for polypharmacy were not consistently found to be significant, only in age cohorts 41-64 and 65-74. This could indicate the importance of baseline multi-morbidity on acute outcomes in middle to early old age.

Within Influenza patient group:

In contrast to the COVID cohort findings, Influenza patients were observed to have comparatively less substantial in-hospital mortality risk with increasing age, indicating a less immediate mortality risk. Male sex only showed significant negative effects for patients aged 65–74 and ≥75. One possible interpretation is that short-term mortality is less probable in young adults to early old aged patients or that hospitalized middle-aged men and women represent a selected subset with comparable disease severity, thus reducing observable sex differences in that group.

Only in the 75 and older cohort of Influenza patients a consistent association with higher risk for increasing age could be observed. This might suggest that acute mortality hazard is mainly a risk for Influenza hospitalized patients who are elderly. Alternatively, it could be that the number of death events was too limited in the adult cohorts aged 19-74 to yield statistically reliable estimates. Further, effects for polypharmacy were not significant, which indicates no acute shot-term mortality risk of Influenza patients in association with multi-morbidity.

Comparison between COVID-19 and Influenza patient groups:
Propensity score matched comparisons of in-hospital mortality between Influenza and COVID-19 observed significant differences using the corrected significance level only among patients aged 65 and older. This may reflect the generally lower baseline mortality risk in young and middle-aged adults, where deaths are limited. These findings suggest that, in older age cohorts, the short-term risk is higher of COVID-19 than of Influenza. The findings of increased in-hospital risk are supported by Fröhlich et al., 2022, who observed markedly increased risk for COVID-19 patients in crude in-hospital mortality rates and also adjusted analysis. Further, Woodcock et al., 2023 who found increased odds ratios for in-hospital death for COVID-19 patients in reference to Influenza patients also support the findings.

5.4 All-Cause Mortality Post-Discharge

Within COVID-19 patient group:
Male sex and higher age consistently showed negative associations with post-discharge mortality among adults aged $\geq$41 years. The risk difference in sex attenuated with older age which is in accordance with observations of the post-admission all-cause mortality outcome. In contrast, Ayoubkhani et al., 2021 found only small differences for mortality between sexes. Polypharmacy did not indicate consistent differences in mortality risk conditional on hospital survival in adjusted analyses. It is possible that middle-aged patients with polypharmacy had a smaller probability to survive their initial hospital stay. A descriptive stratification of deaths by the number of medication groups for hospital survivors could help clarify these trends. The non-consistent results of mortality risk for hospital survivors in comparison to in-hospital mortality risk, most notably for sex and age, may highlight the importance of monitoring long-term outcomes after hospitalization, especially in older adults with certain comorbidity burden, as mortality risk of middle-aged adult patients may not be fully captured by in-hospital observations alone.

Within Influenza patient group:

Also among Influenza patients, male sex and higher age was associated with increased risk of post-discharge mortality in adults aged ≥41 years with attenuation of the hazard ratios for sex in the oldest age groups. In contrast to the COVID-19 cohort, polypharmacy showed (partial) effects for increased mortality for hospital survivors across all age cohorts aged ≥41 years, indicating a more relevant association of multi-morbidity in Influenza patients' long-term risk.

Comparison between COVID-19 and Influenza patient groups:
Propensity score matched comparisons showed no significant differences in post-discharge mortality between COVID-19 and Influenza patients. The observed lack of hazard differences between COVID-19 and Influenza patients may be partially explained by early in-hospital mortality among severely ill COVID-19 patients, resulting in a comparatively healthier cohort of survivors. In contrast, Influenza patients may have survived the acute phase but remained at elevated risk of delayed mortality, especially with multi-morbidity, leading to a trade-off of short-term and long-term risk profiles between the two groups. This dynamic supports the suggestion that COVID-19 exerts its greatest mortality risk early in the disease course, whereas Influenza may pose a greater long-term risk for patients with severe comorbidities. The results are in contradiction to Bhaskaran et al., 2021, who found increased risk for COVID-19 patients compared to Influenza controls in hospital discharged samples. Oseran et al., 2023 observed patients aged ≥65 discharged from COVID or Influenza hospitalization between 2020 to 2022 and 2018 to 2019 respectively. They also observed contradictory findings compared to this thesis. They observed increased risk of all-cause death in hospital survivors of COVID-19 hospitalized patients in comparison to survivors of Influenza hospitalized patients. However, their follow-up outcomes only included weighted 30-, 90-and 180-day survival, which could explain the discrepancy with the markedly longer observation period of this thesis.

5.5 Hospital Discharge

Within COVID-19 patient group:
No significant difference between sexes for time to hospital discharge were observed between male and female pediatric patients. However, across all adult age cohorts, men showed longer hospital stays than women. These findings support prior observations that males may be more vulnerable to severe outcomes after a COVID-19 hospitalization. Younger age was consistently associated with shorter hospital stay among COVID-19 patients, indicating more rapid recovery and milder disease progression. Furthermore, the children cohort had no significant associations of polypharmacy with time to hospital discharge. In COVID-19 patients aged 19–74, polyphar-

macy with 6–10 prescribed medication groups was associated with longer hospital stay. Patients prescribed ≥11 medication groups may experience higher in-hospital mortality, which could reduce the effect of associations with discharge probability in the competing risk analyses. Among patients aged ≥75, no significant effects of polypharmacy on discharge probabilities were detected in multivariable models. This may be related to an altogether high comorbidity burden, which are related to underlying health conditions in old age patients.

Within Influenza patient group:

No sex-related differences in discharge probabilities were found among hospitalized Influenza patients. These findings are consistent with the in-hospital mortality findings showing no sex-based differences in Influenza cohorts. Further, no significant age effects for hospital discharge probability were observed in the 19–40 and 65–74 age cohorts. No (reliable) effects of polypharmacy on time to hospital discharge could be found across all age cohorts of Influenza patients. The findings for number of medication groups prescribed in the year prior to hospital admission are also in line with the short-term outcome in-hospital death. This may supports the interpretation of no association of multi-morbidity with acute Influenza hospitalization outcomes.

Comparison between COVID-19 and Influenza patient groups:

In the propensity score matched sample, COVID-19 patients showed consistently longer hospital stays compared to Influenza patients in all adult age cohorts. This pattern may supports the interpretation of COVID-19 having more acute severe outcomes than Influenza in adults. The same conclusion may not be appropriate for children aged 0-18. Besides measures of median length of hospital stay in research on COVID and Influenza comparisons in children, direct support on adjusted comparisons are limited. Delahoy et al., 2023 reported slightly longer median hospital stay of COVID hospitalized children compared to Influenza patients and that a higher proportion of pediatric COVID patients required ICU admissions compared to Influenza patients. Additionally, Brigadoi et al., 2024 observed that pediatric COVID-19 hospitalized children were clinically similar to other viral respiratory tract infections and even associated with a less severe infection course. For adult patients, the finding of COVID-19 hospitalized patients spending generally longer time in-hospital is supported by findings of Verma et al., 2021; Woodcock et al., 2023, and Bhaskaran et al., 2022.

5.6 Re-hospitalization Due to Any Reason

Comparison to control group:

Across all cohorts, higher numbers of re-hospitalization for COVID and Influenza patients in comparison to their respective controls were observed. For the respective control groups re-hospitalization was measured as the first hospitalization after the assigned hospitalization date of their corresponding patients. Therefore, hospitalization risk was measured between the general population and for patients who previously experienced severe infections from either Influenza or COVID-19. Given the previously mentioned finding of medication profiles between the patient and control groups, that hospitalized individuals had higher percentages of prescribed medication groups, the re-hospitalization results indicate that patients who survived a hospitalization for either infection still are a more vulnerable subgroup compared to their respective controls and are possibly more likely to have higher healthcare demand. However, this interpretation should be viewed with caution. These descriptive observations are supported by findings of Ayoubkhani et al., 2021 and Bhaskaran et al., 2022, who also observed increased readmission rates compared to control groups from the general population in retrospective cohort studies with large sample sizes in England.

Within COVID-19 patient group:

Among children aged 0–18, neither age nor sex was observed as a significant risk factor for re-hospitalization. Among adults aged ≥41 years in the COVID-19 cohort, men exhibited a higher probability of hospital readmission due to any cause than women. Again, higher vulnerability of the male sex is consistent with the other outcomes observed in this thesis. Interestingly, the effect of sex was reversed among young adult patients with COVID-19, aged 19-40. In this group, women were at significantly higher risk of readmission. Similar observations in literature address this reversed finding by describing that long-term symptoms of the disease were more commonly reported by young adult women. This may explain why the readmission risk of sex for this subgroup is reversed in comparison to the other age cohorts. For instance, Sigfrid et al., 2021, in a prospective multicenter case report study conducted in the UK, found that three months after COVID-19 hospital discharge, women aged 50 or younger were five times less likely than men to report feeling fully recovered (adjusted OR: 5.09, 95% CI: 1.64–15.74). The women in their study also reported higher rates of persistent symptoms, including breathlessness and fatigue. Stewart et al., 2021 have proposed biological mechanisms as an explanation, suggesting that hormonal differences may contribute to sex-specific risk profiles and recovery trajectories. Similarly, Krueger et al., 2024 analyzed index hospitalizations with a COVID-19 diagnosis in

2020 from the National Readmission Database. Among these, 644,903 individuals were included in a 30-day readmission analysis and 418,122 in a 90-day readmission analysis. Their analyses found that women had significantly higher odds of readmission due to endocrine and metabolic disorders at both 30- and 90-days post-discharge. Their research supports these sex-specific vulnerabilities of female patients after a COVID-19 hospital discharge.

Increasing age was associated with a higher risk of all-cause re-hospitalization among COVID-19 patients, but this finding is not unexpected due to common frailty with increasing age.

Polypharmacy showed elevated risk even after adjustment in the pediatric cohort. Among adults, polypharmacy was not significantly associated with outcome re-hospitalization, except in the 41–64 age cohort for 2-5 prescribed medication groups in reference to no polypharmacy. The lack of association between the number of medication groups as a proxy for multi-morbidity and re-hospitalization risk may be due to explanation of specific medication groups. This suggests that not the number of medication groups may increase re-hospitalization risk but rather certain underlying comorbidities or its combinations. Furthermore, this interpretation aligns with the results regarding the risk of all-cause mortality after hospital discharge for hospital survivors, where also no significant association with polypharmacy was found.

Within Influenza patient group:

In the Influenza cohort for children aged 0–18, age and sex were not observed to be a significant risk factor for re-hospitalization. Similar sex-specific patterns of re-hospitalization were observed among Influenza patients as in the cohort of patients with COVID-19. These patterns included a reversal of the typical male-associated risk of negative outcomes in the 19–40 age group, where women demonstrated higher rates of re-hospitalization. This finding is implicitly supported in literature, for example by Purcell et al., 2025. Their analysis described poor outcomes among pregnant women who were hospitalized with an Influenza diagnosis, highlighting reproductive status as a significant risk factor. Similarly, Ursin and Klein, 2021 emphasized that during reproductive years, female patients may be at greater risk than males for severe outcomes from viral respiratory infections. These differences are attributable not only to pregnancy, but also to biological sex, which influences both disease pathology and treatment response. They may explain that women usually have stronger immune responses, and that this can also make them more prone to harmful immune overreactions. Here, the same interpretation as for women aged 19-40 among COVID patients may be appropriate.

Among Influenza patients aged $\geq$41 years, polypharmacy remained significant for re-hospitalization risk in unadjusted and adjusted analyses. This suggests that, for Influenza patients, polyphar-

macy and therefore multi-morbidity poses a higher risk than specific comorbidities.

Comparison between COVID-19 and Influenza patient groups:
Re-hospitalization conditional on initial hospital survival was observed to be high in both COVID-19 and Influenza discharged patients in the cumulative incidence curves. This highlights the importance of monitoring long-term outcomes for understanding morbidity and, implicitly, health care demand. The comparison of the propensity score matched patient groups showed a consistently higher risk of hospital readmission among Influenza patients compared to COVID-19 patients across all adult age groups. The pediatric cohort showed the same trend. However, the effect in the children cohort did not reach the corrected significance level. These findings for evaluation of long-term morbidity suggest that Influenza should not be underestimated in comparison to COVID-19 trajectories. It should be noted in this comparison that mortality outcomes were higher for COVID-19 patients. The excess risk of re-hospitalization among Influenza patients likely reflects underlying health status rather than severity of this respiratory viral disease. The results of this thesis, however, are contradicting with the ones from other studies when comparing re-hospitalization risk. Woodcock et al., 2023 found in a retrospective cohort study of 5132 patients no difference in readmission rates between COVID and Influenza hospital survivors. This may be due to their follow-up period being limited to 90-days after hospital discharge. Also in contrast, Bhaskaran et al., 2022 found higher rates of re-hospitalization for discharged COVID patients in comparison to Influenza patients. The same was found by Xie et al., 2024 in a 18-month follow-up of US veterans with a large sample size, including COVID patients hospitalized between March 2020 and June 2022 and Influenza patients hospitalized between October 2015 and February 2019. Therefore, their setting was similar to the study design of this thesis. These contradicting findings warrant caution in interpretations and suggest that (long-term) severity of Influenza should not be underestimated.

6 Limitations

This study relies on observational data derived from national health insurance registries, which are dependent on hospital visit documentation to compare outcomes between COVID-19 and Influenza patients and their respective control groups from the Austrian population without a COVID-19 or Influenza hospital stay. While such data offer broad population coverage and real-world insight, they also come with important limitations, particularly when compared to randomized controlled trials (RCTs). One key limitation is the lack of detailed clinical information in registry-based data. Crucial variables such as comorbidities, vaccination status, BMI and ICU admission details are often either incompletely recorded or unavailable. Risk factors such as smoking, obesity and diabetes, for example, are often underreported in administrative data, as they are typically captured only through diagnostic codes from prior hospital visits. This can lead to measurement bias, particularly for risk factors that may not be documented consistently across encounters due to selective reporting or differences in clinical coding practices. To mitigate potential confounding between patient groups, propensity score matching (PSM) was employed to balance COVID-19 and Influenza cohorts based on observable covariates, including sex, age, and pre-hospitalization prescribed medication groups. Nevertheless, residual confounding remains a concern. Patients may differ systemically based on unmeasured characteristics such as behavioral risk profiles or socioeconomic status, all of which are usually unavailable in registry datasets but of interest in demographic studies. The comorbidity/health burden was approximated using medication history, assuming that prescription data of the ATC classification system provides a more reliable proxy for chronic conditions than the ICD documentation. It is important to note that the quality of ICD coding was presumably substantially higher for hospitalized patients than for controls from the general population, who possibly have fewer medical encounters and therefore less complete documentation. However, only medication prescriptions subject to the prescription fee are recorded in the database with an ATC code. Medications that cost less than this threshold may be paid privately and thus go undocumented. Consequently, some drug exposures, and by extension some chronic conditions, may be underestimated. Furthermore, the prescribed medication groups may not necessarily correspond to the severity or complexity of pre-existing health burden and associations may be confounded by other unobserved factors. Similarly, an absence of observed polypharmacy does not necessarily mean that individuals had fewer than two prescriptions prior to hospitalization. Rather, it means that they had fewer than two medication groups documented that were defined as relevant to the endpoints of this thesis in the study design. Medication prescriptions should

not be interpreted as causal evidence either. Although this strategy may improve comorbidity adjustment estimation compared to ICD-Codes, it lacks the clinical depth of RCTs. This discrepancy may limit the comparability of comorbidities across patient and control groups.

Regarding vaccination status, this study could not adjust for vaccinations as this information was not available in the insurance registry dataset. This introduces an important potential source of unmeasured confounding. COVID-19 vaccinations in Austria began on 27 December 2020. By 31 December 2021, approximately 72% of the population have had received at least one dose, and approximately 62% have had received a second dose (ORF, 2023). Accordingly, vaccination is not a relevant factor for patients hospitalized in 2020, but may have influenced outcomes in 2021. Early in the vaccination campaign, high-risk individuals and health-care workers were prioritized, potentially introducing selection bias in the hospitalization risk across population subgroups that could not be fully adjusted for. For children and adolescents, COVID-19 vaccination only became widely available in September 2021 and is therefore unlikely to have significantly affected outcomes in this age group. Nevertheless, the findings should be interpreted with caution. Regarding Influenza vaccinations, a 2019 survey by Statistics Austria (Krankheitsprävention aus der Gesundheitsbefragung 2019) found that 69.8% of individuals aged 15 and older reported never having been vaccinated against Influenza (Statistik Austria, 2025) and Kunze et al., 2019 found that despite throughout recommendations for Influenza vaccine in Austria, coverage was low in the 2015/2016 season, suggesting modest bias by Influenza vaccine. Whether vaccination status influenced hospitalization risk or severity of outcomes is unknown. Future research incorporating immunization registry data could address this limitation but it is currently not possible for the Austrian Insurance Funds to include this information.

Additionally, this study focused exclusively on outcomes of the disease-related hospitalizations and did not include data on COVID-19– or Influenza-specific treatments, which may have impacted hospital trajectories and mortality after diagnosis. These treatments were not included in this thesis because data on them were not available in the insurance registry dataset.

Another important limitation is that the observation periods for Influenza and COVID-19 hospitalized patients differed because they were not comparable due to low number of Influenza hospitalizations in times of lockdowns and protective wearing of face-masks. Consequently, no be simultaneous observation period was possible. Moreover, Influenza is a well-established respiratory viral disease for which extensive research on treatment exists. This could mitigate the risk of the endpoints observed in this thesis.

Finally, the interpretation of effects also comes with limitations. The Bonferroni-corrected significance level means some potentially relevant trends may not have reached statistical significance.

Accordingly, non-significant findings should be interpreted with caution. However, on the other hand false-positive results may be less probable. Given the large number of observed outcomes, variables, and patient and control cohorts, this thesis mainly focused on significant findings based on the corrected significance level.

Although this study has an exceptionally large dataset, bias remains a concern, and these limitations should be considered when interpreting the results of this thesis.

7 Conclusion

This thesis explored potential demographic and health-related factors associated with risk of negative outcomes, following hospitalization for COVID-19 or Influenza across different age cohorts over a long observation period. Based on a nationwide Austrian insurance data collective, we observed that hospitalized patients with COVID-19 and Influenza had a generally inferior health status at hospital admission than population controls. In both patient cohorts, demographic risk patterns, mostly male sex and higher age, appeared to be associated with varying degrees of outcome severity, which align with patterns observed in literature. However, among children, sex and age differences were not clearly pronounced, whereas health status could be considered as an indicator of risk across pediatric cohorts. Among adult patients, the presence and number of comorbidities indicated an increased risk for both negative short- and long-term outcomes. Patient comparison showed COVID-19 hospitalized patients had higher risk of all-cause in-hospital and post-admission mortality and longer hospital stays, whereas Influenza hospitalized patients had a higher all-cause re-hospitalization risk in age cohorts $\geq$41 years. These findings suggest that severe Influenza infections should not be underestimated, and that sustained investment in healthy aging and the prevention of multi-morbidity might be important for resilience in viral respiratory diseases.

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A Appendix: Supplementary Materials

A.1 Definitions

Tables A.1 and A.2 provide information on confounder definitions for analysis.

Table A.1. Number of Medication Groups prescribed (polypharmacy status) one year prior to hospitalization date of patients across age cohorts.

Age Cohort	Categories of Number of Medication Groups
0-18	0, 1, ≥2 (reference)
19-40	0-1, 2-5, ≥6 (reference)
41-64	0-1, 2-5, 6-10, ≥11 (reference)
65-74	0-1, 2-5, 6-10, ≥11 (reference)
≥75	0-1, 2-5, 6-10, ≥11 (reference)

Table A.2. Medication Group definition of included Anatomical Therapeutic Chemical (ATC) Classification Codes.

Medication group	ATC-Codes
MG 1: Anticoagulants	B01AA01, B01AA02, B01AA03, B01AA04, B01AA07, B01AA08, B01AA09, B01AA10, B01AA11, B01AA12, B01AB01, B01AB02, B01AB04, B01AB05, B01AB06, B01AB07, B01AB08, B01AB09, B01AB10, B01AB11, B01AB12, B01AB51, B01AC01, B01AC02, B01AC03, B01AC04, B01AC05, B01AC06, B01AC07, B01AC08, B01AC09, B01AC10, B01AC11, B01AC13, B01AC14, B01AC15, B01AC16, B01AC17, B01AC18, B01AC19, B01AC21, B01AC22, B01AC23, B01AC24, B01AC25, B01AC27, B01AC30, B01AC56, B01AD01, B01AD02, B01AD03, B01AD04, B01AD05, B01AD06, B01AD07, B01AD08, B01AD09, B01AD10, B01AD11, B01AD12, B01AE01, B01AE02, B01AE03, B01AE04, B01AE05, B01AE06, B01AE07, B01AF01, B01AF02, B01AF03, B01AF04, B01AX01, B01AX04, B01AX05, B01AX06
MG 2: Antibiotics, antivirals, antiprotozoals, or anthelmintics	A07AA01, A07AA02, A07AA03, A07AA04, A07AA05, A07AA06, A07AA07, A07AA08, A07AA09, A07AA10, A07AA11, A07AA12, A07AA13, A07AA51, A07AA54, A07AB02, A07AB03, A07AB04, A07AC01, J01AA01, J01AA02, J01AA03, J01AA04, J01AA05, J01AA06, J01AA07, J01AA08, J01AA09, J01AA10, J01AA11, J01AA12, J01AA13, J01AA14, J01AA15, J01AA20, J01AA56, J01BA01, J01BA02, J01BA52, J01CA01, J01CA02, J01CA03, J01CA04, J01CA05, J01CA06, J01CA07, J01CA08, J01CA09, J01CA10, J01CA11, J01CA12, J01CA13, J01CA14, J01CA15, J01CA16, J01CA17, J01CA18, J01CA19, J01CA20, J01CA51, J01CE01, J01CE02, J01CE03, J01CE04, J01CE05, J01CE06, J01CE07, J01CE08, J01CE09, J01CE10, J01CE30, J01CF01, J01CF02, J01CF03, J01CF04, J01CF05, J01CG01, J01CG02, J01CR01, J01CR02, J01CR03, J01CR04, J01CR05, J01CR50, J01DA01, J01DA02, J01DA03, J01DA04, J01DA05, J01DA06, J01DA07, J01DA08, J01DA09, J01DA10, J01DA11, J01DA12, J01DA13, J01DA14, J01DA15, J01DA16, J01DA17, J01DA18, J01DA19, J01DA21, J01DA22, J01DA23, J01DA24, J01DA25, J01DA26, J01DA27, J01DA30, J01DA31, J01DA32, J01DA33, J01DA34, J01DA35, J01DA36, J01DA37, J01DA38, J01DA39, J01DA40, J01DA41, J01DA42, J01DA63, J01DB01, J01DB02, J01DB03, J01DB04, J01DB05, J01DB06, J01DB07, J01DB08, J01DB09, J01DB10, J01DB11, J01DB12, J01DC01, J01DC02, J01DC03, J01DC04, J01DC05, J01DC06, J01DC07, J01DC08, J01DC09, J01DC10, J01DC11, J01DC12, J01DC13, J01DC14, J01DD01, J01DD02, J01DD03, J01DD04, J01DD05, J01DD06, J01DD07, J01DD08,

Medication group	ATC-Codes
	J01DD09, J01DD10, J01DD11, J01DD12, J01DD13, J01DD14, J01DD15, J01DD16, J01DD18, J01DD52, J01DD54, J01DD62, J01DD63, J01DD64, J01DE01, J01DE02, J01DF01, J01DF02, J01DH02, J01DH03, J01DH04, J01DH06, J01DH51, J01DH52, J01DH55, J01DH56, J01DI01, J01DI02, J01DI04, J01DI54, J01EA01, J01EA02, J01EB01, J01EB02, J01EB03, J01EB04, J01EB05, J01EB06, J01EB07, J01EB08, J01EB20, J01EC01, J01EC02, J01EC03, J01EC20, J01ED01, J01ED02, J01ED03, J01ED04, J01ED05, J01ED06, J01ED07, J01ED08, J01ED09, J01ED20, J01EE01, J01EE02, J01EE03, J01EE04, J01EE05, J01EE06, J01EE07, J01FA01, J01FA02, J01FA03, J01FA05, J01FA06, J01FA07, J01FA08, J01FA09, J01FA10, J01FA11, J01FA12, J01FA13, J01FA14, J01FA15, J01FF01, J01FF02, J01FG01, J01FG02, J01GA01, J01GA02, J01GB01, J01GB03, J01GB04, J01GB05, J01GB06, J01GB07, J01GB08, J01GB09, J01GB10, J01GB11, J01GB12, J01GB13, J01GB14, J01MA01, J01MA02, J01MA03, J01MA04, J01MA05, J01MA06, J01MA07, J01MA08, J01MA09, J01MA10, J01MA11, J01MA12, J01MA13, J01MA14, J01MA15, J01MA16, J01MA17, J01MA18, J01MA19, J01MA21, J01MA22, J01MA23, J01MA24, J01MB01, J01MB02, J01MB03, J01MB04, J01MB05, J01MB06, J01MB07, J01RA01, J01RA02, J01RA03, J01RA04, J01XA01, J01XA02, J01XA03, J01XA04, J01XA05, J01XB01, J01XB02, J01XC01, J01XD01, J01XD02, J01XD03, J01XE01, J01XE02, J01XX01, J01XX02, J01XX03, J01XX04, J01XX05, J01XX06, J01XX07, J01XX08, J01XX09, J01XX11, J01XX12, J02AA01, J02AA02, J02AB01, J02AB02, J02AC01, J02AC02, J02AC03, J02AC04, J02AC05, J02AX01, J02AX04, J02AX05, J02AX06, J04AA01, J04AA02, J04AA03, J04AB01, J04AB02, J04AB03, J04AB04, J04AB05, J04AB06, J04AB30, J04AC01, J04AC51, J04AD01, J04AD02, J04AD03, J04AK01, J04AK02, J04AK03, J04AK04, J04AK05, J04AK06, J04AK07, J04AM01, J04AM02, J04AM03, J04AM04, J04AM05, J04AM06, J04AM07, J04AM08, J04BA01, J04BA02, J04BA03, P01AA01, P01AA02, P01AA04, P01AA05, P01AA52, P01AB01, P01AB02, P01AB03, P01AB04, P01AB05, P01AB06, P01AB07, P01AC01, P01AC02, P01AC03, P01AC04, P01AR01, P01AR02, P01AR03, P01AR53, P01AX01, P01AX02, P01AX04, P01AX05, P01AX06, P01AX07, P01AX08, P01AX09, P01AX10, P01AX11, P01AX52, P01BA01, P01BA02, P01BA03, P01BA06, P01BA07, P01BB01, P01BB02, P01BB51, P01BC01, P01BC02, P01BD01, P01BD51, P01BE01, P01BE02, P01BE03, P01BE04, P01BE05, P01BE52, P01BF01, P01BF02, P01BF03, P01BF04, P01BF05, P01BF06, P01BX01, P01CA02, P01CA03, P01CB01, P01CB02, P01CC01, P01CC02, P01CD01, P01CD02, P01CX01, P01CX02, P01CX03, P01CX04, P02BA01, P02BA02, P02BB01, P02BX01, P02BX02, P02BX03, P02BX04, P02CA01, P02CA02, P02CA03, P02CA04, P02CA05, P02CA06, P02CA51, P02CB01, P02CB02, P02CC01, P02CC02, P02CE01, P02CF01, P02CX01, P02CX02, P02CX03, P02DA01, P02DX01, P02DX02, P03AA01, P03AA02, P03AA03, P03AA04, P03AA05, P03AA54, P03AB01, P03AB02, P03AB51, P03AC01, P03AC02, P03AC03, P03AC04, P03AC51, P03AC52, P03AC53, P03AC54, P03AX01, P03AX02, P03AX03, P03AX04, P03AX05, P03BA01, P03BA02, P03BA03, P03BA04, P03BX01, P03BX02, P03BX03, P03BX04, P03BX05, P03BX06
MG 3: Insulin and other antidiabetics	A10AB01, A10AB02, A10AB03, A10AB04, A10AB05, A10AB06, A10AB30, A10AC01, A10AC02, A10AC03, A10AC04, A10AC30, A10AD01, A10AD02, A10AD03, A10AD04, A10AD05, A10AD06, A10AD30, A10AE01, A10AE02, A10AE03, A10AE04, A10AE05, A10AE06, A10AE30, A10AE54, A10AE56, A10AF01, A10BA01, A10BA02, A10BA03, A10BB01, A10BB02, A10BB03, A10BB04, A10BB05, A10BB06, A10BB07, A10BB08, A10BB09, A10BB10, A10BB11, A10BB12, A10BB31, A10BC01, A10BD01, A10BD02, A10BD03, A10BD04, A10BD05, A10BD06, A10BD07, A10BD08, A10BD09, A10BD10, A10BD11, A10BD12, A10BD13, A10BD14, A10BD15, A10BD16, A10BD17, A10BD18,A10BD19, A10BD20, A10BD21, A10BD22, A10BD23, A10BD24, A10BD25, A10BD26, A10BF01, A10BF02, A10BF03, A10BG01, A10BG02, A10BG03, A10BG04, A10BH01, A10BH02, A10BH03, A10BH04, A10BH05, A10BH06, A10BH07, A10BH08, A10BH52, A10BJ01, A10BJ02, A10BJ03,

Medication group	ATC-Codes
	A10BJ04, A10BJ05, A10BJ06, A10BK01, A10BK02, A10BK03, A10BK04, A10BK05, A10BK06, A10BK07, A10BX01, A10BX02, A10BX03, A10BX04, A10BX05, A10BX06, A10BX07, A10BX08, A10BX09, A10BX10, A10BX11, A10BX12, A10BX13, A10BX14, A10XA01
MG 4: Heart drugs	C01AA01, C01AA02, C01AA03, C01AA04, C01AA05, C01AA06, C01AA07, C01AA08,C01AA09, C01AA52, C01AB01, C01AB51, C01AC01, C01AC03, C01AX02, C01BA01, C01BA02, C01BA03, C01BA04, C01BA05, C01BA08, C01BA12, C01BA51, C01BA71, C01BB01, C01BB02, C01BB03, C01BB04, C01BC03, C01BC04, C01BC07, C01BC08, C01BD01, C01BD02, C01BD03, C01BD04, C01BD05, C01BD06, C01BD07, C01BG01, C01BG07, C01BG11, C01CA01, C01CA02, C01CA03, C01CA04, C01CA05, C01CA06, C01CA07, C01CA08, C01CA09, C01CA10, C01CA11, C01CA12, C01CA13, C01CA14, C01CA15, C01CA16, C01CA17, C01CA18, C01CA19, C01CA21, C01CA22, C01CA23, C01CA24, C01CA25, C01CA26, C01CA30, C01CA51, C01CE01, C01CE02, C01CE03, C01CE04, C01CX06, C01CX07, C01CX08, C01CX09, C01DA02, C01DA04, C01DA05, C01DA07, C01DA08, C01DA09, C01DA13, C01DA14, C01DA20, C01DA38, C01DA52, C01DA54, C01DA55, C01DA57, C01DA58, C01DA59, C01DA63, C01DA70, C01DB01, C01DX01, C01DX02, C01DX03, C01DX04, C01DX05, C01DX06, C01DX07, C01DX08, C01DX09, C01DX10, C01DX11, C01DX12, C01DX13, C01DX14, C01DX15, C01DX16, C01DX18, C01DX19, C01DX51, C01DX52, C01DX53, C01DX54, C01EA01, C01EB02, C01EB03, C01EB04, C01EB05, C01EB06, C01EB07, C01EB09, C01EB10, C01EB11, C01EB12, C01EB13, C01EB15, C01EB16, C01EB17, C01EB18, C01EB19, C01EB21
MG 5: Antihypertensives, including diuretics and renin-angiotensin-aldosterone system inhibitors	C02AA01, C02AA02, C02AA03, C02AA04, C02AA05, C02AA06, C02AA07, C02AA52, C02AA53, C02AA57, C02AB01, C02AB02, C02AC01, C02AC02, C02AC04, C02AC05, C02AC06, C02BA01, C02BB01, C02CA01, C02CA02, C02CA03, C02CA04, C02CA06, C02CA08, C02CC01, C02CC02, C02CC03, C02CC04, C02CC05, C02CC06, C02CC07, C02DA01, C02DB01, C02DB02, C02DB03, C02DB04, C02DC01, C02DD01, C02DG01, C02KA01, C02KB01, C02KC01, C02KD01, C02KX01, C02KX02, C02KX03, C02KX04, C02KX05, C02KX52, C02LA01, C02LA02, C02LA03, C02LA04, C02LA07, C02LA08, C02LA09, C02LA50, C02LA51, C02LA52, C02LA71, C02LB01, C02LC01, C02LC05, C02LC51, C02LE01, C02LF01, C02LG01, C02LG02, C02LG03, C02LG51, C02LG73, C02LK01, C02LL01, C02LX01, C03AA01, C03AA02, C03AA03, C03AA04, C03AA05, C03AA06, C03AA07, C03AA08, C03AA09, C03AA13, C03AB01, C03AB02, C03AB03, C03AB04, C03AB05, C03AB06, C03AB07, C03AB08, C03AB09, C03AH01, C03AH02, C03AX01, C03BA02, C03BA03, C03BA04, C03BA05, C03BA07, C03BA08, C03BA09, C03BA10, C03BA11, C03BA12, C03BA13, C03BA82, C03BB02, C03BB03, C03BB04, C03BB05, C03BB07, C03BC01, C03BD01, C03BX03, C03CA01, C03CA02, C03CA03, C03CA04, C03CB01, C03CB02, C03CC01, C03CC02, C03CD01, C03CX01, C03DA01, C03DA02, C03DA03, C03DA04, C03DB01, C03DB02, C03EA01, C03EA02, C03EA03, C03EA04, C03EA05, C03EA06, C03EA07, C03EA12, C03EA13, C03EA14, C03EB01, C03EB02, C08CA01, C08CA02, C08CA03, C08CA04, C08CA05, C08CA06, C08CA07, C08CA08, C08CA09, C08CA10, C08CA11, C08CA12, C08CA13, C08CA14, C08CA15, C08CA16, C08CA51, C08CA55, C08CX01, C08DA01, C08DA02, C08DA51, C08DB01, C08EA01, C08EA02, C08EX01, C08EX02, C08GA01, C08GA02, C09AA01, C09AA02, C09AA03, C09AA04, C09AA05, C09AA06, C09AA07, C09AA08, C09AA09, C09AA10, C09AA11, C09AA12, C09AA13, C09AA14, C09AA15, C09AA16, C09BA01, C09BA02, C09BA03, C09BA04, C09BA05, C09BA06, C09BA07, C09BA08, C09BA09, C09BA12, C09BA13, C09BA15, C09BB02, C09BB03, C09BB04, C09BB05, C09BB06, C09BB07, C09BB10, C09BB12, C09BX01, C09BX03, C09BX04, C09BX05, C09CA01, C09CA02, C09CA03, C09CA04, C09CA05, C09CA06, C09CA07, C09CA08, C09CA09, C09DA01, C09DA02, C09DA03, C09DA04, C09DA06, C09DA07, C09DA08, C09DA10, C09DB01, C09DB02, C09DB04, C09DB05, C09DB06, C09DB07, C09DB09, C09DX01, C09DX02, C09DX03, C09DX04, C09DX05, C09DX06, C09DX07, C09XA01, C09XA02, C09XA52, C09XA53, C09XA54

Medication group	**ATC-Codes**
MG 6: Beta-blockers	C07AA01, C07AA02, C07AA03, C07AA05, C07AA06, C07AA07, C07AA12, C07AA14, C07AA15, C07AA16, C07AA17, C07AA19, C07AA23, C07AA27, C07AA57, C07AB01, C07AB02, C07AB03, C07AB04, C07AB05, C07AB06, C07AB07, C07AB08, C07AB09, C07AB10, C07AB11, C07AB12, C07AB13, C07AB14, C07AB52, C07AG01, C07AG02, C07BA02, C07BA05, C07BA06, C07BA07, C07BA12, C07BA68, C07BB02, C07BB03, C07BB04, C07BB06, C07BB07, C07BB12, C07BB52, C07BG01, C07CA02, C07CA03, C07CA17, C07CA23, C07CB02, C07CB03, C07CB53, C07CG01, C07DA06, C07DB01, C07FA05, C07FB02, C07FB03, C07FB07, C07FB13, C07FX01, C07FX02, C07FX03, C07FX04, C07FX05, C07FX06
MG 7: Statins, fibrates, including proprotein convertase subtilisin/kexin type 9 inhibitors and inclisiran	C10AA01, C10AA02, C10AA03, C10AA04, C10AA05, C10AA06, C10AA07, C10AA08, C10AA51, C10AA52, C10AA53, C10AA55, C10AB01, C10AB02, C10AB03, C10AB04, C10AB05, C10AB06, C10AB07, C10AB08, C10AB09, C10AB10, C10AB11, C10AX06, C10AX07, C10AX08, C10AX09, C10AX10, C10AX11, C10AX12, C10AX13, C10AX14, C10AX15, C10AX16, C10BA01, C10BA02, C10BA03, C10BA04, C10BA05, C10BA06, C10BA07, C10BA08, C10BA09, C10BA10, C10BX01, C10BX02, C10BX03, C10BX04, C10BX05, C10BX06, C10BX07, C10BX08, C10BX09, C10BX10, C10BX11, C10BX12, C10BX13, C10BX14, C10BX15, C10BX16, C10BX17, C10BX18
MG 8: Immunosuppressants and immunomodulators	D11AH05, L04AA01, L04AA02, L04AA03, L04AA04, L04AA05, L04AA06, L04AA08, L04AA09, L04AA10, L04AA11, L04AA12, L04AA13, L04AA14, L04AA15, L04AA16, L04AA17, L04AA18, L04AA19, L04AA21, L04AA22, L04AA23, L04AA24, L04AA25, L04AA26, L04AA27, L04AA28, L04AA29, L04AA31, L04AA32, L04AA33, L04AA34, L04AA36, L04AA37, L04AA38, L04AA39, L04AA40, L04AA41, L04AA42, L04AA43, L04AA44, L04AA45, L04AA46, L04AB01, L04AB02, L04AB03, L04AB04, L04AB05, L04AB06, L04AB07, L04AC01, L04AC02, L04AC03, L04AC04, L04AC05, L04AC06, L04AC07, L04AC08, L04AC09, L04AC10, L04AC11, L04AC12, L04AC13, L04AC14, L04AC15, L04AC16, L04AC17, L04AC18, L04AC19, L04AD01, L04AD02, L04AD03, L04AX01, L04AX02, L04AX03, L04AX04, L04AX05, L04AX06, L04AX07, L04AX08
MG 9: Systemic steroids	H02AA01, H02AA02, H02AA03, H02AB01, H02AB02, H02AB03, H02AB04, H02AB05, H02AB06, H02AB07, H02AB08, H02AB09, H02AB10, H02AB11, H02AB12, H02AB13, H02AB14, H02AB15, H02AB17, H02BX01, H02CA01, H02CA02, H02CA03
MG 10: Chemotherapy	L01AA01, L01AA02, L01AA03, L01AA05, L01AA06, L01AA07, L01AA08, L01AA09, L01AB01, L01AB02, L01AB03, L01AC01, L01AC02, L01AC03, L01AD01, L01AD02, L01AD03, L01AD04, L01AD05, L01AD06, L01AD07, L01AD08, L01AG01, L01AX01, L01AX02, L01AX03, L01AX04, L01BA01, L01BA03, L01BA04, L01BB02, L01BB03, L01BB04, L01BB05, L01BB06, L01BB07, L01BC01, L01BC02, L01BC03, L01BC04, L01BC05, L01BC06, L01BC07, L01BC08, L01BC09, L01BC52, L01BC53, L01BC59, L01CA01, L01CA02, L01CA03, L01CA04, L01CA05, L01CB01, L01CB02, L01CC01, L01CD01, L01CD02, L01CD03, L01CD04, L01CE01, L01CE02, L01CE03, L01CE04, L01CX01, L01DA01, L01DB01, L01DB02, L01DB03, L01DB04, L01DB05, L01DB06, L01DB07, L01DB08, L01DB09, L01DB10, L01DB11, L01DC01, L01DC02, L01DC03, L01DC04, L01EA01, L01EA02, L01EA03, L01EA04, L01EA05, L01EB01, L01EB02, L01EB03, L01EB04, L01EB05, L01EB07, L01EB08, L01EC01, L01EC02, L01EC03, L01ED01, L01ED02, L01ED03, L01ED04, L01ED05, L01EE01, L01EE02, L01EE03, L01EF01, L01EF02, L01EF03, L01EG01, L01EG02, L01EH01, L01EH02, L01EJ01, L01EJ02, L01EK01, L01EK03, L01EL01, L01EL02, L01EM01, L01EM02, L01EM03, L01EX01, L01EX02, L01EX03, L01EX04, L01EX05, L01EX07, L01EX08, L01EX09, L01EX10, L01EX11, L01EX12, L01EX13, L01EX14, L01XA01, L01XA02, L01XA03, L01XA04, L01XA05, L01XB01, L01XC01, L01XC02, L01XC03, L01XC04, L01XC05, L01XC06, L01XC07, L01XC08, L01XC09, L01XC10, L01XC11, L01XC12, L01XC13, L01XC14, L01XC15, L01XC16, L01XC17, L01XC18, L01XC19, L01XC21, L01XC22, L01XC23, L01XC24,

Medication group	ATC-Codes
	L01XC25, L01XC26, L01XC27, L01XC28, L01XC29, L01XC31, L01XC32, L01XC33, L01XC34, L01XC35, L01XC36, L01XC37, L01XC38, L01XC39, L01XC40, L01XC41, L01XD01, L01XD02, L01XD03, L01XD04, L01XD05, L01XD06, L01XD07, L01XE01, L01XE02, L01XE03, L01XE04, L01XE05, L01XE06, L01XE07, L01XE08, L01XE09, L01XE10, L01XE11, L01XE12, L01XE13, L01XE14, L01XE15, L01XE16, L01XE17, L01XE18, L01XE21, L01XE23, L01XE24, L01XE25, L01XE26, L01XE27, L01XE28, L01XE29, L01XE31, L01XE33, L01XE34, L01XE35, L01XE36, L01XE37, L01XE38, L01XE39, L01XE41, L01XE42, L01XE43, L01XE44, L01XE45, L01XE46, L01XE47, L01XE48, L01XE50, L01XE51, L01XE52, L01XE53, L01XE54, L01XE56, L01XE57, L01XF01, L01XF02, L01XF03, L01XG01, L01XG02, L01XG03, L01XH01, L01XH02, L01XH03, L01XH05, L01XJ01, L01XJ02, L01XJ03, L01XK01, L01XK02, L01XK03, L01XK04, L01XX01, L01XX02, L01XX03, L01XX05, L01XX07, L01XX08, L01XX09, L01XX10, L01XX11, L01XX14, L01XX16, L01XX17, L01XX18, L01XX19, L01XX22, L01XX23, L01XX24, L01XX25, L01XX27, L01XX28, L01XX29, L01XX31, L01XX32, L01XX33, L01XX34, L01XX35, L01XX36, L01XX37, L01XX38, L01XX39, L01XX40, L01XX41, L01XX42, L01XX43, L01XX44, L01XX45, L01XX46, L01XX47, L01XX48, L01XX50, L01XX51, L01XX52, L01XX53, L01XX54, L01XX55, L01XX56, L01XX57, L01XX58, L01XX59, L01XX60, L01XX61, L01XX62, L01XX63, L01XX64, L01XX65, L01XX66, L01XX67, L01XX68, L01XX70, L01XX71, L01XY01, L01XY02, L02AA01, L02AA02, L02AA03, L02AA04, L02AB01, L02AB02, L02AB03, L02AE01, L02AE02, L02AE03, L02AE04, L02AE05, L02AE51, L02BA01, L02BA02, L02BA03, L02BB01, L02BB02, L02BB03, L02BB04, L02BB05, L02BB06, L02BG01, L02BG02, L02BG03, L02BG04, L02BG05, L02BG06, L02BX01, L02BX02, L02BX03
MG 11: Iron supplements, erythropoietic stimulating agents, vitamin B12, folic acid	B03AA01, B03AA02, B03AA03, B03AA04, B03AA05, B03AA06, B03AA07, B03AA08, B03AA09, B03AA10, B03AA11, B03AA12, B03AB01, B03AB02, B03AB03, B03AB04, B03AB05, B03AB06, B03AB07, B03AB08, B03AB09, B03AB10, B03AC01, B03AC02, B03AC03, B03AC05, B03AC06, B03AC07, B03AD01, B03AD02, B03AD03, B03AD04, B03AD05, B03AE01, B03AE02, B03AE03, B03AE04, B03AE10, B03BA01, B03BA02, B03BA03, B03BA04, B03BA05, B03BA51, B03BA53, B03BB01, B03BB51, B03XA01, B03XA02, B03XA03, B03XA05, B03XA06
MG 12: Antacids, including antihistamines	A02BB01, A02BB02, A02BC01, A02BC02, A02BC03, A02BC04, A02BC05, A02BC06, A02BC08
MG 13: Vitamin D and other vitamin supplements	A11CA01, A11CA02, A11CC01, A11CC02, A11CC03, A11CC04, A11CC05, A11CC06, A11CC07, A11CC20, A11CC55, A11DA01, A11DA02, A11DA03, A11GA01, A11GB01, A11HA01, A11HA02, A11HA03, A11HA04, A11HA05, A11HA06, A11HA07, A11HA08, A11HA30, A11HA31, A11HA32
MG 14: Caplacizumab	B01AX07
MG 15: Systemic hemostatics	B02BX01, B02BX02, B02BX03, B02BX04, B02BX05, B02BX06, B02BX07, B02BX08, B02BX09
MG 16: Hereditary angioedema therapeutics	B06AC01, B06AC02, B06AC03, B06AC04, B06AC05
MG 17: Peripheral vasodilators	C04AA01, C04AA02, C04AA31, C04AB01, C04AB02, C04AC01, C04AC02, C04AC03, C04AC07, C04AD01, C04AD02, C04AD03, C04AD04, C04AE01, C04AE02, C04AE04, C04AE51, C04AE54, C04AF01, C04AX01, C04AX02, C04AX07, C04AX10, C04AX11, C04AX13, C04AX17, C04AX19, C04AX20, C04AX21, C04AX23, C04AX24, C04AX26, C04AX27, C04AX28, C04AX30, C04AX32
MG 18: Hormonal contraceptives and similar hormone preparations	G03AA01, G03AA02, G03AA03, G03AA04, G03AA05, G03AA06, G03AA07, G03AA08, G03AA09, G03AA10, G03AA11, G03AA12, G03AA13, G03AA14, G03AA15, G03AA16, G03AA17, G03AB01, G03AB02, G03AB03, G03AB04, G03AB05, G03AB06, G03AB07, G03AB08, G03AB09, G03AC01, G03AC02, G03AC03, G03AC04, G03AC05, G03AC06, G03AC07, G03AC08, G03AC09, G03AC10, G03AD01, G03AD02, G03BA01, G03BA02, G03BA03, G03BB01, G03BB02, G03CA01, G03CA03, G03CA04, G03CA06, G03CA07, G03CA09,

Medication group	ATC-Codes
	G03CA53, G03CA57, G03CB01, G03CB02, G03CB03, G03CB04, G03CC02, G03CC03, G03CC04, G03CC05, G03CC06, G03CC07, G03CX01, G03DA01, G03DA02, G03DA03, G03DA04, G03DB01, G03DB02, G03DB03, G03DB04, G03DB05, G03DB06, G03DB07, G03DB08, G03DC01, G03DC02, G03DC03, G03DC04, G03DC05, G03DC06, G03DC31, G03EA01, G03EA02, G03EA03, G03EK01, G03FA01, G03FA02, G03FA03, G03FA04, G03FA05, G03FA06, G03FA07, G03FA08, G03FA09, G03FA10, G03FA11, G03FA12, G03FA13, G03FA14, G03FA15, G03FA16, G03FA17, G03FB01, G03FB02, G03FB03, G03FB04, G03FB05, G03FB06, G03FB07, G03FB08, G03FB09, G03FB10, G03FB11, G03GA01, G03GA02, G03GA03, G03GA04, G03GA05, G03GA06, G03GA07, G03GA08, G03GA09, G03GA10, G03GA30, G03GB01, G03GB02, G03GB03, G03HA01, G03HB01, G03XA01, G03XA02, G03XB01, G03XB02, G03XC01, G03XC02, G03XC03, G03XX01
MG 19: Immunoglobulins	J06BA01, J06BA02
MG 20: Interferons and CSF	L03AA02, L03AA03, L03AA09, L03AA10, L03AA12, L03AA13, L03AA14, L03AA16, L03AA17, L03AB01, L03AB02, L03AB03, L03AB04, L03AB05, L03AB06, L03AB07, L03AB08, L03AB09, L03AB10, L03AB11, L03AB12, L03AB13, L03AB15, L03AB60, L03AB61, L03AC01, L03AC02, L03AX01, L03AX02, L03AX03, L03AX04, L03AX05, L03AX07, L03AX08, L03AX09, L03AX10, L03AX11, L03AX12, L03AX13, L03AX14, L03AX15, L03AX16, L03AX17, L03AX21
MG 21: NSAR and other anti-inflammatory drugs	M01AA01, M01AA02, M01AA03, M01AA05, M01AA06, M01AB01, M01AB02, M01AB03, M01AB04, M01AB05, M01AB06, M01AB07, M01AB08, M01AB09, M01AB10, M01AB11, M01AB12, M01AB13, M01AB14, M01AB15, M01AB16, M01AB17, M01AB51, M01AB55, M01AC01, M01AC02, M01AC04, M01AC05, M01AC06, M01AC56, M01AE01, M01AE02, M01AE03, M01AE04, M01AE05, M01AE06, M01AE07, M01AE08, M01AE09, M01AE10, M01AE11, M01AE12, M01AE13, M01AE14, M01AE15, M01AE16, M01AE17, M01AE18, M01AE51, M01AE52, M01AE53, M01AE56, M01AG01, M01AG02, M01AG03, M01AG04, M01AH01, M01AH02, M01AH03, M01AH04, M01AH05, M01AH06, M01AH07, M01AX01, M01AX02, M01AX04, M01AX05, M01AX07, M01AX12, M01AX13, M01AX14, M01AX17, M01AX18, M01AX21, M01AX22, M01AX23, M01AX24, M01AX25, M01AX26, M01AX68, M01BA01, M01BA02, M01BA03, M01CA03, M01CB01, M01CB02, M01CB03, M01CB04, M01CB05, M01CC01, M01CC02
MG 22: Gout medications	M04AA01, M04AA02, M04AA03, M04AA51, M04AB01, M04AB02, M04AB03, M04AB04, M04AB05, M04AC01, M04AC02, M04AX01
MG 23: Antiepileptics	N03AA01, N03AA02, N03AA03, N03AA04, N03AA30, N03AB01, N03AB02, N03AB03, N03AB04, N03AB05, N03AB52, N03AB54, N03AC01, N03AC02, N03AC03, N03AD01, N03AD02, N03AD03, N03AD51, N03AE01, N03AF01, N03AF02, N03AF03, N03AF04, N03AG01, N03AG02, N03AG03, N03AG04, N03AG05, N03AG06, N03AX03, N03AX07, N03AX09, N03AX10, N03AX11, N03AX12, N03AX13, N03AX14, N03AX15, N03AX16, N03AX17, N03AX18, N03AX21, N03AX22, N03AX23, N03AX24, N03AX30
MG 24: Antipsychotics/Antidepressive Drugs	N05AA01, N05AA02, N05AA03, N05AA04, N05AA05, N05AA06, N05AA07, N05AB01, N05AB02, N05AB03, N05AB04, N05AB05, N05AB06, N05AB07, N05AB08, N05AB09, N05AB10, N05AC01, N05AC02, N05AC03, N05AC04, N05AD01, N05AD02, N05AD03, N05AD04, N05AD05, N05AD06, N05AD07, N05AD08, N05AD09, N05AE01, N05AE02, N05AE03, N05AE04, N05AF01, N05AF02, N05AF03, N05AF04, N05AF05, N05AG01, N05AG02, N05AG03, N05AH01, N05AH02, N05AH03, N05AH04, N05AH05, N05AH06, N05AK01, N05AL01, N05AL02, N05AL03, N05AL04, N05AL05, N05AL06, N05AL07, N05AN01, N05AX07, N05AX08, N05AX09, N05AX10, N05AX11, N05AX12, N05AX13, N05AX14, N05AX15, N05BA01, N05BA02, N05BA03, N05BA04, N05BA05, N05BA06, N05BA07, N05BA08, N05BA09, N05BA10, N05BA11, N05BA12, N05BA13, N05BA14, N05BA15, N05BA16, N05BA17, N05BA18, N05BA19, N05BA21, N05BA22, N05BA23, N05BA56, N05BB01, N05BB02, N05BB51, N05BC01, N05BC03, N05BC04, N05BC51, N05BD01, N05BE01, N05BX01, N05BX02, N05BX03, N05BX05, N05CA01, N05CA02, N05CA03,

Medication group	ATC-Codes
	N05CA04, N05CA05, N05CA06, N05CA07, N05CA08, N05CA09, N05CA10, N05CA11, N05CA12, N05CA15, N05CA16, N05CA19, N05CA20, N05CA21, N05CA22, N05CB01, N05CB02, N05CC01, N05CC02, N05CC03, N05CC04, N05CC05, N05CD01, N05CD02, N05CD03, N05CD04, N05CD05, N05CD06, N05CD07, N05CD08, N05CD09, N05CD10, N05CD11, N05CD12, N05CD13, N05CD14, N05CD15, N05CE01, N05CE02, N05CE03, N05CF01, N05CF02, N05CF03, N05CF04, N05CH01, N05CH02, N05CM01, N05CM02, N05CM03, N05CM04, N05CM05, N05CM06, N05CM07, N05CM08, N05CM09, N05CM10, N05CM11, N05CM12, N05CM13, N05CM15, N05CM16, N05CM17, N05CM18, N05CM19, N05CX01, N05CX02, N05CX03, N05CX04, N05CX05, N05CX06, N06AA01, N06AA02, N06AA03, N06AA04, N06AA05, N06AA06, N06AA07, N06AA08, N06AA09, N06AA10, N06AA11, N06AA12, N06AA13, N06AA14, N06AA15, N06AA16, N06AA17, N06AA18, N06AA19, N06AA21, N06AA23, N06AB02, N06AB03, N06AB04, N06AB05, N06AB06, N06AB07, N06AB08, N06AB09, N06AB10, N06AF01, N06AF02, N06AF03, N06AF04, N06AF05, N06AF06, N06AG02, N06AG03, N06AX01, N06AX02, N06AX03, N06AX04, N06AX05, N06AX06, N06AX07, N06AX08, N06AX09, N06AX10, N06AX11, N06AX12, N06AX13, N06AX14, N06AX15, N06AX16, N06AX17, N06AX18, N06AX19, N06AX21, N06AX22, N06AX23, N06AX24, N06AX25, N06AX26, N06AX27, N06BA01, N06BA02, N06BA03, N06BA04, N06BA05, N06BA06, N06BA07, N06BA08, N06BA09, N06BA10, N06BA11, N06BA12, N06BA14, N06BC01, N06BC02, N06BX01, N06BX02, N06BX03, N06BX04, N06BX05, N06BX06, N06BX07, N06BX08, N06BX09, N06BX10, N06BX11, N06BX12, N06BX13, N06BX14, N06BX15, N06BX16, N06BX17, N06BX18, N06BX21, N06CA01, N06CA02, N06DA01, N06DA02, N06DA03, N06DA04, N06DA52, N06DX01, N06DX02
MG 25: Rhinological and throat antiseptics	R01AA02, R01AA03, R01AA04, R01AA05, R01AA06, R01AA07, R01AA08, R01AA09, R01AA10, R01AA11, R01AA12, R01AA13, R01AA14, R01AB01, R01AB02, R01AB03, R01AB05, R01AB06, R01AB07, R01AB08, R01AC01, R01AC02, R01AC03, R01AC04, R01AC05, R01AC06, R01AC07, R01AC08, R01AC51, R01AD01, R01AD02, R01AD03, R01AD04, R01AD05, R01AD06, R01AD07, R01AD08, R01AD09, R01AD11, R01AD12, R01AD13, R01AD52, R01AD53, R01AD57, R01AD58, R01AD60, R01AX01, R01AX02, R01AX03, R01AX05, R01AX06, R01AX07, R01AX08, R01AX09, R01AX10, R01AX30, R01BA01, R01BA02, R01BA03, R01BA51, R01BA52, R01BA53, R02AA01, R02AA02, R02AA03, R02AA05, R02AA06, R02AA09, R02AA10, R02AA11, R02AA12, R02AA13, R02AA14, R02AA15, R02AA16, R02AA17, R02AA18, R02AA19, R02AA20, R02AB01, R02AB02, R02AB03, R02AB04, R02AB30, R02AD01, R02AD02, R02AD03, R02AD04, R02AX01, R02AX03
MG 26: Inhaled anti-obstructive drugs	R03AA01, R03AB02, R03AB03, R03AC02, R03AC03, R03AC04, R03AC05, R03AC06, R03AC07, R03AC08, R03AC09, R03AC10, R03AC11, R03AC12, R03AC13, R03AC14, R03AC15, R03AC16, R03AC17, R03AC18, R03AC19, R03AK01, R03AK02, R03AK03, R03AK04, R03AK05, R03AK06, R03AK07, R03AK08, R03AK09, R03AK10, R03AK11, R03AK13, R03AK14, R03AL01, R03AL02, R03AL03, R03AL04, R03AL05, R03AL06, R03AL07, R03AL08, R03AL09, R03AL10, R03AL11, R03AL12, R03BB01, R03BB02, R03BB03, R03BB04, R03BB05, R03BB06, R03BB07, R03BB08, R03BC01, R03BC03, R03BX01, R03CA02, R03CB01, R03CB02, R03CB03, R03CB51, R03CB53, R03CC02, R03CC03, R03CC04, R03CC05, R03CC06, R03CC07, R03CC08, R03CC09, R03CC10, R03CC11, R03CC12, R03CC13, R03CC14, R03CC53, R03CC63, R03DA01, R03DA02, R03DA03, R03DA04, R03DA05, R03DA06, R03DA07, R03DA08, R03DA09, R03DA10, R03DA11, R03DA12, R03DA20, R03DA51, R03DA54, R03DA55, R03DA57, R03DA74, R03DB01, R03DB02, R03DB03, R03DB04, R03DB05, R03DB06
MG 27: Inhaled steroids	R03BA01, R03BA02, R03BA03, R03BA04, R03BA05, R03BA06, R03BA07, R03BA08, R03BA09
MG 28: Other COPD drugs	R03DC01, R03DC02, R03DC03, R03DC04, R03DX01, R03DX02, R03DX03, R03DX05, R03DX06, R03DX07, R03DX08, R03DX09, R03DX10

Medication group	**ATC-Codes**
MG 29: Cold and cough preparations	R05CA01, R05CA02, R05CA03, R05CA04, R05CA05, R05CA06, R05CA07, R05CA08, R05CA09, R05CA10, R05CA11, R05CA12, R05CA13, R05CB01, R05CB02, R05CB03, R05CB04, R05CB05, R05CB06, R05CB07, R05CB08, R05CB09, R05CB10, R05CB11, R05CB12, R05CB13, R05CB14, R05CB15, R05CB16, R05DA01, R05DA03, R05DA04, R05DA05, R05DA06, R05DA07, R05DA08, R05DA09, R05DA10, R05DA11, R05DA12, R05DA20, R05DB01, R05DB02, R05DB03, R05DB04, R05DB05, R05DB07, R05DB09, R05DB10, R05DB11, R05DB12, R05DB13, R05DB14, R05DB15, R05DB16, R05DB17, R05DB18, R05DB19, R05DB20, R05DB21, R05DB22, R05DB23, R05DB24, R05DB25, R05DB26, R05DB27, R05DB28, R05FA01, R05FA02, R05FB01, R05FB02
MG 30: Systemic antihistamines	R06AA01, R06AA02, R06AA04, R06AA06, R06AA07, R06AA08, R06AA09, R06AA52, R06AA54, R06AA56, R06AA57, R06AA59, R06AB01, R06AB02, R06AB03, R06AB04, R06AB05, R06AB06, R06AB07, R06AB51, R06AB52, R06AB54, R06AB56, R06AC01, R06AC02, R06AC03, R06AC04, R06AC05, R06AC06, R06AC52, R06AC53, R06AD01, R06AD02, R06AD03, R06AD04, R06AD05, R06AD06, R06AD07, R06AD08, R06AD09, R06AD52, R06AD55, R06AE01, R06AE03, R06AE04, R06AE05, R06AE06, R06AE07, R06AE09, R06AE51, R06AE53, R06AE55, R06AX01, R06AX02, R06AX03, R06AX04, R06AX05, R06AX07, R06AX08, R06AX09, R06AX11, R06AX12, R06AX13, R06AX15, R06AX16, R06AX17, R06AX18, R06AX19, R06AX21, R06AX22, R06AX23, R06AX24, R06AX25, R06AX26, R06AX27, R06AX28, R06AX29, R06AX53, R06AX58

A.2 Children and Adolescents (Age Cohort 0-18)

Tables A.3-A.6 show frequencies and percentages of medication group prescriptions (yes/no) in the year prior to hospitalization and for controls in the year prior to assigned hospitalization and corresponding one-year mortality rates within each category. Comparisons are shown for COVID-19 hospitalized patients and corresponding controls, Influenza hospitalized patients and corresponding controls, COVID-19 and Influenza hospitalized patients, and propensity score matched COVID-19 and Influenza hospitalized patients. The tables also include p-values from Fisher's exact test, assessing differences in medication group frequencies between the compared groups.

Tables A.7-A.9 show frequencies and percentages of deaths after (assigned) hospital admission stratified by sex, age subgroup and polypharmacy status at specific follow-up intervals: in-hospital, 30 days, 180 days, 1 year, and 1.5 years. Comparisons are shown for COVID-19 hospitalized patients and corresponding controls, Influenza hospitalized patients and corresponding controls, and propensity score matched COVID-19 and Influenza hospitalized patients.

Tables A.10-A.12 present results of simple Cox proportional hazards regressions and multivariable Cox proportional hazards regressions of the outcome time to hospital discharge after hospital admission for within COVID-19 hospitalized patients, within Influenza hospitalized patients and for propensity score matched group comparison of COVID-19 and Influenza hospitalized patients aged 0-18.

Tables A.13-A.15 show frequencies and percentages of re-hospitalizations due to any reason and no event after (assigned) hospital discharge conditional on hospital survival, stratified by sex and age subgroup at specific follow-up intervals: in-hospital, 30 days, 180 days, 1 year, and 1.5 years. Comparisons are shown for COVID-19 hospitalized patients and corresponding controls, Influenza hospitalized patients and corresponding controls, and propensity score matched COVID-19 and Influenza hospitalized patients.

Tables A.16-A.18 present results of simple Cox proportional hazards regressions and multivariable Cox proportional hazards regressions of the outcome time to re-hospitalization after hospital discharge conditional on hospital survival for within COVID-19 hospitalized patients, within Influenza hospitalized patients and for propensity score matched group comparison of COVID-19 and Influenza hospitalized patients aged 0-18.

A.2.1 Medication Profiles

Table A.3. Descriptive medication prescription comparison between COVID patients and sex-, age-, region-assigned controls aged 0-18.

	COVID-19 (n = 1063)				Control (n = 10626)				test
	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	p-value
MG 1: Anticoagulants	1044 (98.21)	0.86	19 (1.79)	15.79	10559 (99.37)	0.08	67 (0.63)	0.00	<0.001
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	832 (78.27)	0.96	231 (21.73)	1.73	8941 (84.14)	0.09	1685 (15.86)	0.00	<0.001
MG 3: Insulins and other Antidiabetics	1060 (99.72)	1.13	3 (0.28)	0.00	10619 (99.93)	0.08	7 (0.07)	0.00	0.0554
MG 4: "heart" drugs	1059 (99.62)	0.94	4 (0.38)	50.00	10585 (99.61)	0.08	41 (0.39)	0.00	1
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	1058 (99.53)	0.95	5 (0.47)	40.00	10619 (99.93)	0.08	7 (0.07)	0.00	0.0028
MG 6: Beta Blockers	1060 (99.72)	1.13	3 (0.28)	0.00	10619 (99.93)	0.08	7 (0.07)	0.00	0.0554
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	1062 (99.91)	1.04	1 (0.09)	100.00	10626 (100)	0.08	0 (0)	0.00	0.0909
MG 8: Immunosuppressants and Immunomodulators	1053 (99.06)	1.14	10 (0.94)	0.00	10615 (99.9)	0.08	11 (0.1)	0.00	<0.001
MG 9: Systemic Steroids	1041 (97.93)	1.06	22 (2.07)	4.55	10573 (99.5)	0.08	53 (0.5)	0.00	<0.001
MG 10: Chemotherapy	1053 (99.06)	0.95	10 (0.94)	20.00	10622 (99.96)	0.08	4 (0.04)	0.00	<0.001
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1050 (98.78)	0.95	13 (1.22)	15.38	10591 (99.67)	0.08	35 (0.33)	0.00	<0.001
MG 12: Antacids incl. Antihistamines	1036 (97.46)	0.77	27 (2.54)	14.81	10587 (99.63)	0.08	39 (0.37)	0.00	<0.001
MG 13: Vitamin D and other Vitamin supplements	1019 (95.86)	0.79	44 (4.14)	9.09	10488 (98.7)	0.08	138 (1.3)	0.00	<0.001
MG 14: Caplacizumab	1063 (100)	1.13	0 (0)	0.00	10626 (100)	0.08	0 (0)	0.00	1
MG 15: Systemic Hemostatics	1063 (100)	1.13	0 (0)	0.00	10626 (100)	0.08	0 (0)	0.00	1
MG 16: Hereditary angioedema Therapeutics	1063 (100)	1.13	0 (0)	0.00	10626 (100)	0.08	0 (0)	0.00	1
MG 17: Peripheral Vasodilators	1063 (100)	1.13	0 (0)	0.00	10626 (100)	0.08	0 (0)	0.00	1
MG 18: Hormonal contraceptives and similar hormone preparations	1054 (99.15)	1.14	9 (0.85)	0.00	10557 (99.35)	0.08	69 (0.65)	0.00	0.4278
MG 19: Immunoglobulins	1058 (99.53)	1.04	5 (0.47)	20.00	10626 (100)	0.08	0 (0)	0.00	<0.001
MG 20: Interferons and CSF	1056 (99.34)	0.95	7 (0.66)	28.57	10588 (99.64)	0.08	38 (0.36)	0.00	0.185
MG 21: NSAR and other anti-inflammatory drugs	992 (93.32)	0.60	71 (6.68)	8.45	10358 (97.48)	0.08	268 (2.52)	0.00	<0.001
MG 22: Gout medications	1063 (100)	1.13	0 (0)	0.00	10624 (99.98)	0.08	2 (0.02)	0.00	1
MG 23: Antiepileptics	1037 (97.55)	0.58	26 (2.45)	23.08	10591 (99.67)	0.08	35 (0.33)	0.00	<0.001
MG 24: Antipsychotics	1017 (95.67)	0.59	46 (4.33)	13.04	10505 (98.86)	0.07	121 (1.14)	0.83	<0.001
MG 25: Rhinological and throat antiseptics	999 (93.98)	1.10	64 (6.02)	1.56	10249 (96.45)	0.08	377 (3.55)	0.00	<0.001
MG 26: inhaled anti-obstructive drugs	1017 (95.67)	0.79	46 (4.33)	8.70	10462 (98.46)	0.08	164 (1.54)	0.00	<0.001

(continued)

	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	p-value
MG 27: inhaled steroids	1030 (96.9)	1.17	33 (3.1)	0.00	10456 (98.4)	0.08	170 (1.6)	0.00	0.0012
MG 28: other COPD drugs	1053 (99.06)	1.04	10 (0.94)	10.00	10588 (99.64)	0.08	38 (0.36)	0.00	0.0099
MG 29: Cold and Cough preparations	1031 (96.99)	1.07	32 (3.01)	3.12	10480 (98.63)	0.08	146 (1.37)	0.00	<0.001
MG 30: Systemic Antihistamines	1033 (97.18)	1.06	30 (2.82)	3.33	10393 (97.81)	0.08	233 (2.19)	0.00	0.1922

Table A.4. Descriptive medication prescription comparison between Influenza patients and sex-, age-, region-assigned controls aged 0-18.

	Influenza (n = 2781)				Control (n = 27634)				test
	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	p-value
MG 1: Anticoagulants	2765 (99.42)	0.33	16 (0.58)	0.00	27578 (99.8)	0.05	56 (0.2)	0	<0.001
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1632 (58.68)	0.25	1149 (41.32)	0.44	19902 (72.02)	0.07	7732 (27.98)	0	<0.001
MG 3: Insulins and other Antidiabetics	2772 (99.68)	0.32	9 (0.32)	0.00	27618 (99.94)	0.05	16 (0.06)	0	<0.001
MG 4: "heart" drugs	2773 (99.71)	0.32	8 (0.29)	0.00	27584 (99.82)	0.05	50 (0.18)	0	0.2474
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	2770 (99.6)	0.29	11 (0.4)	9.09	27626 (99.97)	0.05	8 (0.03)	0	<0.001
MG 6: Beta Blockers	2779 (99.93)	0.32	2 (0.07)	0.00	27627 (99.97)	0.05	7 (0.03)	0	0.196
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	2780 (99.96)	0.32	1 (0.04)	0.00	27630 (99.99)	0.05	4 (0.01)	0	0.3809
MG 8: Immunosuppressants and Immunomodulators	2769 (99.57)	0.33	12 (0.43)	0.00	27620 (99.95)	0.05	14 (0.05)	0	<0.001
MG 9: Systemic Steroids	2734 (98.31)	0.29	47 (1.69)	2.13	27495 (99.5)	0.05	139 (0.5)	0	<0.001
MG 10: Chemotherapy	2774 (99.75)	0.32	7 (0.25)	0.00	27630 (99.99)	0.05	4 (0.01)	0	<0.001
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	2758 (99.17)	0.29	23 (0.83)	4.35	27533 (99.63)	0.05	101 (0.37)	0	<0.001
MG 12: Antacids incl. Antihistamines	2744 (98.67)	0.29	37 (1.33)	2.70	27563 (99.74)	0.05	71 (0.26)	0	<0.001
MG 13: Vitamin D and other Vitamin supplements	2700 (97.09)	0.26	81 (2.91)	2.47	27188 (98.39)	0.05	446 (1.61)	0	<0.001
MG 14: Caplacizumab	2781 (100)	0.32	0 (0)	0.00	27634 (100)	0.05	0 (0)	0	1
MG 15: Systemic Hemostatics	2781 (100)	0.32	0 (0)	0.00	27634 (100)	0.05	0 (0)	0	1
MG 16: Hereditary angioedema Therapeutics	2781 (100)	0.32	0 (0)	0.00	27634 (100)	0.05	0 (0)	0	1
MG 17: Peripheral Vasodilators	2780 (99.96)	0.32	1 (0.04)	0.00	27633 (100)	0.05	1 (0)	0	0.1745
MG 18: Hormonal contraceptives and similar hormone preparations	2754 (99.03)	0.33	27 (0.97)	0.00	27388 (99.11)	0.05	246 (0.89)	0	0.6725
MG 19: Immunoglobulins	2778 (99.89)	0.32	3 (0.11)	0.00	27634 (100)	0.05	0 (0)	0	<0.001
MG 20: Interferons and CSF	2748 (98.81)	0.33	33 (1.19)	0.00	27388 (99.11)	0.05	246 (0.89)	0	0.1177
MG 21: NSAR and other anti-inflammatory drugs	2599 (93.46)	0.31	182 (6.54)	0.55	26452 (95.72)	0.05	1182 (4.28)	0	<0.001
MG 22: Gout medications	2779 (99.93)	0.32	2 (0.07)	0.00	27633 (100)	0.05	1 (0)	0	0.0235
MG 23: Antiepileptics	2711 (97.48)	0.18	70 (2.52)	5.71	27583 (99.82)	0.05	51 (0.18)	0	<0.001
MG 24: Antipsychotics	2677 (96.26)	0.22	104 (3.74)	2.88	27387 (99.11)	0.05	247 (0.89)	0	<0.001
MG 25: Rhinological and throat antiseptics	2568 (92.34)	0.27	213 (7.66)	0.94	26269 (95.06)	0.05	1365 (4.94)	0	<0.001
MG 26: inhaled anti-obstructive drugs	2589 (93.1)	0.23	192 (6.9)	1.56	26892 (97.31)	0.05	742 (2.69)	0	<0.001
MG 27: inhaled steroids	2588 (93.06)	0.23	193 (6.94)	1.55	26544 (96.06)	0.05	1090 (3.94)	0	<0.001
MG 28: other COPD drugs	2719 (97.77)	0.33	62 (2.23)	0.00	27195 (98.41)	0.05	439 (1.59)	0	0.0151
MG 29: Cold and Cough preparations	2657 (95.54)	0.30	124 (4.46)	0.81	26883 (97.28)	0.05	751 (2.72)	0	<0.001
MG 30: Systemic Antihistamines	2652 (95.36)	0.34	129 (4.64)	0.00	26703 (96.63)	0.05	931 (3.37)	0	<0.001

Table A.5. Descriptive Medications Prescription comparison between all COVID and Influenza patients aged 0-18.

	COVID-19 (n = 1063)				Influenza (n = 2781)				test
	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	p-value
MG 1: Anticoagulants	1044 (98.21)	0.86	19 (1.79)	15.79	2765 (99.42)	0.33	16 (0.58)	0.00	<0.001
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	832 (78.27)	0.96	231 (21.73)	1.73	1632 (58.68)	0.25	1149 (41.32)	0.44	<0.001
MG 3: Insulins and other Antidiabetics	1060 (99.72)	1.13	3 (0.28)	0.00	2772 (99.68)	0.32	9 (0.32)	0.00	1
MG 4: "heart" drugs	1059 (99.62)	0.94	4 (0.38)	50.00	2773 (99.71)	0.32	8 (0.29)	0.00	0.747
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	1058 (99.53)	0.95	5 (0.47)	40.00	2770 (99.6)	0.29	11 (0.4)	9.09	0.7808
MG 6: Beta Blockers	1060 (99.72)	1.13	3 (0.28)	0.00	2779 (99.93)	0.32	2 (0.07)	0.00	0.1333
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	1062 (99.91)	1.04	1 (0.09)	100.00	2780 (99.96)	0.32	1 (0.04)	0.00	0.4767
MG 8: Immunosuppressants and Immunomodulators	1053 (99.06)	1.14	10 (0.94)	0.00	2769 (99.57)	0.33	12 (0.43)	0.00	0.0903
MG 9: Systemic Steroids	1041 (97.93)	1.06	22 (2.07)	4.55	2734 (98.31)	0.29	47 (1.69)	2.13	0.4177
MG 10: Chemotherapy	1053 (99.06)	0.95	10 (0.94)	20.00	2774 (99.75)	0.32	7 (0.25)	0.00	0.0108
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1050 (98.78)	0.95	13 (1.22)	15.38	2758 (99.17)	0.29	23 (0.83)	4.35	0.2633
MG 12: Antacids incl. Antihistamines	1036 (97.46)	0.77	27 (2.54)	14.81	2744 (98.67)	0.29	37 (1.33)	2.70	0.0111
MG 13: Vitamin D and other Vitamin supplements	1019 (95.86)	0.79	44 (4.14)	9.09	2700 (97.09)	0.26	81 (2.91)	2.47	0.0667
MG 14: Caplacizumab	1063 (100)	1.13	0 (0)	0.00	2781 (100)	0.32	0 (0)	0.00	1
MG 15: Systemic Hemostatics	1063 (100)	1.13	0 (0)	0.00	2781 (100)	0.32	0 (0)	0.00	1
MG 16: Hereditary angioedema Therapeutics	1063 (100)	1.13	0 (0)	0.00	2781 (100)	0.32	0 (0)	0.00	1
MG 17: Peripheral Vasodilators	1063 (100)	1.13	0 (0)	0.00	2780 (99.96)	0.32	1 (0.04)	0.00	1
MG 18: Hormonal contraceptives and similar hormone preparations	1054 (99.15)	1.14	9 (0.85)	0.00	2754 (99.03)	0.33	27 (0.97)	0.00	0.8522
MG 19: Immunoglobulins	1058 (99.53)	1.04	5 (0.47)	20.00	2778 (99.89)	0.32	3 (0.11)	0.00	0.0414
MG 20: Interferons and CSF	1056 (99.34)	0.95	7 (0.66)	28.57	2748 (98.81)	0.33	33 (1.19)	0.00	0.212
MG 21: NSAR and other anti-inflammatory drugs	992 (93.32)	0.60	71 (6.68)	8.45	2599 (93.46)	0.31	182 (6.54)	0.55	0.8845
MG 22: Gout medications	1063 (100)	1.13	0 (0)	0.00	2779 (99.93)	0.32	2 (0.07)	0.00	1
MG 23: Antiepileptics	1037 (97.55)	0.58	26 (2.45)	23.08	2711 (97.48)	0.18	70 (2.52)	5.71	1
MG 24: Antipsychotics	1017 (95.67)	0.59	46 (4.33)	13.04	2677 (96.26)	0.22	104 (3.74)	2.88	0.4027
MG 25: Rhinological and throat antiseptics	999 (93.98)	1.10	64 (6.02)	1.56	2568 (92.34)	0.27	213 (7.66)	0.94	0.0815
MG 26: inhaled anti-obstructive drugs	1017 (95.67)	0.79	46 (4.33)	8.70	2589 (93.1)	0.23	192 (6.9)	1.56	0.0027
MG 27: inhaled steroids	1030 (96.9)	1.17	33 (3.1)	0.00	2588 (93.06)	0.23	193 (6.94)	1.55	<0.001
MG 28: other COPD drugs	1053 (99.06)	1.04	10 (0.94)	10.00	2719 (97.77)	0.33	62 (2.23)	0.00	0.0074
MG 29: Cold and Cough preparations	1031 (96.99)	1.07	32 (3.01)	3.12	2657 (95.54)	0.30	124 (4.46)	0.81	0.0442
MG 30: Systemic Antihistamines	1033 (97.18)	1.06	30 (2.82)	3.33	2652 (95.36)	0.34	129 (4.64)	0.00	0.011

Table A.6. Descriptive medications prescription comparison between propensity score matched COVID and Influenza patients aged 0-18.

	COVID-19 (n = 896)				Influenza (n = 896)				test
	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	p-value
MG 1: Anticoagulants	892 (99.55)	0.34	4 (0.45)	0.00	892 (99.55)	0.45	4 (0.45)	0.00	1
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	713 (79.58)	0.42	183 (20.42)	0.00	733 (81.81)	0.27	163 (18.19)	1.23	0.2555
MG 3: Insulins and other Antidiabetics	895 (99.89)	0.34	1 (0.11)	0.00	893 (99.67)	0.45	3 (0.33)	0.00	0.6246
MG 4: "heart" drugs	893 (99.67)	0.22	3 (0.33)	33.33	892 (99.55)	0.45	4 (0.45)	0.00	1
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	892 (99.55)	0.22	4 (0.45)	25.00	892 (99.55)	0.34	4 (0.45)	25.00	1
MG 6: Beta Blockers	894 (99.78)	0.34	2 (0.22)	0.00	895 (99.89)	0.45	1 (0.11)	0.00	1
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	895 (99.89)	0.22	1 (0.11)	100.00	896 (100)	0.45	0 (0)	0.00	1
MG 8: Immunosuppressants and Immunomodulators	893 (99.67)	0.34	3 (0.33)	0.00	893 (99.67)	0.45	3 (0.33)	0.00	1
MG 9: Systemic Steroids	883 (98.55)	0.34	13 (1.45)	0.00	891 (99.44)	0.45	5 (0.56)	0.00	0.0946
MG 10: Chemotherapy	896 (100)	0.33	0 (0)	0.00	896 (100)	0.45	0 (0)	0.00	1
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	891 (99.44)	0.34	5 (0.56)	0.00	888 (99.11)	0.45	8 (0.89)	0.00	0.5796
MG 12: Antacids incl. Antihistamines	890 (99.33)	0.22	6 (0.67)	16.67	890 (99.33)	0.34	6 (0.67)	16.67	1
MG 13: Vitamin D and other Vitamin supplements	865 (96.54)	0.23	31 (3.46)	3.23	867 (96.76)	0.35	29 (3.24)	3.45	0.8957
MG 14: Caplacizumab	896 (100)	0.33	0 (0)	0.00	896 (100)	0.45	0 (0)	0.00	1
MG 15: Systemic Hemostatics	896 (100)	0.33	0 (0)	0.00	896 (100)	0.45	0 (0)	0.00	1
MG 16: Hereditary angioedema Therapeutics	896 (100)	0.33	0 (0)	0.00	896 (100)	0.45	0 (0)	0.00	1
MG 17: Peripheral Vasodilators	896 (100)	0.33	0 (0)	0.00	896 (100)	0.45	0 (0)	0.00	1
MG 18: Hormonal contraceptives and similar hormone preparations	890 (99.33)	0.34	6 (0.67)	0.00	886 (98.88)	0.45	10 (1.12)	0.00	0.4524
MG 19: Immunoglobulins	896 (100)	0.33	0 (0)	0.00	895 (99.89)	0.45	1 (0.11)	0.00	1
MG 20: Interferons and CSF	893 (99.67)	0.34	3 (0.33)	0.00	893 (99.67)	0.45	3 (0.33)	0.00	1
MG 21: NSAR and other anti-inflammatory drugs	854 (95.31)	0.23	42 (4.69)	2.38	860 (95.98)	0.47	36 (4.02)	0.00	0.5629
MG 22: Gout medications	896 (100)	0.33	0 (0)	0.00	895 (99.89)	0.45	1 (0.11)	0.00	1
MG 23: Antiepileptics	887 (99)	0.23	9 (1)	11.11	883 (98.55)	0.11	13 (1.45)	23.08	0.5209
MG 24: Antipsychotics	874 (97.54)	0.34	22 (2.46)	0.00	870 (97.1)	0.23	26 (2.9)	7.69	0.6612
MG 25: Rhinological and throat antiseptics	851 (94.98)	0.35	45 (5.02)	0.00	845 (94.31)	0.24	51 (5.69)	3.92	0.6001
MG 26: inhaled anti-obstructive drugs	877 (97.88)	0.34	19 (2.12)	0.00	875 (97.66)	0.23	21 (2.34)	9.52	0.8732
MG 27: inhaled steroids	876 (97.77)	0.34	20 (2.23)	0.00	871 (97.21)	0.23	25 (2.79)	8.00	0.5464
MG 28: other COPD drugs	893 (99.67)	0.34	3 (0.33)	0.00	895 (99.89)	0.45	1 (0.11)	0.00	0.6246
MG 29: Cold and Cough preparations	872 (97.32)	0.23	24 (2.68)	4.17	874 (97.54)	0.46	22 (2.46)	0.00	0.8815
MG 30: Systemic Antihistamines	887 (99)	0.34	9 (1)	0.00	865 (96.54)	0.46	31 (3.46)	0.00	<0.001

A.2.2 All-Cause Mortality

Table A.7. Descriptive number of deaths of COVID hospitalized children and sex-, age- and region-assigned controls aged 0-18 years by number of medication groups prescribed within one year prior to hospitalization.

			COVID-19 (n = 1063)			Control (n = 10626)		
Sex	**Age**	**Time**	**0 (n = 705)**	**1 (n = 194)**	**≥2 (n = 164)**	**0 (n = 8402)**	**1 (n = 1521)**	**≥2 (n = 703)**
M	0-5	Hospital	1 (0.36)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		30-day	1 (0.36)	0 (0)	0 (0)	4 (0.14)	0 (0)	0 (0)
		180-day	1 (0.36)	0 (0)	0 (0)	4 (0.14)	0 (0)	0 (0)
		1-year	1 (0.36)	0 (0)	0 (0)	4 (0.14)	0 (0)	0 (0)
		1.5-year	1 (0.36)	0 (0)	0 (0)	4 (0.14)	0 (0)	0 (0)
	6-10	Hospital	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		30-day	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		180-day	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		1-year	0 (0)	0 (0)	1 (9.09)	0 (0)	0 (0)	0 (0)
		1.5-year	0 (0)	0 (0)	1 (9.09)	0 (0)	0 (0)	0 (0)
	11-15	Hospital	0 (0)	0 (0)	2 (9.09)	0 (0)	0 (0)	0 (0)
		30-day	0 (0)	0 (0)	2 (9.09)	0 (0)	0 (0)	0 (0)
		180-day	0 (0)	0 (0)	2 (9.09)	0 (0)	0 (0)	0 (0)
		1-year	0 (0)	0 (0)	2 (9.09)	0 (0)	0 (0)	0 (0)
		1.5-year	0 (0)	0 (0)	2 (9.09)	0 (0)	0 (0)	0 (0)
	16-18	Hospital	2 (5.13)	0 (0)	1 (5.56)	0 (0)	0 (0)	0 (0)
		30-day	1 (2.56)	0 (0)	1 (5.56)	0 (0)	0 (0)	0 (0)
		180-day	2 (5.13)	0 (0)	2 (11.11)	0 (0)	1 (0.81)	0 (0)
		1-year	2 (5.13)	0 (0)	2 (11.11)	0 (0)	1 (0.81)	0 (0)
		1.5-year	2 (5.13)	0 (0)	2 (11.11)	0 (0)	1 (0.81)	0 (0)
F	0-5	Hospital	0 (0)	0 (0)	4 (14.81)	0 (0)	0 (0)	0 (0)
		30-day	0 (0)	0 (0)	3 (11.11)	1 (0.04)	0 (0)	0 (0)
		180-day	0 (0)	0 (0)	4 (14.81)	3 (0.13)	0 (0)	0 (0)
		1-year	0 (0)	0 (0)	4 (14.81)	3 (0.13)	0 (0)	0 (0)
		1.5-year	0 (0)	0 (0)	4 (14.81)	3 (0.13)	0 (0)	0 (0)
	6-10	Hospital	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		30-day	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		180-day	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		1-year	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		1.5-year	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	11-15	Hospital	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		30-day	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		180-day	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		1-year	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		1.5-year	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	16-18	Hospital	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		30-day	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		180-day	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		1-year	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		1.5-year	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

Table A.8. Descriptive number of deaths of Influenza hospitalized children and sex-, age- and region-assigned controls aged 0-18 years by number of medication groups prescribed within one year prior to hospitalization.

			Influenza (n = 2781)			Control (n = 27634)		
Sex	**Age**	**Time**	**0 (n = 1360)**	**1 (n = 841)**	**≥2 (n = 580)**	**0 (n = 18711)**	**1 (n = 5766)**	**≥2 (n = 3157)**
M	0-5	Hospital	0 (0)	0 (0)	1 (0.47)	1 (0.01)	0 (0)	0 (0)
		30-day	0 (0)	0 (0)	1 (0.47)	2 (0.03)	0 (0)	0 (0)
		180-day	0 (0)	1 (0.34)	1 (0.47)	4 (0.05)	0 (0)	0 (0)
		1-year	1 (0.18)	2 (0.68)	1 (0.47)	7 (0.1)	0 (0)	0 (0)
		1.5-year	1 (0.18)	2 (0.68)	1 (0.47)	7 (0.1)	1 (0.05)	0 (0)
	6-10	Hospital	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		30-day	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		180-day	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		1-year	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		1.5-year	0 (0)	0 (0)	2 (3.28)	0 (0)	0 (0)	0 (0)
	11-15	Hospital	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		30-day	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		180-day	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		1-year	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		1.5-year	0 (0)	0 (0)	1 (3.03)	0 (0)	0 (0)	0 (0)
	16-18	Hospital	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		30-day	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		180-day	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		1-year	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		1.5-year	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
F	0-5	Hospital	0 (0)	0 (0)	1 (0.65)	0 (0)	0 (0)	0 (0)
		30-day	0 (0)	0 (0)	1 (0.65)	1 (0.02)	0 (0)	0 (0)
		180-day	0 (0)	0 (0)	1 (0.65)	2 (0.03)	0 (0)	0 (0)
		1-year	0 (0)	0 (0)	1 (0.65)	6 (0.1)	0 (0)	0 (0)
		1.5-year	0 (0)	1 (0.36)	1 (0.65)	7 (0.11)	0 (0)	0 (0)
	6-10	Hospital	0 (0)	1 (1.32)	3 (6.38)	0 (0)	0 (0)	0 (0)
		30-day	0 (0)	1 (1.32)	3 (6.38)	0 (0)	0 (0)	0 (0)
		180-day	0 (0)	1 (1.32)	3 (6.38)	0 (0)	0 (0)	0 (0)
		1-year	0 (0)	1 (1.32)	3 (6.38)	0 (0)	0 (0)	0 (0)
		1.5-year	0 (0)	1 (1.32)	3 (6.38)	0 (0)	0 (0)	0 (0)
	11-15	Hospital	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		30-day	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		180-day	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		1-year	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		1.5-year	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	16-18	Hospital	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		30-day	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		180-day	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		1-year	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		1.5-year	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

Table A.9. Descriptive number of deaths of propensity score matched COVID and Influenza hospitalized children aged 0-18 years stratified by sex, age and number of medication groups prescribed within one year prior to hospitalization.

			COVID-19 (n = 896)			Influenza (n = 896)		
Sex	**Age**	**Time**	**0 (n = 643)**	**1 (n = 162)**	**≥2 (n = 91)**	**0 (n = 625)**	**1 (n = 193)**	**≥2 (n = 78)**
M	**0-5**	**Hospital**	1 (0.36)	0 (0)	0 (0)	0 (0)	0 (0)	1 (7.14)
		30-day	1 (0.36)	0 (0)	0 (0)	0 (0)	0 (0)	1 (7.14)
		180-day	1 (0.36)	0 (0)	0 (0)	0 (0)	0 (0)	1 (7.14)
		1-year	1 (0.36)	0 (0)	0 (0)	0 (0)	0 (0)	1 (7.14)
		1.5-year	1 (0.36)	0 (0)	0 (0)	0 (0)	0 (0)	1 (7.14)
	6-10	**Hospital**	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		30-day	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		180-day	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		1-year	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		1.5-year	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	11-15	**Hospital**	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		30-day	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		180-day	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		1-year	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		1.5-year	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	16-18	**Hospital**	1 (3.85)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		30-day	1 (3.85)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		180-day	1 (3.85)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		1-year	1 (3.85)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		1.5-year	1 (3.85)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
F	**0-5**	**Hospital**	0 (0)	0 (0)	1 (5.56)	0 (0)	0 (0)	0 (0)
		30-day	0 (0)	0 (0)	1 (5.56)	0 (0)	0 (0)	0 (0)
		180-day	0 (0)	0 (0)	1 (5.56)	0 (0)	0 (0)	0 (0)
		1-year	0 (0)	0 (0)	1 (5.56)	0 (0)	0 (0)	0 (0)
		1.5-year	0 (0)	0 (0)	1 (5.56)	0 (0)	0 (0)	0 (0)
	6-10	**Hospital**	0 (0)	0 (0)	0 (0)	0 (0)	1 (5.26)	2 (20)
		30-day	0 (0)	0 (0)	0 (0)	0 (0)	1 (5.26)	2 (20)
		180-day	0 (0)	0 (0)	0 (0)	0 (0)	1 (5.26)	2 (20)
		1-year	0 (0)	0 (0)	0 (0)	0 (0)	1 (5.26)	2 (20)
		1.5-year	0 (0)	0 (0)	0 (0)	0 (0)	1 (5.26)	2 (20)
	11-15	**Hospital**	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		30-day	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		180-day	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		1-year	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		1.5-year	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	16-18	**Hospital**	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		30-day	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		180-day	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		1-year	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		1.5-year	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

A.2.3 Hospital Discharge

Table A.10. Cox regression results examining time to discharge after COVID-19 hospital admission in patients aged 0-18. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 0-18			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	1.12 (0.99-1.26)	0.076	1.12 (0.97-1.29)	0.132
Age Group: 6-10 (ref: 0-5)	0.85 (0.80-0.91)	<0.001	0.84 (0.78-0.91)	<0.001
Age Group: 11-15 (ref: 0-5)	0.96 (0.89-1.04)	0.302	0.96 (0.91-1.01)	0.096
Age Group: 16-18 (ref: 0-5)	0.91 (0.76-1.09)	0.303	0.90 (0.75-1.09)	0.278
Medicament Groups: 1 (ref: 0)	1.00 (0.94-1.07)	0.978	1.01 (0.87-1.17)	0.904
Medicament Groups: ≥2 (ref: 0)	0.76 (0.63-0.91)	0.003	0.95 (0.74-1.23)	0.716
Wave: 3 (ref: Wave 1 & 2)	1.10 (1.02-1.19)	0.011	1.12 (1.05-1.21)	0.001
Wave: 4 (ref: Wave 1 & 2)	1.08 (0.95-1.23)	0.225	1.11 (0.97-1.28)	0.123
MG 1: Anticoagulants	0.67 (0.35-1.28)	0.226		
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.18 (0.97-1.42)	0.091	1.04 (0.84-1.30)	0.697
MG 3: Insulins and other Antidiabetics	0.41 (0.11-1.61)	0.203		
MG 4: "heart" drugs	0.37 (0.13-1.00)	0.051	0.79 (0.25-2.46)	0.682
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	0.29 (0.10-0.84)	0.023	0.58 (0.18-1.91)	0.371
MG 8: Immunosuppressants and Immunomodulators	0.86 (0.55-1.34)	0.497		
MG 9: Systemic Steroids	0.88 (0.69-1.12)	0.285		
MG 10: Chemotherapy	0.69 (0.44-1.06)	0.088	0.85 (0.46-1.58)	0.604
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	0.40 (0.23-0.69)	<0.001	0.43 (0.25-0.73)	0.002
MG 12: Antacids incl. Antihistamines	0.61 (0.46-0.80)	<0.001	0.89 (0.70-1.13)	0.327
MG 13: Vitamin D and other Vitamin supplements	0.67 (0.59-0.75)	<0.001	0.82 (0.74-0.92)	<0.001
MG 18: Hormonal contraceptives and similar hormone preparations	1.07 (0.65-1.77)	0.780		
MG 20: Interferons and CSF	0.62 (0.45-0.85)	0.003	0.69 (0.56-0.85)	<0.001
MG 21: NSAR and other anti-inflammatory drugs	1.00 (0.74-1.35)	0.992		
MG 23: Antiepileptics	0.47 (0.37-0.60)	<0.001	0.58 (0.41-0.80)	<0.001
MG 24: Antipsychotics	0.71 (0.49-1.04)	0.078	0.85 (0.60-1.21)	0.364
MG 25: Rhinological and throat antiseptics	1.18 (1.08-1.30)	<0.001	1.15 (1.01-1.31)	0.029
MG 26: inhaled anti-obstructive drugs	0.92 (0.73-1.16)	0.471		
MG 27: inhaled steroids	1.34 (0.99-1.80)	0.055	1.31 (1.00-1.72)	0.049
MG 28: other COPD drugs	0.75 (0.40-1.40)	0.369		
MG 29: Cold and Cough preparations	1.02 (0.74-1.42)	0.894		
MG 30: Systemic Antihistamines	1.16 (0.82-1.65)	0.391		

Table A.11. Cox regression results examining time to discharge after Influenza hospital admission in patients aged 0-18. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 0-18			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	0.97 (0.89-1.05)	0.439	0.97 (0.89-1.06)	0.447
Age Group: 6-10 (ref: 0-5)	1.16 (1.09-1.24)	<0.001	1.23 (1.14-1.32)	<0.001
Age Group: 11-15 (ref: 0-5)	1.21 (1.01-1.46)	0.041	1.31 (1.06-1.61)	0.012
Age Group: 16-18 (ref: 0-5)	1.46 (1.22-1.75)	<0.001	1.54 (1.28-1.86)	<0.001
Medicament Groups: 1 (ref: 0)	0.89 (0.80-0.99)	0.027	0.91 (0.81-1.01)	0.082
Medicament Groups: ≥2 (ref: 0)	0.63 (0.54-0.73)	<0.001	0.80 (0.69-0.93)	0.003
Wave: 2016/2017 (ref: Wave /2016)	1.27 (1.05-1.54)	0.016	1.26 (1.01-1.58)	0.043
Wave: 2017/2018 (ref: Wave /2016)	1.28 (1.11-1.48)	<0.001	1.29 (1.10-1.51)	0.002
Wave: 2018/2019 (ref: Wave /2016)	1.34 (1.11-1.61)	0.003	1.32 (1.08-1.62)	0.007
Wave: 2019/2020 (ref: Wave /2016)	1.46 (1.23-1.73)	<0.001	1.45 (1.21-1.74)	<0.001
Wave: 2020/2021 (ref: Wave /2016)	NA (NA-NA)		NA (NA-NA)	
Wave: 2021/ (ref: Wave /2016)	0.83 (0.57-1.21)	0.330	0.83 (0.54-1.28)	0.406
MG 1: Anticoagulants	0.93 (0.51-1.70)	0.820		
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.02 (0.88-1.18)	0.830		
MG 3: Insulins and other Antidiabetics	1.26 (0.76-2.10)	0.370		
MG 4: "heart" drugs	2.07 (1.06-4.04)	0.033	1.77 (0.90-3.49)	0.100
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	0.45 (0.21-0.94)	0.033	0.62 (0.36-1.07)	0.088
MG 8: Immunosuppressants and Immunomodulators	0.55 (0.26-1.16)	0.116		
MG 9: Systemic Steroids	0.88 (0.63-1.23)	0.466		
MG 10: Chemotherapy	0.67 (0.60-0.75)	<0.001	0.61 (0.42-0.88)	0.008
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	0.72 (0.34-1.53)	0.399		
MG 12: Antacids incl. Antihistamines	0.45 (0.31-0.66)	<0.001	0.51 (0.38-0.68)	<0.001
MG 13: Vitamin D and other Vitamin supplements	0.75 (0.67-0.84)	<0.001	0.76 (0.66-0.87)	<0.001
MG 18: Hormonal contraceptives and similar hormone preparations	0.97 (0.80-1.18)	0.777		
MG 20: Interferons and CSF	1.16 (0.92-1.48)	0.210		
MG 21: NSAR and other anti-inflammatory drugs	0.99 (0.89-1.10)	0.907		
MG 23: Antiepileptics	0.51 (0.40-0.64)	<0.001	0.55 (0.45-0.68)	<0.001
MG 24: Antipsychotics	0.73 (0.58-0.92)	0.008	0.91 (0.77-1.06)	0.227
MG 25: Rhinological and throat antiseptics	0.89 (0.81-0.97)	0.008	0.91 (0.79-1.04)	0.170
MG 26: inhaled anti-obstructive drugs	0.84 (0.71-1.00)	0.048	0.89 (0.77-1.02)	0.096
MG 27: inhaled steroids	0.99 (0.82-1.19)	0.887		
MG 28: other COPD drugs	1.12 (0.96-1.32)	0.156		
MG 29: Cold and Cough preparations	1.13 (0.92-1.38)	0.261		
MG 30: Systemic Antihistamines	1.03 (0.79-1.33)	0.841		

Table A.12. Cox regression results comparing time to hospital discharge between propensity score matched COVID-19 and Influenza patients aged 0-18. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 0-18			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Group: Influenza (ref: COVID-19)	1.23 (0.95-1.57)	0.111	1.22 (0.97-1.55)	0.093
Sex: F (ref: M)	1.00 (0.92-1.08)	0.929	1.00 (0.92-1.10)	0.923
Age Group: 6-10 (ref: 0-5)	1.05 (0.92-1.21)	0.452	1.05 (0.91-1.22)	0.499
Age Group: 11-15 (ref: 0-5)	1.09 (0.95-1.24)	0.226	1.09 (0.94-1.27)	0.234
Age Group: 16-18 (ref: 0-5)	1.22 (1.04-1.45)	0.017	1.22 (1.00-1.49)	0.055
Medicament Groups: 1 (ref: 0)	0.86 (0.76-0.97)	0.013	0.89 (0.78-1.01)	0.071
Medicament Groups: ≥2 (ref: 0)	0.73 (0.60-0.90)	0.003	0.83 (0.62-1.12)	0.227
MG 1: Anticoagulants	1.61 (0.82-3.14)	0.167		
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.06 (0.95-1.17)	0.310		
MG 3: Insulins and other Antidiabetics	2.13 (0.78-5.77)	0.138		
MG 4: "heart" drugs	0.90 (0.55-1.46)	0.662		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	0.48 (0.28-0.84)	0.010	0.84 (0.42-1.68)	0.617
MG 8: Immunosuppressants and Immunomodulators	0.81 (0.43-1.54)	0.522		
MG 9: Systemic Steroids	0.87 (0.69-1.10)	0.255		
MG 10: Chemotherapy	NA (NA-NA)			
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.06 (0.66-1.70)	0.814		
MG 12: Antacids incl. Antihistamines	0.53 (0.42-0.67)	<0.001	0.76 (0.58-1.01)	0.054
MG 13: Vitamin D and other Vitamin supplements	0.69 (0.57-0.83)	<0.001	0.70 (0.58-0.86)	<0.001
MG 18: Hormonal contraceptives and similar hormone preparations	1.14 (0.73-1.80)	0.560		
MG 20: Interferons and CSF	0.82 (0.53-1.25)	0.351		
MG 21: NSAR and other anti-inflammatory drugs	0.95 (0.71-1.28)	0.753		
MG 23: Antiepileptics	0.48 (0.32-0.73)	<0.001	0.51 (0.27-0.97)	0.041
MG 24: Antipsychotics	0.91 (0.71-1.18)	0.478		
MG 25: Rhinological and throat antiseptics	1.03 (0.97-1.09)	0.359		
MG 26: inhaled anti-obstructive drugs	1.00 (0.63-1.59)	1.000		
MG 27: inhaled steroids	1.33 (0.95-1.84)	0.092	1.25 (0.92-1.70)	0.157
MG 28: other COPD drugs	0.65 (0.48-0.89)	0.008	0.63 (0.47-0.84)	0.002
MG 29: Cold and Cough preparations	0.90 (0.77-1.05)	0.170		
MG 30: Systemic Antihistamines	1.37 (1.07-1.75)	0.014	1.23 (0.96-1.58)	0.107

A.2.4 Re-hospitalization Due to Any Reason

Table A.13. Frequencies of re-hospitalization due to any reason and no event by sex, age, and follow-up time points (30 days, 180 days, 1 year, and 1.5 years) for COVID-19 patients and sex-, age-, region-assigned control group aged 0-18 years.

			COVID-19 (n = 1063)		Control (n = 10626)	
Sex	**Age**	**Time**	**No Event**	**Readmission**	**No Event**	**Readmission**
M	**0-5**	**30-day**	325 (96.15)	13 (3.85)	3322 (98.49)	51 (1.51)
		180-day	311 (92.01)	27 (7.99)	3225 (95.61)	148 (4.39)
		1-year	298 (88.17)	40 (11.83)	3179 (94.25)	194 (5.75)
		1.5-year	298 (88.17)	40 (11.83)	3168 (93.92)	205 (6.08)
	6-10	**30-day**	40 (95.24)	2 (4.76)	429 (99.77)	1 (0.23)
		180-day	33 (78.57)	9 (21.43)	424 (98.6)	6 (1.4)
		1-year	31 (73.81)	11 (26.19)	420 (97.67)	10 (2.33)
		1.5-year	31 (73.81)	11 (26.19)	418 (97.21)	12 (2.79)
	11-15	**30-day**	75 (94.94)	4 (5.06)	804 (99.5)	4 (0.5)
		180-day	66 (83.54)	13 (16.46)	796 (98.51)	12 (1.49)
		1-year	66 (83.54)	13 (16.46)	793 (98.14)	15 (1.86)
		1.5-year	66 (83.54)	13 (16.46)	793 (98.14)	15 (1.86)
	16-18	**30-day**	61 (91.04)	6 (8.96)	691 (99.14)	6 (0.86)
		180-day	58 (86.57)	9 (13.43)	680 (97.56)	17 (2.44)
		1-year	55 (82.09)	12 (17.91)	676 (96.99)	21 (3.01)
		1.5-year	55 (82.09)	12 (17.91)	675 (96.84)	22 (3.16)
F	**0-5**	**30-day**	256 (96.24)	10 (3.76)	2695 (99.26)	20 (0.74)
		180-day	243 (91.35)	23 (8.65)	2637 (97.13)	78 (2.87)
		1-year	236 (88.72)	30 (11.28)	2609 (96.1)	106 (3.9)
		1.5-year	236 (88.72)	30 (11.28)	2606 (95.99)	109 (4.01)
	6-10	**30-day**	53 (94.64)	3 (5.36)	558 (99.64)	2 (0.36)
		180-day	49 (87.5)	7 (12.5)	556 (99.29)	4 (0.71)
		1-year	49 (87.5)	7 (12.5)	556 (99.29)	4 (0.71)
		1.5-year	49 (87.5)	7 (12.5)	556 (99.29)	4 (0.71)
	11-15	**30-day**	80 (93.02)	6 (6.98)	854 (99.53)	4 (0.47)
		180-day	71 (82.56)	15 (17.44)	843 (98.25)	15 (1.75)
		1-year	69 (80.23)	17 (19.77)	833 (97.09)	25 (2.91)
		1.5-year	69 (80.23)	17 (19.77)	832 (96.97)	26 (3.03)
	16-18	**30-day**	111 (93.28)	8 (6.72)	1179 (99.49)	6 (0.51)
		180-day	103 (86.55)	16 (13.45)	1166 (98.4)	19 (1.6)
		1-year	100 (84.03)	19 (15.97)	1157 (97.64)	28 (2.36)
		1.5-year	100 (84.03)	19 (15.97)	1153 (97.3)	32 (2.7)

Table A.14. Frequencies of re-hospitalization due to any reason and no event by sex, age, and follow-up time points (30 days, 180 days, 1 year, and 1.5 years) for Influenza patients and sex-, age-, and region-assigned control group aged 0-18 years.

			Influenza (n = 2781)		Control (n = 27634)	
Sex	**Age**	**Time**	**No Event**	**Readmission**	**No Event**	**Readmission**
M	**0-5**	**30-day**	1021 (96.14)	41 (3.86)	10458 (99.17)	87 (0.83)
		180-day	916 (86.25)	146 (13.75)	10175 (96.49)	370 (3.51)
		1-year	839 (79)	223 (21)	9894 (93.83)	651 (6.17)
		1.5-year	839 (79)	223 (21)	9656 (91.57)	889 (8.43)
	6-10	**30-day**	257 (95.19)	13 (4.81)	2690 (99.59)	11 (0.41)
		180-day	233 (86.3)	37 (13.7)	2666 (98.7)	35 (1.3)
		1-year	213 (78.89)	57 (21.11)	2632 (97.45)	69 (2.55)
		1.5-year	213 (78.89)	57 (21.11)	2591 (95.93)	110 (4.07)
	11-15	**30-day**	112 (96.55)	4 (3.45)	1159 (99.91)	1 (0.09)
		180-day	100 (86.21)	16 (13.79)	1145 (98.71)	15 (1.29)
		1-year	91 (78.45)	25 (21.55)	1128 (97.24)	32 (2.76)
		1.5-year	91 (78.45)	25 (21.55)	1112 (95.86)	48 (4.14)
	16-18	**30-day**	58 (92.06)	5 (7.94)	627 (99.84)	1 (0.16)
		180-day	51 (80.95)	12 (19.05)	618 (98.41)	10 (1.59)
		1-year	48 (76.19)	15 (23.81)	605 (96.34)	23 (3.66)
		1.5-year	48 (76.19)	15 (23.81)	597 (95.06)	31 (4.94)
F	**0-5**	**30-day**	862 (96.1)	35 (3.9)	8826 (99.17)	74 (0.83)
		180-day	797 (88.85)	100 (11.15)	8652 (97.21)	248 (2.79)
		1-year	743 (82.83)	154 (17.17)	8468 (95.15)	432 (4.85)
		1.5-year	742 (82.72)	155 (17.28)	8356 (93.89)	544 (6.11)
	6-10	**30-day**	199 (96.6)	7 (3.4)	2087 (99.81)	4 (0.19)
		180-day	184 (89.32)	22 (10.68)	2067 (98.85)	24 (1.15)
		1-year	173 (83.98)	33 (16.02)	2046 (97.85)	45 (2.15)
		1.5-year	173 (83.98)	33 (16.02)	2026 (96.89)	65 (3.11)
	11-15	**30-day**	84 (92.31)	7 (7.69)	907 (99.78)	2 (0.22)
		180-day	74 (81.32)	17 (18.68)	897 (98.68)	12 (1.32)
		1-year	63 (69.23)	28 (30.77)	886 (97.47)	23 (2.53)
		1.5-year	63 (69.23)	28 (30.77)	869 (95.6)	40 (4.4)
	16-18	**30-day**	68 (97.14)	2 (2.86)	697 (99.71)	2 (0.29)
		180-day	60 (85.71)	10 (14.29)	692 (99)	7 (1)
		1-year	51 (72.86)	19 (27.14)	681 (97.42)	18 (2.58)
		1.5-year	51 (72.86)	19 (27.14)	671 (95.99)	28 (4.01)

Table A.15. Frequencies of re-hospitalization due to any reason and no event by sex, age, and follow-up time points (30 days, 180 days, 1 year, and 1.5 years) for propensity score matched COVID-19 and Influenza patients aged 0-18 years.

			COVID-19 (n = 896)		Influenza (n = 896)	
Sex	**Age**	**Time**	**No Event**	**Readmission**	**No Event**	**Readmission**
M	**0-5**	**30-day**	318 (96.36)	12 (3.64)	315 (94.88)	17 (5.12)
		180-day	305 (92.42)	25 (7.58)	291 (87.65)	41 (12.35)
		1-year	292 (88.48)	38 (11.52)	273 (82.23)	59 (17.77)
		1.5-year	292 (88.48)	38 (11.52)	273 (82.23)	59 (17.77)
	6-10	**30-day**	36 (94.74)	2 (5.26)	39 (90.7)	4 (9.3)
		180-day	30 (78.95)	8 (21.05)	37 (86.05)	6 (13.95)
		1-year	28 (73.68)	10 (26.32)	33 (76.74)	10 (23.26)
		1.5-year	28 (73.68)	10 (26.32)	33 (76.74)	10 (23.26)
	11-15	**30-day**	56 (96.55)	2 (3.45)	52 (98.11)	1 (1.89)
		180-day	52 (89.66)	6 (10.34)	48 (90.57)	5 (9.43)
		1-year	52 (89.66)	6 (10.34)	46 (86.79)	7 (13.21)
		1.5-year	52 (89.66)	6 (10.34)	46 (86.79)	7 (13.21)
	16-18	**30-day**	38 (90.48)	4 (9.52)	34 (91.89)	3 (8.11)
		180-day	37 (88.1)	5 (11.9)	30 (81.08)	7 (18.92)
		1-year	35 (83.33)	7 (16.67)	29 (78.38)	8 (21.62)
		1.5-year	35 (83.33)	7 (16.67)	29 (78.38)	8 (21.62)
F	**0-5**	**30-day**	248 (96.5)	9 (3.5)	259 (97.74)	6 (2.26)
		180-day	236 (91.83)	21 (8.17)	242 (91.32)	23 (8.68)
		1-year	229 (89.11)	28 (10.89)	233 (87.92)	32 (12.08)
		1.5-year	229 (89.11)	28 (10.89)	233 (87.92)	32 (12.08)
	6-10	**30-day**	49 (94.23)	3 (5.77)	54 (100)	0 (0.0)
		180-day	47 (90.38)	5 (9.62)	52 (96.3)	2 (3.7)
		1-year	47 (90.38)	5 (9.62)	49 (90.74)	5 (9.26)
		1.5-year	47 (90.38)	5 (9.62)	49 (90.74)	5 (9.26)
	11-15	**30-day**	56 (91.8)	5 (8.2)	53 (94.64)	3 (5.36)
		180-day	49 (80.33)	12 (19.67)	46 (82.14)	10 (17.86)
		1-year	47 (77.05)	14 (22.95)	40 (71.43)	16 (28.57)
		1.5-year	47 (77.05)	14 (22.95)	40 (71.43)	16 (28.57)
	16-18	**30-day**	49 (89.09)	6 (10.91)	51 (98.08)	1 (1.92)
		180-day	46 (83.64)	9 (16.36)	44 (84.62)	8 (15.38)
		1-year	44 (80)	11 (20)	37 (71.15)	15 (28.85)
		1.5-year	44 (80)	11 (20)	37 (71.15)	15 (28.85)

Table A.16. Cox regression results examining time to all-cause re-hospitalization after hospital discharge for COVID-19 among patients aged 0-18. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 0-18			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	0.94 (0.67-1.30)	0.692	0.94 (0.68-1.30)	0.698
Age Group: 6-10 (ref: 0-5)	1.13 (0.61-2.07)	0.706	1.02 (0.61-1.71)	0.942
Age Group: 11-15 (ref: 0-5)	1.11 (0.70-1.74)	0.663	1.16 (0.76-1.77)	0.500
Age Group: 16-18 (ref: 0-5)	0.94 (0.61-1.45)	0.782	1.05 (0.67-1.63)	0.847
Medicament Groups: 1 (ref: 0)	1.27 (1.01-1.60)	0.044	1.16 (0.89-1.50)	0.270
Medicament Groups: ≥2 (ref: 0)	2.93 (2.04-4.21)	<0.001	1.96 (1.39-2.78)	<0.001
Wave: 3 (ref: Wave 1 & 2)	1.02 (0.75-1.40)	0.883	1.04 (0.74-1.44)	0.835
Wave: 4 (ref: Wave 1 & 2)	0.44 (0.26-0.74)	0.002	0.43 (0.24-0.77)	0.004
Length of hospital stay (days)	1.03 (1.02-1.04)	<0.001	1.03 (1.02-1.03)	<0.001
MG 1: Anticoagulants	0.64 (0.29-1.40)	0.261		
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.28 (0.78-2.11)	0.334		
MG 3: Insulins and other Antidiabetics	1.44 (0.10-21.09)	0.792		
MG 4: "heart" drugs	NA (NA-NA)			
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	NA (NA-NA)			
MG 8: Immunosuppressants and Immunomodulators	0.38 (0.06-2.32)	0.292		
MG 9: Systemic Steroids	1.57 (1.04-2.38)	0.031	1.42 (0.84-2.41)	0.194
MG 10: Chemotherapy	2.45 (1.03-5.82)	0.042	2.56 (0.95-6.95)	0.064
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.50 (0.55-4.07)	0.425		
MG 12: Antacids incl. Antihistamines	2.01 (0.86-4.68)	0.107		
MG 13: Vitamin D and other Vitamin supplements	1.01 (0.64-1.60)	0.954		
MG 18: Hormonal contraceptives and similar hormone preparations	2.31 (1.35-3.94)	0.002	2.53 (1.48-4.33)	<0.001
MG 20: Interferons and CSF	2.82 (1.41-5.63)	0.003	1.74 (0.51-5.94)	0.376
MG 21: NSAR and other anti-inflammatory drugs	0.79 (0.56-1.11)	0.167		
MG 23: Antiepileptics	2.81 (1.52-5.20)	<0.001	2.24 (0.88-5.68)	0.090
MG 24: Antipsychotics	1.82 (0.97-3.41)	0.064	1.47 (0.45-4.78)	0.522
MG 25: Rhinological and throat antiseptics	0.93 (0.48-1.79)	0.821		
MG 26: inhaled anti-obstructive drugs	0.98 (0.54-1.77)	0.936		
MG 27: inhaled steroids	0.63 (0.35-1.12)	0.116		
MG 28: other COPD drugs	2.25 (1.17-4.35)	0.016	2.70 (1.46-5.01)	0.002
MG 29: Cold and Cough preparations	0.74 (0.34-1.61)	0.443		
MG 30: Systemic Antihistamines	0.60 (0.27-1.33)	0.206		

Table A.17. Cox regression results examining time to all-cause re-hospitalization after hospital discharge for Influenza among patients aged 0-18. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 0-18			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	0.87 (0.73-1.03)	0.116	0.88 (0.74-1.04)	0.120
Age Group: 6-10 (ref: 0-5)	1.01 (0.80-1.27)	0.955	0.93 (0.75-1.15)	0.487
Age Group: 11-15 (ref: 0-5)	1.40 (1.10-1.79)	0.007	1.18 (0.86-1.62)	0.305
Age Group: 16-18 (ref: 0-5)	1.31 (1.10-1.57)	0.003	1.23 (1.02-1.47)	0.027
Medicament Groups: 1 (ref: 0)	1.37 (1.09-1.72)	0.007	1.33 (1.06-1.67)	0.013
Medicament Groups: ≥2 (ref: 0)	2.15 (1.89-2.45)	<0.001	1.57 (1.23-2.02)	<0.001
Wave: 2017/2019 (ref: Wave 2016/2017)	0.99 (0.79-1.24)	0.932	0.98 (0.77-1.25)	0.893
Wave: 2019/2021 (ref: Wave 2016/2017)	0.65 (0.50-0.86)	0.002	0.65 (0.50-0.85)	0.002
Length of hospital stay (days)	1.11 (1.09-1.13)	<0.001	1.10 (1.08-1.12)	<0.001
MG 1: Anticoagulants	2.92 (1.40-6.07)	0.004	2.75 (1.04-7.27)	0.041
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	0.96 (0.71-1.29)	0.766		
MG 3: Insulins and other Antidiabetics	0.72 (0.22-2.35)	0.588		
MG 4: "heart" drugs	0.79 (0.25-2.51)	0.688		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	0.71 (0.33-1.55)	0.393		
MG 8: Immunosuppressants and Immunomodulators	1.02 (0.32-3.31)	0.968		
MG 9: Systemic Steroids	1.17 (0.86-1.60)	0.308		
MG 10: Chemotherapy	6.97 (4.72-10.31)	<0.001	6.33 (4.39-9.13)	<0.001
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	0.70 (0.35-1.37)	0.294		
MG 12: Antacids incl. Antihistamines	1.72 (1.09-2.71)	0.019	1.77 (1.28-2.44)	<0.001
MG 13: Vitamin D and other Vitamin supplements	1.06 (0.74-1.53)	0.748		
MG 18: Hormonal contraceptives and similar hormone preparations	1.22 (0.51-2.95)	0.652		
MG 20: Interferons and CSF	1.31 (0.76-2.27)	0.331		
MG 21: NSAR and other anti-inflammatory drugs	0.96 (0.81-1.14)	0.640		
MG 23: Antiepileptics	2.64 (2.06-3.39)	<0.001	2.09 (1.73-2.53)	<0.001
MG 24: Antipsychotics	1.91 (1.74-2.09)	<0.001	1.44 (1.29-1.61)	<0.001
MG 25: Rhinological and throat antiseptics	1.06 (0.85-1.32)	0.616		
MG 26: inhaled anti-obstructive drugs	1.40 (1.20-1.63)	<0.001	1.51 (1.20-1.90)	<0.001
MG 27: inhaled steroids	0.87 (0.64-1.19)	0.386		
MG 28: other COPD drugs	0.68 (0.36-1.30)	0.248		
MG 29: Cold and Cough preparations	0.80 (0.58-1.11)	0.179		
MG 30: Systemic Antihistamines	0.72 (0.51-1.01)	0.056	0.77 (0.51-1.16)	0.204

Table A.18. Cox regression results comparing time to all-cause re-hospitalization between propensity score matched COVID-19 and Influenza patients aged 0-18. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 0-18			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Group: Influenza (ref: COVID-19)	1.24 (1.04-1.47)	0.016	1.23 (1.02-1.48)	0.029
Sex: F (ref: M)	0.88 (0.64-1.23)	0.466	0.88 (0.64-1.22)	0.455
Age Group: 6-10 (ref: 0-5)	0.99 (0.67-1.48)	0.970	0.97 (0.64-1.47)	0.897
Age Group: 11-15 (ref: 0-5)	1.35 (0.88-2.07)	0.163	1.35 (0.87-2.10)	0.184
Age Group: 16-18 (ref: 0-5)	1.30 (0.97-1.75)	0.079	1.27 (0.92-1.76)	0.141
Medicament Groups: 1 (ref: 0)	1.53 (1.14-2.04)	0.004	1.47 (1.08-2.01)	0.016
Medicament Groups: ≥2 (ref: 0)	2.51 (1.89-3.33)	<0.001	1.97 (1.49-2.61)	<0.001
Length of hospital stay (days)	1.03 (1.01-1.06)	0.008	1.03 (1.01-1.06)	0.009
MG 1: Anticoagulants	1.76 (0.90-3.42)	0.099		
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	0.87 (0.63-1.21)	0.421		
MG 3: Insulins and other Antidiabetics	0.86 (0.08-8.95)	0.903		
MG 4: "heart" drugs	NA (NA-NA)			
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	0.85 (0.38-1.89)	0.694		
MG 8: Immunosuppressants and Immunomodulators	2.16 (0.86-5.42)	0.101		
MG 9: Systemic Steroids	1.25 (0.66-2.36)	0.489		
MG 10: Chemotherapy	NA (NA-NA)			
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.24 (0.42-3.73)	0.696		
MG 12: Antacids incl. Antihistamines	3.13 (1.25-7.83)	0.015	2.13 (0.75-6.06)	0.155
MG 13: Vitamin D and other Vitamin supplements	1.28 (0.89-1.85)	0.187		
MG 18: Hormonal contraceptives and similar hormone preparations	1.36 (0.44-4.18)	0.594		
MG 20: Interferons and CSF	2.15 (1.20-3.87)	0.011	2.29 (1.18-4.45)	0.015
MG 21: NSAR and other anti-inflammatory drugs	0.75 (0.47-1.22)	0.247		
MG 23: Antiepileptics	2.83 (1.81-4.44)	<0.001	2.17 (1.36-3.46)	0.001
MG 24: Antipsychotics	2.02 (1.52-2.69)	<0.001	1.51 (0.83-2.72)	0.176
MG 25: Rhinological and throat antiseptics	0.90 (0.68-1.20)	0.476		
MG 26: inhaled anti-obstructive drugs	1.34 (0.79-2.26)	0.280		
MG 27: inhaled steroids	0.80 (0.38-1.69)	0.555		
MG 28: other COPD drugs	0.82 (0.52-1.31)	0.413		
MG 29: Cold and Cough preparations	0.61 (0.32-1.17)	0.137		
MG 30: Systemic Antihistamines	0.90 (0.49-1.66)	0.744		

A.3 Adults (Age Cohorts >18 years)

Tables A.19-A.34 show frequencies and percentages of medication group prescriptions (yes/no) and corresponding one-year mortality rates within each category. Comparisons are shown for COVID-19 hospitalized patients and corresponding controls, Influenza hospitalized patients and corresponding controls, COVID-19 and Influenza hospitalized patients, and propensity score matched COVID-19 and Influenza hospitalized patients separately for age cohorts 19-40, 41-64, 65-74 and ≥75 years. The tables also include p-values from Chi-square or Fisher's exact test, as appropriate, assessing differences in medication group frequencies between the compared groups.

Tables A.35-A.37 show frequencies and percentages of deaths after (assigned) hospital admission stratified by sex, age cohort and polypharmacy status at specific follow-up intervals: in-hospital, 30 days, 180 days, 1 year, and 1.5 years. Comparisons are shown for COVID-19 hospitalized patients and corresponding controls, Influenza hospitalized patients and corresponding controls, and propensity score matched COVID-19 and Influenza hospitalized patients separately for age cohorts 19-40, 41-64, 65-74 and ≥75 years.

Tables A.38-A.73 present results of simple Cox proportional hazards regressions and multivariable Cox proportional hazards regressions of the outcomes time to all-cause death; after hospital admission, in-hospital, and after hospital discharge for within COVID-19 hospitalized patients, within Influenza hospitalized patients and for propensity score matched COVID-19 and Influenza patients, separately for age cohorts 19-40, 41-64, 65-74, and ≥75 years.

Tables A.74-A.85 present results of simple Fine and Gray competing risk regressions and multivariable Fine and Gray competing risk regressions of the outcome time to hospital discharge after hospital admission with competing risk all-cause death for within COVID-19 hospitalized patients, within Influenza hospitalized patients and for propensity score matched COVID-19 and Influenza patients, separately for age cohorts 19-40, 41-64, 65-74, and ≥75 years.

Tables A.86-A.87 show frequencies and percentages of re-hospitalizations due to any reason and no event after (assigned) hospital discharge conditional on hospital survival, stratified by sex and age cohort at specific follow-up intervals: in-hospital, 30 days, 180 days, 1 year, and 1.5 years. Comparisons are shown for COVID-19 hospitalized patients and corresponding controls, Influenza hospitalized patients and corresponding controls, and propensity score matched COVID-19 and Influenza hospitalized patients.

Tables A.88-A.99 present results of simple Fine and Gray competing risk regressions and multivariable Fine and Gray competing risk regressions of the outcome time to re-hospitalization due to any reason conditional on hospital survival after hospital discharge with competing risk all-cause death for within COVID-19 hospitalized patients, within Influenza hospitalized patients and for propensity score matched COVID-19 and Influenza patients, separately for age cohorts 19-40, 41-64, 65-74, and $\geq$75 years.

A.3.1 Medication Profiles

Table A.19. Descriptive medication prescription comparison between COVID-19 and sex-, age-, region-assigned control group aged 19-40.

	COVID-19 (n = 3941)				Control (n = 39214)				test
	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	p-value
MG 1: Anticoagulants	3620 (91.85)	1.10	321 (8.15)	2.49	38469 (98.1)	0.04	745 (1.9)	0.67	<0.001
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	2271 (57.62)	1.10	1670 (42.38)	1.38	32160 (82.01)	0.04	7054 (17.99)	0.10	<0.001
MG 3: Insulins and other Antidiabetics	3836 (97.34)	0.99	105 (2.66)	9.52	39042 (99.56)	0.05	172 (0.44)	0.00	<0.001
MG 4: "heart" drugs	3879 (98.43)	1.24	62 (1.57)	0.00	39018 (99.5)	0.05	196 (0.5)	0.51	<0.001
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	3712 (94.19)	0.97	229 (5.81)	5.24	38893 (99.18)	0.04	321 (0.82)	0.93	<0.001
MG 6: Beta Blockers	3848 (97.64)	1.09	93 (2.36)	6.45	39101 (99.71)	0.04	113 (0.29)	2.65	<0.001
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	3845 (97.56)	1.12	96 (2.44)	5.21	39033 (99.54)	0.05	181 (0.46)	0.00	<0.001
MG 8: Immunosuppressants and Immunomodulators	3837 (97.36)	1.15	104 (2.64)	3.85	39063 (99.61)	0.05	151 (0.39)	0.00	<0.001
MG 9: Systemic Steroids	3676 (93.28)	1.01	265 (6.72)	4.15	38639 (98.53)	0.05	575 (1.47)	0.17	<0.001
MG 10: Chemotherapy	3922 (99.52)	1.17	19 (0.48)	10.53	39191 (99.94)	0.05	23 (0.06)	4.35	<0.001
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	3700 (93.88)	1.19	241 (6.12)	1.66	38653 (98.57)	0.05	561 (1.43)	0.00	<0.001
MG 12: Antacids incl. Antihistamines	3563 (90.41)	0.95	378 (9.59)	3.70	38483 (98.14)	0.03	731 (1.86)	0.82	<0.001
MG 13: Vitamin D and other Vitamin supplements	3664 (92.97)	1.15	277 (7.03)	2.17	38660 (98.59)	0.04	554 (1.41)	0.72	<0.001
MG 14: Caplacizumab	3940 (99.97)	1.22	1 (0.03)	0.00	39214 (100)	0.05	0 (0)	0.00	0.0913
MG 15: Systemic Hemostatics	3940 (99.97)	1.22	1 (0.03)	0.00	39212 (99.99)	0.05	2 (0.01)	0.00	0.2497
MG 16: Hereditary angioedema Therapeutics	3940 (99.97)	1.22	1 (0.03)	0.00	39214 (100)	0.05	0 (0)	0.00	0.0913
MG 17: Peripheral Vasodilators	3936 (99.87)	1.22	5 (0.13)	0.00	39197 (99.96)	0.05	17 (0.04)	0.00	0.0652
MG 18: Hormonal contraceptives and similar hormone preparations	3752 (95.2)	1.25	189 (4.8)	0.53	38565 (98.34)	0.05	649 (1.66)	0.00	<0.001
MG 19: Immunoglobulins	3937 (99.9)	1.22	4 (0.1)	0.00	39211 (99.99)	0.05	3 (0.01)	0.00	0.0019
MG 20: Interferons and CSF	3893 (98.78)	1.21	48 (1.22)	2.08	39051 (99.58)	0.04	163 (0.42)	1.23	<0.001
MG 21: NSAR and other anti-inflammatory drugs	3010 (76.38)	1.23	931 (23.62)	1.18	35716 (91.08)	0.05	3498 (8.92)	0.03	<0.001
MG 22: Gout medications	3922 (99.52)	1.15	19 (0.48)	15.79	39190 (99.94)	0.05	24 (0.06)	4.17	<0.001
MG 23: Antiepileptics	3770 (95.66)	1.03	171 (4.34)	5.26	38927 (99.27)	0.04	287 (0.73)	0.70	<0.001
MG 24: Antipsychotics	3446 (87.44)	0.93	495 (12.56)	3.23	37646 (96)	0.02	1568 (4)	0.64	<0.001
MG 25: Rhinological and throat antiseptics	3570 (90.59)	1.18	371 (9.41)	1.62	37719 (96.19)	0.04	1495 (3.81)	0.20	<0.001
MG 26: inhaled anti-obstructive drugs	3438 (87.24)	1.08	503 (12.76)	2.19	38206 (97.43)	0.04	1008 (2.57)	0.20	<0.001

(continued)

	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	p-value
MG 27: inhaled steroids	3746 (95.05)	1.20	195 (4.95)	1.54	38926 (99.27)	0.05	288 (0.73)	0.35	<0.001
MG 28: other COPD drugs	3904 (99.06)	1.23	37 (0.94)	0.00	39107 (99.73)	0.05	107 (0.27)	0.00	<0.001
MG 29: Cold and Cough preparations	3727 (94.57)	1.05	214 (5.43)	4.21	38829 (99.02)	0.05	385 (0.98)	0.26	<0.001
MG 30: Systemic Antihistamines	3762 (95.46)	1.17	179 (4.54)	2.23	38574 (98.37)	0.05	640 (1.63)	0.16	<0.001

Table A.20. Descriptive medication prescription comparison between COVID-19 and sex-, age-, region-assigned control group aged 41-64.

	COVID-19 (n = 16481)				Control (n = 161718)				test
	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	p-value
MG 1: Anticoagulants	13288 (80.63)	5.74	3193 (19.37)	11.93	153606 (94.98)	0.38	8112 (5.02)	2.28	<0.001
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	9464 (57.42)	5.58	7017 (42.58)	8.78	133534 (82.57)	0.36	28184 (17.43)	1.02	<0.001
MG 3: Insulins and other Antidiabetics	14320 (86.89)	6.10	2161 (13.11)	12.49	157684 (97.51)	0.44	4034 (2.49)	2.03	<0.001
MG 4: "heart" drugs	15821 (96)	6.73	660 (4)	11.97	159506 (98.63)	0.46	2212 (1.37)	2.08	<0.001
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	11493 (69.73)	5.01	4988 (30.27)	11.39	147550 (91.24)	0.37	14168 (8.76)	1.60	<0.001
MG 6: Beta Blockers	14397 (87.36)	5.95	2084 (12.64)	13.82	156399 (96.71)	0.40	5319 (3.29)	2.71	<0.001
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	13112 (79.56)	6.18	3369 (20.44)	9.91	150911 (93.32)	0.44	10807 (6.68)	1.05	<0.001
MG 8: Immunosuppressants and Immunomodulators	15829 (96.04)	6.73	652 (3.96)	12.12	160476 (99.23)	0.47	1242 (0.77)	1.45	<0.001
MG 9: Systemic Steroids	14478 (87.85)	6.04	2003 (12.15)	13.48	155680 (96.27)	0.41	6038 (3.73)	2.25	<0.001
MG 10: Chemotherapy	16235 (98.51)	6.65	246 (1.49)	26.02	161092 (99.61)	0.44	626 (0.39)	10.70	<0.001
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	15671 (95.09)	6.32	810 (4.91)	18.89	159994 (98.93)	0.43	1724 (1.07)	4.81	<0.001
MG 12: Antacids incl. Antihistamines	13462 (81.68)	5.66	3019 (18.32)	12.65	154696 (95.66)	0.39	7022 (4.34)	2.46	<0.001
MG 13: Vitamin D and other Vitamin supplements	14604 (88.61)	5.96	1877 (11.39)	14.60	156282 (96.64)	0.42	5436 (3.36)	2.15	<0.001
MG 14: Caplacizumab	16481 (100)	6.94	0 (0)	0.00	161717 (100)	0.48	1 (0)	0.00	1
MG 15: Systemic Hemostatics	16476 (99.97)	6.93	5 (0.03)	40.00	161710 (100)	0.48	8 (0)	12.50	0.0016
MG 16: Hereditary angioedema Therapeutics	16481 (100)	6.94	0 (0)	0.00	161717 (100)	0.48	1 (0)	0.00	1
MG 17: Peripheral Vasodilators	16412 (99.58)	6.95	69 (0.42)	5.80	161375 (99.79)	0.48	343 (0.21)	0.29	<0.001
MG 18: Hormonal contraceptives and similar hormone preparations	15922 (96.61)	6.98	559 (3.39)	5.90	157985 (97.69)	0.48	3733 (2.31)	0.27	<0.001
MG 19: Immunoglobulins	16471 (99.94)	6.93	10 (0.06)	20.00	161702 (99.99)	0.48	16 (0.01)	6.25	<0.001
MG 20: Interferons and CSF	16199 (98.29)	6.56	282 (1.71)	29.08	160833 (99.45)	0.44	885 (0.55)	7.12	<0.001
MG 21: NSAR and other anti-inflammatory drugs	10852 (65.85)	6.74	5629 (34.15)	7.34	138200 (85.46)	0.40	23518 (14.54)	0.91	<0.001
MG 22: Gout medications	16096 (97.66)	6.69	385 (2.34)	17.40	160762 (99.41)	0.47	956 (0.59)	1.88	<0.001
MG 23: Antiepileptics	15174 (92.07)	6.05	1307 (7.93)	17.29	158558 (98.05)	0.42	3160 (1.95)	3.58	<0.001
MG 24: Antipsychotics	12866 (78.07)	5.56	3615 (21.93)	11.87	149849 (92.66)	0.37	11869 (7.34)	1.80	<0.001
MG 25: Rhinological and throat antiseptics	15105 (91.65)	6.97	1376 (8.35)	6.61	156388 (96.7)	0.46	5330 (3.3)	0.94	<0.001
MG 26: inhaled anti-obstructive drugs	13354 (81.03)	6.43	3127 (18.97)	9.11	154577 (95.58)	0.41	7141 (4.42)	1.85	<0.001
MG 27: inhaled steroids	15490 (93.99)	6.96	991 (6.01)	6.66	159895 (98.87)	0.47	1823 (1.13)	1.43	<0.001
MG 28: other COPD drugs	16214 (98.38)	6.93	267 (1.62)	7.49	161117 (99.63)	0.47	601 (0.37)	1.50	<0.001
MG 29: Cold and Cough preparations	15222 (92.36)	6.57	1259 (7.64)	11.44	159398 (98.57)	0.44	2320 (1.43)	2.97	<0.001
MG 30: Systemic Antihistamines	15601 (94.66)	6.67	880 (5.34)	11.70	158944 (98.28)	0.46	2774 (1.72)	1.62	<0.001

Table A.21. Descriptive medication prescription comparison between COVID-19 and sex-, age-, region-assigned control group aged 65-74.

	COVID-19 (n = 10140)				Control (n = 97946)				test
	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	p-value
MG 1: Anticoagulants	6027 (59.44)	17.42	4113 (40.56)	26.23	84880 (86.66)	1.39	13066 (13.34)	5.35	<0.001
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	5743 (56.64)	19.28	4397 (43.36)	23.24	76980 (78.59)	1.42	20966 (21.41)	3.73	<0.001
MG 3: Insulins and other Antidiabetics	7455 (73.52)	18.78	2685 (26.48)	27.15	90951 (92.86)	1.68	6995 (7.14)	4.95	<0.001
MG 4: "heart" drugs	9119 (89.93)	20.40	1021 (10.07)	26.35	93944 (95.91)	1.77	4002 (4.09)	5.27	<0.001
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	4197 (41.39)	18.13	5943 (58.61)	23.02	75233 (76.81)	1.39	22713 (23.19)	3.67	<0.001
MG 6: Beta Blockers	7046 (69.49)	18.55	3094 (30.51)	26.57	87647 (89.49)	1.56	10299 (10.51)	4.96	<0.001
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	5897 (58.16)	20.18	4243 (41.84)	22.13	79766 (81.44)	1.62	18180 (18.56)	3.22	<0.001
MG 8: Immunosuppressants and Immunomodulators	9655 (95.22)	20.59	485 (4.78)	29.07	96800 (98.83)	1.89	1146 (1.17)	3.93	<0.001
MG 9: Systemic Steroids	8410 (82.94)	19.62	1730 (17.06)	27.69	91510 (93.43)	1.64	6436 (6.57)	5.81	<0.001
MG 10: Chemotherapy	9770 (96.35)	20.40	370 (3.65)	36.76	96672 (98.7)	1.76	1274 (1.3)	13.50	<0.001
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	9255 (91.27)	19.54	885 (8.73)	36.27	95951 (97.96)	1.74	1995 (2.04)	10.38	<0.001
MG 12: Antacids incl. Antihistamines	6916 (68.21)	18.16	3224 (31.79)	27.08	88833 (90.7)	1.58	9113 (9.3)	5.14	<0.001
MG 13: Vitamin D and other Vitamin supplements	8074 (79.63)	19.56	2066 (20.37)	26.62	91027 (92.94)	1.72	6919 (7.06)	4.49	<0.001
MG 14: Caplacizumab	10140 (100)	21.00	0 (0)	0.00	97946 (100)	1.92	0 (0)	0.00	1
MG 15: Systemic Hemostatics	10135 (99.95)	21.00	5 (0.05)	20.00	97940 (99.99)	1.91	6 (0.01)	16.67	<0.001
MG 16: Hereditary angioedema Therapeutics	10140 (100)	21.00	0 (0)	0.00	97946 (100)	1.92	0 (0)	0.00	1
MG 17: Peripheral Vasodilators	10040 (99.01)	20.93	100 (0.99)	28.00	97487 (99.53)	1.91	459 (0.47)	3.05	<0.001
MG 18: Hormonal contraceptives and similar hormone preparations	9812 (96.77)	21.31	328 (3.23)	11.59	94900 (96.89)	1.94	3046 (3.11)	1.25	0.5105
MG 19: Immunoglobulins	10131 (99.91)	21.00	9 (0.09)	11.11	97932 (99.99)	1.91	14 (0.01)	7.14	<0.001
MG 20: Interferons and CSF	9894 (97.57)	20.54	246 (2.43)	39.43	97025 (99.06)	1.79	921 (0.94)	15.20	<0.001
MG 21: NSAR and other anti-inflammatory drugs	6658 (65.66)	22.30	3482 (34.34)	18.50	79027 (80.68)	1.74	18919 (19.32)	2.66	<0.001
MG 22: Gout medications	9446 (93.16)	20.26	694 (6.84)	30.98	96224 (98.24)	1.83	1722 (1.76)	6.50	<0.001
MG 23: Antiepileptics	8823 (87.01)	19.51	1317 (12.99)	30.98	94420 (96.4)	1.70	3526 (3.6)	7.60	<0.001
MG 24: Antipsychotics	6607 (65.16)	18.13	3533 (34.84)	26.35	85526 (87.32)	1.46	12420 (12.68)	5.02	<0.001
MG 25: Rhinological and throat antiseptics	9430 (93)	21.09	710 (7)	19.72	94338 (96.32)	1.89	3608 (3.68)	2.49	<0.001
MG 26: inhaled anti-obstructive drugs	7613 (75.08)	19.70	2527 (24.92)	24.89	90583 (92.48)	1.63	7363 (7.52)	5.49	<0.001
MG 27: inhaled steroids	9589 (94.57)	21.09	551 (5.43)	19.42	96304 (98.32)	1.88	1642 (1.68)	3.78	<0.001
MG 28: other COPD drugs	9972 (98.34)	20.97	168 (1.66)	22.62	97451 (99.49)	1.90	495 (0.51)	4.85	<0.001
MG 29: Cold and Cough preparations	8904 (87.81)	20.52	1236 (12.19)	24.43	94904 (96.89)	1.78	3042 (3.11)	6.08	<0.001
MG 30: Systemic Antihistamines	9519 (93.88)	20.88	621 (6.12)	22.71	95484 (97.49)	1.88	2462 (2.51)	3.45	<0.001

Table A.22. Descriptive medication prescription comparison between COVID-19 and sex-, age-, region-assigned control group aged 75 and older.

	COVID-19 (n = 21453)				Control (n = 202638)				test
	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	p-value
MG 1: Anticoagulants	9466 (44.12)	37.23	11987 (55.88)	44.95	143675 (70.9)	5.83	58963 (29.1)	16.76	<0.001
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	12165 (56.71)	38.44	9288 (43.29)	45.61	143838 (70.98)	6.38	58800 (29.02)	15.45	<0.001
MG 3: Insulins and other Antidiabetics	16856 (78.57)	41.12	4597 (21.43)	43.09	183751 (90.68)	8.24	18887 (9.32)	16.48	<0.001
MG 4: "heart" drugs	17985 (83.83)	40.44	3468 (16.17)	47.23	181988 (89.81)	8.15	20650 (10.19)	16.63	<0.001
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	6983 (32.55)	40.28	14470 (67.45)	42.15	122661 (60.53)	5.80	79977 (39.47)	13.93	<0.001
MG 6: Beta Blockers	13877 (64.69)	40.35	7576 (35.31)	43.72	162844 (80.36)	7.58	39794 (19.64)	14.85	<0.001
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	13255 (61.79)	43.68	8198 (38.21)	38.08	151745 (74.88)	8.48	50893 (25.12)	10.58	<0.001
MG 8: Immunosuppressants and Immunomodulators	20957 (97.69)	41.57	496 (2.31)	40.52	200505 (98.95)	8.99	2133 (1.05)	11.39	<0.001
MG 9: Systemic Steroids	18378 (85.67)	41.48	3075 (14.33)	41.89	184006 (90.81)	8.66	18632 (9.19)	12.52	<0.001
MG 10: Chemotherapy	20577 (95.92)	41.32	876 (4.08)	46.69	197798 (97.61)	8.73	4840 (2.39)	20.68	<0.001
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	18772 (87.5)	39.70	2681 (12.5)	54.46	191822 (94.66)	8.10	10816 (5.34)	25.08	<0.001
MG 12: Antacids incl. Antihistamines	14233 (66.35)	39.79	7220 (33.65)	44.99	169843 (83.82)	7.43	32795 (16.18)	17.23	<0.001
MG 13: Vitamin D and other Vitamin supplements	16389 (76.39)	40.48	5064 (23.61)	44.98	175430 (86.57)	8.03	27208 (13.43)	15.37	<0.001
MG 14: Caplacizumab	21453 (100)	41.54	0 (0)	0.00	202638 (100)	9.01	0 (0)	0.00	1
MG 15: Systemic Hemostatics	21441 (99.94)	41.53	12 (0.06)	58.33	202604 (99.98)	9.01	34 (0.02)	14.71	<0.001
MG 16: Hereditary angioedema Therapeutics	21453 (100)	41.54	0 (0)	0.00	202638 (100)	9.01	0 (0)	0.00	1
MG 17: Peripheral Vasodilators	21165 (98.66)	41.56	288 (1.34)	40.28	200408 (98.9)	8.96	2230 (1.1)	14.04	0.0016
MG 18: Hormonal contraceptives and similar hormone preparations	20955 (97.68)	41.81	498 (2.32)	30.12	196398 (96.92)	9.09	6240 (3.08)	6.55	<0.001
MG 19: Immunoglobulins	21442 (99.95)	41.52	11 (0.05)	81.82	202601 (99.98)	9.01	37 (0.02)	10.81	0.0038
MG 20: Interferons and CSF	21215 (98.89)	41.50	238 (1.11)	45.38	200889 (99.14)	8.95	1749 (0.86)	16.52	<0.001
MG 21: NSAR and other anti-inflammatory drugs	16162 (75.34)	43.58	5291 (24.66)	35.32	158159 (78.05)	8.85	44479 (21.95)	9.60	<0.001
MG 22: Gout medications	19756 (92.09)	40.99	1697 (7.91)	47.97	194955 (96.21)	8.61	7683 (3.79)	19.28	<0.001
MG 23: Antiepileptics	18228 (84.97)	40.87	3225 (15.03)	45.33	188384 (92.97)	8.42	14254 (7.03)	16.82	<0.001
MG 24: Antipsychotics	10254 (47.8)	35.16	11199 (52.2)	47.39	147484 (72.78)	5.63	55154 (27.22)	18.06	<0.001
MG 25: Rhinological and throat antiseptics	20627 (96.15)	41.91	826 (3.85)	32.32	195181 (96.32)	9.00	7457 (3.68)	9.25	0.2156
MG 26: inhaled anti-obstructive drugs	17210 (80.22)	41.00	4243 (19.78)	43.74	183270 (90.44)	8.31	19368 (9.56)	15.64	<0.001
MG 27: inhaled steroids	20787 (96.9)	41.62	666 (3.1)	39.04	199119 (98.26)	8.97	3519 (1.74)	11.37	<0.001
MG 28: other COPD drugs	21273 (99.16)	41.56	180 (0.84)	38.89	201758 (99.57)	9.01	880 (0.43)	9.77	<0.001
MG 29: Cold and Cough preparations	19077 (88.92)	41.09	2376 (11.08)	45.16	191183 (94.35)	8.38	11455 (5.65)	19.47	<0.001
MG 30: Systemic Antihistamines	20062 (93.52)	41.25	1391 (6.48)	45.72	194682 (96.07)	8.70	7956 (3.93)	16.59	<0.001

Table A.23. Descriptive medication prescription comparison between all Influenza patients and sex-, age-, region-assigned control group aged 19-40.

	Influenza (n = 925)				Control (n = 9283)				test
	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	p-value
MG 1: Anticoagulants	863 (93.3)	1.39	62 (6.7)	9.68	9044 (97.43)	0.10	239 (2.57)	0.42	<0.001
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	451 (48.76)	1.11	474 (51.24)	2.74	7157 (77.1)	0.11	2126 (22.9)	0.09	<0.001
MG 3: Insulins and other Antidiabetics	889 (96.11)	2.02	36 (3.89)	0.00	9240 (99.54)	0.11	43 (0.46)	0.00	<0.001
MG 4: "heart" drugs	911 (98.49)	1.54	14 (1.51)	28.57	9234 (99.47)	0.11	49 (0.53)	0.00	<0.001
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	862 (93.19)	1.04	63 (6.81)	14.29	9209 (99.2)	0.11	74 (0.8)	0.00	<0.001
MG 6: Beta Blockers	889 (96.11)	1.69	36 (3.89)	8.33	9246 (99.6)	0.10	37 (0.4)	2.70	<0.001
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	899 (97.19)	1.89	26 (2.81)	3.85	9252 (99.67)	0.11	31 (0.33)	0.00	<0.001
MG 8: Immunosuppressants and Immunomodulators	883 (95.46)	1.93	42 (4.54)	2.38	9257 (99.72)	0.11	26 (0.28)	0.00	<0.001
MG 9: Systemic Steroids	849 (91.78)	1.88	76 (8.22)	2.63	9146 (98.52)	0.11	137 (1.48)	0.00	<0.001
MG 10: Chemotherapy	909 (98.27)	1.76	16 (1.73)	12.50	9274 (99.9)	0.11	9 (0.1)	0.00	<0.001
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	847 (91.57)	1.30	78 (8.43)	8.97	9059 (97.59)	0.11	224 (2.41)	0.00	<0.001
MG 12: Antacids incl. Antihistamines	811 (87.68)	0.99	114 (12.32)	8.77	8992 (96.87)	0.11	291 (3.13)	0.00	<0.001
MG 13: Vitamin D and other Vitamin supplements	852 (92.11)	1.53	73 (7.89)	6.85	9115 (98.19)	0.10	168 (1.81)	0.60	<0.001
MG 14: Caplacizumab	925 (100)	1.95	0 (0)	0.00	9283 (100)	0.11	0 (0)	0.00	1
MG 15: Systemic Hemostatics	924 (99.89)	1.95	1 (0.11)	0.00	9283 (100)	0.11	0 (0)	0.00	0.0906
MG 16: Hereditary angioedema Therapeutics	924 (99.89)	1.95	1 (0.11)	0.00	9283 (100)	0.11	0 (0)	0.00	0.0906
MG 17: Peripheral Vasodilators	925 (100)	1.95	0 (0)	0.00	9271 (99.87)	0.11	12 (0.13)	0.00	0.6173
MG 18: Hormonal contraceptives and similar hormone preparations	865 (93.51)	1.73	60 (6.49)	5.00	9075 (97.76)	0.11	208 (2.24)	0.00	<0.001
MG 19: Immunoglobulins	924 (99.89)	1.95	1 (0.11)	0.00	9283 (100)	0.11	0 (0)	0.00	0.0906
MG 20: Interferons and CSF	909 (98.27)	1.98	16 (1.73)	0.00	9219 (99.31)	0.11	64 (0.69)	0.00	0.0013
MG 21: NSAR and other anti-inflammatory drugs	722 (78.05)	1.80	203 (21.95)	2.46	8260 (88.98)	0.11	1023 (11.02)	0.10	<0.001
MG 22: Gout medications	924 (99.89)	1.84	1 (0.11)	100.00	9278 (99.95)	0.11	5 (0.05)	0.00	0.4345
MG 23: Antiepileptics	860 (92.97)	1.16	65 (7.03)	12.31	9200 (99.11)	0.10	83 (0.89)	1.20	<0.001
MG 24: Antipsychotics	783 (84.65)	0.77	142 (15.35)	8.45	8909 (95.97)	0.09	374 (4.03)	0.53	<0.001
MG 25: Rhinological and throat antiseptics	805 (87.03)	1.86	120 (12.97)	2.50	8816 (94.97)	0.11	467 (5.03)	0.00	<0.001
MG 26: inhaled anti-obstructive drugs	796 (86.05)	1.38	129 (13.95)	5.43	9004 (96.99)	0.11	279 (3.01)	0.00	<0.001
MG 27: inhaled steroids	899 (97.19)	1.67	26 (2.81)	11.54	9194 (99.04)	0.11	89 (0.96)	0.00	<0.001
MG 28: other COPD drugs	905 (97.84)	1.88	20 (2.16)	5.00	9241 (99.55)	0.11	42 (0.45)	0.00	<0.001
MG 29: Cold and Cough preparations	851 (92)	1.41	74 (8)	8.11	9134 (98.39)	0.11	149 (1.61)	0.00	<0.001
MG 30: Systemic Antihistamines	869 (93.95)	2.07	56 (6.05)	0.00	9030 (97.27)	0.10	253 (2.73)	0.40	<0.001

Table A.24. Descriptive medication prescription comparison between all Influenza patients and sex-, age-, region-assigned control group aged 41-64.

	Influenza (n = 2342)				Control (n = 23330)				test
	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	p-value
MG 1: Anticoagulants	1790 (76.43)	4.80	552 (23.57)	11.78	21857 (93.69)	0.82	1473 (6.31)	2.99	<0.001
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1058 (45.18)	5.01	1284 (54.82)	7.63	18163 (77.85)	0.83	5167 (22.15)	1.41	<0.001
MG 3: Insulins and other Antidiabetics	1925 (82.19)	5.61	417 (17.81)	10.31	22635 (97.02)	0.90	695 (2.98)	2.88	<0.001
MG 4: "heart" drugs	2182 (93.17)	6.05	160 (6.83)	11.88	22979 (98.5)	0.91	351 (1.5)	3.70	<0.001
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	1424 (60.8)	4.21	918 (39.2)	9.91	20939 (89.75)	0.84	2391 (10.25)	2.01	<0.001
MG 6: Beta Blockers	1824 (77.88)	5.32	518 (22.12)	10.42	22264 (95.43)	0.86	1066 (4.57)	3.00	<0.001
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	1727 (73.74)	6.43	615 (26.26)	6.50	21541 (92.33)	0.91	1789 (7.67)	1.45	<0.001
MG 8: Immunosuppressants and Immunomodulators	2173 (92.78)	6.21	169 (7.22)	9.47	23174 (99.33)	0.94	156 (0.67)	3.21	<0.001
MG 9: Systemic Steroids	1864 (79.59)	5.15	478 (20.41)	11.51	22195 (95.14)	0.88	1135 (4.86)	2.47	<0.001
MG 10: Chemotherapy	2290 (97.78)	6.07	52 (2.22)	23.08	23229 (99.57)	0.92	101 (0.43)	8.91	<0.001
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	2138 (91.29)	5.43	204 (8.71)	17.16	22916 (98.23)	0.87	414 (1.77)	5.56	<0.001
MG 12: Antacids incl. Antihistamines	1616 (69)	5.14	726 (31)	9.37	21589 (92.54)	0.82	1741 (7.46)	2.58	<0.001
MG 13: Vitamin D and other Vitamin supplements	1929 (82.37)	5.13	413 (17.63)	12.59	22357 (95.83)	0.88	973 (4.17)	2.67	<0.001
MG 14: Caplacizumab	2342 (100)	6.45	0 (0)	0.00	23330 (100)	0.96	0 (0)	0.00	1
MG 15: Systemic Hemostatics	2340 (99.91)	6.45	2 (0.09)	0.00	23330 (100)	0.96	0 (0)	0.00	0.0083
MG 16: Hereditary angioedema Therapeutics	2342 (100)	6.45	0 (0)	0.00	23330 (100)	0.96	0 (0)	0.00	1
MG 17: Peripheral Vasodilators	2322 (99.15)	6.46	20 (0.85)	5.00	23226 (99.55)	0.95	104 (0.45)	1.92	0.0105
MG 18: Hormonal contraceptives and similar hormone preparations	2248 (95.99)	6.45	94 (4.01)	6.38	22592 (96.84)	0.96	738 (3.16)	0.95	0.0312
MG 19: Immunoglobulins	2342 (100)	6.45	0 (0)	0.00	23329 (100)	0.96	1 (0)	0.00	1
MG 20: Interferons and CSF	2260 (96.5)	6.24	82 (3.5)	12.20	23142 (99.19)	0.91	188 (0.81)	6.38	<0.001
MG 21: NSAR and other anti-inflammatory drugs	1414 (60.38)	6.72	928 (39.62)	6.03	19033 (81.58)	0.93	4297 (18.42)	1.07	<0.001
MG 22: Gout medications	2262 (96.58)	6.15	80 (3.42)	15.00	23158 (99.26)	0.94	172 (0.74)	2.91	<0.001
MG 23: Antiepileptics	2025 (86.46)	4.99	317 (13.54)	15.77	22804 (97.75)	0.89	526 (2.25)	3.99	<0.001
MG 24: Antipsychotics	1555 (66.4)	4.69	787 (33.6)	9.91	21319 (91.38)	0.81	2011 (8.62)	2.54	<0.001
MG 25: Rhinological and throat antiseptics	2054 (87.7)	6.82	288 (12.3)	3.82	22276 (95.48)	0.93	1054 (4.52)	1.42	<0.001
MG 26: inhaled anti-obstructive drugs	1654 (70.62)	5.62	688 (29.38)	8.43	22064 (94.57)	0.89	1266 (5.43)	2.05	<0.001
MG 27: inhaled steroids	2204 (94.11)	6.53	138 (5.89)	5.07	22939 (98.32)	0.96	391 (1.68)	0.51	<0.001
MG 28: other COPD drugs	2279 (97.31)	6.41	63 (2.69)	7.94	23193 (99.41)	0.95	137 (0.59)	1.46	<0.001
MG 29: Cold and Cough preparations	1973 (84.24)	5.93	369 (15.76)	9.21	22758 (97.55)	0.91	572 (2.45)	2.80	<0.001
MG 30: Systemic Antihistamines	2175 (92.87)	5.84	167 (7.13)	14.37	22727 (97.42)	0.95	603 (2.58)	1.16	<0.001

Table A.25. Descriptive medication prescription comparison between all Influenza patients and sex-, age-, region-assigned control group aged 65-74.

	Influenza (n = 2272)				Control (n = 22365)				test
	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	p-value
MG 1: Anticoagulants	1275 (56.12)	8.39	997 (43.88)	14.04	19137 (85.57)	3.25	3228 (14.43)	6.20	<0.001
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1120 (49.3)	8.84	1152 (50.7)	12.85	16675 (74.56)	3.53	5690 (25.44)	4.09	<0.001
MG 3: Insulins and other Antidiabetics	1695 (74.6)	9.56	577 (25.4)	14.73	20715 (92.62)	3.44	1650 (7.38)	6.61	<0.001
MG 4: "heart" drugs	1959 (86.22)	10.01	313 (13.78)	16.29	21303 (95.25)	3.57	1062 (4.75)	5.74	<0.001
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	871 (38.34)	10.33	1401 (61.66)	11.21	16888 (75.51)	3.38	5477 (24.49)	4.58	<0.001
MG 6: Beta Blockers	1464 (64.44)	9.43	808 (35.56)	13.49	19724 (88.19)	3.41	2641 (11.81)	5.68	<0.001
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	1270 (55.9)	12.20	1002 (44.1)	9.18	18167 (81.23)	3.63	4198 (18.77)	3.86	<0.001
MG 8: Immunosuppressants and Immunomodulators	2162 (95.16)	10.59	110 (4.84)	16.36	22140 (98.99)	3.67	225 (1.01)	4.00	<0.001
MG 9: Systemic Steroids	1770 (77.9)	9.77	502 (22.1)	14.74	20568 (91.97)	3.56	1797 (8.03)	5.01	<0.001
MG 10: Chemotherapy	2184 (96.13)	10.07	88 (3.87)	30.68	22075 (98.7)	3.50	290 (1.3)	16.90	<0.001
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	2034 (89.52)	9.64	238 (10.48)	21.43	21698 (97.02)	3.40	667 (2.98)	12.74	<0.001
MG 12: Antacids incl. Antihistamines	1415 (62.28)	8.48	857 (37.72)	14.82	19189 (85.8)	3.29	3176 (14.2)	6.01	<0.001
MG 13: Vitamin D and other Vitamin supplements	1792 (78.87)	10.32	480 (21.13)	12.92	20640 (92.29)	3.53	1725 (7.71)	5.45	<0.001
MG 14: Caplacizumab	2272 (100)	10.87	0 (0)	0.00	22365 (100)	3.68	0 (0)	0.00	1
MG 15: Systemic Hemostatics	2272 (100)	10.87	0 (0)	0.00	22363 (99.99)	3.68	2 (0.01)	0.00	1
MG 16: Hereditary angioedema Therapeutics	2272 (100)	10.87	0 (0)	0.00	22365 (100)	3.68	0 (0)	0.00	1
MG 17: Peripheral Vasodilators	2251 (99.08)	10.97	21 (0.92)	0.00	22157 (99.07)	3.66	208 (0.93)	5.77	1
MG 18: Hormonal contraceptives and similar hormone preparations	2195 (96.61)	10.98	77 (3.39)	7.79	21503 (96.15)	3.80	862 (3.85)	0.46	0.2957
MG 19: Immunoglobulins	2270 (99.91)	10.88	2 (0.09)	0.00	22358 (99.97)	3.67	7 (0.03)	14.29	0.1986
MG 20: Interferons and CSF	2190 (96.39)	10.23	82 (3.61)	28.05	22083 (98.74)	3.54	282 (1.26)	14.18	<0.001
MG 21: NSAR and other anti-inflammatory drugs	1449 (63.78)	10.56	823 (36.22)	11.42	17226 (77.02)	3.85	5139 (22.98)	3.07	<0.001
MG 22: Gout medications	2110 (92.87)	10.24	162 (7.13)	19.14	21882 (97.84)	3.60	483 (2.16)	7.04	<0.001
MG 23: Antiepileptics	1892 (83.27)	9.88	380 (16.73)	15.79	21541 (96.32)	3.51	824 (3.68)	8.01	<0.001
MG 24: Antipsychotics	1367 (60.17)	7.75	905 (39.83)	15.58	19322 (86.39)	3.33	3043 (13.61)	5.88	<0.001
MG 25: Rhinological and throat antiseptics	2042 (89.88)	11.17	230 (10.12)	8.26	21219 (94.88)	3.75	1146 (5.12)	2.36	<0.001
MG 26: inhaled anti-obstructive drugs	1436 (63.2)	9.82	836 (36.8)	12.68	20377 (91.11)	3.45	1988 (8.89)	5.99	<0.001
MG 27: inhaled steroids	2131 (93.79)	10.70	141 (6.21)	13.48	21818 (97.55)	3.63	547 (2.45)	5.30	<0.001
MG 28: other COPD drugs	2195 (96.61)	10.66	77 (3.39)	16.88	22227 (99.38)	3.66	138 (0.62)	5.80	<0.001
MG 29: Cold and Cough preparations	1897 (83.49)	10.23	375 (16.51)	14.13	21408 (95.72)	3.61	957 (4.28)	5.12	<0.001
MG 30: Systemic Antihistamines	2086 (91.81)	10.98	186 (8.19)	9.68	21626 (96.7)	3.63	739 (3.3)	5.01	<0.001

Table A.26. Descriptive medication prescription comparison between all Influenza patients and sex-, age-, region-assigned control group aged 75 and older.

	Influenza (n = 5257)				Control (n = 49894)				test
	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	p-value
MG 1: Anticoagulants	2429 (46.21)	19.43	2828 (53.79)	23.44	36032 (72.22)	9.89	13862 (27.78)	18.86	<0.001
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	2776 (52.81)	19.13	2481 (47.19)	24.35	34137 (68.42)	10.36	15757 (31.58)	16.77	<0.001
MG 3: Insulins and other Antidiabetics	4247 (80.79)	21.52	1010 (19.21)	21.88	45468 (91.13)	11.62	4426 (8.87)	20.27	<0.001
MG 4: "heart" drugs	4343 (82.61)	20.40	914 (17.39)	27.24	44540 (89.27)	11.52	5354 (10.73)	19.54	<0.001
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	1752 (33.33)	20.61	3505 (66.67)	22.08	31029 (62.19)	9.65	18865 (37.81)	16.88	<0.001
MG 6: Beta Blockers	3440 (65.44)	20.96	1817 (34.56)	22.78	40244 (80.66)	11.14	9650 (19.34)	17.55	<0.001
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	3215 (61.16)	24.14	2042 (38.84)	17.58	38676 (77.52)	12.34	11218 (22.48)	12.53	<0.001
MG 8: Immunosuppressants and Immunomodulators	5160 (98.15)	21.59	97 (1.85)	21.65	49431 (99.07)	12.38	463 (0.93)	12.96	<0.001
MG 9: Systemic Steroids	4475 (85.12)	21.25	782 (14.88)	23.53	44799 (89.79)	12.29	5095 (10.21)	13.23	<0.001
MG 10: Chemotherapy	5050 (96.06)	21.25	207 (3.94)	29.95	48760 (97.73)	12.13	1134 (2.27)	23.37	<0.001
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	4653 (88.51)	20.29	604 (11.49)	31.62	46528 (93.25)	11.58	3366 (6.75)	23.56	<0.001
MG 12: Antacids incl. Antihistamines	3581 (68.12)	20.80	1676 (31.88)	23.27	39089 (78.34)	10.53	10805 (21.66)	19.09	<0.001
MG 13: Vitamin D and other Vitamin supplements	4096 (77.92)	20.70	1161 (22.08)	24.72	43377 (86.94)	11.71	6517 (13.06)	16.88	<0.001
MG 14: Caplacizumab	5257 (100)	21.59	0 (0)	0.00	49894 (100)	12.38	0 (0)	0.00	1
MG 15: Systemic Hemostatics	5253 (99.92)	21.55	4 (0.08)	75.00	49892 (100)	12.38	2 (0)	100.00	0.0011
MG 16: Hereditary angioedema Therapeutics	5257 (100)	21.59	0 (0)	0.00	49894 (100)	12.38	0 (0)	0.00	1
MG 17: Peripheral Vasodilators	5133 (97.64)	21.78	124 (2.36)	13.71	49039 (98.29)	12.35	855 (1.71)	14.50	<0.001
MG 18: Hormonal contraceptives and similar hormone preparations	5083 (96.69)	21.92	174 (3.31)	12.07	48150 (96.5)	12.55	1744 (3.5)	7.74	0.51
MG 19: Immunoglobulins	5254 (99.94)	21.60	3 (0.06)	0.00	49888 (99.99)	12.38	6 (0.01)	50.00	0.0469
MG 20: Interferons and CSF	5188 (98.69)	21.45	69 (1.31)	31.88	49382 (98.97)	12.31	512 (1.03)	19.53	0.0624
MG 21: NSAR and other anti-inflammatory drugs	3831 (72.87)	22.68	1426 (27.13)	18.65	37266 (74.69)	12.63	12628 (25.31)	11.65	0.0043
MG 22: Gout medications	4857 (92.39)	21.02	400 (7.61)	28.50	47931 (96.07)	12.04	1963 (3.93)	20.73	<0.001
MG 23: Antiepileptics	4486 (85.33)	21.24	771 (14.67)	23.61	46691 (93.58)	11.94	3203 (6.42)	18.92	<0.001
MG 24: Antipsychotics	2544 (48.39)	17.49	2713 (51.61)	25.43	36494 (73.14)	9.24	13400 (26.86)	20.96	<0.001
MG 25: Rhinological and throat antiseptics	4935 (93.87)	21.78	322 (6.13)	18.63	47483 (95.17)	12.43	2411 (4.83)	11.45	<0.001
MG 26: inhaled anti-obstructive drugs	4000 (76.09)	20.77	1257 (23.91)	24.18	44779 (89.75)	11.71	5115 (10.25)	18.28	<0.001
MG 27: inhaled steroids	5061 (96.27)	21.68	196 (3.73)	19.39	48804 (97.82)	12.39	1090 (2.18)	12.29	<0.001
MG 28: other COPD drugs	5189 (98.71)	21.62	68 (1.29)	19.12	49604 (99.42)	12.34	290 (0.58)	19.31	<0.001
MG 29: Cold and Cough preparations	4553 (86.61)	21.15	704 (13.39)	24.43	46320 (92.84)	11.82	3574 (7.16)	19.73	<0.001
MG 30: Systemic Antihistamines	4924 (93.67)	21.26	333 (6.33)	26.43	47477 (95.16)	12.14	2417 (4.84)	17.09	<0.001

Table A.27. Descriptive medication prescription comparison between all COVID-19 and Influenza patients aged 19-40.

	COVID-19 (n = 3941)				Influenza (n = 925)				test
	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	p-value
MG 1: Anticoagulants	3620 (91.85)	1.10	321 (8.15)	2.49	863 (93.3)	1.39	62 (6.7)	9.68	0.162
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	2271 (57.62)	1.10	1670 (42.38)	1.38	451 (48.76)	1.11	474 (51.24)	2.74	<0.001
MG 3: Insulins and other Antidiabetics	3836 (97.34)	0.99	105 (2.66)	9.52	889 (96.11)	2.02	36 (3.89)	0.00	0.0582
MG 4: "heart" drugs	3879 (98.43)	1.24	62 (1.57)	0.00	911 (98.49)	1.54	14 (1.51)	28.57	1
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	3712 (94.19)	0.97	229 (5.81)	5.24	862 (93.19)	1.04	63 (6.81)	14.29	0.2821
MG 6: Beta Blockers	3848 (97.64)	1.09	93 (2.36)	6.45	889 (96.11)	1.69	36 (3.89)	8.33	0.0125
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	3845 (97.56)	1.12	96 (2.44)	5.21	899 (97.19)	1.89	26 (2.81)	3.85	0.5896
MG 8: Immunosuppressants and Immunomodulators	3837 (97.36)	1.15	104 (2.64)	3.85	883 (95.46)	1.93	42 (4.54)	2.38	0.0032
MG 9: Systemic Steroids	3676 (93.28)	1.01	265 (6.72)	4.15	849 (91.78)	1.88	76 (8.22)	2.63	0.1265
MG 10: Chemotherapy	3922 (99.52)	1.17	19 (0.48)	10.53	909 (98.27)	1.76	16 (1.73)	12.50	<0.001
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	3700 (93.88)	1.19	241 (6.12)	1.66	847 (91.57)	1.30	78 (8.43)	8.97	0.0128
MG 12: Antacids incl. Antihistamines	3563 (90.41)	0.95	378 (9.59)	3.70	811 (87.68)	0.99	114 (12.32)	8.77	0.0155
MG 13: Vitamin D and other Vitamin supplements	3664 (92.97)	1.15	277 (7.03)	2.17	852 (92.11)	1.53	73 (7.89)	6.85	0.3988
MG 14: Caplacizumab	3940 (99.97)	1.22	1 (0.03)	0.00	925 (100)	1.95	0 (0)	0.00	1
MG 15: Systemic Hemostatics	3940 (99.97)	1.22	1 (0.03)	0.00	924 (99.89)	1.95	1 (0.11)	0.00	0.3441
MG 16: Hereditary angioedema Therapeutics	3940 (99.97)	1.22	1 (0.03)	0.00	924 (99.89)	1.95	1 (0.11)	0.00	0.3441
MG 17: Peripheral Vasodilators	3936 (99.87)	1.22	5 (0.13)	0.00	925 (100)	1.95	0 (0)	0.00	0.5908
MG 18: Hormonal contraceptives and similar hormone preparations	3752 (95.2)	1.25	189 (4.8)	0.53	865 (93.51)	1.73	60 (6.49)	5.00	0.0437
MG 19: Immunoglobulins	3937 (99.9)	1.22	4 (0.1)	0.00	924 (99.89)	1.95	1 (0.11)	0.00	1
MG 20: Interferons and CSF	3893 (98.78)	1.21	48 (1.22)	2.08	909 (98.27)	1.98	16 (1.73)	0.00	0.285
MG 21: NSAR and other anti-inflammatory drugs	3010 (76.38)	1.23	931 (23.62)	1.18	722 (78.05)	1.80	203 (21.95)	2.46	0.297
MG 22: Gout medications	3922 (99.52)	1.15	19 (0.48)	15.79	924 (99.89)	1.84	1 (0.11)	100.00	0.1522
MG 23: Antiepileptics	3770 (95.66)	1.03	171 (4.34)	5.26	860 (92.97)	1.16	65 (7.03)	12.31	<0.001
MG 24: Antipsychotics	3446 (87.44)	0.93	495 (12.56)	3.23	783 (84.65)	0.77	142 (15.35)	8.45	0.0271
MG 25: Rhinological and throat antiseptics	3570 (90.59)	1.18	371 (9.41)	1.62	805 (87.03)	1.86	120 (12.97)	2.50	0.0015
MG 26: inhaled anti-obstructive drugs	3438 (87.24)	1.08	503 (12.76)	2.19	796 (86.05)	1.38	129 (13.95)	5.43	0.3636
MG 27: inhaled steroids	3746 (95.05)	1.20	195 (4.95)	1.54	899 (97.19)	1.67	26 (2.81)	11.54	0.0065
MG 28: other COPD drugs	3904 (99.06)	1.23	37 (0.94)	0.00	905 (97.84)	1.88	20 (2.16)	5.00	0.0033
MG 29: Cold and Cough preparations	3727 (94.57)	1.05	214 (5.43)	4.21	851 (92)	1.41	74 (8)	8.11	0.0037
MG 30: Systemic Antihistamines	3762 (95.46)	1.17	179 (4.54)	2.23	869 (93.95)	2.07	56 (6.05)	0.00	0.065

Table A.28. Descriptive medication prescription comparison between all COVID-19 and Influenza patients aged 41-64.

	COVID-19 (n = 16481)				Influenza (n = 2342)				test
	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	p-value
MG 1: Anticoagulants	13288 (80.63)	5.74	3193 (19.37)	11.93	1790 (76.43)	4.80	552 (23.57)	11.78	<0.001
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	9464 (57.42)	5.58	7017 (42.58)	8.78	1058 (45.18)	5.01	1284 (54.82)	7.63	<0.001
MG 3: Insulins and other Antidiabetics	14320 (86.89)	6.10	2161 (13.11)	12.49	1925 (82.19)	5.61	417 (17.81)	10.31	<0.001
MG 4: "heart" drugs	15821 (96)	6.73	660 (4)	11.97	2182 (93.17)	6.05	160 (6.83)	11.88	<0.001
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	11493 (69.73)	5.01	4988 (30.27)	11.39	1424 (60.8)	4.21	918 (39.2)	9.91	<0.001
MG 6: Beta Blockers	14397 (87.36)	5.95	2084 (12.64)	13.82	1824 (77.88)	5.32	518 (22.12)	10.42	<0.001
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	13112 (79.56)	6.18	3369 (20.44)	9.91	1727 (73.74)	6.43	615 (26.26)	6.50	<0.001
MG 8: Immunosuppressants and Immunomodulators	15829 (96.04)	6.73	652 (3.96)	12.12	2173 (92.78)	6.21	169 (7.22)	9.47	<0.001
MG 9: Systemic Steroids	14478 (87.85)	6.04	2003 (12.15)	13.48	1864 (79.59)	5.15	478 (20.41)	11.51	<0.001
MG 10: Chemotherapy	16235 (98.51)	6.65	246 (1.49)	26.02	2290 (97.78)	6.07	52 (2.22)	23.08	0.0107
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	15671 (95.09)	6.32	810 (4.91)	18.89	2138 (91.29)	5.43	204 (8.71)	17.16	<0.001
MG 12: Antacids incl. Antihistamines	13462 (81.68)	5.66	3019 (18.32)	12.65	1616 (69)	5.14	726 (31)	9.37	<0.001
MG 13: Vitamin D and other Vitamin supplements	14604 (88.61)	5.96	1877 (11.39)	14.60	1929 (82.37)	5.13	413 (17.63)	12.59	<0.001
MG 14: Caplacizumab	16481 (100)	6.94	0 (0)	0.00	2342 (100)	6.45	0 (0)	0.00	1
MG 15: Systemic Hemostatics	16476 (99.97)	6.93	5 (0.03)	40.00	2340 (99.91)	6.45	2 (0.09)	0.00	0.213
MG 16: Hereditary angioedema Therapeutics	16481 (100)	6.94	0 (0)	0.00	2342 (100)	6.45	0 (0)	0.00	1
MG 17: Peripheral Vasodilators	16412 (99.58)	6.95	69 (0.42)	5.80	2322 (99.15)	6.46	20 (0.85)	5.00	0.0067
MG 18: Hormonal contraceptives and similar hormone preparations	15922 (96.61)	6.98	559 (3.39)	5.90	2248 (95.99)	6.45	94 (4.01)	6.38	0.1393
MG 19: Immunoglobulins	16471 (99.94)	6.93	10 (0.06)	20.00	2342 (100)	6.45	0 (0)	0.00	0.6236
MG 20: Interferons and CSF	16199 (98.29)	6.56	282 (1.71)	29.08	2260 (96.5)	6.24	82 (3.5)	12.20	<0.001
MG 21: NSAR and other anti-inflammatory drugs	10852 (65.85)	6.74	5629 (34.15)	7.34	1414 (60.38)	6.72	928 (39.62)	6.03	<0.001
MG 22: Gout medications	16096 (97.66)	6.69	385 (2.34)	17.40	2262 (96.58)	6.15	80 (3.42)	15.00	0.0021
MG 23: Antiepileptics	15174 (92.07)	6.05	1307 (7.93)	17.29	2025 (86.46)	4.99	317 (13.54)	15.77	<0.001
MG 24: Antipsychotics	12866 (78.07)	5.56	3615 (21.93)	11.87	1555 (66.4)	4.69	787 (33.6)	9.91	<0.001
MG 25: Rhinological and throat antiseptics	15105 (91.65)	6.97	1376 (8.35)	6.61	2054 (87.7)	6.82	288 (12.3)	3.82	<0.001
MG 26: inhaled anti-obstructive drugs	13354 (81.03)	6.43	3127 (18.97)	9.11	1654 (70.62)	5.62	688 (29.38)	8.43	<0.001
MG 27: inhaled steroids	15490 (93.99)	6.96	991 (6.01)	6.66	2204 (94.11)	6.53	138 (5.89)	5.07	0.8544
MG 28: other COPD drugs	16214 (98.38)	6.93	267 (1.62)	7.49	2279 (97.31)	6.41	63 (2.69)	7.94	<0.001
MG 29: Cold and Cough preparations	15222 (92.36)	6.57	1259 (7.64)	11.44	1973 (84.24)	5.93	369 (15.76)	9.21	<0.001
MG 30: Systemic Antihistamines	15601 (94.66)	6.67	880 (5.34)	11.70	2175 (92.87)	5.84	167 (7.13)	14.37	<0.001

Table A.29. Descriptive medication prescription comparison between all COVID-19 and Influenza patients aged 65-74.

	COVID-19 (n = 10140)				Influenza (n = 2272)				test
	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	p-value
MG 1: Anticoagulants	6027 (59.44)	17.42	4113 (40.56)	26.23	1275 (56.12)	8.39	997 (43.88)	14.04	0.0039
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	5743 (56.64)	19.28	4397 (43.36)	23.24	1120 (49.3)	8.84	1152 (50.7)	12.85	<0.001
MG 3: Insulins and other Antidiabetics	7455 (73.52)	18.78	2685 (26.48)	27.15	1695 (74.6)	9.56	577 (25.4)	14.73	0.3012
MG 4: "heart" drugs	9119 (89.93)	20.40	1021 (10.07)	26.35	1959 (86.22)	10.01	313 (13.78)	16.29	<0.001
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	4197 (41.39)	18.13	5943 (58.61)	23.02	871 (38.34)	10.33	1401 (61.66)	11.21	0.008
MG 6: Beta Blockers	7046 (69.49)	18.55	3094 (30.51)	26.57	1464 (64.44)	9.43	808 (35.56)	13.49	<0.001
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	5897 (58.16)	20.18	4243 (41.84)	22.13	1270 (55.9)	12.20	1002 (44.1)	9.18	0.0517
MG 8: Immunosuppressants and Immunomodulators	9655 (95.22)	20.59	485 (4.78)	29.07	2162 (95.16)	10.59	110 (4.84)	16.36	0.9492
MG 9: Systemic Steroids	8410 (82.94)	19.62	1730 (17.06)	27.69	1770 (77.9)	9.77	502 (22.1)	14.74	<0.001
MG 10: Chemotherapy	9770 (96.35)	20.40	370 (3.65)	36.76	2184 (96.13)	10.07	88 (3.87)	30.68	0.6519
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	9255 (91.27)	19.54	885 (8.73)	36.27	2034 (89.52)	9.64	238 (10.48)	21.43	0.0098
MG 12: Antacids incl. Antihistamines	6916 (68.21)	18.16	3224 (31.79)	27.08	1415 (62.28)	8.48	857 (37.72)	14.82	<0.001
MG 13: Vitamin D and other Vitamin supplements	8074 (79.63)	19.56	2066 (20.37)	26.62	1792 (78.87)	10.32	480 (21.13)	12.92	0.4392
MG 14: Caplacizumab	10140 (100)	21.00	0 (0)	0.00	2272 (100)	10.87	0 (0)	0.00	1
MG 15: Systemic Hemostatics	10135 (99.95)	21.00	5 (0.05)	20.00	2272 (100)	10.87	0 (0)	0.00	0.5922
MG 16: Hereditary angioedema Therapeutics	10140 (100)	21.00	0 (0)	0.00	2272 (100)	10.87	0 (0)	0.00	1
MG 17: Peripheral Vasodilators	10040 (99.01)	20.93	100 (0.99)	28.00	2251 (99.08)	10.97	21 (0.92)	0.00	0.8782
MG 18: Hormonal contraceptives and similar hormone preparations	9812 (96.77)	21.31	328 (3.23)	11.59	2195 (96.61)	10.98	77 (3.39)	7.79	0.7573
MG 19: Immunoglobulins	10131 (99.91)	21.00	9 (0.09)	11.11	2270 (99.91)	10.88	2 (0.09)	0.00	1
MG 20: Interferons and CSF	9894 (97.57)	20.54	246 (2.43)	39.43	2190 (96.39)	10.23	82 (3.61)	28.05	0.0019
MG 21: NSAR and other anti-inflammatory drugs	6658 (65.66)	22.30	3482 (34.34)	18.50	1449 (63.78)	10.56	823 (36.22)	11.42	0.0927
MG 22: Gout medications	9446 (93.16)	20.26	694 (6.84)	30.98	2110 (92.87)	10.24	162 (7.13)	19.14	0.6595
MG 23: Antiepileptics	8823 (87.01)	19.51	1317 (12.99)	30.98	1892 (83.27)	9.88	380 (16.73)	15.79	<0.001
MG 24: Antipsychotics	6607 (65.16)	18.13	3533 (34.84)	26.35	1367 (60.17)	7.75	905 (39.83)	15.58	<0.001
MG 25: Rhinological and throat antiseptics	9430 (93)	21.09	710 (7)	19.72	2042 (89.88)	11.17	230 (10.12)	8.26	<0.001
MG 26: inhaled anti-obstructive drugs	7613 (75.08)	19.70	2527 (24.92)	24.89	1436 (63.2)	9.82	836 (36.8)	12.68	<0.001
MG 27: inhaled steroids	9589 (94.57)	21.09	551 (5.43)	19.42	2131 (93.79)	10.70	141 (6.21)	13.48	0.1618
MG 28: other COPD drugs	9972 (98.34)	20.97	168 (1.66)	22.62	2195 (96.61)	10.66	77 (3.39)	16.88	<0.001
MG 29: Cold and Cough preparations	8904 (87.81)	20.52	1236 (12.19)	24.43	1897 (83.49)	10.23	375 (16.51)	14.13	<0.001
MG 30: Systemic Antihistamines	9519 (93.88)	20.88	621 (6.12)	22.71	2086 (91.81)	10.98	186 (8.19)	9.68	<0.001

Table A.30. Descriptive medication prescription comparison between all COVID-19 and Influenza patients aged 75 and older.

	COVID-19 (n = 21453)				Influenza (n = 5257)				test
	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	p-value
MG 1: Anticoagulants	9466 (44.12)	37.23	11987 (55.88)	44.95	2429 (46.21)	19.43	2828 (53.79)	23.44	0.0068
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	12165 (56.71)	38.44	9288 (43.29)	45.61	2776 (52.81)	19.13	2481 (47.19)	24.35	<0.001
MG 3: Insulins and other Antidiabetics	16856 (78.57)	41.12	4597 (21.43)	43.09	4247 (80.79)	21.52	1010 (19.21)	21.88	<0.001
MG 4: "heart" drugs	17985 (83.83)	40.44	3468 (16.17)	47.23	4343 (82.61)	20.40	914 (17.39)	27.24	0.0339
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	6983 (32.55)	40.28	14470 (67.45)	42.15	1752 (33.33)	20.61	3505 (66.67)	22.08	0.2894
MG 6: Beta Blockers	13877 (64.69)	40.35	7576 (35.31)	43.72	3440 (65.44)	20.96	1817 (34.56)	22.78	0.3145
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	13255 (61.79)	43.68	8198 (38.21)	38.08	3215 (61.16)	24.14	2042 (38.84)	17.58	0.409
MG 8: Immunosuppressants and Immunomodulators	20957 (97.69)	41.57	496 (2.31)	40.52	5160 (98.15)	21.59	97 (1.85)	21.65	0.0448
MG 9: Systemic Steroids	18378 (85.67)	41.48	3075 (14.33)	41.89	4475 (85.12)	21.25	782 (14.88)	23.53	0.3273
MG 10: Chemotherapy	20577 (95.92)	41.32	876 (4.08)	46.69	5050 (96.06)	21.25	207 (3.94)	29.95	0.6591
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	18772 (87.5)	39.70	2681 (12.5)	54.46	4653 (88.51)	20.29	604 (11.49)	31.62	0.0488
MG 12: Antacids incl. Antihistamines	14233 (66.35)	39.79	7220 (33.65)	44.99	3581 (68.12)	20.80	1676 (31.88)	23.27	0.0151
MG 13: Vitamin D and other Vitamin supplements	16389 (76.39)	40.48	5064 (23.61)	44.98	4096 (77.92)	20.70	1161 (22.08)	24.72	0.0204
MG 14: Caplacizumab	21453 (100)	41.54	0 (0)	0.00	5257 (100)	21.59	0 (0)	0.00	1
MG 15: Systemic Hemostatics	21441 (99.94)	41.53	12 (0.06)	58.33	5253 (99.92)	21.55	4 (0.08)	75.00	0.5366
MG 16: Hereditary angioedema Therapeutics	21453 (100)	41.54	0 (0)	0.00	5257 (100)	21.59	0 (0)	0.00	1
MG 17: Peripheral Vasodilators	21165 (98.66)	41.56	288 (1.34)	40.28	5133 (97.64)	21.78	124 (2.36)	13.71	<0.001
MG 18: Hormonal contraceptives and similar hormone preparations	20955 (97.68)	41.81	498 (2.32)	30.12	5083 (96.69)	21.92	174 (3.31)	12.07	<0.001
MG 19: Immunoglobulins	21442 (99.95)	41.52	11 (0.05)	81.82	5254 (99.94)	21.60	3 (0.06)	0.00	0.7459
MG 20: Interferons and CSF	21215 (98.89)	41.50	238 (1.11)	45.38	5188 (98.69)	21.45	69 (1.31)	31.88	0.2436
MG 21: NSAR and other anti-inflammatory drugs	16162 (75.34)	43.58	5291 (24.66)	35.32	3831 (72.87)	22.68	1426 (27.13)	18.65	<0.001
MG 22: Gout medications	19756 (92.09)	40.99	1697 (7.91)	47.97	4857 (92.39)	21.02	400 (7.61)	28.50	0.4842
MG 23: Antiepileptics	18228 (84.97)	40.87	3225 (15.03)	45.33	4486 (85.33)	21.24	771 (14.67)	23.61	0.518
MG 24: Antipsychotics	10254 (47.8)	35.16	11199 (52.2)	47.39	2544 (48.39)	17.49	2713 (51.61)	25.43	0.4481
MG 25: Rhinological and throat antiseptics	20627 (96.15)	41.91	826 (3.85)	32.32	4935 (93.87)	21.78	322 (6.13)	18.63	<0.001
MG 26: inhaled anti-obstructive drugs	17210 (80.22)	41.00	4243 (19.78)	43.74	4000 (76.09)	20.77	1257 (23.91)	24.18	<0.001
MG 27: inhaled steroids	20787 (96.9)	41.62	666 (3.1)	39.04	5061 (96.27)	21.68	196 (3.73)	19.39	0.0244
MG 28: other COPD drugs	21273 (99.16)	41.56	180 (0.84)	38.89	5189 (98.71)	21.62	68 (1.29)	19.12	0.0027
MG 29: Cold and Cough preparations	19077 (88.92)	41.09	2376 (11.08)	45.16	4553 (86.61)	21.15	704 (13.39)	24.43	<0.001
MG 30: Systemic Antihistamines	20062 (93.52)	41.25	1391 (6.48)	45.72	4924 (93.67)	21.26	333 (6.33)	26.43	0.7158

Table A.31. Descriptive medication prescription comparison between propensity score matched COVID-19 and Influenza patients aged 19-40.

	COVID-19 (n = 1266)				Influenza (n = 710)				test
	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	p-value
MG 1: Anticoagulants	1212 (95.73)	0.74	54 (4.27)	3.70	679 (95.63)	0.88	31 (4.37)	6.45	1
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	743 (58.69)	0.67	523 (41.31)	1.15	394 (55.49)	0.76	316 (44.51)	1.58	0.183
MG 3: Insulins and other Antidiabetics	1237 (97.71)	0.57	29 (2.29)	13.79	697 (98.17)	1.15	13 (1.83)	0.00	0.605
MG 4: "heart" drugs	1252 (98.89)	0.88	14 (1.11)	0.00	705 (99.3)	0.85	5 (0.7)	40.00	0.5238
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	1228 (97)	0.81	38 (3)	2.63	687 (96.76)	0.73	23 (3.24)	13.04	0.8746
MG 6: Beta Blockers	1252 (98.89)	0.88	14 (1.11)	0.00	697 (98.17)	1.00	13 (1.83)	7.69	0.2584
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	1252 (98.89)	0.80	14 (1.11)	7.14	702 (98.87)	1.14	8 (1.13)	0.00	1
MG 8: Immunosuppressants and Immunomodulators	1257 (99.29)	0.80	9 (0.71)	11.11	700 (98.59)	1.14	10 (1.41)	0.00	0.199
MG 9: Systemic Steroids	1230 (97.16)	0.65	36 (2.84)	8.33	678 (95.49)	1.18	32 (4.51)	0.00	0.0691
MG 10: Chemotherapy	1266 (100)	0.87	0 (0)	0.00	709 (99.86)	0.99	1 (0.14)	100.00	0.3593
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1205 (95.18)	0.91	61 (4.82)	0.00	676 (95.21)	0.89	34 (4.79)	5.88	1
MG 12: Antacids incl. Antihistamines	1206 (95.26)	0.83	60 (4.74)	1.67	659 (92.82)	0.46	51 (7.18)	9.80	0.0306
MG 13: Vitamin D and other Vitamin supplements	1215 (95.97)	0.74	51 (4.03)	3.92	683 (96.2)	1.17	27 (3.8)	0.00	0.8992
MG 14: Caplacizumab	1266 (100)	0.87	0 (0)	0.00	710 (100)	1.13	0 (0)	0.00	1
MG 15: Systemic Hemostatics	1266 (100)	0.87	0 (0)	0.00	709 (99.86)	1.13	1 (0.14)	0.00	0.3593
MG 16: Hereditary angioedema Therapeutics	1266 (100)	0.87	0 (0)	0.00	709 (99.86)	1.13	1 (0.14)	0.00	0.3593
MG 17: Peripheral Vasodilators	1265 (99.92)	0.87	1 (0.08)	0.00	710 (100)	1.13	0 (0)	0.00	1
MG 18: Hormonal contraceptives and similar hormone preparations	1203 (95.02)	0.91	63 (4.98)	0.00	672 (94.65)	1.19	38 (5.35)	0.00	0.7968
MG 19: Immunoglobulins	1266 (100)	0.87	0 (0)	0.00	710 (100)	1.13	0 (0)	0.00	1
MG 20: Interferons and CSF	1259 (99.45)	0.87	7 (0.55)	0.00	701 (98.73)	1.14	9 (1.27)	0.00	0.1501
MG 21: NSAR and other anti-inflammatory drugs	1065 (84.12)	0.85	201 (15.88)	1.00	577 (81.27)	1.04	133 (18.73)	1.50	0.1182
MG 22: Gout medications	1266 (100)	0.87	0 (0)	0.00	710 (100)	1.13	0 (0)	0.00	1
MG 23: Antiepileptics	1233 (97.39)	0.73	33 (2.61)	6.06	688 (96.9)	0.87	22 (3.1)	9.09	0.6204
MG 24: Antipsychotics	1171 (92.5)	0.85	95 (7.5)	1.05	649 (91.41)	0.77	61 (8.59)	4.92	0.4394
MG 25: Rhinological and throat antiseptics	1179 (93.13)	0.76	87 (6.87)	2.30	645 (90.85)	1.09	65 (9.15)	1.54	0.082
MG 26: inhaled anti-obstructive drugs	1161 (91.71)	0.69	105 (8.29)	2.86	643 (90.56)	1.09	67 (9.44)	1.49	0.4345
MG 27: inhaled steroids	1248 (98.58)	0.80	18 (1.42)	5.56	698 (98.31)	1.00	12 (1.69)	8.33	0.7823
MG 28: other COPD drugs	1262 (99.68)	0.87	4 (0.32)	0.00	704 (99.15)	1.14	6 (0.85)	0.00	0.1823
MG 29: Cold and Cough preparations	1235 (97.55)	0.81	31 (2.45)	3.23	674 (94.93)	0.89	36 (5.07)	5.56	0.0031
MG 30: Systemic Antihistamines	1239 (97.87)	0.81	27 (2.13)	3.70	687 (96.76)	1.16	23 (3.24)	0.00	0.1758

Table A.32. Descriptive medication prescription comparison between propensity score matched COVID-19 and Influenza patients aged 41-64.

	COVID-19 (n = 3978)				Influenza (n = 2124)				test
	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	p-value
MG 1: Anticoagulants	3242 (81.5)	5.86	736 (18.5)	15.08	1672 (78.72)	4.07	452 (21.28)	10.62	0.01
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1951 (49.04)	6.36	2027 (50.96)	8.73	1030 (48.49)	4.66	1094 (51.51)	6.22	0.7013
MG 3: Insulins and other Antidiabetics	3403 (85.55)	6.41	575 (14.45)	14.43	1790 (84.27)	5.08	334 (15.73)	7.49	0.197
MG 4: "heart" drugs	3781 (95.05)	7.33	197 (4.95)	12.18	2008 (94.54)	5.28	116 (5.46)	8.62	0.4249
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	2647 (66.54)	5.40	1331 (33.46)	11.87	1366 (64.31)	3.66	758 (35.69)	8.71	0.0856
MG 6: Beta Blockers	3344 (84.06)	6.46	634 (15.94)	13.41	1741 (81.97)	4.77	383 (18.03)	8.62	0.0399
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	3101 (77.95)	6.90	877 (22.05)	9.92	1606 (75.61)	5.29	518 (24.39)	5.98	0.0411
MG 8: Immunosuppressants and Immunomodulators	3806 (95.68)	7.41	172 (4.32)	11.05	2008 (94.54)	5.43	116 (5.46)	6.03	0.0533
MG 9: Systemic Steroids	3428 (86.17)	6.86	550 (13.83)	12.00	1768 (83.24)	4.69	356 (16.76)	9.27	0.0024
MG 10: Chemotherapy	3919 (98.52)	7.37	59 (1.48)	20.34	2078 (97.83)	5.20	46 (2.17)	17.39	0.0643
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	3769 (94.75)	6.82	209 (5.25)	21.05	1976 (93.03)	4.76	148 (6.97)	14.86	0.0078
MG 12: Antacids incl. Antihistamines	3044 (76.52)	5.88	934 (23.48)	13.06	1571 (73.96)	4.90	553 (26.04)	7.05	0.0289
MG 13: Vitamin D and other Vitamin supplements	3454 (86.83)	6.20	524 (13.17)	16.60	1808 (85.12)	4.65	316 (14.88)	10.13	0.0715
MG 14: Caplacizumab	3978 (100)	7.57	0 (0)	0.00	2124 (100)	5.46	0 (0)	0.00	1
MG 15: Systemic Hemostatics	3975 (99.92)	7.55	3 (0.08)	33.33	2122 (99.91)	5.47	2 (0.09)	0.00	1
MG 16: Hereditary angioedema Therapeutics	3978 (100)	7.57	0 (0)	0.00	2124 (100)	5.46	0 (0)	0.00	1
MG 17: Peripheral Vasodilators	3952 (99.35)	7.59	26 (0.65)	3.85	2107 (99.2)	5.46	17 (0.8)	5.88	0.6225
MG 18: Hormonal contraceptives and similar hormone preparations	3834 (96.38)	7.51	144 (3.62)	9.03	2044 (96.23)	5.43	80 (3.77)	6.25	0.827
MG 19: Immunoglobulins	3977 (99.97)	7.57	1 (0.03)	0.00	2124 (100)	5.46	0 (0)	0.00	1
MG 20: Interferons and CSF	3893 (97.86)	7.19	85 (2.14)	24.71	2063 (97.13)	5.43	61 (2.87)	6.56	0.0887
MG 21: NSAR and other anti-inflammatory drugs	2565 (64.48)	7.37	1413 (35.52)	7.93	1318 (62.05)	5.77	806 (37.95)	4.96	0.0644
MG 22: Gout medications	3888 (97.74)	7.20	90 (2.26)	23.33	2061 (97.03)	5.29	63 (2.97)	11.11	0.1121
MG 23: Antiepileptics	3617 (90.93)	6.75	361 (9.07)	15.79	1891 (89.03)	4.60	233 (10.97)	12.45	0.0196
MG 24: Antipsychotics	2939 (73.88)	5.82	1039 (26.12)	12.51	1510 (71.09)	4.50	614 (28.91)	7.82	0.0212
MG 25: Rhinological and throat antiseptics	3605 (90.62)	7.82	373 (9.38)	5.09	1893 (89.12)	5.81	231 (10.88)	2.60	0.0683
MG 26: inhaled anti-obstructive drugs	3040 (76.42)	7.20	938 (23.58)	8.74	1603 (75.47)	4.99	521 (24.53)	6.91	0.4255
MG 27: inhaled steroids	3797 (95.45)	7.64	181 (4.55)	6.08	2003 (94.3)	5.59	121 (5.7)	3.31	0.0567
MG 28: other COPD drugs	3898 (97.99)	7.57	80 (2.01)	7.50	2077 (97.79)	5.39	47 (2.21)	8.51	0.6659
MG 29: Cold and Cough preparations	3621 (91.03)	7.32	357 (8.97)	10.08	1851 (87.15)	5.13	273 (12.85)	7.69	<0.001
MG 30: Systemic Antihistamines	3744 (94.12)	7.13	234 (5.88)	14.53	1983 (93.36)	4.99	141 (6.64)	12.06	0.2646

Table A.33. Descriptive medication prescription comparison between propensity score matched COVID-19 and Influenza patients aged 65-74.

	COVID-19 (n = 3666)				Influenza (n = 2015)				test
	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	p-value
MG 1: Anticoagulants	2229 (60.8)	17.32	1437 (39.2)	27.07	1169 (58.01)	8.04	846 (41.99)	13.24	0.0432
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1989 (54.26)	19.71	1677 (45.74)	22.84	1062 (52.7)	8.76	953 (47.3)	11.86	0.2741
MG 3: Insulins and other Antidiabetics	2790 (76.1)	19.35	876 (23.9)	26.83	1499 (74.39)	8.94	516 (25.61)	13.95	0.1604
MG 4: "heart" drugs	3304 (90.13)	20.31	362 (9.87)	28.73	1794 (89.03)	9.75	221 (10.97)	14.03	0.2101
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	1597 (43.56)	18.22	2069 (56.44)	23.39	810 (40.2)	9.75	1205 (59.8)	10.54	0.0152
MG 6: Beta Blockers	2550 (69.56)	18.59	1116 (30.44)	26.97	1357 (67.34)	9.06	658 (32.66)	12.61	0.0906
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	2188 (59.68)	19.56	1478 (40.32)	23.48	1163 (57.72)	11.78	852 (42.28)	8.10	0.1575
MG 8: Immunosuppressants and Immunomodulators	3500 (95.47)	20.83	166 (4.53)	27.71	1918 (95.19)	9.85	97 (4.81)	17.53	0.6712
MG 9: Systemic Steroids	3051 (83.22)	20.06	615 (16.78)	26.50	1647 (81.74)	9.53	368 (18.26)	13.32	0.1673
MG 10: Chemotherapy	3529 (96.26)	20.52	137 (3.74)	37.23	1942 (96.38)	9.53	73 (3.62)	28.77	0.8849
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	3379 (92.17)	19.77	287 (7.83)	37.28	1832 (90.92)	9.17	183 (9.08)	20.77	0.1118
MG 12: Antacids incl. Antihistamines	2504 (68.3)	17.81	1162 (31.7)	28.31	1338 (66.4)	8.45	677 (33.6)	13.74	0.1511
MG 13: Vitamin D and other Vitamin supplements	2988 (81.51)	19.91	678 (18.49)	26.55	1610 (79.9)	9.69	405 (20.1)	12.35	0.1504
MG 14: Caplacizumab	3666 (100)	21.14	0 (0)	0.00	2015 (100)	10.22	0 (0)	0.00	1
MG 15: Systemic Hemostatics	3664 (99.95)	21.15	2 (0.05)	0.00	2015 (100)	10.22	0 (0)	0.00	0.5421
MG 16: Hereditary angioedema Therapeutics	3666 (100)	21.14	0 (0)	0.00	2015 (100)	10.22	0 (0)	0.00	1
MG 17: Peripheral Vasodilators	3624 (98.85)	21.11	42 (1.15)	23.81	1998 (99.16)	10.31	17 (0.84)	0.00	0.3486
MG 18: Hormonal contraceptives and similar hormone preparations	3558 (97.05)	21.33	108 (2.95)	14.81	1946 (96.58)	10.33	69 (3.42)	7.25	0.3613
MG 19: Immunoglobulins	3663 (99.92)	21.16	3 (0.08)	0.00	2013 (99.9)	10.23	2 (0.1)	0.00	1
MG 20: Interferons and CSF	3584 (97.76)	20.70	82 (2.24)	40.24	1956 (97.07)	9.71	59 (2.93)	27.12	0.1302
MG 21: NSAR and other anti-inflammatory drugs	2486 (67.81)	22.37	1180 (32.19)	18.56	1326 (65.81)	10.26	689 (34.19)	10.16	0.1311
MG 22: Gout medications	3428 (93.51)	20.45	238 (6.49)	31.09	1875 (93.05)	9.71	140 (6.95)	17.14	0.5459
MG 23: Antiepileptics	3173 (86.55)	19.29	493 (13.45)	33.06	1706 (84.67)	9.14	309 (15.33)	16.18	0.0556
MG 24: Antipsychotics	2370 (64.65)	17.76	1296 (35.35)	27.31	1274 (63.23)	7.38	741 (36.77)	15.11	0.2981
MG 25: Rhinological and throat antiseptics	3415 (93.15)	21.05	251 (6.85)	22.31	1832 (90.92)	10.48	183 (9.08)	7.65	0.0029
MG 26: inhaled anti-obstructive drugs	2685 (73.24)	19.81	981 (26.76)	24.77	1404 (69.68)	9.62	611 (30.32)	11.62	0.0047
MG 27: inhaled steroids	3465 (94.52)	21.21	201 (5.48)	19.90	1905 (94.54)	10.29	110 (5.46)	9.09	1
MG 28: other COPD drugs	3616 (98.64)	21.27	50 (1.36)	12.00	1987 (98.61)	10.27	28 (1.39)	7.14	1
MG 29: Cold and Cough preparations	3230 (88.11)	20.68	436 (11.89)	24.54	1735 (86.1)	9.86	280 (13.9)	12.50	0.0328
MG 30: Systemic Antihistamines	3440 (93.84)	21.22	226 (6.16)	19.91	1893 (93.95)	10.35	122 (6.05)	8.20	0.9141

Table A.34. Descriptive medication prescription comparison between propensity score matched COVID-19 and Influenza patients aged 75 and older.

	COVID-19 (n = 9579)				Influenza (n = 5005)				test
	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	NO: n(%)	1-year Mort %	YES: n(%)	1-year Mort %	p-value
MG 1: Anticoagulants	4425 (46.19)	36.25	5154 (53.81)	43.75	2303 (46.01)	19.80	2702 (53.99)	23.83	0.8489
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	5321 (55.55)	36.70	4258 (44.45)	44.76	2709 (54.13)	19.27	2296 (45.87)	25.17	0.1047
MG 3: Insulins and other Antidiabetics	7714 (80.53)	40.07	1865 (19.47)	41.18	4032 (80.56)	21.92	973 (19.44)	22.20	0.9839
MG 4: "heart" drugs	8040 (83.93)	39.19	1539 (16.07)	46.00	4166 (83.24)	20.76	839 (16.76)	28.01	0.2901
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	3282 (34.26)	38.94	6297 (65.74)	40.99	1681 (33.59)	21.06	3324 (66.41)	22.44	0.4239
MG 6: Beta Blockers	6383 (66.64)	39.14	3196 (33.36)	42.58	3279 (65.51)	21.41	1726 (34.49)	23.06	0.18
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	5993 (62.56)	42.33	3586 (37.44)	36.87	3093 (61.8)	24.47	1912 (38.2)	17.94	0.3746
MG 8: Immunosuppressants and Immunomodulators	9413 (98.27)	40.33	166 (1.73)	37.95	4913 (98.16)	21.98	92 (1.84)	21.74	0.6955
MG 9: Systemic Steroids	8287 (86.51)	40.17	1292 (13.49)	41.02	4286 (85.63)	21.63	719 (14.37)	24.06	0.1515
MG 10: Chemotherapy	9201 (96.05)	40.06	378 (3.95)	45.77	4806 (96.02)	21.62	199 (3.98)	30.65	0.9656
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	8500 (88.74)	38.49	1079 (11.26)	54.40	4440 (88.71)	20.72	565 (11.29)	31.86	0.9866
MG 12: Antacids incl. Antihistamines	6567 (68.56)	38.68	3012 (31.44)	43.79	3409 (68.11)	21.18	1596 (31.89)	23.68	0.5966
MG 13: Vitamin D and other Vitamin supplements	7493 (78.22)	39.34	2086 (21.78)	43.67	3900 (77.92)	21.10	1105 (22.08)	25.07	0.6917
MG 14: Caplacizumab	9579 (100)	40.29	0 (0)	0.00	5005 (100)	21.98	0 (0)	0.00	1
MG 15: Systemic Hemostatics	9576 (99.97)	40.28	3 (0.03)	66.67	5001 (99.92)	21.94	4 (0.08)	75.00	0.2414
MG 16: Hereditary angioedema Therapeutics	9579 (100)	40.29	0 (0)	0.00	5005 (100)	21.98	0 (0)	0.00	1
MG 17: Peripheral Vasodilators	9511 (99.29)	40.31	68 (0.71)	36.76	4962 (99.14)	22.03	43 (0.86)	16.28	0.3765
MG 18: Hormonal contraceptives and similar hormone preparations	9361 (97.72)	40.70	218 (2.28)	22.48	4844 (96.78)	22.30	161 (3.22)	12.42	<0.001
MG 19: Immunoglobulins	9577 (99.98)	40.28	2 (0.02)	50.00	5002 (99.94)	21.99	3 (0.06)	0.00	0.3468
MG 20: Interferons and CSF	9481 (98.98)	40.20	98 (1.02)	48.98	4950 (98.9)	21.84	55 (1.1)	34.55	0.733
MG 21: NSAR and other anti-inflammatory drugs	7185 (75.01)	42.35	2394 (24.99)	34.09	3711 (74.15)	22.85	1294 (25.85)	19.47	0.264
MG 22: Gout medications	8878 (92.68)	39.79	701 (7.32)	46.50	4630 (92.51)	21.40	375 (7.49)	29.07	0.7269
MG 23: Antiepileptics	8225 (85.86)	39.76	1354 (14.14)	43.50	4275 (85.41)	21.64	730 (14.59)	23.97	0.4759
MG 24: Antipsychotics	4657 (48.62)	34.16	4922 (51.38)	46.08	2433 (48.61)	17.76	2572 (51.39)	25.97	1
MG 25: Rhinological and throat antiseptics	9230 (96.36)	40.59	349 (3.64)	32.38	4715 (94.21)	22.10	290 (5.79)	20.00	<0.001
MG 26: inhaled anti-obstructive drugs	7621 (79.56)	39.75	1958 (20.44)	42.39	3917 (78.26)	20.93	1088 (21.74)	25.74	0.0705
MG 27: inhaled steroids	9276 (96.84)	40.31	303 (3.16)	39.60	4843 (96.76)	22.01	162 (3.24)	20.99	0.8489
MG 28: other COPD drugs	9519 (99.37)	40.32	60 (0.63)	35.00	4967 (99.24)	21.94	38 (0.76)	26.32	0.4089
MG 29: Cold and Cough preparations	8551 (89.27)	39.94	1028 (10.73)	43.19	4344 (86.79)	21.52	661 (13.21)	24.96	<0.001
MG 30: Systemic Antihistamines	8993 (93.88)	40.13	586 (6.12)	42.66	4696 (93.83)	21.68	309 (6.17)	26.54	0.9218

A.3.2 All-Cause Mortality

Table A.35. Descriptive number of deaths of COVID-19 hospitalized adults and sex-, age-, region-assigned control group by number of medication groups prescribed within one year prior to hospitalization.

			COVID-19 (n = 52015)				Control (n = 501516)			
Sex	**Age**	**Time**	**0-1 (n = 12380)**	**2-5 (n = 24367)**	**6-10 (n = 13553)**	**≥11 (n = 1715)**	**0-1 (n = 319214)**	**2-5 (n = 121657)**	**6-10 (n = 54019)**	**≥11 (n = 6626)**
M	**19-40**	**Hospital**	11 (0.84)	5 (0.71)	6 (8)	0 (0)	0 (0)	1 (0.05)	0 (0)	0 (0)
		30-day	7 (0.54)	6 (0.85)	7 (9.33)	0 (0)	1 (0.01)	1 (0.05)	1 (1.3)	0 (0)
		180-day	12 (0.92)	9 (1.27)	8 (10.67)	0 (0)	4 (0.02)	5 (0.25)	1 (1.3)	0 (0)
		1-year	13 (1)	10 (1.41)	8 (10.67)	0 (0)	5 (0.03)	6 (0.3)	2 (2.6)	0 (0)
		1.5-year	13 (1)	10 (1.41)	9 (12)	0 (0)	6 (0.03)	8 (0.4)	2 (2.6)	0 (0)
	41-64	**Hospital**	117 (3.08)	269 (5.69)	160 (11.99)	25 (17.73)	21 (0.03)	11 (0.07)	7 (0.27)	2 (0.78)
		30-day	93 (2.45)	221 (4.68)	148 (11.09)	26 (18.44)	49 (0.06)	28 (0.17)	23 (0.88)	4 (1.56)
		180-day	148 (3.9)	338 (7.15)	212 (15.89)	33 (23.4)	208 (0.26)	105 (0.65)	72 (2.74)	18 (7)
		1-year	156 (4.11)	365 (7.73)	231 (17.32)	37 (26.24)	284 (0.36)	154 (0.96)	95 (3.62)	26 (10.12)
		1.5-year	158 (4.17)	386 (8.17)	242 (18.14)	38 (26.95)	326 (0.41)	182 (1.13)	105 (4)	28 (10.89)
	65-74	**Hospital**	131 (13.86)	451 (15.69)	396 (23.84)	83 (28.04)	61 (0.16)	23 (0.18)	40 (0.89)	5 (1.01)
		30-day	124 (13.12)	418 (14.54)	372 (22.4)	84 (28.38)	101 (0.27)	31 (0.25)	69 (1.54)	9 (1.81)
		180-day	161 (17.04)	554 (19.28)	493 (29.68)	108 (36.49)	365 (0.97)	230 (1.82)	247 (5.49)	43 (8.67)
		1-year	169 (17.88)	602 (20.95)	548 (32.99)	121 (40.88)	478 (1.27)	366 (2.9)	354 (7.88)	67 (13.51)
		1.5-year	175 (18.52)	639 (22.23)	578 (34.8)	128 (43.24)	545 (1.44)	448 (3.54)	416 (9.25)	80 (16.13)
	≥75	**Hospital**	358 (30.06)	1556 (31.4)	1158 (35.37)	135 (38.24)	182 (0.36)	302 (1.16)	317 (2.23)	46 (2.87)
		30-day	377 (31.65)	1591 (32.1)	1194 (36.47)	138 (39.09)	352 (0.7)	561 (2.16)	581 (4.09)	96 (5.99)
		180-day	440 (36.94)	1982 (39.99)	1498 (45.75)	168 (47.59)	1307 (2.61)	2003 (7.72)	1826 (12.85)	299 (18.65)
		1-year	461 (38.71)	2119 (42.76)	1613 (49.27)	188 (53.26)	1754 (3.5)	2941 (11.34)	2575 (18.12)	402 (25.08)
		1.5-year	477 (40.05)	2215 (44.69)	1704 (52.05)	197 (55.81)	2096 (4.19)	3566 (13.75)	3067 (21.59)	467 (29.13)
F	**19-40**	**Hospital**	5 (0.47)	5 (0.72)	1 (1.08)	1 (11.11)	0 (0)	0 (0)	0 (0)	0 (0)
		30-day	3 (0.28)	5 (0.72)	1 (1.08)	1 (11.11)	0 (0)	0 (0)	0 (0)	0 (0)
		180-day	6 (0.57)	6 (0.87)	2 (2.15)	1 (11.11)	1 (0.01)	1 (0.04)	1 (0.76)	0 (0)
		1-year	6 (0.57)	8 (1.16)	2 (2.15)	1 (11.11)	2 (0.01)	3 (0.11)	1 (0.76)	0 (0)
		1.5-year	6 (0.57)	8 (1.16)	2 (2.15)	1 (11.11)	2 (0.01)	5 (0.19)	1 (0.76)	0 (0)
	41-64	**Hospital**	37 (1.71)	103 (3.32)	95 (8.71)	18 (13.74)	9 (0.02)	1 (0.01)	6 (0.24)	5 (1.97)
		30-day	28 (1.29)	94 (3.03)	84 (7.7)	15 (11.45)	17 (0.04)	8 (0.06)	10 (0.39)	7 (2.76)
		180-day	42 (1.94)	130 (4.19)	127 (11.64)	23 (17.56)	61 (0.13)	41 (0.31)	42 (1.66)	15 (5.91)
		1-year	45 (2.08)	144 (4.65)	142 (13.02)	24 (18.32)	73 (0.15)	62 (0.46)	61 (2.41)	17 (6.69)
		1.5-year	45 (2.08)	149 (4.81)	152 (13.93)	25 (19.08)	79 (0.17)	77 (0.58)	70 (2.76)	20 (7.87)
	65-74	**Hospital**	45 (6.78)	176 (8.63)	218 (15.6)	53 (20.15)	19 (0.08)	15 (0.12)	17 (0.35)	8 (1.09)
		30-day	42 (6.33)	178 (8.73)	208 (14.89)	45 (17.11)	39 (0.16)	22 (0.18)	27 (0.56)	15 (2.05)
		180-day	56 (8.43)	245 (12.01)	269 (19.26)	63 (23.95)	135 (0.55)	115 (0.93)	128 (2.64)	50 (6.84)
		1-year	62 (9.34)	262 (12.84)	295 (21.12)	70 (26.62)	186 (0.75)	176 (1.42)	184 (3.8)	65 (8.89)
		1.5-year	66 (9.94)	281 (13.77)	311 (22.26)	77 (29.28)	217 (0.88)	215 (1.74)	210 (4.34)	74 (10.12)
	≥75	**Hospital**	296 (23.53)	1283 (24.32)	1267 (27.38)	161 (31.08)	220 (0.48)	420 (1.15)	444 (1.77)	83 (2.53)
		30-day	307 (24.4)	1368 (25.93)	1337 (28.89)	161 (31.08)	392 (0.86)	763 (2.08)	820 (3.27)	147 (4.48)
		180-day	401 (31.88)	1761 (33.38)	1752 (37.86)	215 (41.51)	1472 (3.21)	2800 (7.65)	2783 (11.08)	431 (13.14)
		1-year	433 (34.42)	1907 (36.15)	1950 (42.13)	241 (46.53)	2030 (4.43)	4047 (11.06)	3896 (15.52)	615 (18.74)
		1.5-year	458 (36.41)	2028 (38.45)	2058 (44.47)	253 (48.84)	2448 (5.34)	4906 (13.4)	4654 (18.54)	713 (21.73)

Table A.36. Descriptive number of deaths of Influenza hospitalized adults and sex-, age-, region-assigned control group by number of medication groups prescribed within one year prior to hospitalization.

			Influenza (n = 10796)				Control (n = 104872)			
Sex	**Age**	**Time**	**0-1 (n = 1936)**	**2-5 (n = 4953)**	**6-10 (n = 3373)**	**≥11 (n = 534)**	**0-1 (n = 63615)**	**2-5 (n = 24553)**	**6-10 (n = 14397)**	**≥11 (n = 2307)**
M	**19-40**	**Hospital**	1 (0.52)	1 (0.59)	1 (3.12)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0.0)
		30-day	2 (1.04)	1 (0.59)	1 (3.12)	0 (0)	1 (0.03)	0 (0)	0 (0)	0 (0.0)
		180-day	2 (1.04)	3 (1.78)	1 (3.12)	1 (50)	3 (0.09)	1 (0.2)	0 (0)	0 (0.0)
		1-year	2 (1.04)	6 (3.55)	3 (9.38)	1 (50)	4 (0.12)	1 (0.2)	0 (0)	0 (0.0)
		1.5-year	2 (1.04)	6 (3.55)	3 (9.38)	1 (50)	4 (0.12)	1 (0.2)	0 (0)	0 (0.0)
	41-64	**Hospital**	7 (2.11)	9 (1.57)	13 (4.02)	1 (1.52)	4 (0.04)	0 (0)	1 (0.18)	0 (0)
		30-day	4 (1.2)	11 (1.92)	13 (4.02)	1 (1.52)	12 (0.12)	1 (0.04)	1 (0.18)	0 (0)
		180-day	8 (2.41)	21 (3.66)	33 (10.22)	4 (6.06)	62 (0.63)	17 (0.71)	12 (2.2)	4 (4.65)
		1-year	11 (3.31)	36 (6.27)	43 (13.31)	11 (16.67)	107 (1.09)	35 (1.47)	22 (4.04)	5 (5.81)
		1.5-year	14 (4.22)	52 (9.06)	58 (17.96)	11 (16.67)	145 (1.47)	41 (1.72)	28 (5.14)	6 (6.98)
	65-74	**Hospital**	6 (3.66)	13 (2.55)	16 (3.61)	6 (7.23)	16 (0.2)	4 (0.15)	7 (0.58)	0 (0)
		30-day	4 (2.44)	18 (3.54)	20 (4.51)	6 (7.23)	47 (0.6)	13 (0.5)	17 (1.4)	0 (0)
		180-day	11 (6.71)	39 (7.66)	41 (9.26)	11 (13.25)	173 (2.21)	68 (2.62)	55 (4.55)	10 (6.17)
		1-year	12 (7.32)	55 (10.81)	63 (14.22)	17 (20.48)	312 (3.99)	123 (4.75)	98 (8.1)	21 (12.96)
		1.5-year	18 (10.98)	68 (13.36)	83 (18.74)	24 (28.92)	391 (5)	154 (5.94)	123 (10.17)	31 (19.14)
	≥75	**Hospital**	17 (6.2)	84 (6.98)	61 (7.6)	12 (13.04)	56 (0.43)	29 (0.56)	26 (0.68)	9 (1.6)
		30-day	19 (6.93)	112 (9.31)	80 (9.96)	15 (16.3)	140 (1.08)	74 (1.42)	95 (2.5)	16 (2.85)
		180-day	33 (12.04)	182 (15.13)	151 (18.8)	24 (26.09)	544 (4.18)	381 (7.32)	400 (10.51)	73 (13.01)
		1-year	49 (17.88)	247 (20.53)	211 (26.28)	30 (32.61)	979 (7.52)	766 (14.71)	762 (20.03)	135 (24.06)
		1.5-year	61 (22.26)	329 (27.35)	266 (33.13)	38 (41.3)	1240 (9.53)	950 (18.24)	961 (25.26)	165 (29.41)
F	**19-40**	**Hospital**	0 (0)	2 (1.04)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		30-day	0 (0)	2 (1.04)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
		180-day	0 (0)	2 (1.04)	3 (9.68)	0 (0)	2 (0.05)	1 (0.11)	0 (0)	0 (0)
		1-year	0 (0)	2 (1.04)	4 (12.9)	0 (0)	4 (0.09)	1 (0.11)	0 (0)	0 (0)
		1.5-year	1 (0.33)	3 (1.55)	6 (19.35)	0 (0)	5 (0.12)	2 (0.22)	0 (0)	0 (0)
	41-64	**Hospital**	2 (0.81)	7 (1.48)	13 (4.63)	2 (4.35)	0 (0)	0 (0)	1 (0.16)	0 (0)
		30-day	1 (0.4)	7 (1.48)	10 (3.56)	3 (6.52)	2 (0.03)	1 (0.04)	4 (0.66)	0 (0)
		180-day	2 (0.81)	12 (2.54)	18 (6.41)	6 (13.04)	9 (0.12)	11 (0.46)	10 (1.64)	1 (1.39)
		1-year	4 (1.61)	16 (3.39)	21 (7.47)	9 (19.57)	19 (0.26)	15 (0.63)	16 (2.62)	4 (5.56)
		1.5-year	4 (1.61)	21 (4.45)	29 (10.32)	11 (23.91)	25 (0.34)	18 (0.75)	19 (3.11)	5 (6.94)
	65-74	**Hospital**	1 (0.76)	10 (2.16)	16 (4.15)	3 (3.3)	4 (0.07)	4 (0.14)	3 (0.2)	2 (0.81)
		30-day	2 (1.52)	8 (1.72)	17 (4.4)	3 (3.3)	17 (0.29)	9 (0.31)	10 (0.65)	4 (1.62)
		180-day	3 (2.27)	13 (2.8)	38 (9.84)	9 (9.89)	74 (1.25)	44 (1.52)	33 (2.15)	10 (4.05)
		1-year	6 (4.55)	22 (4.74)	58 (15.03)	14 (15.38)	128 (2.17)	72 (2.49)	54 (3.52)	14 (5.67)
		1.5-year	6 (4.55)	30 (6.47)	65 (16.84)	17 (18.68)	167 (2.83)	89 (3.08)	79 (5.14)	20 (8.1)
	≥75	**Hospital**	15 (5.19)	73 (5.33)	72 (6.7)	14 (9.15)	42 (0.35)	53 (0.69)	63 (0.95)	13 (1.11)
		30-day	24 (8.3)	98 (7.16)	92 (8.57)	15 (9.8)	154 (1.3)	145 (1.89)	148 (2.24)	29 (2.47)
		180-day	39 (13.49)	201 (14.68)	172 (16.01)	30 (19.61)	598 (5.04)	595 (7.75)	540 (8.19)	109 (9.27)
		1-year	52 (17.99)	269 (19.65)	232 (21.6)	45 (29.41)	1097 (9.25)	1146 (14.92)	1075 (16.3)	219 (18.62)
		1.5-year	61 (21.11)	332 (24.25)	287 (26.72)	55 (35.95)	1378 (11.62)	1452 (18.9)	1387 (21.02)	281 (23.89)

Table A.37. Descriptive number of deaths of propensity score matched COVID-19 and Influenza hospitalized adults by number of medication groups prescribed within one year prior to hospitalization.

			COVID-19 (n = 18489)				Influenza (n = 9854)			
Sex	**Age**	**Time**	**0-1 (n = 3992)**	**2-5 (n = 8714)**	**6-10 (n = 5146)**	**≥11 (n = 637)**	**0-1 (n = 1920)**	**2-5 (n = 4650)**	**6-10 (n = 2927)**	**≥11 (n = 357)**
M	**19-40**	**Hospital**	2 (0.54)	2 (1.46)	1 (6.67)	0 (0)	1 (0.53)	0 (0)	1 (8.33)	0 (0.0)
		30-day	1 (0.27)	2 (1.46)	1 (6.67)	0 (0)	2 (1.06)	0 (0)	1 (8.33)	0 (0.0)
		180-day	2 (0.54)	3 (2.19)	1 (6.67)	0 (0)	2 (1.06)	2 (1.9)	1 (8.33)	0 (0.0)
		1-year	2 (0.54)	4 (2.92)	1 (6.67)	0 (0)	2 (1.06)	4 (3.81)	1 (8.33)	0 (0.0)
		1.5-year	2 (0.54)	4 (2.92)	1 (6.67)	0 (0)	2 (1.06)	4 (3.81)	1 (8.33)	0 (0.0)
	41-64	**Hospital**	18 (2.59)	57 (5.27)	54 (13.37)	7 (14.89)	7 (2.11)	9 (1.6)	11 (4.12)	0 (0)
		30-day	15 (2.16)	51 (4.71)	45 (11.14)	8 (17.02)	4 (1.2)	11 (1.95)	10 (3.75)	0 (0)
		180-day	23 (3.31)	74 (6.84)	69 (17.08)	11 (23.4)	8 (2.41)	21 (3.73)	27 (10.11)	0 (0)
		1-year	25 (3.6)	82 (7.58)	73 (18.07)	13 (27.66)	11 (3.31)	35 (6.22)	31 (11.61)	4 (13.79)
		1.5-year	25 (3.6)	86 (7.95)	75 (18.56)	13 (27.66)	14 (4.22)	50 (8.88)	43 (16.1)	4 (13.79)
	65-74	**Hospital**	56 (15.34)	155 (16.61)	154 (25.2)	30 (30.61)	6 (3.66)	13 (2.64)	13 (3.39)	2 (3.64)
		30-day	56 (15.34)	143 (15.33)	141 (23.08)	31 (31.63)	4 (2.44)	18 (3.66)	17 (4.44)	2 (3.64)
		180-day	66 (18.08)	191 (20.47)	185 (30.28)	38 (38.78)	11 (6.71)	38 (7.72)	36 (9.4)	5 (9.09)
		1-year	69 (18.9)	203 (21.76)	205 (33.55)	44 (44.9)	12 (7.32)	54 (10.98)	52 (13.58)	9 (16.36)
		1.5-year	73 (20)	214 (22.94)	211 (34.53)	45 (45.92)	18 (10.98)	67 (13.62)	68 (17.75)	12 (21.82)
	≥75	**Hospital**	155 (26.82)	697 (30.37)	497 (36.44)	54 (35.76)	17 (6.27)	82 (6.98)	59 (7.89)	11 (13.58)
		30-day	169 (29.24)	708 (30.85)	512 (37.54)	54 (35.76)	19 (7.01)	110 (9.37)	78 (10.43)	13 (16.05)
		180-day	200 (34.6)	895 (39)	644 (47.21)	68 (45.03)	32 (11.81)	179 (15.25)	146 (19.52)	22 (27.16)
		1-year	212 (36.68)	969 (42.22)	677 (49.63)	80 (52.98)	48 (17.71)	242 (20.61)	205 (27.41)	28 (34.57)
		1.5-year	220 (38.06)	1023 (44.58)	707 (51.83)	84 (55.63)	60 (22.14)	324 (27.6)	256 (34.22)	36 (44.44)
F	**19-40**	**Hospital**	2 (0.36)	0 (0)	0 (0)	0 (0.0)	0 (0)	0 (0)	0 (0)	0 (0.0)
		30-day	1 (0.18)	0 (0)	0 (0)	0 (0.0)	0 (0)	0 (0)	0 (0)	0 (0.0)
		180-day	2 (0.36)	1 (0.6)	0 (0)	0 (0.0)	0 (0)	0 (0)	1 (14.29)	0 (0.0)
		1-year	2 (0.36)	2 (1.19)	0 (0)	0 (0.0)	0 (0)	0 (0)	1 (14.29)	0 (0.0)
		1.5-year	2 (0.36)	2 (1.19)	0 (0)	0 (0.0)	1 (0.34)	0 (0)	1 (14.29)	0 (0.0)
	41-64	**Hospital**	7 (1.36)	37 (4.17)	28 (8.64)	1 (3.85)	2 (0.81)	6 (1.3)	10 (4.83)	1 (5.56)
		30-day	5 (0.97)	36 (4.06)	22 (6.79)	1 (3.85)	1 (0.4)	6 (1.3)	9 (4.35)	1 (5.56)
		180-day	9 (1.75)	49 (5.52)	37 (11.42)	2 (7.69)	2 (0.81)	11 (2.39)	12 (5.8)	3 (16.67)
		1-year	9 (1.75)	52 (5.86)	45 (13.89)	2 (7.69)	4 (1.61)	15 (3.26)	13 (6.28)	3 (16.67)
		1.5-year	9 (1.75)	53 (5.98)	46 (14.2)	2 (7.69)	4 (1.61)	19 (4.13)	17 (8.21)	4 (22.22)
	65-74	**Hospital**	13 (4.48)	71 (9.2)	77 (15.19)	17 (18.89)	1 (0.76)	9 (2.05)	13 (4.19)	0 (0)
		30-day	11 (3.79)	69 (8.94)	78 (15.38)	12 (13.33)	2 (1.52)	7 (1.6)	14 (4.52)	0 (0)
		180-day	20 (6.9)	95 (12.31)	100 (19.72)	21 (23.33)	3 (2.27)	11 (2.51)	33 (10.65)	2 (4.88)
		1-year	22 (7.59)	100 (12.95)	108 (21.3)	24 (26.67)	6 (4.55)	19 (4.34)	49 (15.81)	5 (12.2)
		1.5-year	25 (8.62)	108 (13.99)	110 (21.7)	30 (33.33)	6 (4.55)	25 (5.71)	55 (17.74)	6 (14.63)
	≥75	**Hospital**	139 (22.46)	571 (23.4)	480 (25.16)	60 (26.79)	15 (5.19)	72 (5.47)	67 (6.75)	14 (10.53)
		30-day	152 (24.56)	615 (25.2)	513 (26.89)	58 (25.89)	24 (8.3)	97 (7.37)	87 (8.76)	15 (11.28)
		180-day	191 (30.86)	788 (32.3)	692 (36.27)	79 (35.27)	39 (13.49)	199 (15.12)	161 (16.21)	30 (22.56)
		1-year	205 (33.12)	856 (35.08)	766 (40.15)	94 (41.96)	52 (17.99)	265 (20.14)	219 (22.05)	41 (30.83)
		1.5-year	217 (35.06)	916 (37.54)	811 (42.51)	101 (45.09)	61 (21.11)	328 (24.92)	267 (26.89)	51 (38.35)

Table A.38. Cox regression results evaluating all-cause mortality after COVID-19 hospital admission of patients aged 19-40. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 19-40			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	0.55 (0.43-0.70)	<0.001	0.54 (0.43-0.68)	<0.001
Age Group: 31-35 (ref: 36-40)	0.57 (0.21-1.59)	0.284	0.77 (0.26-2.24)	0.625
Age Group: 26-30 (ref: 36-40)	1.06 (0.60-1.88)	0.830	1.44 (0.75-2.75)	0.271
Age Group: 19-25 (ref: 36-40)	0.42 (0.12-1.42)	0.162	0.55 (0.15-2.01)	0.368
Medicament Groups: 2-5 (ref: 0-1)	1.64 (0.84-3.22)	0.149	0.92 (0.56-1.50)	0.733
Medicament Groups: ≥6 (ref: 0-1)	8.53 (4.08-17.82)	<0.001	1.17 (0.28-4.90)	0.833
Wave: 3 (ref: Wave 1 & 2)	0.89 (0.57-1.38)	0.599	0.92 (0.58-1.47)	0.740
Wave: 4 (ref: Wave 1 & 2)	0.82 (0.50-1.36)	0.446	0.82 (0.55-1.23)	0.339
MG 1: Anticoagulants	1.30 (0.58-2.95)	0.525		
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	0.68 (0.51-0.92)	0.011	1.03 (0.68-1.56)	0.898
MG 3: Insulins and other Antidiabetics	5.91 (3.51-9.96)	<0.001	5.57 (2.14-14.48)	<0.001
MG 4: "heart" drugs	NA (NA-NA)			
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	2.47 (0.96-6.36)	0.062	1.64 (0.51-5.25)	0.406
MG 6: Beta Blockers	2.04 (0.99-4.20)	0.052	0.99 (0.48-2.04)	0.972
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	1.74 (0.81-3.74)	0.154		
MG 8: Immunosuppressants and Immunomodulators	1.15 (0.49-2.73)	0.749		
MG 9: Systemic Steroids	1.73 (0.97-3.09)	0.064	2.49 (1.45-4.26)	<0.001
MG 10: Chemotherapy	5.49 (1.44-20.93)	0.013		
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	0.66 (0.38-1.13)	0.133		
MG 12: Antacids incl. Antihistamines	1.69 (1.01-2.81)	0.045	1.47 (0.82-2.66)	0.197
MG 13: Vitamin D and other Vitamin supplements	0.67 (0.27-1.67)	0.394		
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	NA (NA-NA)			
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	NA (NA-NA)			
MG 19: Immunoglobulins	NA (NA-NA)			
MG 20: Interferons and CSF	0.81 (0.09-7.50)	0.855		
MG 21: NSAR and other anti-inflammatory drugs	0.45 (0.24-0.85)	0.013	0.63 (0.36-1.12)	0.114
MG 22: Gout medications	4.15 (1.74-9.88)	0.001		
MG 23: Antiepileptics	2.50 (1.31-4.76)	0.005	1.81 (0.78-4.24)	0.170
MG 24: Antipsychotics	2.32 (1.13-4.75)	0.021	2.07 (1.06-4.05)	0.034
MG 26: inhaled anti-obstructive drugs	1.22 (0.77-1.93)	0.395		
MG 27: inhaled steroids	0.77 (0.29-2.01)	0.589		
MG 28: other COPD drugs	NA (NA-NA)			
MG 30: Systemic Antihistamines	0.77 (0.35-1.71)	0.525		

Table A.39. Cox regression results evaluating all-cause mortality after Influenza hospital admission of patients aged 19-40. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 19-40			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	0.55 (0.28-1.06)	0.075	0.83 (0.31-2.26)	0.720
Age Group: 31-35 (ref: 36-40)	1.01 (0.50-2.05)	0.972	1.03 (0.40-2.68)	0.948
Age Group: 26-30 (ref: 36-40)	1.00 (0.35-2.87)	0.997	1.44 (0.49-4.26)	0.506
Age Group: 19-25 (ref: 36-40)	1.12 (0.61-2.06)	0.723	1.69 (0.80-3.56)	0.168
Medicament Groups: 2-5 (ref: 0-1)	4.26 (1.42-12.78)	0.010	2.49 (0.53-11.60)	0.247
Medicament Groups: ≥6 (ref: 0-1)	27.65 (7.52-101.70)	<0.001	5.02 (0.80-31.73)	0.086
Wave: 2016/2017 (ref: Wave 2015/2016)	NA (NA-NA)		NA (NA-NA)	
Wave: 2017/2018 (ref: Wave 2015/2016)	NA (NA-NA)		NA (NA-NA)	
Wave: 2018/2019 (ref: Wave 2015/2016)	NA (NA-NA)		NA (NA-NA)	
Wave: 2019/2020 (ref: Wave 2015/2016)	NA (NA-NA)		NA (NA-NA)	
Wave: 2020/2021 (ref: Wave 2015/2016)	0.99 (0.15-6.31)	0.988	1.17 (0.20-6.96)	0.864
MG 1: Anticoagulants	2.80 (1.72-4.56)	<0.001	1.56 (0.63-3.89)	0.340
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.25 (0.60-2.59)	0.546		
MG 3: Insulins and other Antidiabetics	0.84 (0.28-2.49)	0.754		
MG 4: "heart" drugs	6.01 (3.27-11.03)	<0.001		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	2.48 (1.32-4.68)	0.005	1.84 (0.50-6.82)	0.361
MG 6: Beta Blockers	2.14 (1.38-3.31)	<0.001	0.88 (0.22-3.59)	0.860
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.17 (0.02-1.44)	0.105		
MG 8: Immunosuppressants and Immunomodulators	0.86 (0.51-1.45)	0.566		
MG 9: Systemic Steroids	0.46 (0.20-1.02)	0.055	0.63 (0.19-2.10)	0.450
MG 10: Chemotherapy	3.04 (1.22-7.57)	0.017	2.88 (0.70-11.76)	0.141
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.49 (0.76-2.95)	0.247		
MG 12: Antacids incl. Antihistamines	4.01 (1.99-8.08)	<0.001	4.05 (1.69-9.71)	0.002
MG 13: Vitamin D and other Vitamin supplements	0.66 (0.39-1.12)	0.121		
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	NA (NA-NA)			
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	NA (NA-NA)			
MG 19: Immunoglobulins	NA (NA-NA)			
MG 20: Interferons and CSF	NA (NA-NA)			
MG 21: NSAR and other anti-inflammatory drugs	0.62 (0.40-0.95)	0.029	0.65 (0.35-1.20)	0.166
MG 22: Gout medications	11.52 (1.18-112.78)	0.036		
MG 23: Antiepileptics	3.16 (1.40-7.15)	0.006	3.08 (1.02-9.33)	0.046
MG 24: Antipsychotics	2.67 (1.41-5.03)	0.002	1.50 (0.53-4.26)	0.448
MG 26: inhaled anti-obstructive drugs	1.08 (0.71-1.63)	0.717		
MG 27: inhaled steroids	2.44 (0.67-8.93)	0.177		
MG 28: other COPD drugs	0.44 (0.05-4.10)	0.467		
MG 30: Systemic Antihistamines	0.23 (0.10-0.53)	<0.001	0.38 (0.20-0.72)	0.003

Table A.40. Cox regression results comparing all-cause mortality after hospital admission between propensity score matched COVID-19 and Influenza patients aged 19-40. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 19-40			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Group: Influenza (ref: COVID-19)	1.21 (0.68-2.16)	0.509	1.20 (0.67-2.14)	0.545
Sex: F (ref: M)	0.30 (0.10-0.90)	0.032	0.24 (0.08-0.70)	0.009
Age Group: 31-35 (ref: 36-40)	1.02 (0.30-3.55)	0.969	1.13 (0.39-3.29)	0.818
Age Group: 26-30 (ref: 36-40)	1.06 (0.34-3.26)	0.923	1.42 (0.48-4.20)	0.526
Age Group: 19-25 (ref: 36-40)	1.92 (0.49-7.50)	0.350	2.17 (0.74-6.35)	0.157
Medicament Groups: 2-5 (ref: 0-1)	3.56 (2.16-5.86)	<0.001	1.58 (0.62-4.02)	0.335
Medicament Groups: ≥6 (ref: 0-1)	13.64 (10.59-17.58)	<0.001	0.90 (0.17-4.70)	0.900
MG 1: Anticoagulants	3.57 (1.73-7.37)	<0.001	3.98 (1.71-9.25)	0.001
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	0.99 (0.66-1.49)	0.963		
MG 3: Insulins and other Antidiabetics	5.06 (0.72-35.49)	0.103		
MG 4: "heart" drugs	5.76 (3.21-10.31)	<0.001	6.75 (2.22-20.57)	<0.001
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	2.34 (0.57-9.66)	0.240		
MG 6: Beta Blockers	0.82 (0.36-1.84)	0.623		
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	1.35 (0.25-7.47)	0.728		
MG 8: Immunosuppressants and Immunomodulators	1.11 (0.55-2.24)	0.768		
MG 9: Systemic Steroids	1.49 (0.56-3.93)	0.421		
MG 10: Chemotherapy	51.87 (23.08-116.55)	<0.001		
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.52 (0.85-2.71)	0.161		
MG 12: Antacids incl. Antihistamines	3.30 (1.34-8.12)	0.009	3.97 (1.63-9.68)	0.002
MG 13: Vitamin D and other Vitamin supplements	0.62 (0.21-1.84)	0.389		
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	NA (NA-NA)			
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	NA (NA-NA)			
MG 19: Immunoglobulins	NA (NA-NA)			
MG 20: Interferons and CSF	NA (NA-NA)			
MG 21: NSAR and other anti-inflammatory drugs	0.44 (0.14-1.36)	0.155		
MG 22: Gout medications	NA (NA-NA)			
MG 23: Antiepileptics	3.21 (0.94-10.98)	0.062	3.36 (1.20-9.36)	0.021
MG 24: Antipsychotics	1.06 (0.37-3.05)	0.913		
MG 26: inhaled anti-obstructive drugs	0.74 (0.26-2.11)	0.576		
MG 27: inhaled steroids	2.36 (1.36-4.08)	0.002	4.03 (1.83-8.86)	<0.001
MG 28: other COPD drugs	NA (NA-NA)			
MG 30: Systemic Antihistamines	0.73 (0.38-1.40)	0.344		

Table A.41. Cox regression results evaluating all-cause mortality after COVID-19 hospital admission of patients aged 41-64. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 41-64			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	0.64 (0.57-0.72)	<0.001	0.60 (0.54-0.67)	<0.001
Age Group: 56-60 (ref: 61-64)	0.63 (0.55-0.72)	<0.001	0.63 (0.55-0.73)	<0.001
Age Group: 51-55 (ref: 61-64)	0.43 (0.34-0.54)	<0.001	0.43 (0.34-0.53)	<0.001
Age Group: 46-50 (ref: 61-64)	0.33 (0.27-0.40)	<0.001	0.31 (0.26-0.37)	<0.001
Age Group: 41-45 (ref: 61-64)	0.19 (0.15-0.26)	<0.001	0.19 (0.15-0.24)	<0.001
Medicament Groups: 2-5 (ref: 0-1)	1.84 (1.57-2.16)	<0.001	1.64 (1.43-1.88)	<0.001
Medicament Groups: 6-10 (ref: 0-1)	4.18 (3.64-4.81)	<0.001	2.57 (2.03-3.24)	<0.001
Medicament Groups: ≥11 (ref: 0-1)	6.00 (4.56-7.89)	<0.001	2.34 (1.50-3.64)	<0.001
Wave: 3 (ref: Wave 1 & 2)	0.90 (0.80-1.02)	0.097	0.94 (0.82-1.08)	0.398
Wave: 4 (ref: Wave 1 & 2)	1.27 (1.14-1.40)	<0.001	1.29 (1.15-1.43)	<0.001
MG 1: Anticoagulants	1.09 (0.96-1.22)	0.172		
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.13 (1.03-1.25)	0.010	1.13 (1.02-1.24)	0.019
MG 3: Insulins and other Antidiabetics	0.97 (0.90-1.04)	0.380		
MG 4: "heart" drugs	0.81 (0.62-1.07)	0.136		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	1.09 (0.97-1.23)	0.133		
MG 6: Beta Blockers	1.10 (0.91-1.32)	0.330		
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.69 (0.62-0.78)	<0.001	0.86 (0.76-0.98)	0.028
MG 8: Immunosuppressants and Immunomodulators	1.02 (0.88-1.19)	0.755		
MG 9: Systemic Steroids	1.36 (1.21-1.54)	<0.001	1.31 (1.19-1.44)	<0.001
MG 10: Chemotherapy	2.63 (2.08-3.33)	<0.001	1.97 (1.59-2.45)	<0.001
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.88 (1.55-2.27)	<0.001	1.53 (1.27-1.84)	<0.001
MG 12: Antacids incl. Antihistamines	1.08 (0.96-1.21)	0.188		
MG 13: Vitamin D and other Vitamin supplements	1.46 (1.16-1.84)	0.001	1.35 (1.11-1.63)	0.002
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	4.33 (0.63-29.78)	0.136		
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	0.49 (0.20-1.19)	0.115		
MG 19: Immunoglobulins	2.11 (0.39-11.48)	0.389		
MG 20: Interferons and CSF	2.91 (2.38-3.55)	<0.001	2.18 (1.79-2.65)	<0.001
MG 21: NSAR and other anti-inflammatory drugs	0.67 (0.61-0.75)	<0.001	0.73 (0.66-0.80)	<0.001
MG 22: Gout medications	1.06 (0.85-1.33)	0.584		
MG 23: Antiepileptics	1.85 (1.58-2.15)	<0.001	1.61 (1.41-1.83)	<0.001
MG 24: Antipsychotics	1.42 (1.22-1.65)	<0.001	1.31 (1.16-1.48)	<0.001
MG 26: inhaled anti-obstructive drugs	0.92 (0.75-1.14)	0.459		
MG 27: inhaled steroids	0.75 (0.64-0.88)	<0.001	0.87 (0.75-1.00)	0.056
MG 28: other COPD drugs	0.61 (0.39-0.95)	0.027	0.71 (0.48-1.05)	0.089
MG 30: Systemic Antihistamines	1.06 (0.92-1.22)	0.424		

Table A.42. Cox regression results evaluating all-cause mortality after Influenza hospital admission of patients aged 41-64. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 41-64			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	0.50 (0.42-0.60)	<0.001	0.46 (0.37-0.57)	<0.001
Age Group: 56-60 (ref: 61-64)	0.78 (0.66-0.93)	0.005	0.72 (0.62-0.84)	<0.001
Age Group: 51-55 (ref: 61-64)	0.57 (0.49-0.66)	<0.001	0.48 (0.42-0.56)	<0.001
Age Group: 46-50 (ref: 61-64)	0.51 (0.34-0.76)	0.001	0.43 (0.30-0.63)	<0.001
Age Group: 41-45 (ref: 61-64)	0.61 (0.45-0.83)	0.001	0.55 (0.41-0.72)	<0.001
Medicament Groups: 2-5 (ref: 0-1)	2.25 (1.58-3.19)	<0.001	1.92 (1.31-2.80)	<0.001
Medicament Groups: 6-10 (ref: 0-1)	4.71 (3.69-6.01)	<0.001	2.90 (1.97-4.25)	<0.001
Medicament Groups: ≥11 (ref: 0-1)	6.45 (4.75-8.75)	<0.001	2.30 (1.29-4.07)	0.005
Wave: 2016/2017 (ref: Wave 2015/2016)	0.69 (0.55-0.86)	0.001	0.72 (0.57-0.91)	0.005
Wave: 2017/2018 (ref: Wave 2015/2016)	0.66 (0.43-1.01)	0.058	0.67 (0.40-1.13)	0.137
Wave: 2018/2019 (ref: Wave 2015/2016)	0.69 (0.44-1.11)	0.124	0.72 (0.44-1.18)	0.193
Wave: 2019/2020 (ref: Wave 2015/2016)	0.72 (0.40-1.31)	0.281	0.71 (0.37-1.35)	0.298
Wave: 2020/2021 (ref: Wave 2015/2016)	7.54 (2.95-19.28)	<0.001	6.42 (3.37-12.20)	<0.001
MG 1: Anticoagulants	1.21 (0.99-1.47)	0.057	1.46 (1.20-1.79)	<0.001
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	0.93 (0.77-1.13)	0.463		
MG 3: Insulins and other Antidiabetics	1.07 (0.91-1.26)	0.407		
MG 4: "heart" drugs	1.21 (0.84-1.73)	0.298		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	1.21 (0.93-1.58)	0.153		
MG 6: Beta Blockers	0.87 (0.74-1.01)	0.070	0.88 (0.71-1.09)	0.246
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.56 (0.46-0.69)	<0.001	0.72 (0.55-0.94)	0.015
MG 8: Immunosuppressants and Immunomodulators	1.15 (0.84-1.57)	0.379		
MG 9: Systemic Steroids	1.29 (1.07-1.56)	0.008	1.36 (1.08-1.72)	0.009
MG 10: Chemotherapy	3.06 (1.71-5.47)	<0.001	2.92 (1.83-4.66)	<0.001
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	2.26 (1.67-3.06)	<0.001	1.79 (1.29-2.48)	<0.001
MG 12: Antacids incl. Antihistamines	1.01 (0.74-1.39)	0.944		
MG 13: Vitamin D and other Vitamin supplements	1.57 (1.33-1.84)	<0.001	1.33 (1.11-1.58)	0.002
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	2.33 (1.16-4.70)	0.018	2.02 (0.58-7.02)	0.270
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	0.65 (0.23-1.83)	0.416		
MG 19: Immunoglobulins	NA (NA-NA)			
MG 20: Interferons and CSF	1.61 (0.97-2.67)	0.068	1.32 (0.88-1.99)	0.179
MG 21: NSAR and other anti-inflammatory drugs	0.59 (0.49-0.70)	<0.001	0.64 (0.52-0.78)	<0.001
MG 22: Gout medications	1.38 (0.85-2.23)	0.194		
MG 23: Antiepileptics	1.97 (1.50-2.57)	<0.001	1.66 (1.28-2.16)	<0.001
MG 24: Antipsychotics	1.48 (1.29-1.69)	<0.001	1.27 (1.07-1.51)	0.007
MG 26: inhaled anti-obstructive drugs	0.88 (0.68-1.14)	0.339		
MG 27: inhaled steroids	0.62 (0.43-0.90)	0.011	0.80 (0.57-1.11)	0.183
MG 28: other COPD drugs	0.65 (0.53-0.79)	<0.001	0.73 (0.56-0.94)	0.016
MG 30: Systemic Antihistamines	1.46 (1.19-1.80)	<0.001	1.45 (1.00-2.10)	0.049

Table A.43. Cox regression results comparing all-cause mortality after hospital admission between propensity score matched COVID-19 and Influenza patients aged 41-64. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 41-64			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Group: Influenza (ref: COVID-19)	0.79 (0.66-0.96)	0.016	0.79 (0.66-0.94)	0.009
Sex: F (ref: M)	0.56 (0.48-0.65)	<0.001	0.52 (0.45-0.61)	<0.001
Age Group: 56-60 (ref: 61-64)	0.75 (0.61-0.92)	0.007	0.75 (0.59-0.94)	0.014
Age Group: 51-55 (ref: 61-64)	0.48 (0.40-0.59)	<0.001	0.46 (0.37-0.58)	<0.001
Age Group: 46-50 (ref: 61-64)	0.39 (0.32-0.46)	<0.001	0.36 (0.31-0.42)	<0.001
Age Group: 41-45 (ref: 61-64)	0.30 (0.19-0.45)	<0.001	0.28 (0.19-0.44)	<0.001
Medicament Groups: 2-5 (ref: 0-1)	2.04 (1.70-2.45)	<0.001	1.83 (1.47-2.28)	<0.001
Medicament Groups: 6-10 (ref: 0-1)	4.41 (3.76-5.18)	<0.001	2.66 (1.92-3.69)	<0.001
Medicament Groups: ≥11 (ref: 0-1)	5.78 (4.58-7.29)	<0.001	2.13 (1.46-3.11)	<0.001
MG 1: Anticoagulants	1.28 (1.10-1.50)	0.002	1.39 (1.12-1.72)	0.003
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	0.93 (0.83-1.04)	0.193		
MG 3: Insulins and other Antidiabetics	1.05 (0.88-1.26)	0.563		
MG 4: "heart" drugs	0.96 (0.84-1.09)	0.490		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	1.07 (0.92-1.25)	0.353		
MG 6: Beta Blockers	0.96 (0.80-1.14)	0.621		
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.61 (0.49-0.77)	<0.001	0.75 (0.57-0.98)	0.034
MG 8: Immunosuppressants and Immunomodulators	1.02 (0.71-1.47)	0.919		
MG 9: Systemic Steroids	1.21 (1.00-1.46)	0.046	1.25 (1.04-1.51)	0.017
MG 10: Chemotherapy	2.08 (1.50-2.88)	<0.001	1.72 (1.18-2.51)	0.005
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	2.27 (1.80-2.86)	<0.001	1.77 (1.43-2.20)	<0.001
MG 12: Antacids incl. Antihistamines	1.06 (0.99-1.13)	0.105		
MG 13: Vitamin D and other Vitamin supplements	1.69 (1.33-2.15)	<0.001	1.46 (1.20-1.79)	<0.001
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	2.63 (1.31-5.28)	0.007	2.01 (1.29-3.15)	0.002
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	0.62 (0.25-1.59)	0.322		
MG 19: Immunoglobulins	NA (NA-NA)			
MG 20: Interferons and CSF	1.90 (1.48-2.44)	<0.001	1.53 (1.06-2.22)	0.023
MG 21: NSAR and other anti-inflammatory drugs	0.64 (0.58-0.71)	<0.001	0.69 (0.61-0.78)	<0.001
MG 22: Gout medications	1.45 (0.86-2.45)	0.162		
MG 23: Antiepileptics	1.84 (1.64-2.05)	<0.001	1.57 (1.37-1.79)	<0.001
MG 24: Antipsychotics	1.44 (1.30-1.58)	<0.001	1.25 (1.12-1.40)	<0.001
MG 26: inhaled anti-obstructive drugs	0.87 (0.67-1.13)	0.280		
MG 27: inhaled steroids	0.52 (0.33-0.83)	0.005	0.64 (0.39-1.05)	0.076
MG 28: other COPD drugs	0.83 (0.49-1.40)	0.479		
MG 30: Systemic Antihistamines	1.33 (1.14-1.55)	<0.001	1.32 (1.11-1.58)	0.002

Table A.44. Cox regression results evaluating all-cause mortality after COVID-19 hospital admission of patients aged 65-74. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 65-74			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	0.58 (0.54-0.62)	<0.001	0.56 (0.51-0.61)	<0.001
Age Group: 65-70 (ref: 71-74)	0.74 (0.71-0.78)	<0.001	0.76 (0.73-0.79)	<0.001
Medicament Groups: 2-5 (ref: 0-1)	1.24 (1.11-1.39)	<0.001	1.14 (1.01-1.30)	0.042
Medicament Groups: 6-10 (ref: 0-1)	2.09 (1.80-2.43)	<0.001	1.37 (1.09-1.71)	0.007
Medicament Groups: ≥11 (ref: 0-1)	2.84 (2.33-3.46)	<0.001	1.26 (0.91-1.74)	0.167
Wave: 3 (ref: Wave 1 & 2)	0.93 (0.87-1.00)	0.058	0.95 (0.90-1.02)	0.152
Wave: 4 (ref: Wave 1 & 2)	1.22 (1.08-1.37)	0.001	1.21 (1.07-1.36)	0.002
MG 1: Anticoagulants	1.13 (1.04-1.22)	0.005	1.17 (1.07-1.27)	<0.001
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	0.99 (0.88-1.11)	0.846		
MG 3: Insulins and other Antidiabetics	1.13 (1.05-1.22)	0.002	1.27 (1.17-1.39)	<0.001
MG 4: "heart" drugs	0.98 (0.88-1.10)	0.769		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	0.89 (0.80-0.98)	0.021	0.95 (0.86-1.05)	0.319
MG 6: Beta Blockers	1.09 (0.99-1.21)	0.078	1.14 (1.08-1.21)	<0.001
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.74 (0.69-0.80)	<0.001	0.77 (0.72-0.82)	<0.001
MG 8: Immunosuppressants and Immunomodulators	1.16 (1.00-1.33)	0.044	1.08 (0.94-1.25)	0.274
MG 9: Systemic Steroids	1.14 (1.07-1.21)	<0.001	1.20 (1.10-1.31)	<0.001
MG 10: Chemotherapy	1.74 (1.50-2.01)	<0.001	1.65 (1.36-2.00)	<0.001
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.62 (1.34-1.94)	<0.001	1.48 (1.26-1.74)	<0.001
MG 12: Antacids incl. Antihistamines	1.12 (1.04-1.21)	0.003	1.14 (1.06-1.22)	<0.001
MG 13: Vitamin D and other Vitamin supplements	1.10 (1.03-1.18)	0.007	1.06 (0.96-1.16)	0.241
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	1.18 (0.13-10.44)	0.881		
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	1.12 (0.86-1.47)	0.393		
MG 19: Immunoglobulins	0.38 (0.06-2.39)	0.302		
MG 20: Interferons and CSF	1.79 (1.56-2.04)	<0.001	1.62 (1.41-1.87)	<0.001
MG 21: NSAR and other anti-inflammatory drugs	0.67 (0.64-0.70)	<0.001	0.72 (0.69-0.75)	<0.001
MG 22: Gout medications	1.06 (0.87-1.29)	0.559		
MG 23: Antiepileptics	1.34 (1.19-1.51)	<0.001	1.28 (1.14-1.44)	<0.001
MG 24: Antipsychotics	1.35 (1.26-1.44)	<0.001	1.32 (1.22-1.42)	<0.001
MG 26: inhaled anti-obstructive drugs	1.01 (0.96-1.06)	0.754		
MG 27: inhaled steroids	0.77 (0.67-0.88)	<0.001	0.88 (0.77-1.00)	0.045
MG 28: other COPD drugs	0.76 (0.52-1.10)	0.150		
MG 30: Systemic Antihistamines	0.85 (0.75-0.96)	0.009	0.89 (0.80-1.00)	0.057

Table A.45. Cox regression results evaluating all-cause mortality after Influenza hospital admission of patients aged 65-74. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 65-74			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	0.66 (0.54-0.80)	<0.001	0.64 (0.49-0.84)	0.001
Age Group: 65-70 (ref: 71-74)	0.76 (0.65-0.88)	<0.001	0.77 (0.65-0.91)	0.002
Medicament Groups: 2-5 (ref: 0-1)	1.58 (1.19-2.11)	0.002	1.38 (1.02-1.86)	0.036
Medicament Groups: 6-10 (ref: 0-1)	2.91 (2.27-3.74)	<0.001	2.14 (1.59-2.88)	<0.001
Medicament Groups: ≥11 (ref: 0-1)	3.33 (2.56-4.33)	<0.001	1.79 (1.24-2.59)	0.002
Wave: 2016/2017 (ref: Wave 2015/2016)	0.79 (0.57-1.10)	0.162	0.78 (0.55-1.10)	0.153
Wave: 2017/2018 (ref: Wave 2015/2016)	0.84 (0.57-1.24)	0.378	0.83 (0.58-1.19)	0.304
Wave: 2018/2019 (ref: Wave 2015/2016)	0.70 (0.53-0.93)	0.015	0.69 (0.52-0.91)	0.009
Wave: 2019/2020 (ref: Wave 2015/2016)	0.92 (0.64-1.31)	0.632	0.90 (0.63-1.29)	0.574
Wave: 2020/2021 (ref: Wave 2015/2016)	1.56 (0.80-3.03)	0.193	1.65 (0.93-2.94)	0.090
MG 1: Anticoagulants	1.16 (0.89-1.50)	0.273		
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.09 (0.89-1.33)	0.396		
MG 3: Insulins and other Antidiabetics	1.26 (1.12-1.41)	<0.001	1.41 (1.24-1.61)	<0.001
MG 4: "heart" drugs	1.12 (0.85-1.48)	0.405		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	0.90 (0.79-1.02)	0.092	1.01 (0.92-1.11)	0.782
MG 6: Beta Blockers	1.09 (0.86-1.38)	0.489		
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.71 (0.62-0.81)	<0.001	0.75 (0.66-0.86)	<0.001
MG 8: Immunosuppressants and Immunomodulators	0.96 (0.65-1.43)	0.848		
MG 9: Systemic Steroids	1.19 (0.98-1.44)	0.074	1.24 (1.06-1.45)	0.009
MG 10: Chemotherapy	2.75 (1.72-4.38)	<0.001	2.46 (1.54-3.91)	<0.001
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.49 (1.12-1.99)	0.007	1.34 (1.04-1.73)	0.023
MG 12: Antacids incl. Antihistamines	1.15 (0.93-1.42)	0.206		
MG 13: Vitamin D and other Vitamin supplements	0.98 (0.64-1.51)	0.930		
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	NA (NA-NA)			
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	0.86 (0.60-1.24)	0.428		
MG 19: Immunoglobulins	NA (NA-NA)			
MG 20: Interferons and CSF	2.45 (2.01-2.99)	<0.001	2.07 (1.70-2.53)	<0.001
MG 21: NSAR and other anti-inflammatory drugs	0.83 (0.70-0.98)	0.032	0.88 (0.75-1.02)	0.082
MG 22: Gout medications	1.06 (0.83-1.35)	0.640		
MG 23: Antiepileptics	1.39 (1.18-1.64)	<0.001	1.28 (1.13-1.45)	<0.001
MG 24: Antipsychotics	1.34 (1.21-1.49)	<0.001	1.39 (1.23-1.57)	<0.001
MG 26: inhaled anti-obstructive drugs	1.16 (0.95-1.43)	0.153		
MG 27: inhaled steroids	0.82 (0.75-0.90)	<0.001	0.94 (0.84-1.05)	0.309
MG 28: other COPD drugs	1.26 (0.91-1.76)	0.167		
MG 30: Systemic Antihistamines	0.71 (0.61-0.83)	<0.001	0.78 (0.64-0.95)	0.012

Table A.46. Cox regression results comparing all-cause mortality after hospital admission between propensity score matched COVID-19 and Influenza patients aged 65-74. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 65-74			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Group: Influenza (ref: COVID-19)	0.51 (0.42-0.61)	<0.001	0.50 (0.41-0.60)	<0.001
Sex: F (ref: M)	0.60 (0.53-0.67)	<0.001	0.59 (0.51-0.68)	<0.001
Age Group: 65-70 (ref: 71-74)	0.75 (0.64-0.88)	<0.001	0.76 (0.65-0.90)	0.001
Medicament Groups: 2-5 (ref: 0-1)	1.35 (1.15-1.59)	<0.001	1.26 (1.06-1.49)	0.008
Medicament Groups: 6-10 (ref: 0-1)	2.32 (1.92-2.81)	<0.001	1.73 (1.36-2.21)	<0.001
Medicament Groups: ≥11 (ref: 0-1)	2.86 (2.30-3.55)	<0.001	1.57 (0.94-2.62)	0.082
MG 1: Anticoagulants	1.16 (0.97-1.39)	0.103		
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	0.97 (0.86-1.08)	0.564		
MG 3: Insulins and other Antidiabetics	1.14 (1.01-1.29)	0.030	1.24 (1.09-1.40)	<0.001
MG 4: "heart" drugs	1.12 (0.98-1.27)	0.100	1.20 (1.07-1.36)	0.002
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	0.91 (0.76-1.08)	0.279		
MG 6: Beta Blockers	1.11 (0.90-1.37)	0.319		
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.77 (0.72-0.83)	<0.001	0.81 (0.72-0.90)	<0.001
MG 8: Immunosuppressants and Immunomodulators	1.04 (0.89-1.20)	0.630		
MG 9: Systemic Steroids	1.02 (0.89-1.17)	0.778		
MG 10: Chemotherapy	2.02 (1.70-2.40)	<0.001	1.79 (1.50-2.15)	<0.001
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.54 (1.31-1.81)	<0.001	1.34 (1.17-1.53)	<0.001
MG 12: Antacids incl. Antihistamines	1.16 (1.00-1.34)	0.044	1.19 (1.00-1.41)	0.050
MG 13: Vitamin D and other Vitamin supplements	1.05 (0.83-1.33)	0.702		
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	NA (NA-NA)			
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	0.86 (0.60-1.23)	0.415		
MG 19: Immunoglobulins	NA (NA-NA)			
MG 20: Interferons and CSF	2.12 (1.83-2.46)	<0.001	1.97 (1.58-2.45)	<0.001
MG 21: NSAR and other anti-inflammatory drugs	0.72 (0.64-0.80)	<0.001	0.77 (0.68-0.86)	<0.001
MG 22: Gout medications	1.05 (0.86-1.28)	0.637		
MG 23: Antiepileptics	1.51 (1.29-1.78)	<0.001	1.39 (1.20-1.61)	<0.001
MG 24: Antipsychotics	1.39 (1.25-1.54)	<0.001	1.32 (1.19-1.47)	<0.001
MG 26: inhaled anti-obstructive drugs	1.04 (0.90-1.20)	0.617		
MG 27: inhaled steroids	0.71 (0.53-0.94)	0.018	0.86 (0.66-1.12)	0.253
MG 28: other COPD drugs	0.58 (0.34-1.00)	0.051	0.75 (0.47-1.22)	0.251
MG 30: Systemic Antihistamines	0.68 (0.57-0.81)	<0.001	0.72 (0.61-0.84)	<0.001

Table A.47. Cox regression results evaluating all-cause mortality after COVID-19 hospital admission of patients aged 75 and older. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: ≥75			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	0.73 (0.70-0.75)	<0.001	0.69 (0.66-0.72)	<0.001
Age Group: 86-90 (ref: >90)	0.64 (0.59-0.69)	<0.001	0.67 (0.62-0.73)	<0.001
Age Group: 81-85 (ref: >90)	0.43 (0.40-0.45)	<0.001	0.46 (0.43-0.49)	<0.001
Age Group: 75-80 (ref: >90)	0.31 (0.29-0.33)	<0.001	0.35 (0.32-0.37)	<0.001
Medicament Groups: 2-5 (ref: 0-1)	1.09 (1.00-1.19)	0.059	0.93 (0.84-1.04)	0.224
Medicament Groups: 6-10 (ref: 0-1)	1.37 (1.24-1.52)	<0.001	0.95 (0.81-1.11)	0.521
Medicament Groups: ≥11 (ref: 0-1)	1.73 (1.51-1.97)	<0.001	0.95 (0.79-1.13)	0.536
Wave: 3 (ref: Wave 1 & 2)	0.97 (0.89-1.07)	0.573	0.99 (0.90-1.08)	0.749
Wave: 4 (ref: Wave 1 & 2)	0.97 (0.85-1.11)	0.664	1.00 (0.88-1.14)	0.995
MG 1: Anticoagulants	1.13 (1.09-1.17)	<0.001	1.15 (1.11-1.18)	<0.001
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.14 (1.05-1.23)	0.001	1.15 (1.06-1.25)	<0.001
MG 3: Insulins and other Antidiabetics	1.07 (1.00-1.13)	0.035	1.15 (1.09-1.21)	<0.001
MG 4: "heart" drugs	1.05 (1.01-1.08)	0.007	1.08 (1.05-1.12)	<0.001
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	0.89 (0.83-0.96)	0.003	0.93 (0.86-1.00)	0.055
MG 6: Beta Blockers	1.03 (1.00-1.07)	0.073	1.07 (1.03-1.11)	<0.001
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.81 (0.78-0.85)	<0.001	0.85 (0.82-0.88)	<0.001
MG 8: Immunosuppressants and Immunomodulators	1.04 (0.93-1.16)	0.507		
MG 9: Systemic Steroids	0.98 (0.88-1.09)	0.680		
MG 10: Chemotherapy	1.06 (0.98-1.15)	0.137		
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.40 (1.32-1.48)	<0.001	1.36 (1.30-1.44)	<0.001
MG 12: Antacids incl. Antihistamines	1.05 (1.03-1.07)	<0.001	1.03 (1.01-1.05)	<0.001
MG 13: Vitamin D and other Vitamin supplements	1.06 (1.01-1.10)	0.010	1.01 (0.97-1.05)	0.570
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	1.85 (0.93-3.70)	0.081	1.89 (0.94-3.79)	0.074
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	0.83 (0.72-0.97)	0.016	0.90 (0.77-1.05)	0.181
MG 19: Immunoglobulins	3.32 (2.18-5.06)	<0.001	3.19 (2.30-4.43)	<0.001
MG 20: Interferons and CSF	1.15 (1.06-1.25)	<0.001	1.26 (1.17-1.36)	<0.001
MG 21: NSAR and other anti-inflammatory drugs	0.76 (0.72-0.79)	<0.001	0.80 (0.77-0.83)	<0.001
MG 22: Gout medications	1.03 (0.95-1.13)	0.447		
MG 23: Antiepileptics	1.08 (1.05-1.12)	<0.001	1.06 (1.02-1.10)	0.002
MG 24: Antipsychotics	1.37 (1.31-1.42)	<0.001	1.34 (1.30-1.39)	<0.001
MG 26: inhaled anti-obstructive drugs	1.03 (0.99-1.07)	0.136		
MG 27: inhaled steroids	0.87 (0.80-0.95)	0.003	0.93 (0.84-1.02)	0.115
MG 28: other COPD drugs	0.89 (0.72-1.10)	0.273		
MG 30: Systemic Antihistamines	0.99 (0.92-1.06)	0.708		

Table A.48. Cox regression results evaluating all-cause mortality after Influenza hospital admission of patients aged 75 and older. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: ≥75			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	0.71 (0.66-0.77)	<0.001	0.68 (0.65-0.72)	<0.001
Age Group: 86-90 (ref: >90)	0.56 (0.51-0.62)	<0.001	0.58 (0.54-0.63)	<0.001
Age Group: 81-85 (ref: >90)	0.41 (0.37-0.47)	<0.001	0.43 (0.39-0.48)	<0.001
Age Group: 75-80 (ref: >90)	0.25 (0.21-0.29)	<0.001	0.27 (0.24-0.30)	<0.001
Medicament Groups: 2-5 (ref: 0-1)	1.30 (1.18-1.44)	<0.001	1.18 (1.06-1.32)	0.002
Medicament Groups: 6-10 (ref: 0-1)	1.68 (1.53-1.84)	<0.001	1.28 (1.09-1.50)	0.003
Medicament Groups: ≥11 (ref: 0-1)	2.43 (2.31-2.55)	<0.001	1.60 (1.26-2.03)	<0.001
Wave: 2016/2017 (ref: Wave 2015/2016)	0.93 (0.72-1.19)	0.552	0.98 (0.77-1.25)	0.879
Wave: 2017/2018 (ref: Wave 2015/2016)	1.00 (0.77-1.31)	0.993	1.07 (0.84-1.36)	0.574
Wave: 2018/2019 (ref: Wave 2015/2016)	1.08 (0.81-1.44)	0.610	1.13 (0.88-1.46)	0.330
Wave: 2019/2020 (ref: Wave 2015/2016)	1.05 (0.85-1.30)	0.626	1.10 (0.90-1.34)	0.341
Wave: 2020/2021 (ref: Wave 2015/2016)	3.59 (1.32-9.73)	0.012	3.85 (1.02-14.50)	0.047
MG 1: Anticoagulants	1.08 (0.99-1.18)	0.069	1.12 (1.04-1.21)	0.002
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.07 (0.96-1.20)	0.242		
MG 3: Insulins and other Antidiabetics	1.10 (1.02-1.19)	0.020	1.19 (1.10-1.28)	<0.001
MG 4: "heart" drugs	1.06 (1.00-1.12)	0.070	1.08 (1.02-1.13)	0.004
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	0.90 (0.83-0.97)	0.008	0.91 (0.83-1.00)	0.045
MG 6: Beta Blockers	0.97 (0.91-1.03)	0.267		
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.78 (0.72-0.84)	<0.001	0.80 (0.75-0.86)	<0.001
MG 8: Immunosuppressants and Immunomodulators	1.08 (0.88-1.33)	0.460		
MG 9: Systemic Steroids	0.99 (0.89-1.11)	0.886		
MG 10: Chemotherapy	1.08 (0.92-1.26)	0.366		
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.35 (1.23-1.49)	<0.001	1.30 (1.18-1.44)	<0.001
MG 12: Antacids incl. Antihistamines	1.16 (1.10-1.22)	<0.001	1.14 (1.09-1.19)	<0.001
MG 13: Vitamin D and other Vitamin supplements	1.02 (0.93-1.11)	0.702		
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	2.24 (0.38-13.16)	0.373		
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	0.66 (0.54-0.80)	<0.001	0.71 (0.61-0.84)	<0.001
MG 19: Immunoglobulins	0.85 (0.16-4.46)	0.844		
MG 20: Interferons and CSF	1.32 (1.06-1.66)	0.014	1.36 (1.10-1.68)	0.005
MG 21: NSAR and other anti-inflammatory drugs	0.74 (0.69-0.79)	<0.001	0.76 (0.71-0.82)	<0.001
MG 22: Gout medications	1.10 (1.04-1.17)	0.001	1.13 (1.06-1.22)	<0.001
MG 23: Antiepileptics	1.04 (0.93-1.17)	0.463		
MG 24: Antipsychotics	1.44 (1.40-1.48)	<0.001	1.42 (1.37-1.48)	<0.001
MG 26: inhaled anti-obstructive drugs	1.13 (1.06-1.20)	<0.001	1.16 (1.07-1.25)	<0.001
MG 27: inhaled steroids	0.81 (0.63-1.05)	0.119		
MG 28: other COPD drugs	0.83 (0.57-1.21)	0.335		
MG 30: Systemic Antihistamines	1.08 (0.95-1.23)	0.247		

Table A.49. Cox regression results comparing all-cause mortality after hospital admission between propensity score matched COVID-19 and Influenza patients aged 75 and older. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: ≥75			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Group: Influenza (ref: COVID-19)	0.51 (0.49-0.54)	<0.001	0.51 (0.49-0.53)	<0.001
Sex: F (ref: M)	0.70 (0.66-0.74)	<0.001	0.67 (0.64-0.71)	<0.001
Age Group: 86-90 (ref: >90)	0.62 (0.58-0.66)	<0.001	0.65 (0.60-0.70)	<0.001
Age Group: 81-85 (ref: >90)	0.42 (0.38-0.46)	<0.001	0.45 (0.41-0.49)	<0.001
Age Group: 75-80 (ref: >90)	0.28 (0.26-0.31)	<0.001	0.32 (0.28-0.36)	<0.001
Medicament Groups: 2-5 (ref: 0-1)	1.21 (1.10-1.33)	<0.001	1.04 (0.95-1.15)	0.388
Medicament Groups: 6-10 (ref: 0-1)	1.52 (1.37-1.69)	<0.001	1.09 (0.96-1.24)	0.191
Medicament Groups: ≥11 (ref: 0-1)	1.99 (1.84-2.16)	<0.001	1.16 (1.05-1.27)	0.003
MG 1: Anticoagulants	1.10 (1.02-1.19)	0.013	1.15 (1.08-1.23)	<0.001
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.14 (1.02-1.27)	0.018	1.13 (1.03-1.24)	0.011
MG 3: Insulins and other Antidiabetics	1.06 (1.02-1.09)	0.001	1.16 (1.13-1.19)	<0.001
MG 4: "heart" drugs	1.04 (0.96-1.12)	0.364		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	0.89 (0.81-0.97)	0.008	0.92 (0.85-1.00)	0.049
MG 6: Beta Blockers	1.01 (0.96-1.07)	0.606		
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.80 (0.75-0.86)	<0.001	0.84 (0.79-0.89)	<0.001
MG 8: Immunosuppressants and Immunomodulators	1.03 (0.91-1.17)	0.609		
MG 9: Systemic Steroids	0.98 (0.91-1.07)	0.720		
MG 10: Chemotherapy	1.08 (0.97-1.21)	0.156		
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.41 (1.34-1.48)	<0.001	1.36 (1.31-1.42)	<0.001
MG 12: Antacids incl. Antihistamines	1.08 (1.03-1.14)	0.002	1.07 (1.02-1.12)	0.003
MG 13: Vitamin D and other Vitamin supplements	1.05 (0.99-1.13)	0.125		
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	1.94 (0.64-5.87)	0.241		
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	0.69 (0.49-0.98)	0.038	0.72 (0.52-0.99)	0.045
MG 19: Immunoglobulins	0.97 (0.25-3.80)	0.970		
MG 20: Interferons and CSF	1.32 (1.10-1.58)	0.003	1.34 (1.12-1.60)	0.001
MG 21: NSAR and other anti-inflammatory drugs	0.75 (0.71-0.79)	<0.001	0.78 (0.74-0.82)	<0.001
MG 22: Gout medications	1.08 (1.03-1.14)	0.004	1.12 (1.07-1.18)	<0.001
MG 23: Antiepileptics	1.05 (1.00-1.10)	0.059	1.02 (0.98-1.05)	0.284
MG 24: Antipsychotics	1.41 (1.35-1.46)	<0.001	1.39 (1.33-1.45)	<0.001
MG 26: inhaled anti-obstructive drugs	1.07 (1.01-1.14)	0.023	1.07 (1.00-1.15)	0.059
MG 27: inhaled steroids	0.94 (0.82-1.07)	0.313		
MG 28: other COPD drugs	0.87 (0.62-1.22)	0.422		
MG 30: Systemic Antihistamines	0.98 (0.90-1.07)	0.691		

Table A.50. Cox regression results evaluating in-hospital mortality among COVID-19 patients aged 19-40. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 19-40			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	0.77 (0.55-1.09)	0.144	0.92 (0.62-1.38)	0.693
Age Group: 31-35 (ref: 36-40)	0.64 (0.18-2.22)	0.477	0.62 (0.16-2.34)	0.478
Age Group: 26-30 (ref: 36-40)	1.31 (0.66-2.60)	0.439	1.37 (0.62-3.02)	0.439
Age Group: 19-25 (ref: 36-40)	0.56 (0.16-2.02)	0.379	0.74 (0.21-2.62)	0.644
Medicament Groups: 2-5 (ref: 0-1)	0.69 (0.30-1.59)	0.384	0.62 (0.20-1.92)	0.411
Medicament Groups: ≥6 (ref: 0-1)	2.75 (1.32-5.74)	0.007	3.13 (0.98-10.05)	0.055
Wave: 3 (ref: Wave 1 & 2)	1.19 (0.46-3.05)	0.720	1.30 (0.45-3.81)	0.627
Wave: 4 (ref: Wave 1 & 2)	1.34 (0.55-3.25)	0.524	1.54 (0.59-4.04)	0.380
MG 1: Anticoagulants	0.87 (0.22-3.48)	0.845		
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	0.70 (0.34-1.44)	0.333		
MG 3: Insulins and other Antidiabetics	3.55 (1.89-6.66)	<0.001	3.10 (1.66-5.80)	<0.001
MG 4: "heart" drugs	NA (NA-NA)			
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	2.27 (0.79-6.56)	0.129		
MG 6: Beta Blockers	1.51 (0.35-6.51)	0.583		
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	2.56 (1.21-5.42)	0.014	1.67 (0.64-4.35)	0.291
MG 8: Immunosuppressants and Immunomodulators	1.54 (0.51-4.65)	0.447		
MG 9: Systemic Steroids	0.69 (0.30-1.55)	0.366		
MG 10: Chemotherapy	4.17 (0.89-19.68)	0.071		
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	0.19 (0.07-0.55)	0.002	0.24 (0.08-0.77)	0.017
MG 12: Antacids incl. Antihistamines	1.66 (0.53-5.19)	0.386		
MG 13: Vitamin D and other Vitamin supplements	0.36 (0.05-2.83)	0.333		
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	NA (NA-NA)			
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	NA (NA-NA)			
MG 19: Immunoglobulins	NA (NA-NA)			
MG 20: Interferons and CSF	NA (NA-NA)			
MG 21: NSAR and other anti-inflammatory drugs	0.34 (0.11-1.09)	0.069	0.39 (0.10-1.49)	0.171
MG 22: Gout medications	6.36 (1.99-20.38)	0.002		
MG 23: Antiepileptics	1.04 (0.42-2.58)	0.925		
MG 24: Antipsychotics	2.00 (0.68-5.87)	0.209		
MG 26: inhaled anti-obstructive drugs	1.95 (1.07-3.54)	0.029	1.54 (0.76-3.13)	0.235
MG 27: inhaled steroids	0.60 (0.15-2.45)	0.476		
MG 28: other COPD drugs	NA (NA-NA)			
MG 30: Systemic Antihistamines	1.12 (0.56-2.24)	0.758		

Table A.51. Cox regression results evaluating in-hospital mortality among Influenza patients aged 19-40. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 19-40			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	0.48 (0.02-9.60)	0.629	0.49 (0.02-10.34)	0.647
Age Group: 31-35 (ref: 36-40)	NA (NA-NA)		NA (NA-NA)	
Age Group: 26-30 (ref: 36-40)	3.64 (2.03-6.53)	<0.001	4.29 (2.25-8.19)	<0.001
Age Group: 19-25 (ref: 36-40)	4.13 (0.92-18.47)	0.064	4.27 (0.84-21.56)	0.079
Medicament Groups: 2-5 (ref: 0-1)	2.48 (0.21-29.99)	0.475	2.45 (0.22-27.77)	0.468
Medicament Groups: ≥6 (ref: 0-1)	2.78 (0.77-10.04)	0.118	1.28 (0.26-6.29)	0.759
Wave: 2016/2017 (ref: Wave 2015/2016)	0.61 (0.17-2.19)	0.446	0.65 (0.20-2.11)	0.471
Wave: 2017/2018 (ref: Wave 2015/2016)	NA (NA-NA)		NA (NA-NA)	
Wave: 2018/2019 (ref: Wave 2015/2016)	NA (NA-NA)		NA (NA-NA)	
Wave: 2019/2020 (ref: Wave 2015/2016)	NA (NA-NA)		NA (NA-NA)	
Wave: 2020/2021 (ref: Wave 2015/2016)	6.26 (0.61-64.73)	0.124	6.02 (0.56-64.39)	0.138
MG 1: Anticoagulants	NA (NA-NA)			
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	0.49 (0.07-3.56)	0.481		
MG 3: Insulins and other Antidiabetics	NA (NA-NA)			
MG 4: "heart" drugs	10.20 (5.12-20.34)	<0.001		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	2.01 (1.08-3.76)	0.028	1.35 (0.69-2.65)	0.386
MG 6: Beta Blockers	3.04 (1.44-6.44)	0.004	2.72 (1.22-6.08)	0.015
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	NA (NA-NA)			
MG 8: Immunosuppressants and Immunomodulators	NA (NA-NA)			
MG 9: Systemic Steroids	NA (NA-NA)			
MG 10: Chemotherapy	NA (NA-NA)			
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.23 (0.40-3.78)	0.715		
MG 12: Antacids incl. Antihistamines	2.50 (0.18-35.19)	0.498		
MG 13: Vitamin D and other Vitamin supplements	NA (NA-NA)			
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	NA (NA-NA)			
MG 16: Hereditary angioedema Therapeutics	1.30 (0.03-59.89)	0.892		
MG 17: Peripheral Vasodilators	NA (NA-NA)			
MG 19: Immunoglobulins	NA (NA-NA)			
MG 20: Interferons and CSF	NA (NA-NA)			
MG 21: NSAR and other anti-inflammatory drugs	NA (NA-NA)			
MG 22: Gout medications	NA (NA-NA)			
MG 23: Antiepileptics	10.68 (1.16-97.97)	0.036		
MG 24: Antipsychotics	39.65 (14.31-109.91)	<0.001		
MG 26: inhaled anti-obstructive drugs	7.24 (1.50-35.00)	0.014		
MG 27: inhaled steroids	NA (NA-NA)			
MG 28: other COPD drugs	NA (NA-NA)			
MG 30: Systemic Antihistamines	NA (NA-NA)			

Table A.52. Cox regression results of comparing in-hospital mortality between propensity score matched COVID-19 and Influenza patients aged 19-40. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 19-40			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Group: Influenza (ref: COVID-19)	1.75 (0.50-6.05)	0.380	1.47 (0.54-4.00)	0.448
Sex: F (ref: M)	0.42 (0.03-5.55)	0.514	0.39 (0.03-5.43)	0.481
Age Group: 31-35 (ref: 36-40)	0.31 (0.06-1.77)	0.190	0.43 (0.09-2.13)	0.298
Age Group: 26-30 (ref: 36-40)	3.02 (1.33-6.87)	0.008	2.94 (1.08-7.96)	0.034
Age Group: 19-25 (ref: 36-40)	2.19 (0.51-9.51)	0.294	2.18 (0.58-8.25)	0.251
Medicament Groups: 2-5 (ref: 0-1)	0.82 (0.19-3.60)	0.791	1.31 (0.26-6.64)	0.746
Medicament Groups: ≥6 (ref: 0-1)	10.22 (3.99-26.22)	<0.001	27.14 (8.82-83.50)	<0.001
MG 1: Anticoagulants	3.40 (0.70-16.53)	0.129		
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	0.83 (0.25-2.83)	0.770		
MG 3: Insulins and other Antidiabetics	3.19 (0.80-12.71)	0.101		
MG 4: "heart" drugs	7.42 (2.84-19.42)	<0.001		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	0.57 (0.18-1.74)	0.322		
MG 6: Beta Blockers	4.09 (2.63-6.35)	<0.001	3.97 (2.66-5.91)	<0.001
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	8.80 (1.15-67.40)	0.036		
MG 8: Immunosuppressants and Immunomodulators	NA (NA-NA)			
MG 9: Systemic Steroids	0.78 (0.27-2.25)	0.648		
MG 10: Chemotherapy	NA (NA-NA)			
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	2.31 (0.53-10.11)	0.268		
MG 12: Antacids incl. Antihistamines	0.29 (0.06-1.47)	0.134		
MG 13: Vitamin D and other Vitamin supplements	2.66 (0.05-136.67)	0.627		
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	NA (NA-NA)			
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	NA (NA-NA)			
MG 19: Immunoglobulins	NA (NA-NA)			
MG 20: Interferons and CSF	NA (NA-NA)			
MG 21: NSAR and other anti-inflammatory drugs	0.34 (0.16-0.72)	0.005	0.34 (0.18-0.63)	<0.001
MG 22: Gout medications	NA (NA-NA)			
MG 23: Antiepileptics	1.23 (0.52-2.91)	0.640		
MG 24: Antipsychotics	0.53 (0.34-0.83)	0.005	0.30 (0.12-0.77)	0.012
MG 26: inhaled anti-obstructive drugs	8.72 (5.19-14.62)	<0.001		
MG 27: inhaled steroids	1.04 (0.36-3.02)	0.947		
MG 28: other COPD drugs	NA (NA-NA)			
MG 30: Systemic Antihistamines	1.06 (0.54-2.05)	0.873		

Table A.53. Cox regression results evaluating in-hospital mortality among COVID-19 patients aged 41-64. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 41-64			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	0.83 (0.69-1.01)	0.063	0.80 (0.67-0.96)	0.014
Age Group: 56-60 (ref: 61-64)	0.68 (0.58-0.81)	<0.001	0.67 (0.57-0.79)	<0.001
Age Group: 51-55 (ref: 61-64)	0.52 (0.39-0.69)	<0.001	0.50 (0.37-0.67)	<0.001
Age Group: 46-50 (ref: 61-64)	0.40 (0.26-0.62)	<0.001	0.40 (0.27-0.60)	<0.001
Age Group: 41-45 (ref: 61-64)	0.26 (0.16-0.40)	<0.001	0.25 (0.16-0.40)	<0.001
Medicament Groups: 2-5 (ref: 0-1)	1.49 (1.31-1.70)	<0.001	1.37 (1.20-1.56)	<0.001
Medicament Groups: 6-10 (ref: 0-1)	2.36 (1.90-2.92)	<0.001	1.57 (1.15-2.15)	0.004
Medicament Groups: ≥11 (ref: 0-1)	2.99 (2.20-4.07)	<0.001	1.32 (0.82-2.13)	0.253
Wave: 3 (ref: Wave 1 & 2)	1.03 (0.88-1.21)	0.708	1.04 (0.87-1.25)	0.637
Wave: 4 (ref: Wave 1 & 2)	1.58 (1.34-1.86)	<0.001	1.60 (1.39-1.84)	<0.001
MG 1: Anticoagulants	1.05 (0.94-1.17)	0.408		
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.08 (0.97-1.20)	0.155		
MG 3: Insulins and other Antidiabetics	0.99 (0.86-1.13)	0.843		
MG 4: "heart" drugs	0.99 (0.79-1.25)	0.960		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	1.09 (0.95-1.26)	0.218		
MG 6: Beta Blockers	1.02 (0.86-1.22)	0.783		
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.92 (0.83-1.01)	0.093	1.05 (0.96-1.15)	0.282
MG 8: Immunosuppressants and Immunomodulators	1.00 (0.78-1.27)	0.991		
MG 9: Systemic Steroids	1.26 (1.09-1.44)	0.001	1.31 (1.15-1.49)	<0.001
MG 10: Chemotherapy	2.00 (1.32-3.02)	0.001	1.85 (1.16-2.94)	0.009
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.27 (1.00-1.62)	0.054	1.17 (0.96-1.41)	0.115
MG 12: Antacids incl. Antihistamines	1.16 (1.04-1.30)	0.007	1.15 (1.01-1.29)	0.028
MG 13: Vitamin D and other Vitamin supplements	1.40 (1.10-1.77)	0.006	1.36 (1.10-1.68)	0.005
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	17.37 (9.06-33.28)	<0.001		
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	0.50 (0.29-0.85)	0.011	0.57 (0.32-1.01)	0.053
MG 19: Immunoglobulins	NA (NA-NA)			
MG 20: Interferons and CSF	1.56 (1.01-2.41)	0.047	1.35 (0.77-2.36)	0.293
MG 21: NSAR and other anti-inflammatory drugs	0.81 (0.70-0.94)	0.006	0.83 (0.74-0.93)	0.002
MG 22: Gout medications	1.07 (0.90-1.26)	0.452		
MG 23: Antiepileptics	1.39 (1.11-1.74)	0.004	1.34 (1.10-1.64)	0.003
MG 24: Antipsychotics	1.09 (0.84-1.41)	0.522		
MG 26: inhaled anti-obstructive drugs	0.92 (0.76-1.13)	0.437		
MG 27: inhaled steroids	0.75 (0.61-0.93)	0.007	0.79 (0.65-0.95)	0.014
MG 28: other COPD drugs	0.85 (0.53-1.37)	0.507		
MG 30: Systemic Antihistamines	1.26 (1.06-1.51)	0.011	1.31 (1.12-1.53)	<0.001

Table A.54. Cox regression results evaluating in-hospital mortality among Influenza patients aged 41-64. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 41-64			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	1.04 (0.61-1.78)	0.884	1.02 (0.57-1.81)	0.956
Age Group: 56-60 (ref: 61-64)	0.93 (0.53-1.65)	0.814	1.05 (0.64-1.73)	0.841
Age Group: 51-55 (ref: 61-64)	0.45 (0.16-1.23)	0.119	0.46 (0.17-1.22)	0.116
Age Group: 46-50 (ref: 61-64)	0.59 (0.21-1.69)	0.329	0.62 (0.26-1.49)	0.284
Age Group: 41-45 (ref: 61-64)	0.62 (0.24-1.59)	0.318	0.73 (0.24-2.15)	0.563
Medicament Groups: 2-5 (ref: 0-1)	0.82 (0.50-1.35)	0.439	0.59 (0.25-1.37)	0.219
Medicament Groups: 6-10 (ref: 0-1)	1.84 (0.83-4.11)	0.134	0.97 (0.21-4.51)	0.968
Medicament Groups: ≥11 (ref: 0-1)	1.00 (0.39-2.58)	0.994	0.53 (0.08-3.67)	0.521
Wave: 2016/2017 (ref: Wave 2015/2016)	0.51 (0.25-1.04)	0.063	0.54 (0.22-1.29)	0.162
Wave: 2017/2018 (ref: Wave 2015/2016)	0.39 (0.16-0.94)	0.037	0.38 (0.16-0.94)	0.036
Wave: 2018/2019 (ref: Wave 2015/2016)	0.43 (0.08-2.42)	0.339	0.43 (0.07-2.49)	0.344
Wave: 2019/2020 (ref: Wave 2015/2016)	0.64 (0.15-2.72)	0.543	0.57 (0.12-2.73)	0.483
Wave: 2020/2021 (ref: Wave 2015/2016)	1.30 (0.26-6.59)	0.748	1.24 (0.19-7.95)	0.820
MG 1: Anticoagulants	1.22 (0.79-1.90)	0.374		
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	0.68 (0.40-1.16)	0.161		
MG 3: Insulins and other Antidiabetics	1.05 (0.49-2.24)	0.894		
MG 4: "heart" drugs	0.73 (0.54-0.98)	0.039	0.80 (0.45-1.41)	0.441
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	1.90 (1.18-3.04)	0.008	1.92 (1.08-3.40)	0.026
MG 6: Beta Blockers	1.76 (1.17-2.65)	0.006	1.54 (0.95-2.49)	0.082
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.66 (0.34-1.28)	0.219		
MG 8: Immunosuppressants and Immunomodulators	0.43 (0.19-0.96)	0.038	0.45 (0.16-1.27)	0.132
MG 9: Systemic Steroids	0.58 (0.36-0.94)	0.028	0.75 (0.43-1.32)	0.322
MG 10: Chemotherapy	1.11 (0.16-7.48)	0.916		
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	0.90 (0.42-1.93)	0.789		
MG 12: Antacids incl. Antihistamines	0.80 (0.51-1.24)	0.319		
MG 13: Vitamin D and other Vitamin supplements	1.20 (0.81-1.76)	0.363		
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	NA (NA-NA)			
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	1.19 (0.14-9.87)	0.872		
MG 19: Immunoglobulins	NA (NA-NA)			
MG 20: Interferons and CSF	NA (NA-NA)			
MG 21: NSAR and other anti-inflammatory drugs	0.94 (0.51-1.74)	0.842		
MG 22: Gout medications	0.72 (0.22-2.42)	0.598		
MG 23: Antiepileptics	1.58 (0.93-2.69)	0.091	1.76 (0.83-3.72)	0.139
MG 24: Antipsychotics	1.24 (0.63-2.44)	0.536		
MG 26: inhaled anti-obstructive drugs	1.20 (0.60-2.39)	0.598		
MG 27: inhaled steroids	1.23 (0.56-2.72)	0.609		
MG 28: other COPD drugs	1.08 (0.43-2.71)	0.877		
MG 30: Systemic Antihistamines	1.08 (0.54-2.17)	0.830		

Table A.55. Cox regression results of comparing in-hospital mortality between propensity score matched COVID-19 and Influenza patients aged 41-64. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 41-64			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Group: Influenza (ref: COVID-19)	0.76 (0.59-0.97)	0.027	0.71 (0.52-0.96)	0.029
Sex: F (ref: M)	0.87 (0.62-1.22)	0.408	0.83 (0.58-1.17)	0.275
Age Group: 56-60 (ref: 61-64)	0.85 (0.64-1.14)	0.273	0.83 (0.63-1.09)	0.184
Age Group: 51-55 (ref: 61-64)	0.53 (0.38-0.73)	<0.001	0.51 (0.37-0.71)	<0.001
Age Group: 46-50 (ref: 61-64)	0.45 (0.21-0.94)	0.034	0.44 (0.21-0.90)	0.025
Age Group: 41-45 (ref: 61-64)	0.38 (0.16-0.86)	0.021	0.37 (0.17-0.82)	0.014
Medicament Groups: 2-5 (ref: 0-1)	1.47 (1.17-1.85)	<0.001	1.40 (1.14-1.72)	0.001
Medicament Groups: 6-10 (ref: 0-1)	2.82 (2.42-3.29)	<0.001	2.23 (1.71-2.90)	<0.001
Medicament Groups: ≥11 (ref: 0-1)	2.30 (0.94-5.63)	0.067	1.52 (0.51-4.54)	0.454
MG 1: Anticoagulants	1.25 (1.07-1.46)	0.005	1.24 (1.04-1.48)	0.016
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.09 (0.91-1.30)	0.362		
MG 3: Insulins and other Antidiabetics	1.01 (0.75-1.36)	0.960		
MG 4: "heart" drugs	0.89 (0.62-1.27)	0.511		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	1.11 (0.94-1.30)	0.218		
MG 6: Beta Blockers	1.07 (0.81-1.41)	0.624		
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.89 (0.67-1.18)	0.410		
MG 8: Immunosuppressants and Immunomodulators	0.77 (0.58-1.02)	0.069	0.77 (0.56-1.06)	0.104
MG 9: Systemic Steroids	0.95 (0.77-1.19)	0.673		
MG 10: Chemotherapy	1.53 (0.82-2.84)	0.181		
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.35 (0.73-2.53)	0.342		
MG 12: Antacids incl. Antihistamines	0.90 (0.73-1.11)	0.332		
MG 13: Vitamin D and other Vitamin supplements	1.70 (1.17-2.46)	0.005	1.70 (1.20-2.40)	0.003
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	6.74 (2.64-17.18)	<0.001		
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	0.69 (0.34-1.41)	0.312		
MG 19: Immunoglobulins	NA (NA-NA)			
MG 20: Interferons and CSF	1.01 (0.43-2.35)	0.991		
MG 21: NSAR and other anti-inflammatory drugs	0.77 (0.64-0.93)	0.005	0.77 (0.65-0.92)	0.004
MG 22: Gout medications	1.16 (0.81-1.65)	0.417		
MG 23: Antiepileptics	1.20 (0.92-1.56)	0.186		
MG 24: Antipsychotics	1.23 (0.97-1.56)	0.089	1.15 (0.91-1.44)	0.243
MG 26: inhaled anti-obstructive drugs	0.86 (0.64-1.15)	0.306		
MG 27: inhaled steroids	0.64 (0.31-1.32)	0.229		
MG 28: other COPD drugs	0.83 (0.38-1.82)	0.646		
MG 30: Systemic Antihistamines	1.07 (0.77-1.48)	0.676		

Table A.56. Cox regression results evaluating in-hospital mortality among COVID-19 patients aged 65-74. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 65-74			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	0.64 (0.58-0.71)	<0.001	0.63 (0.57-0.71)	<0.001
Age Group: 65-70 (ref: 71-74)	0.78 (0.73-0.82)	<0.001	0.78 (0.74-0.83)	<0.001
Medicament Groups: 2-5 (ref: 0-1)	1.13 (1.00-1.28)	0.047	1.19 (1.04-1.37)	0.010
Medicament Groups: 6-10 (ref: 0-1)	1.59 (1.37-1.83)	<0.001	1.59 (1.32-1.92)	<0.001
Medicament Groups: ≥11 (ref: 0-1)	1.75 (1.35-2.28)	<0.001	1.64 (1.17-2.29)	0.004
Wave: 3 (ref: Wave 1 & 2)	0.94 (0.78-1.12)	0.465	0.96 (0.80-1.15)	0.638
Wave: 4 (ref: Wave 1 & 2)	1.34 (1.14-1.58)	<0.001	1.35 (1.15-1.57)	<0.001
MG 1: Anticoagulants	1.06 (0.97-1.16)	0.218		
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	0.99 (0.90-1.10)	0.906		
MG 3: Insulins and other Antidiabetics	1.08 (1.01-1.16)	0.027	1.13 (1.03-1.24)	0.008
MG 4: "heart" drugs	1.08 (0.95-1.23)	0.227		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	0.87 (0.79-0.96)	0.006	0.88 (0.79-0.98)	0.024
MG 6: Beta Blockers	1.08 (1.00-1.17)	0.058	1.08 (1.04-1.13)	<0.001
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.89 (0.81-0.98)	0.020	0.88 (0.79-0.99)	0.028
MG 8: Immunosuppressants and Immunomodulators	1.09 (0.88-1.34)	0.431		
MG 9: Systemic Steroids	1.03 (0.94-1.13)	0.478		
MG 10: Chemotherapy	1.39 (1.25-1.54)	<0.001	1.35 (1.21-1.52)	<0.001
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.33 (1.14-1.56)	<0.001	1.28 (1.08-1.52)	0.004
MG 12: Antacids incl. Antihistamines	1.07 (0.96-1.20)	0.234		
MG 13: Vitamin D and other Vitamin supplements	1.04 (0.96-1.13)	0.345		
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	1.67 (0.18-15.28)	0.652		
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	1.43 (1.02-2.00)	0.037	1.49 (1.04-2.14)	0.030
MG 19: Immunoglobulins	0.53 (0.20-1.43)	0.210		
MG 20: Interferons and CSF	1.15 (0.88-1.49)	0.300		
MG 21: NSAR and other anti-inflammatory drugs	0.73 (0.69-0.78)	<0.001	0.76 (0.71-0.81)	<0.001
MG 22: Gout medications	1.11 (0.89-1.39)	0.343		
MG 23: Antiepileptics	1.15 (1.00-1.33)	0.047	1.09 (0.93-1.27)	0.274
MG 24: Antipsychotics	1.19 (1.09-1.30)	<0.001	1.16 (1.05-1.29)	0.003
MG 26: inhaled anti-obstructive drugs	1.01 (0.94-1.10)	0.753		
MG 27: inhaled steroids	0.88 (0.68-1.14)	0.319		
MG 28: other COPD drugs	0.77 (0.54-1.12)	0.177		
MG 30: Systemic Antihistamines	0.85 (0.74-0.97)	0.016	0.88 (0.77-1.00)	0.044

Table A.57. Cox regression results evaluating in-hospital mortality among Influenza patients aged 65-74. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 65-74			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	0.80 (0.69-0.91)	<0.001	0.78 (0.64-0.95)	0.014
Age Group: 65-70 (ref: 71-74)	1.02 (0.75-1.40)	0.880	1.02 (0.71-1.46)	0.912
Medicament Groups: 2-5 (ref: 0-1)	1.04 (0.69-1.58)	0.840	1.42 (0.98-2.05)	0.063
Medicament Groups: 6-10 (ref: 0-1)	1.30 (0.93-1.81)	0.131	2.37 (1.30-4.32)	0.005
Medicament Groups: ≥11 (ref: 0-1)	1.78 (1.28-2.46)	<0.001	3.91 (1.84-8.31)	<0.001
Wave: 2016/2017 (ref: Wave 2015/2016)	0.72 (0.30-1.76)	0.474	0.78 (0.34-1.80)	0.558
Wave: 2017/2018 (ref: Wave 2015/2016)	0.64 (0.20-2.06)	0.454	0.61 (0.23-1.63)	0.326
Wave: 2018/2019 (ref: Wave 2015/2016)	0.62 (0.23-1.67)	0.343	0.62 (0.25-1.52)	0.301
Wave: 2019/2020 (ref: Wave 2015/2016)	0.74 (0.25-2.18)	0.580	0.76 (0.30-1.92)	0.566
Wave: 2020/2021 (ref: Wave 2015/2016)	NA (NA-NA)		NA (NA-NA)	
MG 1: Anticoagulants	0.88 (0.59-1.32)	0.550		
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.27 (0.89-1.81)	0.185		
MG 3: Insulins and other Antidiabetics	0.93 (0.54-1.60)	0.784		
MG 4: "heart" drugs	0.83 (0.50-1.39)	0.484		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	0.56 (0.43-0.73)	<0.001	0.60 (0.45-0.80)	<0.001
MG 6: Beta Blockers	1.01 (0.76-1.34)	0.963		
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.53 (0.35-0.81)	0.003	0.50 (0.33-0.77)	0.001
MG 8: Immunosuppressants and Immunomodulators	1.71 (0.72-4.07)	0.229		
MG 9: Systemic Steroids	0.85 (0.57-1.27)	0.438		
MG 10: Chemotherapy	1.96 (1.28-3.01)	0.002	2.08 (1.38-3.15)	<0.001
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.52 (0.91-2.53)	0.106		
MG 12: Antacids incl. Antihistamines	1.42 (0.79-2.55)	0.237		
MG 13: Vitamin D and other Vitamin supplements	0.74 (0.53-1.04)	0.085	0.61 (0.47-0.79)	<0.001
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	NA (NA-NA)			
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	NA (NA-NA)			
MG 19: Immunoglobulins	NA (NA-NA)			
MG 20: Interferons and CSF	1.50 (0.57-3.94)	0.414		
MG 21: NSAR and other anti-inflammatory drugs	0.40 (0.27-0.58)	<0.001	0.34 (0.23-0.52)	<0.001
MG 22: Gout medications	1.53 (0.97-2.43)	0.069	1.77 (1.03-3.05)	0.040
MG 23: Antiepileptics	1.55 (1.04-2.30)	0.030	1.37 (0.93-2.03)	0.113
MG 24: Antipsychotics	1.88 (1.35-2.64)	<0.001	1.84 (1.13-3.00)	0.015
MG 26: inhaled anti-obstructive drugs	1.26 (0.83-1.92)	0.274		
MG 27: inhaled steroids	1.38 (0.82-2.32)	0.221		
MG 28: other COPD drugs	1.93 (1.27-2.93)	0.002	2.48 (1.73-3.55)	<0.001
MG 30: Systemic Antihistamines	1.42 (0.93-2.17)	0.104		

Table A.58. Cox regression results of comparing in-hospital mortality between propensity score matched COVID-19 and Influenza patients aged 65-74. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 65-74			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Group: Influenza (ref: COVID-19)	0.39 (0.28-0.53)	<0.001	0.38 (0.28-0.52)	<0.001
Sex: F (ref: M)	0.58 (0.50-0.67)	<0.001	0.59 (0.50-0.69)	<0.001
Age Group: 65-70 (ref: 71-74)	0.83 (0.75-0.92)	<0.001	0.85 (0.76-0.96)	0.008
Medicament Groups: 2-5 (ref: 0-1)	1.20 (0.91-1.58)	0.204	1.29 (0.95-1.75)	0.101
Medicament Groups: 6-10 (ref: 0-1)	1.66 (1.29-2.13)	<0.001	1.85 (1.28-2.66)	0.001
Medicament Groups: ≥11 (ref: 0-1)	1.82 (1.31-2.53)	<0.001	2.05 (1.19-3.53)	0.010
MG 1: Anticoagulants	1.05 (0.91-1.21)	0.522		
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	0.90 (0.75-1.10)	0.305		
MG 3: Insulins and other Antidiabetics	1.01 (0.87-1.18)	0.891		
MG 4: "heart" drugs	1.20 (0.97-1.49)	0.085	1.15 (0.96-1.37)	0.120
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	0.80 (0.66-0.96)	0.018	0.81 (0.68-0.96)	0.018
MG 6: Beta Blockers	1.13 (0.93-1.36)	0.222		
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.92 (0.81-1.05)	0.209		
MG 8: Immunosuppressants and Immunomodulators	1.08 (0.68-1.73)	0.738		
MG 9: Systemic Steroids	0.87 (0.71-1.07)	0.182		
MG 10: Chemotherapy	1.15 (0.90-1.47)	0.258		
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.29 (1.05-1.59)	0.015	1.17 (0.95-1.44)	0.130
MG 12: Antacids incl. Antihistamines	1.14 (0.96-1.35)	0.124		
MG 13: Vitamin D and other Vitamin supplements	0.92 (0.70-1.20)	0.523		
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	NA (NA-NA)			
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	0.76 (0.42-1.38)	0.369		
MG 19: Immunoglobulins	NA (NA-NA)			
MG 20: Interferons and CSF	1.00 (0.67-1.48)	0.989		
MG 21: NSAR and other anti-inflammatory drugs	0.64 (0.49-0.83)	<0.001	0.66 (0.51-0.85)	0.001
MG 22: Gout medications	1.09 (0.97-1.22)	0.133		
MG 23: Antiepileptics	1.26 (0.99-1.61)	0.057	1.16 (0.92-1.47)	0.215
MG 24: Antipsychotics	1.35 (1.12-1.61)	0.001	1.27 (1.05-1.53)	0.013
MG 26: inhaled anti-obstructive drugs	1.11 (0.92-1.33)	0.283		
MG 27: inhaled steroids	0.89 (0.52-1.53)	0.676		
MG 28: other COPD drugs	0.50 (0.23-1.07)	0.075	0.58 (0.27-1.24)	0.159
MG 30: Systemic Antihistamines	0.72 (0.56-0.92)	0.008	0.76 (0.60-0.97)	0.025

Table A.59. Cox regression results evaluating in-hospital mortality among COVID-19 patients aged 75 and older. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: ≥75			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	0.70 (0.66-0.74)	<0.001	0.68 (0.64-0.72)	<0.001
Age Group: 86-90 (ref: >90)	0.67 (0.62-0.73)	<0.001	0.69 (0.63-0.75)	<0.001
Age Group: 81-85 (ref: >90)	0.51 (0.48-0.53)	<0.001	0.53 (0.51-0.56)	<0.001
Age Group: 75-80 (ref: >90)	0.38 (0.36-0.41)	<0.001	0.42 (0.39-0.45)	<0.001
Medicament Groups: 2-5 (ref: 0-1)	1.05 (0.95-1.15)	0.377	0.94 (0.82-1.08)	0.406
Medicament Groups: 6-10 (ref: 0-1)	1.23 (1.11-1.36)	<0.001	0.95 (0.79-1.15)	0.606
Medicament Groups: ≥11 (ref: 0-1)	1.40 (1.23-1.60)	<0.001	0.93 (0.74-1.17)	0.523
Wave: 3 (ref: Wave 1 & 2)	0.94 (0.82-1.08)	0.397	0.95 (0.83-1.09)	0.454
Wave: 4 (ref: Wave 1 & 2)	1.05 (0.87-1.26)	0.614	1.07 (0.90-1.28)	0.440
MG 1: Anticoagulants	1.11 (1.09-1.14)	<0.001	1.12 (1.10-1.15)	<0.001
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.11 (1.03-1.20)	0.007	1.12 (1.03-1.21)	0.008
MG 3: Insulins and other Antidiabetics	1.06 (1.00-1.13)	0.066	1.13 (1.07-1.20)	<0.001
MG 4: "heart" drugs	1.03 (1.01-1.06)	0.011	1.05 (1.02-1.09)	0.001
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	0.93 (0.88-0.98)	0.005	0.94 (0.90-0.99)	0.017
MG 6: Beta Blockers	1.04 (1.00-1.09)	0.070	1.06 (1.02-1.11)	0.005
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.83 (0.77-0.88)	<0.001	0.85 (0.79-0.90)	<0.001
MG 8: Immunosuppressants and Immunomodulators	1.07 (0.95-1.19)	0.258		
MG 9: Systemic Steroids	1.01 (0.90-1.14)	0.827		
MG 10: Chemotherapy	0.92 (0.86-0.99)	0.018	0.95 (0.89-1.02)	0.149
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.20 (1.10-1.32)	<0.001	1.17 (1.08-1.28)	<0.001
MG 12: Antacids incl. Antihistamines	1.09 (1.01-1.17)	0.022	1.07 (1.00-1.14)	0.049
MG 13: Vitamin D and other Vitamin supplements	1.01 (0.96-1.06)	0.655		
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	1.93 (0.87-4.29)	0.107	1.94 (0.80-4.72)	0.145
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	0.84 (0.71-1.01)	0.057	0.91 (0.77-1.07)	0.260
MG 19: Immunoglobulins	2.65 (1.62-4.33)	<0.001	2.40 (1.47-3.92)	<0.001
MG 20: Interferons and CSF	0.93 (0.79-1.09)	0.350		
MG 21: NSAR and other anti-inflammatory drugs	0.81 (0.76-0.86)	<0.001	0.85 (0.80-0.90)	<0.001
MG 22: Gout medications	1.07 (0.96-1.20)	0.234		
MG 23: Antiepileptics	1.04 (0.97-1.10)	0.273		
MG 24: Antipsychotics	1.24 (1.15-1.33)	<0.001	1.22 (1.14-1.30)	<0.001
MG 26: inhaled anti-obstructive drugs	1.00 (0.95-1.05)	0.978		
MG 27: inhaled steroids	0.99 (0.91-1.07)	0.747		
MG 28: other COPD drugs	0.91 (0.68-1.21)	0.506		
MG 30: Systemic Antihistamines	1.07 (1.00-1.15)	0.057	1.06 (0.99-1.13)	0.078

Table A.60. Cox regression results evaluating in-hospital mortality among Influenza patients aged 75 and older. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: ≥75			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	0.64 (0.57-0.72)	<0.001	0.58 (0.52-0.65)	<0.001
Age Group: 86-90 (ref: >90)	0.57 (0.46-0.72)	<0.001	0.59 (0.48-0.73)	<0.001
Age Group: 81-85 (ref: >90)	0.54 (0.45-0.65)	<0.001	0.60 (0.49-0.73)	<0.001
Age Group: 75-80 (ref: >90)	0.26 (0.21-0.32)	<0.001	0.30 (0.24-0.37)	<0.001
Medicament Groups: 2-5 (ref: 0-1)	1.13 (0.84-1.52)	0.413	1.07 (0.80-1.44)	0.632
Medicament Groups: 6-10 (ref: 0-1)	1.41 (1.03-1.94)	0.034	1.26 (0.89-1.77)	0.192
Medicament Groups: ≥11 (ref: 0-1)	2.24 (1.39-3.62)	<0.001	1.95 (1.15-3.32)	0.014
Wave: 2016/2017 (ref: Wave 2015/2016)	1.02 (0.41-2.53)	0.962	1.04 (0.41-2.64)	0.930
Wave: 2017/2018 (ref: Wave 2015/2016)	1.77 (0.80-3.94)	0.161	1.80 (0.81-4.01)	0.152
Wave: 2018/2019 (ref: Wave 2015/2016)	1.72 (0.76-3.88)	0.191	1.76 (0.77-4.04)	0.180
Wave: 2019/2020 (ref: Wave 2015/2016)	1.79 (0.86-3.71)	0.119	1.83 (0.87-3.83)	0.110
Wave: 2020/2021 (ref: Wave 2015/2016)	2.91 (0.98-8.64)	0.054	2.61 (0.68-9.99)	0.160
MG 1: Anticoagulants	0.93 (0.76-1.13)	0.446		
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.16 (0.98-1.38)	0.092	1.11 (0.94-1.31)	0.225
MG 3: Insulins and other Antidiabetics	0.98 (0.76-1.26)	0.855		
MG 4: "heart" drugs	1.08 (0.92-1.25)	0.355		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	0.91 (0.65-1.28)	0.586		
MG 6: Beta Blockers	1.18 (0.97-1.43)	0.093	1.28 (1.04-1.57)	0.019
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.52 (0.40-0.67)	<0.001	0.53 (0.41-0.69)	<0.001
MG 8: Immunosuppressants and Immunomodulators	1.73 (1.07-2.81)	0.027	1.74 (1.08-2.81)	0.023
MG 9: Systemic Steroids	0.96 (0.76-1.21)	0.731		
MG 10: Chemotherapy	0.70 (0.34-1.42)	0.322		
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.04 (0.79-1.37)	0.771		
MG 12: Antacids incl. Antihistamines	1.01 (0.79-1.29)	0.946		
MG 13: Vitamin D and other Vitamin supplements	0.88 (0.71-1.10)	0.252		
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	2.62 (0.37-18.39)	0.332		
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	1.10 (0.35-3.43)	0.874		
MG 19: Immunoglobulins	NA (NA-NA)			
MG 20: Interferons and CSF	1.16 (0.79-1.69)	0.453		
MG 21: NSAR and other anti-inflammatory drugs	0.88 (0.80-0.96)	0.006	0.84 (0.77-0.92)	<0.001
MG 22: Gout medications	1.07 (0.86-1.33)	0.541		
MG 23: Antiepileptics	0.87 (0.58-1.33)	0.527		
MG 24: Antipsychotics	1.46 (1.22-1.76)	<0.001	1.44 (1.22-1.71)	<0.001
MG 26: inhaled anti-obstructive drugs	1.07 (0.87-1.32)	0.529		
MG 27: inhaled steroids	0.88 (0.52-1.50)	0.633		
MG 28: other COPD drugs	1.76 (1.39-2.22)	<0.001	1.80 (1.40-2.32)	<0.001
MG 30: Systemic Antihistamines	1.08 (0.75-1.57)	0.676		

Table A.61. Cox regression results of comparing in-hospital mortality between propensity score matched COVID-19 and Influenza patients aged 75 and older. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: ≥75			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Group: Influenza (ref: COVID-19)	0.38 (0.35-0.42)	<0.001	0.38 (0.35-0.42)	<0.001
Sex: F (ref: M)	0.66 (0.62-0.71)	<0.001	0.64 (0.60-0.69)	<0.001
Age Group: 86-90 (ref: >90)	0.68 (0.61-0.75)	<0.001	0.70 (0.63-0.79)	<0.001
Age Group: 81-85 (ref: >90)	0.51 (0.46-0.56)	<0.001	0.55 (0.50-0.60)	<0.001
Age Group: 75-80 (ref: >90)	0.39 (0.35-0.43)	<0.001	0.44 (0.39-0.49)	<0.001
Medicament Groups: 2-5 (ref: 0-1)	1.10 (1.02-1.19)	0.017	0.98 (0.85-1.14)	0.828
Medicament Groups: 6-10 (ref: 0-1)	1.29 (1.16-1.44)	<0.001	1.04 (0.85-1.27)	0.718
Medicament Groups: ≥11 (ref: 0-1)	1.42 (1.17-1.71)	<0.001	1.02 (0.77-1.35)	0.899
MG 1: Anticoagulants	1.11 (1.04-1.18)	<0.001	1.13 (1.07-1.21)	<0.001
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.12 (0.99-1.26)	0.067	1.09 (0.96-1.23)	0.165
MG 3: Insulins and other Antidiabetics	0.99 (0.95-1.04)	0.756		
MG 4: "heart" drugs	1.03 (0.94-1.12)	0.574		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	0.93 (0.84-1.02)	0.128		
MG 6: Beta Blockers	1.07 (0.97-1.18)	0.196		
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.77 (0.72-0.83)	<0.001	0.81 (0.74-0.88)	<0.001
MG 8: Immunosuppressants and Immunomodulators	1.05 (0.86-1.30)	0.627		
MG 9: Systemic Steroids	1.03 (0.88-1.20)	0.732		
MG 10: Chemotherapy	0.89 (0.72-1.09)	0.269		
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.24 (1.12-1.37)	<0.001	1.19 (1.11-1.29)	<0.001
MG 12: Antacids incl. Antihistamines	1.07 (1.00-1.14)	0.041	1.04 (0.98-1.10)	0.246
MG 13: Vitamin D and other Vitamin supplements	0.98 (0.87-1.11)	0.796		
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	2.19 (0.66-7.31)	0.203		
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	0.70 (0.37-1.33)	0.277		
MG 19: Immunoglobulins	2.91 (0.68-12.39)	0.148		
MG 20: Interferons and CSF	1.12 (0.87-1.43)	0.384		
MG 21: NSAR and other anti-inflammatory drugs	0.83 (0.76-0.91)	<0.001	0.86 (0.79-0.93)	<0.001
MG 22: Gout medications	1.11 (0.99-1.25)	0.075	1.13 (1.00-1.28)	0.051
MG 23: Antiepileptics	0.97 (0.90-1.05)	0.467		
MG 24: Antipsychotics	1.29 (1.22-1.37)	<0.001	1.27 (1.20-1.35)	<0.001
MG 26: inhaled anti-obstructive drugs	0.98 (0.89-1.08)	0.706		
MG 27: inhaled steroids	1.07 (0.84-1.36)	0.601		
MG 28: other COPD drugs	0.95 (0.62-1.43)	0.792		
MG 30: Systemic Antihistamines	1.05 (0.97-1.15)	0.223		

Table A.62. Cox regression results examining mortality after COVID-19 hospital discharge in patients aged 19-40. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 19-40			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	0.56 (0.19-1.64)	0.288	0.53 (0.18-1.55)	0.246
Age Group: 31-35 (ref: 36-40)	0.48 (0.19-1.16)	0.103	0.58 (0.24-1.36)	0.208
Age Group: 26-30 (ref: 36-40)	1.28 (0.60-2.72)	0.522	1.43 (0.75-2.73)	0.273
Age Group: 19-25 (ref: 36-40)	0.37 (0.04-3.18)	0.362	0.36 (0.04-3.32)	0.367
Medicament Groups: 2-5 (ref: 0-1)	4.14 (0.95-18.07)	0.059	4.02 (0.86-18.80)	0.077
Medicament Groups: ≥6 (ref: 0-1)	12.73 (2.96-54.64)	<0.001	7.56 (1.05-54.62)	0.045
Wave: 3 (ref: Wave 1 & 2)	0.38 (0.16-0.90)	0.028	0.45 (0.20-1.04)	0.063
Wave: 4 (ref: Wave 1 & 2)	0.28 (0.10-0.83)	0.021	0.31 (0.10-0.96)	0.042
Length of hospital stay (days)	1.03 (1.02-1.03)	<0.001	1.03 (1.02-1.04)	<0.001
MG 1: Anticoagulants	1.15 (0.31-4.33)	0.833		
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	0.91 (0.39-2.13)	0.824		
MG 3: Insulins and other Antidiabetics	5.03 (1.09-23.28)	0.039		
MG 4: "heart" drugs	NA (NA-NA)			
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	2.92 (0.98-8.73)	0.055	2.37 (0.84-6.71)	0.104
MG 6: Beta Blockers	2.05 (1.08-3.90)	0.029	1.26 (0.61-2.61)	0.536
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	1.09 (0.22-5.47)	0.917		
MG 8: Immunosuppressants and Immunomodulators	0.86 (0.12-6.31)	0.886		
MG 9: Systemic Steroids	5.02 (1.92-13.09)	<0.001		
MG 10: Chemotherapy	NA (NA-NA)			
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	2.40 (1.23-4.66)	0.010	2.08 (1.12-3.86)	0.020
MG 12: Antacids incl. Antihistamines	0.95 (0.24-3.79)	0.940		
MG 13: Vitamin D and other Vitamin supplements	1.18 (0.74-1.88)	0.479		
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	NA (NA-NA)			
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	NA (NA-NA)			
MG 19: Immunoglobulins	NA (NA-NA)			
MG 20: Interferons and CSF	0.90 (0.02-44.73)	0.956		
MG 21: NSAR and other anti-inflammatory drugs	0.70 (0.47-1.05)	0.084	0.82 (0.61-1.09)	0.170
MG 22: Gout medications	4.76 (0.54-41.98)	0.160		
MG 23: Antiepileptics	2.79 (0.76-10.28)	0.122		
MG 24: Antipsychotics	1.49 (0.59-3.77)	0.397		
MG 26: inhaled anti-obstructive drugs	0.34 (0.10-1.13)	0.079	0.40 (0.15-1.08)	0.071
MG 27: inhaled steroids	0.41 (0.03-5.75)	0.511		
MG 28: other COPD drugs	NA (NA-NA)			
MG 30: Systemic Antihistamines	0.36 (0.05-2.46)	0.299		

Table A.63. Cox regression results examining mortality after Influenza hospital discharge in patients aged 19-40. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 19-40			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	0.61 (0.36-1.05)	0.074	0.70 (0.35-1.39)	0.307
Age Group: 31-35 (ref: 36-40)	1.01 (0.39-2.59)	0.980	1.13 (0.39-3.26)	0.819
Age Group: 26-30 (ref: 36-40)	0.89 (0.25-3.20)	0.861	1.16 (0.34-3.97)	0.815
Age Group: 19-25 (ref: 36-40)	0.93 (0.40-2.17)	0.865	1.25 (0.50-3.14)	0.639
Medicament Groups: 2-5 (ref: 0-1)	3.75 (1.36-10.33)	0.010	3.04 (0.91-10.14)	0.071
Medicament Groups: ≥6 (ref: 0-1)	27.85 (8.32-93.16)	<0.001	13.93 (3.22-60.27)	<0.001
Wave: 2016/2017 (ref: Wave 2015/2016)	NA (NA-NA)		NA (NA-NA)	
Wave: 2017/2018 (ref: Wave 2015/2016)	NA (NA-NA)		NA (NA-NA)	
Wave: 2018/2019 (ref: Wave 2015/2016)	NA (NA-NA)		NA (NA-NA)	
Wave: 2019/2020 (ref: Wave 2015/2016)	NA (NA-NA)		NA (NA-NA)	
Wave: 2020/2021 (ref: Wave 2015/2016)	NA (NA-NA)		NA (NA-NA)	
Length of hospital stay (days)	1.05 (1.04-1.07)	<0.001	1.05 (1.04-1.06)	<0.001
MG 1: Anticoagulants	3.46 (1.97-6.08)	<0.001	2.42 (1.20-4.86)	0.013
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.74 (0.61-5.02)	0.302		
MG 3: Insulins and other Antidiabetics	0.81 (0.18-3.57)	0.782		
MG 4: "heart" drugs	6.42 (2.96-13.88)	<0.001		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	2.33 (0.96-5.67)	0.063	1.60 (0.39-6.64)	0.516
MG 6: Beta Blockers	2.12 (1.21-3.73)	0.009	1.18 (0.35-3.95)	0.786
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.18 (0.02-1.54)	0.118		
MG 8: Immunosuppressants and Immunomodulators	0.97 (0.46-2.05)	0.939		
MG 9: Systemic Steroids	0.54 (0.23-1.23)	0.139		
MG 10: Chemotherapy	4.24 (1.64-10.98)	0.003		
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.49 (0.76-2.91)	0.250		
MG 12: Antacids incl. Antihistamines	3.72 (1.56-8.86)	0.003		
MG 13: Vitamin D and other Vitamin supplements	0.85 (0.47-1.54)	0.588		
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	NA (NA-NA)			
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	NA (NA-NA)			
MG 19: Immunoglobulins	NA (NA-NA)			
MG 20: Interferons and CSF	NA (NA-NA)			
MG 21: NSAR and other anti-inflammatory drugs	0.78 (0.43-1.43)	0.426		
MG 22: Gout medications	16.02 (7.26-35.37)	<0.001		
MG 23: Antiepileptics	2.14 (0.89-5.11)	0.087	1.98 (0.49-7.99)	0.339
MG 24: Antipsychotics	1.90 (1.04-3.46)	0.037	1.21 (0.40-3.68)	0.731
MG 26: inhaled anti-obstructive drugs	0.74 (0.49-1.12)	0.159		
MG 27: inhaled steroids	2.58 (0.64-10.46)	0.185		
MG 28: other COPD drugs	0.65 (0.06-6.54)	0.711		
MG 30: Systemic Antihistamines	0.26 (0.10-0.65)	0.004	0.33 (0.15-0.73)	0.007

Table A.64. Cox regression results of comparing mortality after hospital discharge between propensity score matched COVID-19 and Influenza patients aged 19-40. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 19-40			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Group: Influenza (ref: COVID-19)	NA (NA-NA)	NA	NA (NA-NA)	NA
Sex: F (ref: M)	0.98 (0.41-2.33)	0.958	0.92 (0.31-2.73)	0.879
Age Group: 31-35 (ref: 36-40)	0.36 (0.09-1.48)	0.157	0.41 (0.13-1.34)	0.140
Age Group: 26-30 (ref: 36-40)	0.23 (0.05-1.03)	0.055	0.22 (0.10-0.47)	<0.001
Age Group: 19-25 (ref: 36-40)	0.68 (0.27-1.67)	0.395	0.75 (0.23-2.45)	0.632
Medicament Groups: 2-5 (ref: 0-1)	2.44 (0.64-9.24)	0.190	1.93 (0.31-11.92)	0.478
Medicament Groups: ≥6 (ref: 0-1)	55.89 (9.76-320.06)	<0.001	17.24 (1.34-221.19)	0.029
Length of hospital stay (days)	1.05 (1.00-1.10)	0.053	1.05 (1.00-1.10)	0.051
MG 1: Anticoagulants	2.22 (1.00-4.91)	0.049	1.51 (0.49-4.59)	0.472
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.19 (0.47-3.01)	0.717		
MG 3: Insulins and other Antidiabetics	3.02 (0.47-19.60)	0.246		
MG 4: "heart" drugs	2.94 (1.49-5.84)	0.002	3.25 (0.97-10.90)	0.057
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	4.13 (1.17-14.61)	0.028		
MG 6: Beta Blockers	1.02 (0.63-1.66)	0.934		
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.62 (0.08-4.99)	0.651		
MG 8: Immunosuppressants and Immunomodulators	1.79 (0.59-5.40)	0.302		
MG 9: Systemic Steroids	0.83 (0.17-4.05)	0.821		
MG 10: Chemotherapy	NA (NA-NA)			
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	5.46 (3.24-9.20)	<0.001	5.47 (2.67-11.21)	<0.001
MG 12: Antacids incl. Antihistamines	2.24 (0.42-11.84)	0.343		
MG 13: Vitamin D and other Vitamin supplements	0.44 (0.19-1.04)	0.062	0.68 (0.14-3.21)	0.628
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	NA (NA-NA)			
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	NA (NA-NA)			
MG 19: Immunoglobulins	NA (NA-NA)			
MG 20: Interferons and CSF	NA (NA-NA)			
MG 21: NSAR and other anti-inflammatory drugs	0.50 (0.23-1.07)	0.073	1.22 (0.45-3.26)	0.695
MG 22: Gout medications	NA (NA-NA)			
MG 23: Antiepileptics	1.57 (0.43-5.71)	0.496		
MG 24: Antipsychotics	0.79 (0.32-1.95)	0.602		
MG 26: inhaled anti-obstructive drugs	1.21 (0.52-2.80)	0.654		
MG 27: inhaled steroids	6.99 (3.30-14.79)	<0.001		
MG 28: other COPD drugs	1.16 (0.20-6.65)	0.866		
MG 30: Systemic Antihistamines	NA (NA-NA)			

Table A.65. Cox regression results examining mortality after COVID-19 hospital discharge in patients aged 41-64. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 41-64			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	0.68 (0.58-0.80)	<0.001	0.64 (0.54-0.76)	<0.001
Age Group: 56-60 (ref: 61-64)	0.68 (0.58-0.80)	<0.001	0.68 (0.56-0.83)	<0.001
Age Group: 51-55 (ref: 61-64)	0.47 (0.40-0.55)	<0.001	0.45 (0.37-0.54)	<0.001
Age Group: 46-50 (ref: 61-64)	0.42 (0.30-0.60)	<0.001	0.38 (0.26-0.57)	<0.001
Age Group: 41-45 (ref: 61-64)	0.29 (0.21-0.41)	<0.001	0.27 (0.19-0.38)	<0.001
Medicament Groups: 2-5 (ref: 0-1)	2.26 (1.68-3.05)	<0.001	1.60 (1.18-2.18)	0.002
Medicament Groups: 6-10 (ref: 0-1)	5.85 (4.34-7.88)	<0.001	2.04 (1.35-3.09)	<0.001
Medicament Groups: ≥11 (ref: 0-1)	7.64 (4.49-12.98)	<0.001	1.17 (0.57-2.38)	0.672
Wave: 3 (ref: Wave 1 & 2)	0.63 (0.48-0.82)	<0.001	0.67 (0.52-0.87)	0.003
Wave: 4 (ref: Wave 1 & 2)	1.03 (0.76-1.40)	0.836	1.03 (0.77-1.39)	0.831
Length of hospital stay (days)	1.02 (1.01-1.02)	<0.001	1.02 (1.01-1.02)	<0.001
MG 1: Anticoagulants	1.34 (1.15-1.57)	<0.001	1.42 (1.20-1.68)	<0.001
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.30 (1.04-1.62)	0.021	1.28 (1.05-1.56)	0.013
MG 3: Insulins and other Antidiabetics	0.68 (0.55-0.84)	<0.001	1.08 (0.90-1.31)	0.402
MG 4: "heart" drugs	0.74 (0.51-1.07)	0.108		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	0.98 (0.86-1.11)	0.744		
MG 6: Beta Blockers	1.01 (0.81-1.26)	0.937		
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.43 (0.31-0.61)	<0.001	0.65 (0.49-0.85)	0.002
MG 8: Immunosuppressants and Immunomodulators	0.88 (0.68-1.14)	0.331		
MG 9: Systemic Steroids	1.58 (1.07-2.32)	0.021	1.45 (1.01-2.08)	0.045
MG 10: Chemotherapy	3.95 (2.95-5.29)	<0.001	2.29 (1.77-2.97)	<0.001
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	2.87 (2.31-3.56)	<0.001	2.11 (1.65-2.70)	<0.001
MG 12: Antacids incl. Antihistamines	0.86 (0.67-1.11)	0.251		
MG 13: Vitamin D and other Vitamin supplements	1.41 (1.13-1.76)	0.002	1.22 (1.03-1.45)	0.020
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	NA (NA-NA)			
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	0.37 (0.06-2.22)	0.279		
MG 19: Immunoglobulins	5.86 (0.73-46.70)	0.095		
MG 20: Interferons and CSF	5.65 (4.30-7.41)	<0.001	3.97 (3.04-5.20)	<0.001
MG 21: NSAR and other anti-inflammatory drugs	0.52 (0.48-0.57)	<0.001	0.63 (0.57-0.71)	<0.001
MG 22: Gout medications	1.00 (0.61-1.65)	0.991	1.11 (0.65-1.91)	0.702
MG 23: Antiepileptics	2.82 (2.45-3.24)	<0.001	2.32 (1.93-2.79)	<0.001
MG 24: Antipsychotics	1.80 (1.52-2.13)	<0.001	1.62 (1.33-1.96)	<0.001
MG 26: inhaled anti-obstructive drugs	0.85 (0.68-1.07)	0.168		
MG 27: inhaled steroids	0.65 (0.41-1.02)	0.059		
MG 28: other COPD drugs	0.31 (0.16-0.61)	<0.001	0.46 (0.24-0.91)	0.025
MG 30: Systemic Antihistamines	0.98 (0.77-1.26)	0.900		

Table A.66. Cox regression results examining mortality after Influenza hospital discharge in patients aged 41-64. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 41-64			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	0.44 (0.34-0.57)	<0.001	0.38 (0.29-0.50)	<0.001
Age Group: 56-60 (ref: 61-64)	0.75 (0.61-0.91)	0.004	0.66 (0.54-0.81)	<0.001
Age Group: 51-55 (ref: 61-64)	0.60 (0.50-0.71)	<0.001	0.50 (0.41-0.62)	<0.001
Age Group: 46-50 (ref: 61-64)	0.49 (0.34-0.69)	<0.001	0.40 (0.28-0.56)	<0.001
Age Group: 41-45 (ref: 61-64)	0.65 (0.49-0.84)	0.001	0.54 (0.42-0.70)	<0.001
Medicament Groups: 2-5 (ref: 0-1)	2.67 (1.31-5.42)	0.007	2.49 (1.24-4.98)	0.010
Medicament Groups: 6-10 (ref: 0-1)	5.31 (2.96-9.52)	<0.001	4.58 (2.60-8.05)	<0.001
Medicament Groups: ≥11 (ref: 0-1)	7.78 (4.42-13.69)	<0.001	4.82 (2.87-8.11)	<0.001
Wave: 2016/2017 (ref: Wave 2015/2016)	0.78 (0.53-1.15)	0.213	0.85 (0.57-1.26)	0.415
Wave: 2017/2018 (ref: Wave 2015/2016)	0.81 (0.62-1.06)	0.132	0.84 (0.60-1.16)	0.293
Wave: 2018/2019 (ref: Wave 2015/2016)	0.86 (0.58-1.29)	0.475	0.91 (0.60-1.37)	0.653
Wave: 2019/2020 (ref: Wave 2015/2016)	0.82 (0.47-1.43)	0.494	0.84 (0.43-1.61)	0.593
Wave: 2020/2021 (ref: Wave 2015/2016)	11.55 (1.56-85.59)	0.017	10.30 (2.64-40.21)	<0.001
Length of hospital stay (days)	1.01 (1.01-1.02)	<0.001	1.01 (1.01-1.02)	<0.001
MG 1: Anticoagulants	1.17 (0.94-1.45)	0.163		
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.04 (0.90-1.20)	0.611		
MG 3: Insulins and other Antidiabetics	1.08 (0.92-1.28)	0.335		
MG 4: "heart" drugs	1.27 (0.90-1.79)	0.172		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	1.14 (0.87-1.48)	0.341		
MG 6: Beta Blockers	0.75 (0.64-0.89)	<0.001	0.75 (0.55-1.02)	0.070
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.56 (0.45-0.70)	<0.001	0.77 (0.61-0.98)	0.036
MG 8: Immunosuppressants and Immunomodulators	1.26 (0.95-1.66)	0.104		
MG 9: Systemic Steroids	1.43 (1.16-1.77)	<0.001	1.43 (1.14-1.80)	0.002
MG 10: Chemotherapy	3.98 (2.41-6.58)	<0.001	3.88 (2.44-6.19)	<0.001
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	2.58 (1.80-3.68)	<0.001	1.87 (1.33-2.63)	<0.001
MG 12: Antacids incl. Antihistamines	1.02 (0.75-1.40)	0.880		
MG 13: Vitamin D and other Vitamin supplements	1.44 (1.26-1.65)	<0.001	1.19 (1.01-1.39)	0.035
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	2.95 (1.57-5.55)	<0.001	1.95 (0.54-7.08)	0.310
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	0.50 (0.18-1.36)	0.174		
MG 19: Immunoglobulins	NA (NA-NA)			
MG 20: Interferons and CSF	2.07 (1.28-3.34)	0.003	1.36 (0.86-2.16)	0.192
MG 21: NSAR and other anti-inflammatory drugs	0.56 (0.50-0.64)	<0.001	0.58 (0.51-0.65)	<0.001
MG 22: Gout medications	1.33 (0.79-2.24)	0.276		
MG 23: Antiepileptics	1.91 (1.64-2.21)	<0.001	1.60 (1.45-1.77)	<0.001
MG 24: Antipsychotics	1.48 (1.27-1.73)	<0.001	1.29 (1.09-1.53)	0.004
MG 26: inhaled anti-obstructive drugs	0.78 (0.61-1.01)	0.064	0.93 (0.76-1.13)	0.459
MG 27: inhaled steroids	0.57 (0.38-0.84)	0.005	0.71 (0.48-1.05)	0.084
MG 28: other COPD drugs	0.56 (0.39-0.80)	0.002	0.64 (0.43-0.94)	0.024
MG 30: Systemic Antihistamines	1.46 (1.07-1.98)	0.017	1.39 (0.85-2.28)	0.192

Table A.67. Cox regression results of comparing mortality after hospital discharge between propensity score matched COVID-19 and Influenza patients aged 41-64. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 41-64			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Group: Influenza (ref: COVID-19)	1.62 (1.13-2.31)	0.008	1.67 (1.18-2.36)	0.004
Sex: F (ref: M)	0.53 (0.42-0.65)	<0.001	0.48 (0.38-0.60)	<0.001
Age Group: 56-60 (ref: 61-64)	0.72 (0.62-0.84)	<0.001	0.70 (0.63-0.78)	<0.001
Age Group: 51-55 (ref: 61-64)	0.58 (0.41-0.81)	0.001	0.55 (0.39-0.76)	<0.001
Age Group: 46-50 (ref: 61-64)	0.40 (0.26-0.61)	<0.001	0.35 (0.23-0.54)	<0.001
Age Group: 41-45 (ref: 61-64)	0.42 (0.32-0.54)	<0.001	0.40 (0.30-0.54)	<0.001
Medicament Groups: 2-5 (ref: 0-1)	2.28 (1.46-3.55)	<0.001	1.83 (1.12-2.99)	0.016
Medicament Groups: 6-10 (ref: 0-1)	4.36 (2.81-6.76)	<0.001	2.51 (1.40-4.50)	0.002
Medicament Groups: ≥11 (ref: 0-1)	6.70 (4.57-9.83)	<0.001	2.34 (0.96-5.67)	0.060
Length of hospital stay (days)	1.02 (1.01-1.02)	<0.001	1.01 (1.01-1.02)	<0.001
MG 1: Anticoagulants	1.36 (1.12-1.66)	0.002	1.47 (1.10-1.96)	0.008
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	0.92 (0.87-0.97)	0.004	1.05 (0.95-1.16)	0.331
MG 3: Insulins and other Antidiabetics	0.90 (0.76-1.06)	0.217		
MG 4: "heart" drugs	1.27 (1.00-1.61)	0.046	1.46 (1.13-1.89)	0.003
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	0.97 (0.77-1.22)	0.800		
MG 6: Beta Blockers	0.79 (0.67-0.92)	0.003	0.90 (0.74-1.10)	0.309
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.52 (0.42-0.64)	<0.001	0.66 (0.47-0.92)	0.015
MG 8: Immunosuppressants and Immunomodulators	0.99 (0.67-1.47)	0.978		
MG 9: Systemic Steroids	1.50 (1.26-1.79)	<0.001	1.60 (1.26-2.04)	<0.001
MG 10: Chemotherapy	3.84 (2.55-5.79)	<0.001	3.16 (2.32-4.31)	<0.001
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	2.92 (2.07-4.11)	<0.001	2.15 (1.58-2.92)	<0.001
MG 12: Antacids incl. Antihistamines	1.14 (0.84-1.54)	0.407		
MG 13: Vitamin D and other Vitamin supplements	1.47 (1.21-1.77)	<0.001	1.33 (1.10-1.60)	0.003
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	3.98 (3.07-5.17)	<0.001	4.23 (2.79-6.43)	<0.001
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	0.61 (0.22-1.72)	0.354		
MG 19: Immunoglobulins	NA (NA-NA)			
MG 20: Interferons and CSF	3.39 (2.23-5.14)	<0.001	2.66 (1.73-4.09)	<0.001
MG 21: NSAR and other anti-inflammatory drugs	0.49 (0.41-0.58)	<0.001	0.54 (0.44-0.66)	<0.001
MG 22: Gout medications	1.26 (0.73-2.17)	0.404		
MG 23: Antiepileptics	2.35 (1.90-2.90)	<0.001	2.05 (1.63-2.57)	<0.001
MG 24: Antipsychotics	1.54 (1.35-1.75)	<0.001	1.40 (1.19-1.65)	<0.001
MG 26: inhaled anti-obstructive drugs	0.68 (0.46-1.01)	0.058	0.84 (0.58-1.21)	0.341
MG 27: inhaled steroids	0.46 (0.31-0.68)	<0.001	0.63 (0.44-0.91)	0.013
MG 28: other COPD drugs	0.58 (0.39-0.89)	0.012	0.90 (0.57-1.42)	0.649
MG 30: Systemic Antihistamines	1.38 (0.94-2.04)	0.100		

Table A.68. Cox regression results examining mortality after COVID-19 hospital discharge in patients aged 65-74. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 65-74			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	0.61 (0.55-0.67)	<0.001	0.57 (0.52-0.62)	<0.001
Age Group: 65-70 (ref: 71-74)	0.79 (0.71-0.89)	<0.001	0.81 (0.72-0.92)	<0.001
Medicament Groups: 2-5 (ref: 0-1)	1.41 (0.99-2.00)	0.057	1.30 (0.93-1.83)	0.126
Medicament Groups: 6-10 (ref: 0-1)	2.39 (1.73-3.30)	<0.001	1.71 (1.12-2.61)	0.012
Medicament Groups: ≥11 (ref: 0-1)	3.53 (2.63-4.74)	<0.001	1.66 (0.90-3.03)	0.102
Wave: 3 (ref: Wave 1 & 2)	0.73 (0.55-0.96)	0.025	0.76 (0.58-0.99)	0.040
Wave: 4 (ref: Wave 1 & 2)	1.08 (0.96-1.21)	0.197	1.08 (0.96-1.22)	0.219
Length of hospital stay (days)	1.01 (1.01-1.01)	<0.001	1.01 (1.01-1.01)	<0.001
MG 1: Anticoagulants	1.26 (1.08-1.47)	0.003	1.37 (1.16-1.60)	<0.001
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.04 (0.81-1.32)	0.772		
MG 3: Insulins and other Antidiabetics	0.99 (0.83-1.18)	0.942		
MG 4: "heart" drugs	0.98 (0.83-1.16)	0.842		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	0.82 (0.69-0.98)	0.033	0.97 (0.82-1.14)	0.722
MG 6: Beta Blockers	0.99 (0.82-1.19)	0.892		
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.58 (0.49-0.68)	<0.001	0.66 (0.57-0.77)	<0.001
MG 8: Immunosuppressants and Immunomodulators	1.13 (0.88-1.44)	0.350		
MG 9: Systemic Steroids	1.31 (1.14-1.50)	<0.001	1.25 (1.06-1.48)	0.008
MG 10: Chemotherapy	2.51 (1.84-3.43)	<0.001	2.26 (1.57-3.24)	<0.001
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.94 (1.41-2.67)	<0.001	1.71 (1.28-2.27)	<0.001
MG 12: Antacids incl. Antihistamines	1.05 (0.97-1.14)	0.218		
MG 13: Vitamin D and other Vitamin supplements	1.07 (0.88-1.30)	0.479		
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	NA (NA-NA)			
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	0.83 (0.43-1.62)	0.590		
MG 19: Immunoglobulins	NA (NA-NA)			
MG 20: Interferons and CSF	3.30 (2.60-4.20)	<0.001	2.67 (2.16-3.30)	<0.001
MG 21: NSAR and other anti-inflammatory drugs	0.64 (0.60-0.69)	<0.001	0.69 (0.65-0.73)	<0.001
MG 22: Gout medications	0.86 (0.58-1.26)	0.437		
MG 23: Antiepileptics	1.48 (1.33-1.65)	<0.001	1.33 (1.18-1.50)	<0.001
MG 24: Antipsychotics	1.59 (1.41-1.80)	<0.001	1.50 (1.33-1.70)	<0.001
MG 26: inhaled anti-obstructive drugs	1.02 (0.91-1.15)	0.686		
MG 27: inhaled steroids	0.74 (0.55-1.01)	0.056	0.84 (0.62-1.15)	0.275
MG 28: other COPD drugs	0.60 (0.29-1.24)	0.170		
MG 30: Systemic Antihistamines	0.85 (0.70-1.03)	0.098	0.91 (0.75-1.11)	0.369

Table A.69. Cox regression results examining mortality after Influenza hospital discharge in patients aged 65-74. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 65-74			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	0.64 (0.51-0.80)	<0.001	0.63 (0.47-0.84)	0.001
Age Group: 65-70 (ref: 71-74)	0.76 (0.67-0.85)	<0.001	0.76 (0.67-0.85)	<0.001
Medicament Groups: 2-5 (ref: 0-1)	1.63 (1.09-2.44)	0.017	1.37 (0.92-2.04)	0.118
Medicament Groups: 6-10 (ref: 0-1)	2.93 (2.06-4.16)	<0.001	2.02 (1.39-2.93)	<0.001
Medicament Groups: ≥11 (ref: 0-1)	3.30 (2.29-4.76)	<0.001	1.59 (1.11-2.26)	0.010
Wave: 2016/2017 (ref: Wave 2015/2016)	0.84 (0.62-1.15)	0.279	0.81 (0.57-1.15)	0.230
Wave: 2017/2018 (ref: Wave 2015/2016)	0.92 (0.59-1.45)	0.730	0.89 (0.58-1.38)	0.601
Wave: 2018/2019 (ref: Wave 2015/2016)	0.76 (0.59-0.98)	0.038	0.74 (0.58-0.95)	0.019
Wave: 2019/2020 (ref: Wave 2015/2016)	1.00 (0.69-1.47)	0.980	0.97 (0.66-1.43)	0.878
Wave: 2020/2021 (ref: Wave 2015/2016)	2.14 (0.89-5.14)	0.090	2.25 (0.96-5.26)	0.062
Length of hospital stay (days)	1.03 (1.02-1.03)	<0.001	1.03 (1.02-1.03)	<0.001
MG 1: Anticoagulants	1.15 (0.82-1.60)	0.419		
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.10 (0.89-1.36)	0.401		
MG 3: Insulins and other Antidiabetics	1.26 (1.12-1.42)	<0.001	1.41 (1.22-1.64)	<0.001
MG 4: "heart" drugs	1.13 (0.86-1.49)	0.375		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	0.91 (0.78-1.06)	0.237		
MG 6: Beta Blockers	1.06 (0.84-1.35)	0.616		
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.76 (0.66-0.87)	<0.001	0.81 (0.70-0.93)	0.003
MG 8: Immunosuppressants and Immunomodulators	0.83 (0.57-1.21)	0.337		
MG 9: Systemic Steroids	1.27 (1.05-1.53)	0.015	1.33 (1.12-1.57)	0.001
MG 10: Chemotherapy	2.99 (1.67-5.34)	<0.001	2.62 (1.40-4.92)	0.003
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.44 (1.05-1.96)	0.023	1.31 (0.99-1.73)	0.056
MG 12: Antacids incl. Antihistamines	1.06 (0.87-1.30)	0.566		
MG 13: Vitamin D and other Vitamin supplements	1.01 (0.64-1.58)	0.976		
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	NA (NA-NA)			
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	0.99 (0.69-1.42)	0.957		
MG 19: Immunoglobulins	NA (NA-NA)			
MG 20: Interferons and CSF	2.70 (2.23-3.27)	<0.001	2.37 (1.90-2.95)	<0.001
MG 21: NSAR and other anti-inflammatory drugs	0.95 (0.78-1.14)	0.564		
MG 22: Gout medications	1.02 (0.78-1.33)	0.882		
MG 23: Antiepileptics	1.36 (1.14-1.63)	<0.001	1.29 (1.12-1.49)	<0.001
MG 24: Antipsychotics	1.29 (1.16-1.42)	<0.001	1.34 (1.19-1.51)	<0.001
MG 26: inhaled anti-obstructive drugs	1.15 (0.93-1.43)	0.198		
MG 27: inhaled steroids	0.73 (0.59-0.90)	0.004	0.85 (0.65-1.11)	0.226
MG 28: other COPD drugs	1.13 (0.75-1.70)	0.555		
MG 30: Systemic Antihistamines	0.61 (0.51-0.73)	<0.001	0.65 (0.54-0.78)	<0.001

Table A.70. Cox regression results of comparing mortality after hospital discharge between propensity score matched COVID-19 and Influenza patients aged 65-74. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 65-74			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Group: Influenza (ref: COVID-19)	1.19 (0.87-1.64)	0.274	1.15 (0.84-1.58)	0.382
Sex: F (ref: M)	0.68 (0.58-0.79)	<0.001	0.67 (0.56-0.80)	<0.001
Age Group: 65-70 (ref: 71-74)	0.72 (0.65-0.80)	<0.001	0.72 (0.65-0.80)	<0.001
Medicament Groups: 2-5 (ref: 0-1)	1.55 (1.11-2.17)	0.010	1.23 (0.84-1.80)	0.292
Medicament Groups: 6-10 (ref: 0-1)	2.70 (1.99-3.66)	<0.001	1.48 (0.92-2.37)	0.103
Medicament Groups: ≥11 (ref: 0-1)	2.83 (2.00-4.00)	<0.001	1.03 (0.66-1.62)	0.896
Length of hospital stay (days)	1.02 (1.01-1.02)	<0.001	1.01 (1.01-1.02)	<0.001
MG 1: Anticoagulants	1.30 (1.02-1.65)	0.037	1.38 (1.11-1.72)	0.004
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.12 (0.93-1.35)	0.225		
MG 3: Insulins and other Antidiabetics	1.19 (1.07-1.33)	0.002	1.36 (1.20-1.54)	<0.001
MG 4: "heart" drugs	1.07 (0.83-1.40)	0.594		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	0.84 (0.68-1.05)	0.123		
MG 6: Beta Blockers	0.96 (0.77-1.19)	0.697		
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.72 (0.64-0.80)	<0.001	0.77 (0.69-0.86)	<0.001
MG 8: Immunosuppressants and Immunomodulators	0.90 (0.66-1.23)	0.510		
MG 9: Systemic Steroids	1.23 (1.03-1.47)	0.024	1.31 (1.10-1.56)	0.002
MG 10: Chemotherapy	2.52 (2.04-3.12)	<0.001	2.22 (1.72-2.88)	<0.001
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.63 (1.30-2.05)	<0.001	1.48 (1.24-1.76)	<0.001
MG 12: Antacids incl. Antihistamines	1.10 (0.96-1.27)	0.167		
MG 13: Vitamin D and other Vitamin supplements	1.02 (0.71-1.48)	0.897		
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	NA (NA-NA)			
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	0.91 (0.40-2.08)	0.823		
MG 19: Immunoglobulins	NA (NA-NA)			
MG 20: Interferons and CSF	3.31 (2.66-4.12)	<0.001	3.01 (2.35-3.86)	<0.001
MG 21: NSAR and other anti-inflammatory drugs	0.81 (0.72-0.91)	<0.001	0.88 (0.77-1.01)	0.060
MG 22: Gout medications	1.03 (0.73-1.43)	0.877		
MG 23: Antiepileptics	1.45 (1.27-1.65)	<0.001	1.41 (1.24-1.61)	<0.001
MG 24: Antipsychotics	1.38 (1.19-1.60)	<0.001	1.41 (1.17-1.69)	<0.001
MG 26: inhaled anti-obstructive drugs	1.06 (0.91-1.25)	0.448		
MG 27: inhaled steroids	0.69 (0.52-0.92)	0.010	0.85 (0.65-1.11)	0.225
MG 28: other COPD drugs	1.12 (0.81-1.55)	0.491		
MG 30: Systemic Antihistamines	0.73 (0.55-0.97)	0.031	0.78 (0.62-0.99)	0.039

Table A.71. Cox regression results examining mortality after COVID-19 hospital discharge in patients aged 75 and older. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: ≥75			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	0.83 (0.78-0.87)	<0.001	0.78 (0.74-0.82)	<0.001
Age Group: 86-90 (ref: >90)	0.62 (0.56-0.70)	<0.001	0.67 (0.59-0.75)	<0.001
Age Group: 81-85 (ref: >90)	0.36 (0.32-0.40)	<0.001	0.39 (0.35-0.44)	<0.001
Age Group: 75-80 (ref: >90)	0.25 (0.22-0.28)	<0.001	0.29 (0.26-0.32)	<0.001
Medicament Groups: 2-5 (ref: 0-1)	1.19 (1.05-1.34)	0.005	0.91 (0.77-1.07)	0.239
Medicament Groups: 6-10 (ref: 0-1)	1.64 (1.43-1.87)	<0.001	0.93 (0.73-1.20)	0.599
Medicament Groups: ≥11 (ref: 0-1)	1.99 (1.69-2.35)	<0.001	0.84 (0.62-1.15)	0.285
Wave: 3 (ref: Wave 1 & 2)	0.93 (0.89-0.97)	0.002	0.95 (0.90-1.00)	0.036
Wave: 4 (ref: Wave 1 & 2)	0.92 (0.82-1.04)	0.181	0.96 (0.86-1.06)	0.419
Length of hospital stay (days)	1.01 (1.01-1.01)	<0.001	1.01 (1.01-1.01)	<0.001
MG 1: Anticoagulants	1.22 (1.12-1.32)	<0.001	1.26 (1.16-1.37)	<0.001
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.23 (1.11-1.37)	<0.001	1.25 (1.13-1.40)	<0.001
MG 3: Insulins and other Antidiabetics	1.00 (0.90-1.12)	0.952		
MG 4: "heart" drugs	1.04 (0.99-1.11)	0.140		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	0.87 (0.75-1.02)	0.087	0.95 (0.80-1.11)	0.498
MG 6: Beta Blockers	0.99 (0.92-1.07)	0.828		
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.79 (0.73-0.86)	<0.001	0.88 (0.82-0.94)	<0.001
MG 8: Immunosuppressants and Immunomodulators	0.93 (0.67-1.28)	0.659		
MG 9: Systemic Steroids	0.96 (0.84-1.09)	0.513		
MG 10: Chemotherapy	1.31 (1.11-1.55)	0.001	1.38 (1.16-1.63)	<0.001
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.71 (1.61-1.82)	<0.001	1.67 (1.58-1.78)	<0.001
MG 12: Antacids incl. Antihistamines	0.98 (0.89-1.08)	0.718		
MG 13: Vitamin D and other Vitamin supplements	1.08 (1.01-1.15)	0.019	1.02 (0.94-1.10)	0.665
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	0.91 (0.13-6.55)	0.926		
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	0.80 (0.62-1.03)	0.087	0.87 (0.67-1.13)	0.298
MG 19: Immunoglobulins	4.84 (1.12-20.90)	0.035		
MG 20: Interferons and CSF	1.56 (1.33-1.83)	<0.001	1.71 (1.44-2.04)	<0.001
MG 21: NSAR and other anti-inflammatory drugs	0.68 (0.64-0.72)	<0.001	0.73 (0.68-0.79)	<0.001
MG 22: Gout medications	0.96 (0.86-1.08)	0.527		
MG 23: Antiepileptics	1.09 (1.00-1.18)	0.053	1.05 (0.97-1.14)	0.261
MG 24: Antipsychotics	1.62 (1.52-1.72)	<0.001	1.59 (1.50-1.69)	<0.001
MG 26: inhaled anti-obstructive drugs	1.06 (1.01-1.11)	0.018	1.13 (1.07-1.19)	<0.001
MG 27: inhaled steroids	0.79 (0.70-0.90)	<0.001	0.83 (0.73-0.94)	0.003
MG 28: other COPD drugs	0.72 (0.62-0.84)	<0.001	0.71 (0.61-0.84)	<0.001
MG 30: Systemic Antihistamines	0.89 (0.83-0.97)	0.005	0.89 (0.81-0.97)	0.012

Table A.72. Cox regression results examining mortality after Influenza hospital discharge in patients aged 75 and older. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: ≥75			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	0.70 (0.65-0.77)	<0.001	0.68 (0.63-0.73)	<0.001
Age Group: 86-90 (ref: >90)	0.55 (0.51-0.60)	<0.001	0.56 (0.53-0.60)	<0.001
Age Group: 81-85 (ref: >90)	0.41 (0.36-0.47)	<0.001	0.43 (0.39-0.48)	<0.001
Age Group: 75-80 (ref: >90)	0.25 (0.22-0.30)	<0.001	0.28 (0.24-0.32)	<0.001
Medicament Groups: 2-5 (ref: 0-1)	1.36 (1.26-1.47)	<0.001	1.18 (1.07-1.31)	0.002
Medicament Groups: 6-10 (ref: 0-1)	1.74 (1.64-1.85)	<0.001	1.25 (1.08-1.43)	0.002
Medicament Groups: ≥11 (ref: 0-1)	2.43 (2.19-2.69)	<0.001	1.54 (1.20-1.99)	<0.001
Wave: 2016/2017 (ref: Wave 2015/2016)	0.95 (0.73-1.23)	0.693	0.98 (0.78-1.23)	0.862
Wave: 2017/2018 (ref: Wave 2015/2016)	0.99 (0.74-1.33)	0.939	1.03 (0.80-1.33)	0.812
Wave: 2018/2019 (ref: Wave 2015/2016)	1.05 (0.77-1.44)	0.740	1.08 (0.83-1.40)	0.581
Wave: 2019/2020 (ref: Wave 2015/2016)	1.04 (0.82-1.33)	0.739	1.07 (0.86-1.34)	0.533
Wave: 2020/2021 (ref: Wave 2015/2016)	3.98 (1.30-12.19)	0.016	4.30 (1.04-17.74)	0.044
Length of hospital stay (days)	1.03 (1.02-1.03)	<0.001	1.03 (1.02-1.03)	<0.001
MG 1: Anticoagulants	1.11 (1.00-1.23)	0.041	1.15 (1.05-1.27)	0.002
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.09 (0.99-1.20)	0.077	1.11 (1.01-1.23)	0.028
MG 3: Insulins and other Antidiabetics	1.08 (0.98-1.19)	0.100	1.16 (1.05-1.28)	0.002
MG 4: "heart" drugs	1.06 (0.99-1.14)	0.071	1.08 (1.02-1.15)	0.005
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	0.88 (0.83-0.93)	<0.001	0.90 (0.84-0.96)	0.002
MG 6: Beta Blockers	0.91 (0.85-0.98)	0.007	0.95 (0.88-1.02)	0.167
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.84 (0.79-0.89)	<0.001	0.87 (0.81-0.93)	<0.001
MG 8: Immunosuppressants and Immunomodulators	1.08 (0.88-1.31)	0.468		
MG 9: Systemic Steroids	0.98 (0.86-1.11)	0.712		
MG 10: Chemotherapy	1.15 (0.98-1.35)	0.098	1.24 (1.03-1.50)	0.024
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.34 (1.23-1.46)	<0.001	1.29 (1.17-1.41)	<0.001
MG 12: Antacids incl. Antihistamines	1.18 (1.11-1.25)	<0.001	1.17 (1.11-1.23)	<0.001
MG 13: Vitamin D and other Vitamin supplements	1.01 (0.92-1.12)	0.809		
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	1.75 (0.15-19.79)	0.653		
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	0.62 (0.52-0.75)	<0.001	0.67 (0.53-0.84)	<0.001
MG 19: Immunoglobulins	0.96 (0.20-4.58)	0.960		
MG 20: Interferons and CSF	1.30 (0.94-1.78)	0.110		
MG 21: NSAR and other anti-inflammatory drugs	0.73 (0.67-0.80)	<0.001	0.75 (0.68-0.83)	<0.001
MG 22: Gout medications	1.04 (0.98-1.10)	0.235		
MG 23: Antiepileptics	1.03 (0.93-1.15)	0.548		
MG 24: Antipsychotics	1.46 (1.39-1.53)	<0.001	1.45 (1.38-1.51)	<0.001
MG 26: inhaled anti-obstructive drugs	1.11 (1.03-1.20)	0.004	1.18 (1.09-1.27)	<0.001
MG 27: inhaled steroids	0.82 (0.67-1.01)	0.057	0.82 (0.69-0.98)	0.029
MG 28: other COPD drugs	0.75 (0.55-1.02)	0.069	0.77 (0.59-1.02)	0.069
MG 30: Systemic Antihistamines	1.06 (0.92-1.22)	0.395		

Table A.73. Cox regression results of comparing mortality after hospital discharge between propensity score matched COVID-19 and Influenza patients aged 75 and older. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: ≥75			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Group: Influenza (ref: COVID-19)	1.01 (0.91-1.13)	0.844	1.01 (0.91-1.13)	0.835
Sex: F (ref: M)	0.77 (0.72-0.83)	<0.001	0.74 (0.69-0.80)	<0.001
Age Group: 86-90 (ref: >90)	0.57 (0.53-0.62)	<0.001	0.59 (0.55-0.63)	<0.001
Age Group: 81-85 (ref: >90)	0.37 (0.34-0.41)	<0.001	0.39 (0.36-0.42)	<0.001
Age Group: 75-80 (ref: >90)	0.23 (0.21-0.26)	<0.001	0.26 (0.23-0.29)	<0.001
Medicament Groups: 2-5 (ref: 0-1)	1.21 (1.08-1.35)	<0.001	0.95 (0.80-1.13)	0.581
Medicament Groups: 6-10 (ref: 0-1)	1.60 (1.40-1.83)	<0.001	0.97 (0.75-1.24)	0.793
Medicament Groups: ≥11 (ref: 0-1)	2.07 (1.88-2.27)	<0.001	0.98 (0.74-1.30)	0.885
Length of hospital stay (days)	1.02 (1.01-1.02)	<0.001	1.02 (1.01-1.02)	<0.001
MG 1: Anticoagulants	1.16 (1.06-1.26)	0.001	1.22 (1.12-1.33)	<0.001
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.17 (1.04-1.30)	0.006	1.19 (1.07-1.33)	0.002
MG 3: Insulins and other Antidiabetics	1.08 (1.01-1.15)	0.021	1.17 (1.12-1.23)	<0.001
MG 4: "heart" drugs	1.03 (0.99-1.09)	0.176		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	0.88 (0.81-0.96)	0.002	0.94 (0.87-1.03)	0.171
MG 6: Beta Blockers	0.97 (0.91-1.04)	0.455		
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.83 (0.78-0.89)	<0.001	0.88 (0.83-0.94)	<0.001
MG 8: Immunosuppressants and Immunomodulators	1.00 (0.79-1.26)	0.986		
MG 9: Systemic Steroids	1.02 (0.95-1.09)	0.648		
MG 10: Chemotherapy	1.22 (1.08-1.38)	0.001	1.30 (1.11-1.51)	0.001
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.52 (1.39-1.67)	<0.001	1.50 (1.37-1.65)	<0.001
MG 12: Antacids incl. Antihistamines	1.05 (0.97-1.13)	0.205		
MG 13: Vitamin D and other Vitamin supplements	1.02 (0.95-1.10)	0.502		
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	1.75 (0.27-11.57)	0.561		
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	0.54 (0.40-0.73)	<0.001	0.59 (0.45-0.76)	<0.001
MG 19: Immunoglobulins	0.94 (0.20-4.43)	0.934		
MG 20: Interferons and CSF	1.51 (1.10-2.06)	0.010	1.61 (1.17-2.23)	0.004
MG 21: NSAR and other anti-inflammatory drugs	0.72 (0.68-0.76)	<0.001	0.77 (0.71-0.83)	<0.001
MG 22: Gout medications	0.99 (0.92-1.07)	0.817		
MG 23: Antiepileptics	1.04 (0.97-1.12)	0.273		
MG 24: Antipsychotics	1.50 (1.43-1.57)	<0.001	1.52 (1.44-1.61)	<0.001
MG 26: inhaled anti-obstructive drugs	1.13 (1.07-1.20)	<0.001	1.20 (1.11-1.30)	<0.001
MG 27: inhaled steroids	0.81 (0.69-0.94)	0.005	0.81 (0.69-0.95)	0.010
MG 28: other COPD drugs	0.71 (0.54-0.92)	0.009	0.75 (0.59-0.97)	0.026
MG 30: Systemic Antihistamines	0.97 (0.91-1.04)	0.404		

A.3.3 Hospital Discharge

Table A.74. Competing risk regression results examining time to discharge after COVID-19 hospital admission in patients aged 19-40. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 19-40			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	1.26 (1.19-1.34)	<0.001	1.27 (1.19-1.35)	<0.001
Age Group: 31-35 (ref: 36-40)	1.11 (1.03-1.19)	0.006	1.09 (1.02-1.18)	0.013
Age Group: 26-30 (ref: 36-40)	1.19 (1.09-1.29)	<0.001	1.17 (1.07-1.27)	<0.001
Age Group: 19-25 (ref: 36-40)	1.39 (1.27-1.53)	<0.001	1.39 (1.27-1.53)	<0.001
Medicament Groups: 2-5 (ref: 0-1)	0.80 (0.76-0.86)	<0.001	0.85 (0.78-0.93)	<0.001
Medicament Groups: ≥6 (ref: 0-1)	0.52 (0.45-0.60)	<0.001	0.67 (0.54-0.84)	<0.001
Wave: 3 (ref: Wave 1 & 2)	0.89 (0.83-0.96)	0.002	0.88 (0.82-0.95)	<0.001
Wave: 4 (ref: Wave 1 & 2)	0.98 (0.91-1.05)	0.550	0.96 (0.89-1.04)	0.340
MG 1: Anticoagulants	1.11 (0.98-1.26)	0.098	1.09 (0.96-1.24)	0.180
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.09 (1.02-1.16)	0.010	1.05 (0.98-1.12)	0.190
MG 3: Insulins and other Antidiabetics	0.70 (0.58-0.85)	<0.001	0.73 (0.60-0.90)	0.004
MG 4: "heart" drugs	1.08 (0.84-1.39)	0.550		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	0.83 (0.72-0.94)	0.005	0.87 (0.75-1.00)	0.046
MG 6: Beta Blockers	0.97 (0.79-1.20)	0.800		
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.84 (0.70-1.01)	0.063	0.94 (0.77-1.15)	0.550
MG 8: Immunosuppressants and Immunomodulators	0.88 (0.72-1.07)	0.190		
MG 9: Systemic Steroids	0.94 (0.83-1.07)	0.330		
MG 10: Chemotherapy	0.58 (0.36-0.92)	0.020	0.57 (0.36-0.90)	0.016
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.04 (0.92-1.18)	0.520		
MG 12: Antacids incl. Antihistamines	0.94 (0.83-1.06)	0.320		
MG 13: Vitamin D and other Vitamin supplements	0.89 (0.79-1.01)	0.072	0.93 (0.82-1.05)	0.230
MG 14: Caplacizumab	0.72 (0.67-0.79)	<0.001	0.78 (0.68-0.90)	<0.001
MG 15: Systemic Hemostatics	1.30 (1.16-1.45)	<0.001	1.25 (1.10-1.43)	<0.001
MG 16: Hereditary angioedema Therapeutics	1.13 (1.03-1.24)	0.008	1.04 (0.93-1.17)	0.510
MG 17: Peripheral Vasodilators	3.05 (1.33-6.97)	0.008	2.91 (1.23-6.89)	0.015
MG 19: Immunoglobulins	0.68 (0.36-1.30)	0.240	0.68 (0.34-1.35)	0.270
MG 20: Interferons and CSF	0.91 (0.72-1.15)	0.450		
MG 21: NSAR and other anti-inflammatory drugs	1.09 (1.01-1.18)	0.028	1.05 (0.97-1.13)	0.230
MG 22: Gout medications	0.83 (0.53-1.30)	0.400		
MG 23: Antiepileptics	0.70 (0.60-0.82)	<0.001	0.77 (0.65-0.91)	0.002
MG 24: Antipsychotics	0.79 (0.71-0.87)	<0.001	0.83 (0.75-0.93)	<0.001
MG 26: inhaled anti-obstructive drugs	0.99 (0.90-1.09)	0.860		
MG 27: inhaled steroids	1.12 (0.97-1.28)	0.120		
MG 28: other COPD drugs	1.45 (1.10-1.91)	0.009	1.30 (0.96-1.77)	0.087
MG 30: Systemic Antihistamines	1.08 (0.93-1.25)	0.310		

Table A.75. Competing risk regression results examining time to discharge after Influenza hospital admission in patients aged 19-40. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 19-40			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	1.14 (1.02-1.28)	0.022	1.13 (1.01-1.27)	0.037
Age Group: 31-35 (ref: 36-40)	1.13 (0.97-1.32)	0.110	1.15 (0.98-1.35)	0.090
Age Group: 26-30 (ref: 36-40)	1.12 (0.95-1.32)	0.180	1.12 (0.96-1.32)	0.160
Age Group: 19-25 (ref: 36-40)	1.15 (0.97-1.36)	0.097	1.16 (0.98-1.38)	0.082
Medicament Groups: 2-5 (ref: 0-1)	0.74 (0.66-0.84)	<0.001	0.86 (0.75-0.99)	0.035
Medicament Groups: ≥6 (ref: 0-1)	0.52 (0.42-0.64)	<0.001	0.75 (0.56-1.01)	0.062
Wave: 2016/2017 (ref: Wave 2015/2016)	1.43 (1.07-1.91)	0.016	1.45 (1.09-1.94)	0.012
Wave: 2017/2018 (ref: Wave 2015/2016)	1.27 (1.01-1.60)	0.041	1.27 (1.01-1.61)	0.045
Wave: 2018/2019 (ref: Wave 2015/2016)	1.33 (1.07-1.67)	0.011	1.34 (1.07-1.69)	0.012
Wave: 2019/2020 (ref: Wave 2015/2016)	1.41 (1.12-1.76)	0.003	1.47 (1.17-1.86)	<0.001
Wave: 2020/2021 (ref: Wave 2015/2016)	0.97 (0.37-2.55)	0.950	1.05 (0.38-2.96)	0.920
MG 1: Anticoagulants	0.84 (0.68-1.03)	0.094	0.84 (0.67-1.05)	0.130
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	0.99 (0.86-1.14)	0.930		
MG 3: Insulins and other Antidiabetics	1.03 (0.80-1.33)	0.830		
MG 4: "heart" drugs	0.85 (0.53-1.35)	0.480		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	0.85 (0.67-1.07)	0.160		
MG 6: Beta Blockers	0.85 (0.63-1.17)	0.320		
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	1.28 (0.90-1.81)	0.170		
MG 8: Immunosuppressants and Immunomodulators	1.20 (0.96-1.51)	0.120		
MG 9: Systemic Steroids	1.05 (0.86-1.28)	0.630		
MG 10: Chemotherapy	1.08 (0.81-1.43)	0.620		
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	0.99 (0.80-1.23)	0.960		
MG 12: Antacids incl. Antihistamines	0.88 (0.70-1.11)	0.280		
MG 13: Vitamin D and other Vitamin supplements	1.05 (0.83-1.32)	0.680		
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	0.95 (0.76-1.20)	0.690		
MG 16: Hereditary angioedema Therapeutics	1.27 (1.07-1.51)	0.005	0.95 (0.77-1.18)	0.650
MG 17: Peripheral Vasodilators	NA (NA-NA)			
MG 19: Immunoglobulins	0.36 (0.30-0.43)	<0.001	0.47 (0.34-0.65)	<0.001
MG 20: Interferons and CSF	1.11 (0.78-1.57)	0.560		
MG 21: NSAR and other anti-inflammatory drugs	1.18 (1.01-1.37)	0.038	1.12 (0.96-1.31)	0.130
MG 22: Gout medications	2.08 (1.54-2.81)	<0.001	2.19 (1.47-3.25)	<0.001
MG 23: Antiepileptics	0.55 (0.42-0.72)	<0.001	0.61 (0.47-0.79)	<0.001
MG 24: Antipsychotics	0.69 (0.58-0.84)	<0.001	0.76 (0.64-0.91)	0.003
MG 26: inhaled anti-obstructive drugs	0.85 (0.70-1.02)	0.080	0.81 (0.67-0.98)	0.028
MG 27: inhaled steroids	0.91 (0.71-1.17)	0.450		
MG 28: other COPD drugs	1.42 (1.00-2.01)	0.049	1.44 (1.00-2.08)	0.049
MG 30: Systemic Antihistamines	0.89 (0.73-1.09)	0.250		

Table A.76. Competing risk regression results comparing time to hospital discharge between propensity score matched COVID-19 and Influenza patients aged 19-40. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 19-40			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Group: Influenza (ref: COVID-19)	1.63 (1.49-1.78)	<0.001	1.62 (1.48-1.77)	<0.001
Sex: F (ref: M)	1.23 (1.14-1.34)	<0.001	1.23 (1.13-1.33)	<0.001
Age Group: 31-35 (ref: 36-40)	1.14 (1.03-1.27)	0.012	1.16 (1.04-1.28)	0.006
Age Group: 26-30 (ref: 36-40)	1.15 (1.03-1.29)	0.015	1.13 (1.01-1.27)	0.031
Age Group: 19-25 (ref: 36-40)	1.38 (1.21-1.56)	<0.001	1.36 (1.19-1.54)	<0.001
Medicament Groups: 2-5 (ref: 0-1)	0.82 (0.75-0.90)	<0.001	0.83 (0.74-0.92)	<0.001
Medicament Groups: ≥6 (ref: 0-1)	0.58 (0.42-0.79)	<0.001	0.72 (0.53-0.96)	0.028
MG 1: Anticoagulants	0.86 (0.68-1.09)	0.200		
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.06 (0.97-1.15)	0.230		
MG 3: Insulins and other Antidiabetics	0.65 (0.49-0.86)	0.002	0.64 (0.48-0.85)	0.002
MG 4: "heart" drugs	0.80 (0.46-1.37)	0.410		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	0.73 (0.58-0.92)	0.009	0.78 (0.63-0.97)	0.025
MG 6: Beta Blockers	0.79 (0.53-1.16)	0.230		
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.82 (0.54-1.22)	0.320		
MG 8: Immunosuppressants and Immunomodulators	0.94 (0.66-1.35)	0.760		
MG 9: Systemic Steroids	0.86 (0.68-1.08)	0.190		
MG 10: Chemotherapy	1.16 (1.03-1.31)	0.016	1.01 (0.87-1.17)	0.920
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.09 (0.89-1.34)	0.400		
MG 12: Antacids incl. Antihistamines	0.96 (0.78-1.18)	0.710		
MG 13: Vitamin D and other Vitamin supplements	0.92 (0.73-1.17)	0.500		
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	0.95 (0.69-1.32)	0.760		
MG 16: Hereditary angioedema Therapeutics	1.26 (1.12-1.42)	<0.001	1.09 (0.94-1.27)	0.230
MG 17: Peripheral Vasodilators	5.65 (4.96-6.43)	<0.001	5.64 (4.95-6.42)	<0.001
MG 19: Immunoglobulins	NA (NA-NA)			
MG 20: Interferons and CSF	1.01 (0.64-1.60)	0.970		
MG 21: NSAR and other anti-inflammatory drugs	1.15 (1.01-1.30)	0.031	1.13 (1.00-1.28)	0.049
MG 22: Gout medications	NA (NA-NA)			
MG 23: Antiepileptics	0.80 (0.61-1.06)	0.120		
MG 24: Antipsychotics	0.88 (0.75-1.02)	0.096	0.86 (0.74-1.00)	0.047
MG 26: inhaled anti-obstructive drugs	0.98 (0.85-1.14)	0.820		
MG 27: inhaled steroids	1.04 (0.78-1.40)	0.770		
MG 28: other COPD drugs	1.56 (1.08-2.26)	0.018	1.46 (1.03-2.07)	0.032
MG 30: Systemic Antihistamines	0.87 (0.71-1.08)	0.210		

Table A.77. Competing risk regression results examining time to discharge after COVID-19 hospital admission in patients aged 41-64. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 41-64			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	1.22 (1.19-1.26)	<0.001	1.23 (1.19-1.27)	<0.001
Age Group: 56-60 (ref: 61-64)	1.17 (1.12-1.22)	<0.001	1.17 (1.12-1.22)	<0.001
Age Group: 51-55 (ref: 61-64)	1.32 (1.26-1.38)	<0.001	1.30 (1.24-1.36)	<0.001
Age Group: 46-50 (ref: 61-64)	1.46 (1.39-1.53)	<0.001	1.44 (1.37-1.51)	<0.001
Age Group: 41-45 (ref: 61-64)	1.66 (1.57-1.76)	<0.001	1.62 (1.53-1.72)	<0.001
Medicament Groups: 2-5 (ref: 0-1)	0.86 (0.83-0.89)	<0.001	0.94 (0.90-0.98)	0.003
Medicament Groups: 6-10 (ref: 0-1)	0.65 (0.62-0.68)	<0.001	0.86 (0.79-0.94)	<0.001
Medicament Groups: ≥11 (ref: 0-1)	0.51 (0.45-0.58)	<0.001	0.86 (0.72-1.03)	0.093
Wave: 3 (ref: Wave 1 & 2)	0.93 (0.89-0.96)	<0.001	0.92 (0.89-0.95)	<0.001
Wave: 4 (ref: Wave 1 & 2)	0.93 (0.89-0.97)	<0.001	0.92 (0.89-0.96)	<0.001
MG 1: Anticoagulants	1.03 (0.99-1.07)	0.200		
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.00 (0.97-1.04)	0.880		
MG 3: Insulins and other Antidiabetics	0.86 (0.82-0.90)	<0.001	0.84 (0.80-0.88)	<0.001
MG 4: "heart" drugs	1.07 (0.99-1.17)	0.085	1.04 (0.96-1.13)	0.320
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	0.94 (0.90-0.97)	<0.001	0.93 (0.89-0.97)	<0.001
MG 6: Beta Blockers	0.92 (0.87-0.97)	0.002	0.93 (0.88-0.98)	0.010
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	1.01 (0.97-1.06)	0.600		
MG 8: Immunosuppressants and Immunomodulators	0.92 (0.85-1.00)	0.038	0.94 (0.87-1.02)	0.130
MG 9: Systemic Steroids	0.94 (0.89-0.98)	0.010	0.90 (0.86-0.95)	<0.001
MG 10: Chemotherapy	0.74 (0.65-0.85)	<0.001	0.75 (0.65-0.86)	<0.001
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	0.90 (0.83-0.97)	0.007	0.93 (0.86-1.00)	0.058
MG 12: Antacids incl. Antihistamines	0.97 (0.92-1.02)	0.230		
MG 13: Vitamin D and other Vitamin supplements	0.89 (0.84-0.94)	<0.001	0.89 (0.84-0.94)	<0.001
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	0.39 (0.09-1.67)	0.210		
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	1.01 (0.82-1.23)	0.950		
MG 19: Immunoglobulins	0.81 (0.52-1.25)	0.350		
MG 20: Interferons and CSF	0.84 (0.73-0.96)	0.010	0.84 (0.74-0.97)	0.017
MG 21: NSAR and other anti-inflammatory drugs	1.10 (1.06-1.14)	<0.001	1.06 (1.02-1.10)	0.002
MG 22: Gout medications	0.95 (0.86-1.06)	0.380		
MG 23: Antiepileptics	0.88 (0.83-0.93)	<0.001	0.89 (0.84-0.95)	<0.001
MG 24: Antipsychotics	0.91 (0.88-0.95)	<0.001	0.91 (0.87-0.95)	<0.001
MG 26: inhaled anti-obstructive drugs	1.01 (0.97-1.06)	0.490		
MG 27: inhaled steroids	1.07 (1.00-1.14)	0.048	1.01 (0.95-1.08)	0.750
MG 28: other COPD drugs	1.10 (0.98-1.25)	0.120		
MG 30: Systemic Antihistamines	1.07 (0.99-1.15)	0.087	1.02 (0.95-1.10)	0.560

Table A.78. Competing risk regression results examining time to discharge after Influenza hospital admission in patients aged 41-64. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 41-64			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	1.09 (1.01-1.18)	0.026	1.08 (1.00-1.16)	0.065
Age Group: 56-60 (ref: 61-64)	1.04 (0.94-1.15)	0.410	1.08 (0.98-1.19)	0.140
Age Group: 51-55 (ref: 61-64)	1.20 (1.07-1.34)	0.002	1.22 (1.08-1.37)	<0.001
Age Group: 46-50 (ref: 61-64)	1.18 (1.03-1.34)	0.015	1.22 (1.07-1.39)	0.003
Age Group: 41-45 (ref: 61-64)	1.28 (1.10-1.49)	0.002	1.34 (1.15-1.56)	<0.001
Medicament Groups: 2-5 (ref: 0-1)	0.76 (0.68-0.85)	<0.001	0.80 (0.70-0.90)	<0.001
Medicament Groups: 6-10 (ref: 0-1)	0.62 (0.55-0.70)	<0.001	0.75 (0.62-0.90)	0.002
Medicament Groups: ≥11 (ref: 0-1)	0.61 (0.51-0.74)	<0.001	0.93 (0.69-1.23)	0.600
Wave: 2016/2017 (ref: Wave 2015/2016)	1.40 (1.11-1.75)	0.004	1.36 (1.08-1.72)	0.009
Wave: 2017/2018 (ref: Wave 2015/2016)	1.57 (1.29-1.91)	<0.001	1.52 (1.25-1.86)	<0.001
Wave: 2018/2019 (ref: Wave 2015/2016)	1.36 (1.12-1.65)	0.002	1.33 (1.09-1.63)	0.005
Wave: 2019/2020 (ref: Wave 2015/2016)	1.48 (1.21-1.81)	<0.001	1.48 (1.20-1.81)	<0.001
Wave: 2020/2021 (ref: Wave 2015/2016)	0.64 (0.28-1.45)	0.280	0.60 (0.26-1.40)	0.240
MG 1: Anticoagulants	0.97 (0.87-1.08)	0.560		
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.06 (0.98-1.16)	0.160		
MG 3: Insulins and other Antidiabetics	0.90 (0.80-1.00)	0.041	0.82 (0.73-0.92)	<0.001
MG 4: "heart" drugs	1.15 (0.99-1.35)	0.070	1.11 (0.94-1.30)	0.220
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	0.94 (0.86-1.02)	0.150		
MG 6: Beta Blockers	0.91 (0.82-1.01)	0.068	0.88 (0.79-0.98)	0.018
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	1.19 (1.09-1.31)	<0.001	1.20 (1.08-1.32)	<0.001
MG 8: Immunosuppressants and Immunomodulators	1.00 (0.87-1.16)	0.960		
MG 9: Systemic Steroids	0.93 (0.84-1.02)	0.120		
MG 10: Chemotherapy	1.16 (0.90-1.51)	0.260		
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	0.91 (0.79-1.04)	0.160		
MG 12: Antacids incl. Antihistamines	0.92 (0.83-1.02)	0.100		
MG 13: Vitamin D and other Vitamin supplements	0.81 (0.73-0.90)	<0.001	0.83 (0.75-0.93)	<0.001
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	1.49 (1.08-2.06)	0.015	1.31 (0.83-2.06)	0.250
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	0.92 (0.60-1.41)	0.700		
MG 19: Immunoglobulins	NA (NA-NA)			
MG 20: Interferons and CSF	1.17 (1.00-1.36)	0.047	1.09 (0.94-1.28)	0.260
MG 21: NSAR and other anti-inflammatory drugs	1.19 (1.10-1.30)	<0.001	1.17 (1.07-1.27)	<0.001
MG 22: Gout medications	0.87 (0.70-1.07)	0.190		
MG 23: Antiepileptics	0.80 (0.72-0.90)	<0.001	0.82 (0.73-0.93)	0.001
MG 24: Antipsychotics	0.89 (0.82-0.97)	0.008	0.93 (0.85-1.02)	0.130
MG 26: inhaled anti-obstructive drugs	0.86 (0.79-0.94)	<0.001	0.84 (0.77-0.92)	<0.001
MG 27: inhaled steroids	1.08 (0.93-1.25)	0.340		
MG 28: other COPD drugs	0.98 (0.78-1.23)	0.870		
MG 30: Systemic Antihistamines	0.95 (0.82-1.11)	0.540		

Table A.79. Competing risk regression results comparing time to hospital discharge between propensity score matched COVID-19 and Influenza patients aged 41-64. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 41-64			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Group: Influenza (ref: COVID-19)	1.81 (1.71-1.93)	<0.001	1.84 (1.73-1.96)	<0.001
Sex: F (ref: M)	1.15 (1.10-1.21)	<0.001	1.15 (1.09-1.21)	<0.001
Age Group: 56-60 (ref: 61-64)	1.07 (1.00-1.15)	0.049	1.09 (1.01-1.17)	0.020
Age Group: 51-55 (ref: 61-64)	1.22 (1.13-1.31)	<0.001	1.23 (1.14-1.32)	<0.001
Age Group: 46-50 (ref: 61-64)	1.31 (1.20-1.42)	<0.001	1.31 (1.21-1.43)	<0.001
Age Group: 41-45 (ref: 61-64)	1.44 (1.31-1.60)	<0.001	1.47 (1.33-1.63)	<0.001
Medicament Groups: 2-5 (ref: 0-1)	0.83 (0.78-0.88)	<0.001	0.87 (0.81-0.94)	<0.001
Medicament Groups: 6-10 (ref: 0-1)	0.64 (0.59-0.69)	<0.001	0.79 (0.69-0.91)	<0.001
Medicament Groups: ≥11 (ref: 0-1)	0.68 (0.57-0.81)	<0.001	0.96 (0.74-1.25)	0.760
MG 1: Anticoagulants	0.97 (0.90-1.05)	0.490		
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.04 (0.98-1.10)	0.170		
MG 3: Insulins and other Antidiabetics	0.84 (0.77-0.90)	<0.001	0.80 (0.74-0.87)	<0.001
MG 4: "heart" drugs	1.14 (1.01-1.29)	0.041	1.11 (0.98-1.26)	0.092
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	0.93 (0.87-0.99)	0.018	0.93 (0.87-0.99)	0.018
MG 6: Beta Blockers	0.95 (0.88-1.03)	0.190		
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	1.09 (1.02-1.17)	0.009	1.12 (1.05-1.20)	0.001
MG 8: Immunosuppressants and Immunomodulators	0.96 (0.85-1.08)	0.470		
MG 9: Systemic Steroids	0.95 (0.88-1.02)	0.180		
MG 10: Chemotherapy	0.99 (0.81-1.21)	0.900		
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	0.89 (0.79-1.00)	0.049	0.94 (0.83-1.06)	0.300
MG 12: Antacids incl. Antihistamines	0.93 (0.87-1.00)	0.060	0.94 (0.88-1.01)	0.100
MG 13: Vitamin D and other Vitamin supplements	0.85 (0.78-0.92)	<0.001	0.87 (0.80-0.94)	<0.001
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	0.88 (0.30-2.57)	0.810		
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	0.98 (0.73-1.32)	0.890		
MG 19: Immunoglobulins	4.32 (3.91-4.77)	<0.001	4.72 (4.20-5.31)	<0.001
MG 20: Interferons and CSF	1.04 (0.89-1.21)	0.640		
MG 21: NSAR and other anti-inflammatory drugs	1.16 (1.10-1.23)	<0.001	1.14 (1.08-1.21)	<0.001
MG 22: Gout medications	0.85 (0.72-1.02)	0.082	0.84 (0.71-1.01)	0.065
MG 23: Antiepileptics	0.91 (0.83-0.99)	0.034	0.93 (0.85-1.02)	0.140
MG 24: Antipsychotics	0.91 (0.85-0.96)	0.002	0.91 (0.86-0.97)	0.005
MG 26: inhaled anti-obstructive drugs	0.93 (0.88-0.99)	0.018	0.88 (0.83-0.94)	<0.001
MG 27: inhaled steroids	1.18 (1.05-1.31)	0.004	1.16 (1.04-1.30)	0.008
MG 28: other COPD drugs	1.08 (0.90-1.29)	0.400		
MG 30: Systemic Antihistamines	1.01 (0.90-1.13)	0.920		

Table A.80. Competing risk regression results examining time to discharge after COVID-19 hospital admission in patients aged 65-74. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 65-74			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	1.28 (1.22-1.33)	<0.001	1.29 (1.24-1.35)	<0.001
Age Group: 65-70 (ref: 71-74)	1.17 (1.13-1.22)	<0.001	1.16 (1.12-1.21)	<0.001
Medicament Groups: 2-5 (ref: 0-1)	0.91 (0.86-0.97)	0.002	0.94 (0.87-1.00)	0.056
Medicament Groups: 6-10 (ref: 0-1)	0.69 (0.64-0.73)	<0.001	0.82 (0.73-0.91)	<0.001
Medicament Groups: ≥11 (ref: 0-1)	0.57 (0.52-0.63)	<0.001	0.77 (0.65-0.91)	0.002
Wave: 3 (ref: Wave 1 & 2)	0.91 (0.87-0.95)	<0.001	0.89 (0.85-0.94)	<0.001
Wave: 4 (ref: Wave 1 & 2)	0.91 (0.86-0.96)	<0.001	0.90 (0.86-0.95)	<0.001
MG 1: Anticoagulants	0.97 (0.93-1.02)	0.280		
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.03 (0.98-1.07)	0.250		
MG 3: Insulins and other Antidiabetics	0.88 (0.84-0.93)	<0.001	0.86 (0.81-0.90)	<0.001
MG 4: "heart" drugs	1.04 (0.97-1.12)	0.280		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	1.01 (0.96-1.06)	0.750		
MG 6: Beta Blockers	0.92 (0.88-0.97)	0.002	0.93 (0.88-0.97)	0.003
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	1.09 (1.04-1.14)	<0.001	1.10 (1.05-1.15)	<0.001
MG 8: Immunosuppressants and Immunomodulators	0.92 (0.83-1.01)	0.090	0.91 (0.82-1.01)	0.075
MG 9: Systemic Steroids	0.96 (0.90-1.02)	0.160		
MG 10: Chemotherapy	0.88 (0.78-0.99)	0.030	0.86 (0.76-0.97)	0.018
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	0.82 (0.75-0.89)	<0.001	0.85 (0.78-0.93)	<0.001
MG 12: Antacids incl. Antihistamines	0.93 (0.88-0.98)	0.010	0.92 (0.87-0.98)	0.008
MG 13: Vitamin D and other Vitamin supplements	0.93 (0.87-0.98)	0.012	0.95 (0.90-1.01)	0.098
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	0.79 (0.42-1.48)	0.460		
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	1.03 (0.81-1.30)	0.830		
MG 19: Immunoglobulins	1.31 (0.74-2.30)	0.360		
MG 20: Interferons and CSF	0.96 (0.84-1.11)	0.620		
MG 21: NSAR and other anti-inflammatory drugs	1.19 (1.14-1.25)	<0.001	1.16 (1.10-1.21)	<0.001
MG 22: Gout medications	0.93 (0.85-1.02)	0.140		
MG 23: Antiepileptics	0.84 (0.79-0.90)	<0.001	0.86 (0.80-0.92)	<0.001
MG 24: Antipsychotics	0.90 (0.86-0.95)	<0.001	0.91 (0.87-0.96)	<0.001
MG 26: inhaled anti-obstructive drugs	0.97 (0.92-1.02)	0.260		
MG 27: inhaled steroids	1.15 (1.06-1.26)	0.002	1.09 (0.99-1.19)	0.075
MG 28: other COPD drugs	1.00 (0.86-1.16)	0.990		
MG 30: Systemic Antihistamines	1.09 (1.00-1.18)	0.056	1.06 (0.97-1.15)	0.200

Table A.81. Competing risk regression results examining time to discharge after Influenza hospital admission in patients aged 65-74. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 65-74			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	1.03 (0.96-1.12)	0.400	1.02 (0.94-1.10)	0.620
Age Group: 65-70 (ref: 71-74)	1.07 (0.99-1.16)	0.084	1.08 (1.00-1.17)	0.065
Medicament Groups: 2-5 (ref: 0-1)	0.98 (0.86-1.11)	0.730	0.98 (0.85-1.12)	0.740
Medicament Groups: 6-10 (ref: 0-1)	0.76 (0.67-0.87)	<0.001	0.81 (0.68-0.96)	0.015
Medicament Groups: ≥11 (ref: 0-1)	0.70 (0.59-0.83)	<0.001	0.81 (0.63-1.04)	0.100
Wave: 2016/2017 (ref: Wave 2015/2016)	1.13 (0.90-1.40)	0.290	1.12 (0.90-1.40)	0.300
Wave: 2017/2018 (ref: Wave 2015/2016)	1.26 (1.02-1.55)	0.032	1.24 (1.01-1.53)	0.041
Wave: 2018/2019 (ref: Wave 2015/2016)	1.31 (1.06-1.62)	0.014	1.30 (1.05-1.60)	0.016
Wave: 2019/2020 (ref: Wave 2015/2016)	1.21 (0.98-1.49)	0.081	1.18 (0.96-1.46)	0.120
Wave: 2020/2021 (ref: Wave 2015/2016)	0.78 (0.51-1.19)	0.240	0.70 (0.44-1.11)	0.130
MG 1: Anticoagulants	0.92 (0.84-1.01)	0.096	0.90 (0.82-0.99)	0.024
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.01 (0.92-1.10)	0.880		
MG 3: Insulins and other Antidiabetics	0.88 (0.80-0.96)	0.006	0.85 (0.77-0.93)	<0.001
MG 4: "heart" drugs	0.95 (0.84-1.06)	0.350		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	1.08 (0.98-1.19)	0.110		
MG 6: Beta Blockers	0.98 (0.89-1.07)	0.600		
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	1.19 (1.09-1.30)	<0.001	1.23 (1.12-1.35)	<0.001
MG 8: Immunosuppressants and Immunomodulators	0.91 (0.74-1.11)	0.340		
MG 9: Systemic Steroids	1.03 (0.94-1.14)	0.500		
MG 10: Chemotherapy	0.91 (0.74-1.13)	0.390		
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	0.85 (0.74-0.97)	0.019	0.88 (0.77-1.01)	0.065
MG 12: Antacids incl. Antihistamines	0.93 (0.84-1.03)	0.180		
MG 13: Vitamin D and other Vitamin supplements	1.05 (0.95-1.17)	0.330		
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	NA (NA-NA)			
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	1.22 (0.91-1.63)	0.180		
MG 19: Immunoglobulins	1.67 (1.45-1.92)	<0.001	1.57 (1.16-2.11)	0.003
MG 20: Interferons and CSF	0.88 (0.72-1.07)	0.190		
MG 21: NSAR and other anti-inflammatory drugs	1.21 (1.11-1.32)	<0.001	1.19 (1.09-1.30)	<0.001
MG 22: Gout medications	0.90 (0.76-1.05)	0.170		
MG 23: Antiepileptics	0.84 (0.75-0.93)	0.001	0.87 (0.78-0.97)	0.015
MG 24: Antipsychotics	0.88 (0.81-0.97)	0.006	0.91 (0.83-1.00)	0.041
MG 26: inhaled anti-obstructive drugs	0.92 (0.84-1.01)	0.070		
MG 27: inhaled steroids	1.00 (0.84-1.18)	0.970		
MG 28: other COPD drugs	0.76 (0.62-0.93)	0.008	0.70 (0.57-0.87)	0.001
MG 30: Systemic Antihistamines	0.92 (0.80-1.06)	0.260		

Table A.82. Competing risk regression results comparing time to hospital discharge between propensity score matched COVID-19 and Influenza patients aged 65-74. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 65-74			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Group: Influenza (ref: COVID-19)	2.34 (2.20-2.49)	<0.001	2.39 (2.24-2.54)	<0.001
Sex: F (ref: M)	1.19 (1.13-1.26)	<0.001	1.19 (1.13-1.26)	<0.001
Age Group: 65-70 (ref: 71-74)	1.14 (1.07-1.20)	<0.001	1.13 (1.07-1.19)	<0.001
Medicament Groups: 2-5 (ref: 0-1)	0.94 (0.87-1.01)	0.089	0.95 (0.87-1.04)	0.270
Medicament Groups: 6-10 (ref: 0-1)	0.72 (0.67-0.78)	<0.001	0.82 (0.72-0.94)	0.003
Medicament Groups: ≥11 (ref: 0-1)	0.64 (0.56-0.72)	<0.001	0.79 (0.65-0.97)	0.027
MG 1: Anticoagulants	0.93 (0.87-0.99)	0.031	0.92 (0.86-0.99)	0.023
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.04 (0.98-1.10)	0.170		
MG 3: Insulins and other Antidiabetics	0.92 (0.86-0.98)	0.014	0.90 (0.84-0.97)	0.004
MG 4: "heart" drugs	0.98 (0.89-1.08)	0.650		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	1.04 (0.98-1.11)	0.200		
MG 6: Beta Blockers	0.95 (0.89-1.02)	0.130		
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	1.12 (1.06-1.19)	<0.001	1.14 (1.07-1.21)	<0.001
MG 8: Immunosuppressants and Immunomodulators	0.94 (0.81-1.08)	0.380		
MG 9: Systemic Steroids	1.05 (0.97-1.13)	0.220		
MG 10: Chemotherapy	0.95 (0.81-1.10)	0.460		
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	0.84 (0.75-0.94)	0.002	0.89 (0.80-0.99)	0.037
MG 12: Antacids incl. Antihistamines	0.89 (0.82-0.95)	0.001	0.90 (0.83-0.97)	0.004
MG 13: Vitamin D and other Vitamin supplements	0.98 (0.91-1.06)	0.650		
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	1.29 (0.95-1.75)	0.110		
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	1.18 (0.94-1.48)	0.160		
MG 19: Immunoglobulins	1.51 (0.93-2.42)	0.092	1.42 (0.92-2.20)	0.110
MG 20: Interferons and CSF	0.90 (0.75-1.08)	0.250		
MG 21: NSAR and other anti-inflammatory drugs	1.21 (1.14-1.28)	<0.001	1.19 (1.11-1.26)	<0.001
MG 22: Gout medications	0.97 (0.86-1.09)	0.620		
MG 23: Antiepileptics	0.82 (0.75-0.89)	<0.001	0.86 (0.79-0.93)	<0.001
MG 24: Antipsychotics	0.86 (0.81-0.92)	<0.001	0.89 (0.84-0.95)	<0.001
MG 26: inhaled anti-obstructive drugs	0.97 (0.91-1.04)	0.410		
MG 27: inhaled steroids	1.12 (0.99-1.26)	0.075	1.05 (0.93-1.18)	0.460
MG 28: other COPD drugs	0.96 (0.80-1.17)	0.720		
MG 30: Systemic Antihistamines	1.03 (0.92-1.16)	0.550		

Table A.83. Competing risk regression results examining time to discharge after COVID-19 hospital admission in patients aged 75 and older. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: ≥75			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	1.26 (1.22-1.31)	<0.001	1.29 (1.25-1.33)	<0.001
Age Group: 86-90 (ref: >90)	1.36 (1.28-1.45)	<0.001	1.35 (1.27-1.44)	<0.001
Age Group: 81-85 (ref: >90)	1.68 (1.59-1.79)	<0.001	1.65 (1.55-1.75)	<0.001
Age Group: 75-80 (ref: >90)	2.01 (1.90-2.13)	<0.001	1.93 (1.82-2.05)	<0.001
Medicament Groups: 2-5 (ref: 0-1)	0.96 (0.91-1.01)	0.100	0.98 (0.92-1.04)	0.460
Medicament Groups: 6-10 (ref: 0-1)	0.84 (0.80-0.89)	<0.001	0.93 (0.85-1.02)	0.100
Medicament Groups: ≥11 (ref: 0-1)	0.69 (0.63-0.75)	<0.001	0.85 (0.74-0.98)	0.021
Wave: 3 (ref: Wave 1 & 2)	0.96 (0.92-0.99)	0.014	0.95 (0.91-0.98)	0.003
Wave: 4 (ref: Wave 1 & 2)	1.02 (0.98-1.06)	0.380	1.00 (0.96-1.04)	0.860
MG 1: Anticoagulants	0.97 (0.94-1.01)	0.150		
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	0.96 (0.93-0.99)	0.014	0.96 (0.92-0.99)	0.012
MG 3: Insulins and other Antidiabetics	0.93 (0.89-0.97)	<0.001	0.90 (0.86-0.94)	<0.001
MG 4: "heart" drugs	0.97 (0.92-1.01)	0.130		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	1.08 (1.04-1.12)	<0.001	1.07 (1.02-1.11)	0.002
MG 6: Beta Blockers	0.97 (0.93-1.00)	0.065	0.95 (0.91-0.99)	0.006
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	1.12 (1.08-1.15)	<0.001	1.10 (1.06-1.14)	<0.001
MG 8: Immunosuppressants and Immunomodulators	0.93 (0.83-1.03)	0.150		
MG 9: Systemic Steroids	1.02 (0.97-1.07)	0.480		
MG 10: Chemotherapy	1.02 (0.94-1.11)	0.600		
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	0.85 (0.81-0.90)	<0.001	0.87 (0.83-0.92)	<0.001
MG 12: Antacids incl. Antihistamines	0.95 (0.91-0.99)	0.017	0.97 (0.93-1.01)	0.110
MG 13: Vitamin D and other Vitamin supplements	0.97 (0.93-1.01)	0.110		
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	0.52 (0.25-1.08)	0.079	0.52 (0.25-1.05)	0.068
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	1.11 (0.97-1.27)	0.110		
MG 19: Immunoglobulins	0.33 (0.13-0.85)	0.022	0.35 (0.13-0.92)	0.034
MG 20: Interferons and CSF	1.02 (0.88-1.18)	0.800		
MG 21: NSAR and other anti-inflammatory drugs	1.14 (1.10-1.19)	<0.001	1.12 (1.08-1.16)	<0.001
MG 22: Gout medications	0.94 (0.88-1.00)	0.058	0.93 (0.87-0.99)	0.018
MG 23: Antiepileptics	0.92 (0.88-0.97)	<0.001	0.94 (0.89-0.98)	0.005
MG 24: Antipsychotics	0.87 (0.84-0.90)	<0.001	0.88 (0.85-0.92)	<0.001
MG 26: inhaled anti-obstructive drugs	0.99 (0.95-1.03)	0.540		
MG 27: inhaled steroids	1.09 (0.99-1.19)	0.073	1.05 (0.96-1.15)	0.290
MG 28: other COPD drugs	0.94 (0.79-1.10)	0.430		
MG 30: Systemic Antihistamines	0.98 (0.91-1.04)	0.480		

Table A.84. Competing risk regression results examining time to discharge after Influenza hospital admission in patients aged 75 and older. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: ≥75			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	1.00 (0.94-1.05)	0.910	1.01 (0.96-1.07)	0.750
Age Group: 86-90 (ref: >90)	1.18 (1.07-1.30)	0.001	1.16 (1.05-1.28)	0.004
Age Group: 81-85 (ref: >90)	1.34 (1.21-1.47)	<0.001	1.30 (1.18-1.44)	<0.001
Age Group: 75-80 (ref: >90)	1.56 (1.43-1.72)	<0.001	1.51 (1.37-1.65)	<0.001
Medicament Groups: 2-5 (ref: 0-1)	0.98 (0.89-1.07)	0.600	0.99 (0.90-1.09)	0.870
Medicament Groups: 6-10 (ref: 0-1)	0.89 (0.81-0.97)	0.013	0.96 (0.85-1.08)	0.470
Medicament Groups: ≥11 (ref: 0-1)	0.72 (0.62-0.84)	<0.001	0.84 (0.69-1.03)	0.086
Wave: 2016/2017 (ref: Wave 2015/2016)	1.24 (1.05-1.47)	0.010	1.23 (1.04-1.45)	0.016
Wave: 2017/2018 (ref: Wave 2015/2016)	1.21 (1.03-1.42)	0.019	1.20 (1.02-1.41)	0.028
Wave: 2018/2019 (ref: Wave 2015/2016)	1.16 (0.98-1.36)	0.080	1.16 (0.98-1.36)	0.087
Wave: 2019/2020 (ref: Wave 2015/2016)	1.19 (1.01-1.40)	0.036	1.18 (1.00-1.40)	0.046
Wave: 2020/2021 (ref: Wave 2015/2016)	0.61 (0.31-1.19)	0.150	0.64 (0.33-1.27)	0.210
MG 1: Anticoagulants	1.04 (0.98-1.11)	0.240		
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.03 (0.97-1.09)	0.390		
MG 3: Insulins and other Antidiabetics	0.96 (0.90-1.03)	0.250		
MG 4: "heart" drugs	1.00 (0.93-1.08)	0.960		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	1.01 (0.95-1.08)	0.700		
MG 6: Beta Blockers	0.93 (0.88-0.99)	0.031	0.91 (0.86-0.97)	0.005
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	1.17 (1.10-1.24)	<0.001	1.15 (1.09-1.22)	<0.001
MG 8: Immunosuppressants and Immunomodulators	0.95 (0.77-1.17)	0.640		
MG 9: Systemic Steroids	0.98 (0.91-1.06)	0.620		
MG 10: Chemotherapy	1.01 (0.88-1.16)	0.870		
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	0.90 (0.82-0.98)	0.017	0.91 (0.83-1.00)	0.043
MG 12: Antacids incl. Antihistamines	1.01 (0.95-1.08)	0.700		
MG 13: Vitamin D and other Vitamin supplements	0.98 (0.92-1.05)	0.570		
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	0.55 (0.22-1.38)	0.200		
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	1.01 (0.86-1.20)	0.870		
MG 19: Immunoglobulins	1.03 (0.38-2.78)	0.950		
MG 20: Interferons and CSF	0.92 (0.73-1.16)	0.490		
MG 21: NSAR and other anti-inflammatory drugs	1.06 (0.99-1.13)	0.083	1.06 (0.99-1.13)	0.090
MG 22: Gout medications	0.91 (0.83-1.01)	0.091	0.92 (0.83-1.02)	0.098
MG 23: Antiepileptics	0.97 (0.90-1.04)	0.350		
MG 24: Antipsychotics	0.92 (0.87-0.97)	0.004	0.91 (0.86-0.97)	0.002
MG 26: inhaled anti-obstructive drugs	0.91 (0.85-0.97)	0.004	0.90 (0.84-0.96)	0.002
MG 27: inhaled steroids	1.03 (0.90-1.19)	0.670		
MG 28: other COPD drugs	0.92 (0.73-1.16)	0.460		
MG 30: Systemic Antihistamines	0.94 (0.84-1.06)	0.310		

Table A.85. Competing risk regression results comparing time to hospital discharge between propensity score matched COVID-19 and Influenza patients aged 75 years and older. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: ≥75			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Group: Influenza (ref: COVID-19)	2.52 (2.42-2.62)	<0.001	2.54 (2.44-2.64)	<0.001
Sex: F (ref: M)	1.16 (1.12-1.21)	<0.001	1.18 (1.13-1.22)	<0.001
Age Group: 86-90 (ref: >90)	1.25 (1.16-1.34)	<0.001	1.23 (1.15-1.32)	<0.001
Age Group: 81-85 (ref: >90)	1.50 (1.40-1.60)	<0.001	1.47 (1.37-1.57)	<0.001
Age Group: 75-80 (ref: >90)	1.75 (1.64-1.87)	<0.001	1.69 (1.58-1.80)	<0.001
Medicament Groups: 2-5 (ref: 0-1)	0.95 (0.89-1.00)	0.066	0.95 (0.89-1.02)	0.140
Medicament Groups: 6-10 (ref: 0-1)	0.84 (0.80-0.90)	<0.001	0.90 (0.82-0.99)	0.032
Medicament Groups: ≥11 (ref: 0-1)	0.70 (0.63-0.78)	<0.001	0.83 (0.72-0.97)	0.020
MG 1: Anticoagulants	0.99 (0.95-1.04)	0.700		
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	0.99 (0.95-1.03)	0.710		
MG 3: Insulins and other Antidiabetics	0.96 (0.91-1.00)	0.069	0.92 (0.88-0.97)	0.001
MG 4: "heart" drugs	0.97 (0.92-1.02)	0.190		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	1.06 (1.01-1.10)	0.015	1.05 (1.01-1.10)	0.027
MG 6: Beta Blockers	0.94 (0.90-0.98)	0.007	0.92 (0.88-0.96)	<0.001
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	1.15 (1.10-1.20)	<0.001	1.14 (1.09-1.19)	<0.001
MG 8: Immunosuppressants and Immunomodulators	0.98 (0.85-1.13)	0.750		
MG 9: Systemic Steroids	0.99 (0.94-1.05)	0.710		
MG 10: Chemotherapy	1.01 (0.93-1.11)	0.770		
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	0.85 (0.80-0.91)	<0.001	0.87 (0.81-0.92)	<0.001
MG 12: Antacids incl. Antihistamines	0.98 (0.94-1.03)	0.440		
MG 13: Vitamin D and other Vitamin supplements	0.97 (0.93-1.02)	0.260		
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	0.47 (0.19-1.14)	0.094	0.43 (0.18-1.05)	0.064
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	1.13 (0.91-1.40)	0.260		
MG 19: Immunoglobulins	1.04 (0.39-2.80)	0.940		
MG 20: Interferons and CSF	0.92 (0.77-1.11)	0.370		
MG 21: NSAR and other anti-inflammatory drugs	1.10 (1.05-1.15)	<0.001	1.09 (1.04-1.14)	<0.001
MG 22: Gout medications	0.91 (0.85-0.99)	0.019	0.90 (0.84-0.97)	0.008
MG 23: Antiepileptics	0.95 (0.90-1.00)	0.044	0.95 (0.90-1.00)	0.070
MG 24: Antipsychotics	0.90 (0.87-0.94)	<0.001	0.91 (0.87-0.94)	<0.001
MG 26: inhaled anti-obstructive drugs	0.95 (0.90-1.00)	0.035	0.94 (0.89-0.98)	0.009
MG 27: inhaled steroids	1.03 (0.92-1.14)	0.650		
MG 28: other COPD drugs	0.85 (0.68-1.06)	0.160		
MG 30: Systemic Antihistamines	0.95 (0.88-1.03)	0.180		

A.3.4 Re-hospitalization Due to Any Reason

Table A.86. Frequencies of re-hospitalization due to any reason, competing risk death and no event by sex, age cohort, and follow-up time points (30 days, 180 days, 1 year, and 1.5 years) for all COVID-19 and Influenza patients and their respective sex-, age-, region-assigned control group aged ≥18 years.

			COVID-19 (n = 43390)			Control (n = 499251)			Influenza (n = 10318)			Control (n = 104535)		
Sex	**Age**	**Time**	**No Event**	**Readmission**	**Death**	**No Event**	**Readmission**	**Death**	**No Event**	**Readmission**	**Death**	**No Event**	**Readmission**	**Death**
M	**19-40**	**30-day**	1777	128	1	20482	38	2	274	31	NA	3729	15	1
		180-day	1777	233	2	20482	184	7	274	77	NA	3729	56	4
		1-year	1777	289	3	20482	286	8	274	117	NA	3729	107	5
		1.5-year	1777	289	3	20482	316	10	274	117	NA	3729	137	5
	41-64	**30-day**	6972	969	24	93503	564	80	622	214	4	10847	120	14
		180-day	6972	1970	51	93503	2396	244	622	469	6	10847	489	65
		1-year	6972	2383	55	93503	3545	323	622	603	8	10847	822	117
		1.5-year	6972	2385	63	93503	3795	366	622	604	13	10847	1080	153
	65-74	**30-day**	2713	739	53	49691	744	121	423	216	4	8284	275	49
		180-day	2713	1515	88	49691	2981	485	423	498	10	8284	972	189
		1-year	2713	1868	102	49691	4516	626	423	658	14	8284	1534	332
		1.5-year	2713	1871	122	49691	4773	729	423	659	24	8284	1939	407
	≥75	**30-day**	3159	1101	269	72560	2504	854	558	407	41	12728	875	203
		180-day	3159	2287	447	72560	9225	2621	558	932	69	12728	3019	688
		1-year	3159	2838	507	72560	13583	3380	558	1273	88	12728	4674	1189
		1.5-year	3159	2839	560	72560	14153	4075	558	1276	128	12728	5715	1444
F	**19-40**	**30-day**	1398	140	NA	17713	88	NA	264	69	NA	4649	30	NA
		180-day	1398	373	NA	17713	402	1	264	216	NA	4649	153	2
		1-year	1398	437	1	17713	627	2	264	262	NA	4649	288	4
		1.5-year	1398	438	1	17713	679	3	264	262	1	4649	396	5
	41-64	**30-day**	4884	431	6	61110	437	18	582	118	NA	8723	103	6
		180-day	4884	1038	23	61110	1696	75	582	286	NA	8723	413	14
		1-year	4884	1321	24	61110	2565	93	582	419	1	8723	743	25
		1.5-year	4884	1324	28	61110	2723	101	582	422	7	8723	999	31
	65-74	**30-day**	2494	489	27	38175	614	62	462	152	5	7322	240	26
		180-day	2494	1060	52	38175	2528	196	462	393	9	7322	857	91
		1-year	2494	1306	59	38175	3830	253	462	531	12	7322	1462	143
		1.5-year	2494	1306	71	38175	4004	302	462	533	15	7322	1884	185
	≥75	**30-day**	4307	1323	363	83922	3087	1210	785	451	59	13098	1149	310
		180-day	4307	2710	653	83922	12226	3987	785	1085	104	13098	4229	1046
		1-year	4307	3479	765	83922	18441	5241	785	1472	128	13098	6599	1745
		1.5-year	4307	3480	859	83922	19247	6326	785	1474	160	13098	8124	2098

Table A.87. Frequencies of re-hospitalization due to any reason, competing risk death and no event by sex, age cohort, and follow-up time points (30 days, 180 days, 1 year, and 1.5 years) for all and propensity score matched COVID-19 and Influenza patients aged ≥18 years.

			ALL						PSM					
			COVID (n = 43390)			Influenza (n = 10318)			COVID (n = 16871)			Influenza (n = 9277)		
Sex	**Age**	**Time**	**No Event**	**Readmission**	**Death**	**No Event**	**Readmission**	**Death**	**No Event**	**Readmission**	**Death**	**No Event**	**Readmission**	**Death**
M	**19-40**	**30-day**	1777	128	1	274	31	NA	447	32	NA	228	16	NA
		180-day	1777	233	2	274	77	NA	447	56	NA	228	45	NA
		1-year	1777	289	3	274	117	NA	447	67	NA	228	73	NA
		1.5-year	1777	289	3	274	117	NA	447	67	NA	228	73	NA
	41-64	**30-day**	6972	969	24	622	214	4	1547	241	10	592	190	4
		180-day	6972	1970	51	622	469	6	1547	501	21	592	405	6
		1-year	6972	2383	55	622	603	8	1547	578	23	592	524	8
		1.5-year	6972	2385	63	622	604	13	1547	578	28	592	525	12
	65-74	**30-day**	2713	739	53	423	216	4	1028	285	19	392	186	3
		180-day	2713	1515	88	423	498	10	1028	568	32	392	422	7
		1-year	2713	1868	102	423	658	14	1028	718	37	392	561	11
		1.5-year	2713	1871	122	423	659	24	1028	719	43	392	562	21
	≥75	**30-day**	3159	1101	269	558	407	41	1780	634	150	525	377	38
		180-day	3159	2287	447	558	932	69	1780	1303	262	525	860	62
		1-year	3159	2838	507	558	1273	88	1780	1595	292	525	1175	78
		1.5-year	3159	2839	560	558	1276	128	1780	1596	322	525	1178	117
F	**19-40**	**30-day**	1398	140	NA	264	69	NA	584	60	NA	206	54	NA
		180-day	1398	373	NA	264	216	NA	584	151	NA	206	173	NA
		1-year	1398	437	1	264	262	NA	584	178	NA	206	207	NA
		1.5-year	1398	438	1	264	262	1	584	178	NA	206	207	1
	41-64	**30-day**	4884	431	6	582	118	NA	1266	139	2	538	92	NA
		180-day	4884	1038	23	582	286	NA	1266	309	7	538	237	NA
		1-year	4884	1321	24	582	419	1	1266	395	8	538	351	1
		1.5-year	4884	1324	28	582	422	7	1266	395	11	538	354	4
	65-74	**30-day**	2494	489	27	462	152	5	997	211	10	407	112	5
		180-day	2494	1060	52	462	393	9	997	435	23	407	309	8
		1-year	2494	1306	59	462	531	12	997	534	25	407	434	10
		1.5-year	2494	1306	71	462	533	15	997	534	32	407	436	12
	≥75	**30-day**	4307	1323	363	785	451	59	2363	711	215	750	420	58
		180-day	4307	2710	653	785	1085	104	2363	1445	373	750	1006	103
		1-year	4307	3479	765	785	1472	128	2363	1850	428	750	1368	124
		1.5-year	4307	3480	859	785	1474	160	2363	1850	480	750	1370	152

Table A.88. Competing risk regression results examining time to all-cause re-hospitalization after hospitalization for COVID-19 among patients aged 19–40. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 19-40			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	1.86 (1.60-2.16)	<0.001	1.80 (1.54-2.10)	<0.001
Age Group: 31-35 (ref: 36-40)	1.15 (0.95-1.39)	0.150	1.18 (0.97-1.43)	0.091
Age Group: 26-30 (ref: 36-40)	1.43 (1.18-1.74)	<0.001	1.43 (1.17-1.75)	<0.001
Age Group: 19-25 (ref: 36-40)	1.16 (0.93-1.45)	0.180	1.22 (0.97-1.52)	0.085
Medicament Groups: 2-5 (ref: 0-1)	1.25 (1.07-1.45)	0.005	0.95 (0.76-1.18)	0.640
Medicament Groups: ≥6 (ref: 0-1)	2.12 (1.60-2.81)	<0.001	0.75 (0.44-1.30)	0.310
Wave: 3 (ref: Wave 1 & 2)	0.79 (0.67-0.93)	0.004	0.80 (0.68-0.94)	0.008
Wave: 4 (ref: Wave 1 & 2)	0.36 (0.30-0.44)	<0.001	0.36 (0.30-0.44)	<0.001
Length of hospital stay (days)	1.02 (1.01-1.02)	<0.001	1.01 (1.01-1.02)	<0.001
MG 1: Anticoagulants	1.36 (1.06-1.75)	0.016	1.50 (1.16-1.94)	0.002
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	0.89 (0.75-1.06)	0.180		
MG 3: Insulins and other Antidiabetics	1.61 (1.10-2.35)	0.013	1.77 (1.22-2.57)	0.003
MG 4: "heart" drugs	1.19 (0.76-1.85)	0.450		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	1.31 (0.98-1.77)	0.071	1.14 (0.82-1.58)	0.430
MG 6: Beta Blockers	1.87 (1.29-2.71)	0.001	1.60 (1.09-2.36)	0.016
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.69 (0.40-1.17)	0.170		
MG 8: Immunosuppressants and Immunomodulators	1.06 (0.70-1.63)	0.770		
MG 9: Systemic Steroids	1.32 (1.01-1.72)	0.041	1.31 (0.99-1.74)	0.056
MG 10: Chemotherapy	1.70 (0.78-3.73)	0.190		
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.32 (1.01-1.72)	0.042	1.44 (1.10-1.88)	0.009
MG 12: Antacids incl. Antihistamines	1.29 (0.99-1.69)	0.064	1.36 (1.03-1.79)	0.029
MG 13: Vitamin D and other Vitamin supplements	1.11 (0.84-1.46)	0.460		
MG 14: Caplacizumab	10.07 (8.12-12.49)	<0.001		
MG 15: Systemic Hemostatics	26.51 (19.53-35.98)	<0.001		
MG 16: Hereditary angioedema Therapeutics	0.00 (0.00-0.01)	<0.001		
MG 17: Peripheral Vasodilators	0.91 (0.12-6.82)	0.920		
MG 19: Immunoglobulins	0.00 (0.00-0.00)	<0.001		
MG 20: Interferons and CSF	2.07 (1.32-3.23)	0.002	2.37 (1.50-3.74)	<0.001
MG 21: NSAR and other anti-inflammatory drugs	0.70 (0.57-0.86)	<0.001	0.80 (0.65-0.99)	0.036
MG 22: Gout medications	1.52 (0.75-3.08)	0.250		
MG 23: Antiepileptics	1.56 (1.15-2.11)	0.004	1.56 (1.15-2.12)	0.004
MG 24: Antipsychotics	1.39 (1.12-1.73)	0.003	1.37 (1.09-1.73)	0.007
MG 26: inhaled anti-obstructive drugs	0.88 (0.70-1.10)	0.250		
MG 27: inhaled steroids	0.78 (0.55-1.12)	0.180		
MG 28: other COPD drugs	1.66 (0.92-2.98)	0.093	1.90 (1.01-3.58)	0.046
MG 30: Systemic Antihistamines	0.68 (0.47-0.99)	0.042	0.70 (0.47-1.02)	0.062

Table A.89. Competing risk regression results examining time to all-cause re-hospitalization after hospitalization for Influenza among patients aged 19-40. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 19-40			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	1.98 (1.59-2.46)	<0.001	2.09 (1.67-2.61)	<0.001
Age Group: 31-35 (ref: 36-40)	1.52 (1.13-2.03)	0.006	1.60 (1.18-2.17)	0.002
Age Group: 26-30 (ref: 36-40)	1.56 (1.15-2.12)	0.004	1.74 (1.27-2.39)	<0.001
Age Group: 19-25 (ref: 36-40)	1.13 (0.83-1.55)	0.430	1.19 (0.86-1.64)	0.300
Medicament Groups: 2-5 (ref: 0-1)	1.03 (0.83-1.28)	0.800	0.81 (0.63-1.05)	0.110
Medicament Groups: ≥6 (ref: 0-1)	1.75 (1.23-2.50)	0.002	0.69 (0.36-1.32)	0.260
Wave: 2016/2017 (ref: Wave 2015/2016)	1.26 (0.72-2.20)	0.430	1.30 (0.75-2.26)	0.350
Wave: 2017/2018 (ref: Wave 2015/2016)	0.97 (0.62-1.53)	0.900	1.03 (0.66-1.62)	0.880
Wave: 2018/2019 (ref: Wave 2015/2016)	1.01 (0.64-1.57)	0.980	1.03 (0.66-1.61)	0.890
Wave: 2019/2020 (ref: Wave 2015/2016)	1.02 (0.66-1.60)	0.910	1.01 (0.65-1.57)	0.980
Wave: 2020/2021 (ref: Wave 2015/2016)	NA (NA-NA)		NA (NA-NA)	
Length of hospital stay (days)	1.01 (0.99-1.03)	0.170	1.00 (0.98-1.02)	0.790
MG 1: Anticoagulants	1.79 (1.23-2.62)	0.003	1.91 (1.29-2.83)	0.001
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.09 (0.85-1.38)	0.500		
MG 3: Insulins and other Antidiabetics	1.08 (0.66-1.79)	0.750		
MG 4: "heart" drugs	0.79 (0.36-1.74)	0.560		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	1.30 (0.84-2.01)	0.240		
MG 6: Beta Blockers	1.64 (0.94-2.85)	0.080	1.21 (0.65-2.25)	0.540
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.54 (0.26-1.11)	0.094	0.56 (0.28-1.13)	0.100
MG 8: Immunosuppressants and Immunomodulators	0.88 (0.54-1.44)	0.610		
MG 9: Systemic Steroids	1.16 (0.79-1.71)	0.440		
MG 10: Chemotherapy	1.82 (0.88-3.74)	0.110		
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.97 (1.41-2.76)	<0.001	2.02 (1.42-2.87)	<0.001
MG 12: Antacids incl. Antihistamines	1.83 (1.28-2.62)	<0.001	1.70 (1.16-2.48)	0.006
MG 13: Vitamin D and other Vitamin supplements	1.16 (0.80-1.70)	0.430		
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	NA (NA-NA)			
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	NA (NA-NA)			
MG 19: Immunoglobulins	3.81 (2.68-5.41)	<0.001	4.73 (2.93-7.63)	<0.001
MG 20: Interferons and CSF	1.56 (0.68-3.55)	0.290		
MG 21: NSAR and other anti-inflammatory drugs	0.84 (0.64-1.10)	0.200		
MG 22: Gout medications	4.03 (2.34-6.96)	<0.001	3.76 (1.62-8.71)	0.002
MG 23: Antiepileptics	1.56 (1.05-2.32)	0.027	1.42 (0.93-2.18)	0.110
MG 24: Antipsychotics	1.35 (0.99-1.85)	0.057	1.22 (0.87-1.72)	0.240
MG 26: inhaled anti-obstructive drugs	0.80 (0.58-1.11)	0.180		
MG 27: inhaled steroids	1.11 (0.59-2.07)	0.750		
MG 28: other COPD drugs	0.62 (0.26-1.50)	0.290		
MG 30: Systemic Antihistamines	0.48 (0.29-0.80)	0.005	0.62 (0.38-1.01)	0.055

Table A.90. Competing risk regression results comparing time to all-cause re-hospitalization between propensity score matched COVID-19 and Influenza patients aged 19–40. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 19-40			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Group: Influenza (ref: COVID-19)	2.35 (1.97-2.80)	<0.001	2.35 (1.96-2.81)	<0.001
Sex: F (ref: M)	2.33 (1.92-2.83)	<0.001	2.35 (1.92-2.87)	<0.001
Age Group: 31-35 (ref: 36-40)	1.50 (1.18-1.92)	0.001	1.54 (1.19-1.99)	<0.001
Age Group: 26-30 (ref: 36-40)	1.63 (1.27-2.09)	<0.001	1.74 (1.34-2.26)	<0.001
Age Group: 19-25 (ref: 36-40)	1.14 (0.88-1.49)	0.320	1.20 (0.91-1.59)	0.200
Medicament Groups: 2-5 (ref: 0-1)	1.08 (0.89-1.31)	0.450	1.09 (0.82-1.45)	0.570
Medicament Groups: ≥6 (ref: 0-1)	2.02 (1.37-2.97)	<0.001	1.04 (0.45-2.40)	0.930
Length of hospital stay (days)	1.02 (1.01-1.03)	<0.001	1.02 (1.01-1.02)	<0.001
MG 1: Anticoagulants	1.75 (1.23-2.47)	0.002	1.56 (1.06-2.31)	0.024
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	0.90 (0.74-1.10)	0.310		
MG 3: Insulins and other Antidiabetics	1.67 (0.83-3.33)	0.150		
MG 4: "heart" drugs	0.72 (0.28-1.80)	0.480		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	1.51 (0.96-2.36)	0.072	1.33 (0.78-2.28)	0.290
MG 6: Beta Blockers	1.78 (1.01-3.14)	0.046	1.09 (0.51-2.33)	0.830
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.57 (0.23-1.38)	0.210		
MG 8: Immunosuppressants and Immunomodulators	1.07 (0.53-2.16)	0.850		
MG 9: Systemic Steroids	1.15 (0.77-1.74)	0.490		
MG 10: Chemotherapy	3.06 (1.26-7.40)	0.013	1.85 (0.58-5.94)	0.300
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.79 (1.29-2.47)	<0.001	1.62 (1.14-2.30)	0.007
MG 12: Antacids incl. Antihistamines	1.61 (1.10-2.37)	0.015	1.60 (1.08-2.37)	0.018
MG 13: Vitamin D and other Vitamin supplements	0.97 (0.61-1.53)	0.890		
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	24.09 (17.22-33.72)	<0.001		
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	NA (NA-NA)			
MG 19: Immunoglobulins	NA (NA-NA)			
MG 20: Interferons and CSF	1.29 (0.57-2.91)	0.540		
MG 21: NSAR and other anti-inflammatory drugs	0.62 (0.46-0.82)	0.001	0.64 (0.47-0.87)	0.004
MG 22: Gout medications	5.48 (3.40-8.83)	<0.001	1.48 (0.29-7.50)	0.640
MG 23: Antiepileptics	1.55 (0.95-2.53)	0.076	1.20 (0.71-2.02)	0.500
MG 24: Antipsychotics	1.43 (1.05-1.96)	0.024	1.45 (1.05-2.01)	0.024
MG 26: inhaled anti-obstructive drugs	0.67 (0.48-0.94)	0.021	0.71 (0.51-1.01)	0.057
MG 27: inhaled steroids	0.80 (0.41-1.57)	0.520		
MG 28: other COPD drugs	1.46 (0.46-4.61)	0.520		
MG 30: Systemic Antihistamines	0.55 (0.30-1.02)	0.059	0.68 (0.36-1.27)	0.230

Table A.91. Competing risk regression results examining time to all-cause re-hospitalization after hospitalization for COVID-19 among patients aged 41-64. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 41-64			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	0.83 (0.77-0.88)	<0.001	0.81 (0.75-0.86)	<0.001
Age Group: 56-60 (ref: 61-64)	0.88 (0.80-0.95)	0.003	0.87 (0.80-0.95)	0.002
Age Group: 51-55 (ref: 61-64)	0.83 (0.75-0.91)	<0.001	0.84 (0.76-0.92)	<0.001
Age Group: 46-50 (ref: 61-64)	0.75 (0.67-0.83)	<0.001	0.75 (0.68-0.84)	<0.001
Age Group: 41-45 (ref: 61-64)	0.66 (0.58-0.76)	<0.001	0.67 (0.59-0.77)	<0.001
Medicament Groups: 2-5 (ref: 0-1)	1.47 (1.35-1.59)	<0.001	1.24 (1.13-1.37)	<0.001
Medicament Groups: 6-10 (ref: 0-1)	2.13 (1.93-2.34)	<0.001	1.25 (1.06-1.46)	0.006
Medicament Groups: ≥11 (ref: 0-1)	3.11 (2.54-3.81)	<0.001	1.05 (0.77-1.43)	0.750
Wave: 3 (ref: Wave 1 & 2)	0.70 (0.65-0.75)	<0.001	0.71 (0.66-0.76)	<0.001
Wave: 4 (ref: Wave 1 & 2)	0.29 (0.26-0.32)	<0.001	0.29 (0.26-0.32)	<0.001
Length of hospital stay (days)	1.01 (1.01-1.02)	<0.001	1.01 (1.01-1.02)	<0.001
MG 1: Anticoagulants	1.21 (1.11-1.31)	<0.001	1.22 (1.12-1.32)	<0.001
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.04 (0.97-1.12)	0.260		
MG 3: Insulins and other Antidiabetics	0.97 (0.88-1.07)	0.530		
MG 4: "heart" drugs	1.22 (1.07-1.40)	0.004	1.26 (1.10-1.45)	<0.001
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	0.97 (0.90-1.05)	0.430		
MG 6: Beta Blockers	1.14 (1.04-1.26)	0.006	1.21 (1.10-1.34)	<0.001
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.90 (0.83-0.98)	0.016	0.98 (0.90-1.07)	0.710
MG 8: Immunosuppressants and Immunomodulators	1.07 (0.92-1.25)	0.360		
MG 9: Systemic Steroids	1.26 (1.15-1.39)	<0.001	1.28 (1.17-1.41)	<0.001
MG 10: Chemotherapy	1.73 (1.40-2.14)	<0.001	1.57 (1.27-1.95)	<0.001
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.34 (1.16-1.55)	<0.001	1.30 (1.12-1.50)	<0.001
MG 12: Antacids incl. Antihistamines	0.96 (0.87-1.05)	0.350		
MG 13: Vitamin D and other Vitamin supplements	1.07 (0.97-1.19)	0.180		
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	1.97 (0.30-12.79)	0.480		
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	1.20 (0.81-1.76)	0.360		
MG 19: Immunoglobulins	0.93 (0.27-3.27)	0.910		
MG 20: Interferons and CSF	2.08 (1.72-2.51)	<0.001	1.93 (1.60-2.33)	<0.001
MG 21: NSAR and other anti-inflammatory drugs	0.92 (0.85-0.99)	0.025	1.00 (0.92-1.07)	0.900
MG 22: Gout medications	0.92 (0.76-1.12)	0.400		
MG 23: Antiepileptics	1.47 (1.32-1.63)	<0.001	1.43 (1.28-1.59)	<0.001
MG 24: Antipsychotics	1.24 (1.14-1.34)	<0.001	1.21 (1.12-1.32)	<0.001
MG 26: inhaled anti-obstructive drugs	0.94 (0.87-1.03)	0.180		
MG 27: inhaled steroids	0.76 (0.65-0.88)	<0.001	0.81 (0.70-0.95)	0.007
MG 28: other COPD drugs	0.90 (0.72-1.12)	0.340		
MG 30: Systemic Antihistamines	0.90 (0.78-1.03)	0.120		

Table A.92. Competing risk regression results examining time to all-cause re-hospitalization after hospitalization for Influenza among patients aged 41-64. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 41-64			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	0.79 (0.70-0.89)	<0.001	0.78 (0.69-0.88)	<0.001
Age Group: 56-60 (ref: 61-64)	0.98 (0.83-1.15)	0.760	0.92 (0.78-1.08)	0.310
Age Group: 51-55 (ref: 61-64)	0.85 (0.70-1.02)	0.079	0.80 (0.66-0.96)	0.016
Age Group: 46-50 (ref: 61-64)	0.94 (0.77-1.15)	0.550	0.87 (0.71-1.06)	0.170
Age Group: 41-45 (ref: 61-64)	0.81 (0.63-1.03)	0.088	0.73 (0.57-0.94)	0.013
Medicament Groups: 2-5 (ref: 0-1)	1.85 (1.53-2.23)	<0.001	1.74 (1.42-2.12)	<0.001
Medicament Groups: 6-10 (ref: 0-1)	2.90 (2.37-3.54)	<0.001	2.39 (1.85-3.09)	<0.001
Medicament Groups: ≥11 (ref: 0-1)	3.53 (2.68-4.63)	<0.001	2.23 (1.53-3.26)	<0.001
Wave: 2016/2017 (ref: Wave 2015/2016)	0.89 (0.61-1.31)	0.570	0.89 (0.60-1.30)	0.550
Wave: 2017/2018 (ref: Wave 2015/2016)	0.89 (0.63-1.25)	0.490	0.89 (0.63-1.25)	0.510
Wave: 2018/2019 (ref: Wave 2015/2016)	0.82 (0.58-1.17)	0.280	0.81 (0.57-1.14)	0.230
Wave: 2019/2020 (ref: Wave 2015/2016)	0.66 (0.47-0.94)	0.023	0.64 (0.45-0.91)	0.013
Wave: 2020/2021 (ref: Wave 2015/2016)	0.49 (0.06-4.08)	0.510	0.46 (0.07-3.07)	0.420
Length of hospital stay (days)	1.01 (1.01-1.02)	<0.001	1.01 (1.00-1.02)	<0.001
MG 1: Anticoagulants	1.12 (0.95-1.32)	0.170		
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.09 (0.94-1.25)	0.250		
MG 3: Insulins and other Antidiabetics	0.96 (0.81-1.14)	0.640		
MG 4: "heart" drugs	1.13 (0.89-1.43)	0.310		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	0.95 (0.82-1.11)	0.520		
MG 6: Beta Blockers	0.94 (0.80-1.10)	0.450		
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.84 (0.72-0.97)	0.019	0.95 (0.82-1.11)	0.540
MG 8: Immunosuppressants and Immunomodulators	1.26 (1.02-1.55)	0.035	1.03 (0.82-1.29)	0.790
MG 9: Systemic Steroids	1.47 (1.26-1.71)	<0.001	1.45 (1.24-1.70)	<0.001
MG 10: Chemotherapy	1.67 (1.17-2.37)	0.004	1.52 (1.06-2.17)	0.022
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.35 (1.11-1.66)	0.003	1.28 (1.04-1.57)	0.020
MG 12: Antacids incl. Antihistamines	0.96 (0.81-1.14)	0.680		
MG 13: Vitamin D and other Vitamin supplements	0.94 (0.79-1.11)	0.460		
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	1.34 (0.16-11.27)	0.790		
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	1.35 (0.82-2.23)	0.240		
MG 19: Immunoglobulins	NA (NA-NA)			
MG 20: Interferons and CSF	1.96 (1.44-2.67)	<0.001	1.67 (1.22-2.28)	0.001
MG 21: NSAR and other anti-inflammatory drugs	0.82 (0.72-0.94)	0.004	0.85 (0.74-0.97)	0.017
MG 22: Gout medications	1.09 (0.81-1.47)	0.550		
MG 23: Antiepileptics	1.26 (1.06-1.49)	0.008	1.30 (1.10-1.55)	0.002
MG 24: Antipsychotics	1.04 (0.90-1.20)	0.600		
MG 26: inhaled anti-obstructive drugs	0.93 (0.81-1.07)	0.320		
MG 27: inhaled steroids	0.83 (0.65-1.06)	0.140		
MG 28: other COPD drugs	0.96 (0.68-1.36)	0.820		
MG 30: Systemic Antihistamines	1.09 (0.88-1.36)	0.420		

Table A.93. Competing risk regression results comparing time to all-cause re-hospitalization between propensity score matched COVID-19 and Influenza patients aged 41-64. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 41-64			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Group: Influenza (ref: COVID-19)	1.84 (1.67-2.02)	<0.001	1.83 (1.66-2.01)	<0.001
Sex: F (ref: M)	0.82 (0.75-0.90)	<0.001	0.81 (0.74-0.89)	<0.001
Age Group: 56-60 (ref: 61-64)	0.96 (0.85-1.08)	0.470	0.94 (0.84-1.07)	0.350
Age Group: 51-55 (ref: 61-64)	0.88 (0.77-1.01)	0.072	0.88 (0.77-1.01)	0.065
Age Group: 46-50 (ref: 61-64)	0.84 (0.72-0.98)	0.025	0.80 (0.69-0.93)	0.004
Age Group: 41-45 (ref: 61-64)	0.71 (0.59-0.86)	<0.001	0.69 (0.57-0.84)	<0.001
Medicament Groups: 2-5 (ref: 0-1)	1.59 (1.40-1.80)	<0.001	1.40 (1.21-1.62)	<0.001
Medicament Groups: 6-10 (ref: 0-1)	2.45 (2.14-2.81)	<0.001	1.81 (1.45-2.26)	<0.001
Medicament Groups: ≥11 (ref: 0-1)	3.53 (2.68-4.64)	<0.001	2.01 (1.35-3.01)	<0.001
Length of hospital stay (days)	1.01 (1.01-1.02)	<0.001	1.01 (1.01-1.02)	<0.001
MG 1: Anticoagulants	1.16 (1.03-1.31)	0.018	1.18 (1.05-1.34)	0.007
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.05 (0.95-1.16)	0.340		
MG 3: Insulins and other Antidiabetics	0.98 (0.86-1.12)	0.780		
MG 4: "heart" drugs	1.12 (0.93-1.34)	0.240		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	0.98 (0.88-1.09)	0.670		
MG 6: Beta Blockers	0.98 (0.86-1.11)	0.740		
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.82 (0.73-0.92)	<0.001	0.90 (0.80-1.02)	0.099
MG 8: Immunosuppressants and Immunomodulators	0.97 (0.80-1.19)	0.780		
MG 9: Systemic Steroids	1.41 (1.25-1.59)	<0.001	1.43 (1.26-1.62)	<0.001
MG 10: Chemotherapy	1.79 (1.37-2.34)	<0.001	1.65 (1.27-2.14)	<0.001
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.30 (1.10-1.55)	0.003	1.24 (1.04-1.47)	0.014
MG 12: Antacids incl. Antihistamines	1.00 (0.89-1.14)	0.950		
MG 13: Vitamin D and other Vitamin supplements	1.05 (0.92-1.20)	0.470		
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	5.12 (4.45-5.90)	<0.001	3.99 (2.92-5.46)	<0.001
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	1.53 (0.95-2.47)	0.081	1.42 (0.89-2.26)	0.140
MG 19: Immunoglobulins	0.00 (0.00-0.00)	<0.001		
MG 20: Interferons and CSF	2.06 (1.61-2.66)	<0.001	1.87 (1.45-2.40)	<0.001
MG 21: NSAR and other anti-inflammatory drugs	0.90 (0.82-1.00)	0.049	0.94 (0.84-1.04)	0.210
MG 22: Gout medications	1.00 (0.78-1.30)	0.970		
MG 23: Antiepileptics	1.48 (1.29-1.69)	<0.001	1.46 (1.27-1.68)	<0.001
MG 24: Antipsychotics	1.15 (1.03-1.28)	0.010	1.11 (1.00-1.25)	0.060
MG 26: inhaled anti-obstructive drugs	0.90 (0.81-1.01)	0.066	0.98 (0.88-1.10)	0.790
MG 27: inhaled steroids	0.68 (0.54-0.85)	<0.001	0.70 (0.56-0.88)	0.002
MG 28: other COPD drugs	1.08 (0.82-1.44)	0.580		
MG 30: Systemic Antihistamines	1.03 (0.87-1.23)	0.720		

Table A.94. Competing risk regression results examining time to all-cause re-hospitalization after hospitalization for COVID-19 among patients aged 65-74. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 65-74			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	0.80 (0.74-0.85)	<0.001	0.79 (0.73-0.85)	<0.001
Age Group: 65-70 (ref: 71-74)	0.90 (0.84-0.97)	0.004	0.92 (0.85-0.98)	0.016
Medicament Groups: 2-5 (ref: 0-1)	1.21 (1.08-1.35)	<0.001	1.10 (0.97-1.24)	0.150
Medicament Groups: 6-10 (ref: 0-1)	1.71 (1.52-1.92)	<0.001	1.28 (1.08-1.51)	0.004
Medicament Groups: ≥11 (ref: 0-1)	2.17 (1.84-2.56)	<0.001	1.19 (0.92-1.55)	0.180
Wave: 3 (ref: Wave 1 & 2)	0.86 (0.79-0.92)	<0.001	0.86 (0.79-0.92)	<0.001
Wave: 4 (ref: Wave 1 & 2)	0.34 (0.30-0.38)	<0.001	0.33 (0.29-0.37)	<0.001
Length of hospital stay (days)	1.01 (1.01-1.01)	<0.001	1.01 (1.01-1.01)	<0.001
MG 1: Anticoagulants	1.19 (1.09-1.29)	<0.001	1.21 (1.12-1.31)	<0.001
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.06 (0.98-1.14)	0.140		
MG 3: Insulins and other Antidiabetics	0.91 (0.84-0.99)	0.027	0.99 (0.91-1.08)	0.810
MG 4: "heart" drugs	1.13 (1.01-1.26)	0.034	1.15 (1.03-1.29)	0.015
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	0.98 (0.90-1.06)	0.570		
MG 6: Beta Blockers	1.04 (0.96-1.13)	0.360		
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.91 (0.84-0.98)	0.018	0.96 (0.88-1.03)	0.260
MG 8: Immunosuppressants and Immunomodulators	1.06 (0.91-1.23)	0.470		
MG 9: Systemic Steroids	1.27 (1.16-1.39)	<0.001	1.29 (1.18-1.42)	<0.001
MG 10: Chemotherapy	1.34 (1.14-1.59)	<0.001	1.33 (1.13-1.56)	<0.001
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.14 (1.00-1.29)	0.044	1.14 (1.00-1.29)	0.049
MG 12: Antacids incl. Antihistamines	0.93 (0.85-1.02)	0.130		
MG 13: Vitamin D and other Vitamin supplements	0.94 (0.86-1.04)	0.220		
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	1.67 (0.40-7.03)	0.480		
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	0.86 (0.60-1.23)	0.410		
MG 19: Immunoglobulins	2.13 (1.11-4.11)	0.024	2.16 (1.15-4.06)	0.016
MG 20: Interferons and CSF	1.95 (1.61-2.37)	<0.001	1.81 (1.48-2.20)	<0.001
MG 21: NSAR and other anti-inflammatory drugs	0.86 (0.80-0.93)	<0.001	0.90 (0.83-0.97)	0.006
MG 22: Gout medications	1.00 (0.87-1.15)	0.990		
MG 23: Antiepileptics	1.24 (1.12-1.38)	<0.001	1.24 (1.12-1.37)	<0.001
MG 24: Antipsychotics	1.13 (1.04-1.22)	0.002	1.13 (1.04-1.22)	0.003
MG 26: inhaled anti-obstructive drugs	1.04 (0.95-1.12)	0.400		
MG 27: inhaled steroids	0.96 (0.82-1.11)	0.560		
MG 28: other COPD drugs	0.88 (0.68-1.14)	0.340		
MG 30: Systemic Antihistamines	0.92 (0.79-1.06)	0.250		

Table A.95. Competing risk regression results examining time to all-cause re-hospitalization after hospitalization for Influenza among patients aged 65-74. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 65-74			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	0.81 (0.73-0.91)	<0.001	0.78 (0.69-0.88)	<0.001
Age Group: 65-70 (ref: 71-74)	1.00 (0.89-1.12)	0.960	0.99 (0.88-1.11)	0.800
Medicament Groups: 2-5 (ref: 0-1)	1.79 (1.43-2.24)	<0.001	1.66 (1.31-2.09)	<0.001
Medicament Groups: 6-10 (ref: 0-1)	2.66 (2.12-3.32)	<0.001	2.15 (1.67-2.78)	<0.001
Medicament Groups: ≥11 (ref: 0-1)	3.78 (2.88-4.96)	<0.001	2.54 (1.82-3.55)	<0.001
Wave: 2016/2017 (ref: Wave 2015/2016)	0.60 (0.44-0.81)	0.001	0.56 (0.41-0.77)	<0.001
Wave: 2017/2018 (ref: Wave 2015/2016)	0.68 (0.51-0.91)	0.010	0.65 (0.49-0.88)	0.004
Wave: 2018/2019 (ref: Wave 2015/2016)	0.57 (0.43-0.78)	<0.001	0.55 (0.41-0.74)	<0.001
Wave: 2019/2020 (ref: Wave 2015/2016)	0.49 (0.36-0.65)	<0.001	0.46 (0.34-0.62)	<0.001
Wave: 2020/2021 (ref: Wave 2015/2016)	0.29 (0.10-0.88)	0.028	0.29 (0.10-0.87)	0.028
Length of hospital stay (days)	1.02 (1.02-1.03)	<0.001	1.02 (1.02-1.03)	<0.001
MG 1: Anticoagulants	1.10 (0.96-1.26)	0.170		
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.25 (1.10-1.42)	<0.001	1.22 (1.08-1.39)	0.002
MG 3: Insulins and other Antidiabetics	0.95 (0.83-1.09)	0.470		
MG 4: "heart" drugs	1.07 (0.91-1.26)	0.430		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	1.01 (0.87-1.16)	0.910		
MG 6: Beta Blockers	1.06 (0.93-1.21)	0.350		
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.86 (0.76-0.97)	0.017	0.93 (0.82-1.06)	0.250
MG 8: Immunosuppressants and Immunomodulators	0.83 (0.62-1.10)	0.190		
MG 9: Systemic Steroids	1.36 (1.18-1.56)	<0.001	1.30 (1.12-1.49)	<0.001
MG 10: Chemotherapy	1.41 (1.06-1.88)	0.018	1.32 (0.98-1.77)	0.064
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.40 (1.17-1.69)	<0.001	1.34 (1.11-1.62)	0.002
MG 12: Antacids incl. Antihistamines	1.03 (0.89-1.19)	0.670		
MG 13: Vitamin D and other Vitamin supplements	0.91 (0.78-1.06)	0.210		
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	NA (NA-NA)			
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	0.80 (0.45-1.43)	0.450		
MG 19: Immunoglobulins	1.13 (0.09-14.93)	0.930		
MG 20: Interferons and CSF	1.52 (1.10-2.10)	0.011	1.30 (0.93-1.81)	0.120
MG 21: NSAR and other anti-inflammatory drugs	0.95 (0.84-1.08)	0.430		
MG 22: Gout medications	1.02 (0.83-1.25)	0.870		
MG 23: Antiepileptics	0.98 (0.83-1.15)	0.780		
MG 24: Antipsychotics	1.07 (0.94-1.22)	0.280		
MG 26: inhaled anti-obstructive drugs	1.04 (0.92-1.19)	0.520		
MG 27: inhaled steroids	0.89 (0.71-1.12)	0.330		
MG 28: other COPD drugs	1.07 (0.78-1.45)	0.690		
MG 30: Systemic Antihistamines	0.89 (0.72-1.08)	0.240		

Table A.96. Competing risk regression results comparing time to all-cause re-hospitalization between propensity score matched COVID-19 and Influenza patients aged 65-74. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: 65-74			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Group: Influenza (ref: COVID-19)	1.51 (1.39-1.65)	<0.001	1.51 (1.39-1.65)	<0.001
Sex: F (ref: M)	0.82 (0.75-0.89)	<0.001	0.81 (0.74-0.88)	<0.001
Age Group: 65-70 (ref: 71-74)	0.86 (0.79-0.94)	<0.001	0.86 (0.79-0.94)	<0.001
Medicament Groups: 2-5 (ref: 0-1)	1.50 (1.31-1.72)	<0.001	1.31 (1.12-1.53)	<0.001
Medicament Groups: 6-10 (ref: 0-1)	2.11 (1.84-2.43)	<0.001	1.55 (1.26-1.90)	<0.001
Medicament Groups: ≥11 (ref: 0-1)	2.71 (2.21-3.33)	<0.001	1.66 (1.22-2.26)	0.001
Length of hospital stay (days)	1.01 (1.01-1.01)	<0.001	1.01 (1.01-1.01)	<0.001
MG 1: Anticoagulants	1.16 (1.05-1.29)	0.003	1.19 (1.08-1.32)	<0.001
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.13 (1.04-1.24)	0.005	1.14 (1.04-1.25)	0.004
MG 3: Insulins and other Antidiabetics	0.95 (0.86-1.05)	0.350		
MG 4: "heart" drugs	1.11 (0.98-1.27)	0.110		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	0.95 (0.86-1.05)	0.330		
MG 6: Beta Blockers	1.04 (0.94-1.14)	0.440		
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.93 (0.85-1.01)	0.100	0.99 (0.90-1.09)	0.770
MG 8: Immunosuppressants and Immunomodulators	0.94 (0.78-1.15)	0.570		
MG 9: Systemic Steroids	1.22 (1.09-1.35)	<0.001	1.22 (1.09-1.36)	<0.001
MG 10: Chemotherapy	1.28 (1.04-1.58)	0.018	1.22 (0.98-1.52)	0.069
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.24 (1.06-1.44)	0.006	1.24 (1.06-1.44)	0.006
MG 12: Antacids incl. Antihistamines	0.95 (0.85-1.05)	0.320		
MG 13: Vitamin D and other Vitamin supplements	0.89 (0.79-1.00)	0.052	0.89 (0.79-1.01)	0.065
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	2.39 (2.16-2.65)	<0.001	2.87 (2.38-3.45)	<0.001
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	0.78 (0.48-1.25)	0.300		
MG 19: Immunoglobulins	1.53 (0.26-8.88)	0.640		
MG 20: Interferons and CSF	1.76 (1.37-2.27)	<0.001	1.59 (1.22-2.08)	<0.001
MG 21: NSAR and other anti-inflammatory drugs	0.92 (0.84-1.01)	0.074	0.95 (0.86-1.04)	0.270
MG 22: Gout medications	1.02 (0.87-1.20)	0.770		
MG 23: Antiepileptics	1.07 (0.95-1.21)	0.270		
MG 24: Antipsychotics	1.15 (1.05-1.26)	0.002	1.20 (1.09-1.31)	<0.001
MG 26: inhaled anti-obstructive drugs	1.00 (0.91-1.10)	0.990		
MG 27: inhaled steroids	0.87 (0.74-1.04)	0.130		
MG 28: other COPD drugs	0.89 (0.61-1.30)	0.550		
MG 30: Systemic Antihistamines	1.03 (0.88-1.22)	0.680		

Table A.97. Competing risk regression results examining time to all-cause re-hospitalization after hospitalization for COVID-19 among patients aged 75 and older. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: ≥75			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	0.87 (0.83-0.91)	<0.001	0.87 (0.83-0.91)	<0.001
Age Group: 86-90 (ref: >90)	1.18 (1.06-1.30)	0.002	1.20 (1.08-1.32)	<0.001
Age Group: 81-85 (ref: >90)	1.18 (1.07-1.30)	<0.001	1.21 (1.10-1.33)	<0.001
Age Group: 75-80 (ref: >90)	1.17 (1.07-1.29)	<0.001	1.22 (1.11-1.34)	<0.001
Medicament Groups: 2-5 (ref: 0-1)	1.25 (1.14-1.37)	<0.001	1.07 (0.96-1.18)	0.210
Medicament Groups: 6-10 (ref: 0-1)	1.70 (1.55-1.87)	<0.001	1.19 (1.05-1.35)	0.005
Medicament Groups: ≥11 (ref: 0-1)	2.34 (2.05-2.66)	<0.001	1.28 (1.06-1.55)	0.010
Wave: 3 (ref: Wave 1 & 2)	0.93 (0.88-0.99)	0.015	0.94 (0.89-0.99)	0.020
Wave: 4 (ref: Wave 1 & 2)	0.35 (0.32-0.39)	<0.001	0.35 (0.32-0.39)	<0.001
Length of hospital stay (days)	1.01 (1.01-1.01)	<0.001	1.01 (1.01-1.01)	<0.001
MG 1: Anticoagulants	1.15 (1.08-1.21)	<0.001	1.17 (1.11-1.24)	<0.001
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.06 (1.00-1.12)	0.032	1.07 (1.02-1.13)	0.009
MG 3: Insulins and other Antidiabetics	1.02 (0.96-1.09)	0.440		
MG 4: "heart" drugs	1.14 (1.06-1.21)	<0.001	1.15 (1.08-1.23)	<0.001
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	1.05 (0.98-1.11)	0.150		
MG 6: Beta Blockers	0.99 (0.93-1.04)	0.650		
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.96 (0.91-1.01)	0.120		
MG 8: Immunosuppressants and Immunomodulators	1.02 (0.87-1.19)	0.820		
MG 9: Systemic Steroids	1.11 (1.04-1.19)	0.002	1.13 (1.06-1.21)	<0.001
MG 10: Chemotherapy	1.17 (1.04-1.32)	0.009	1.19 (1.06-1.34)	0.004
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.13 (1.05-1.22)	0.002	1.17 (1.08-1.26)	<0.001
MG 12: Antacids incl. Antihistamines	0.98 (0.92-1.04)	0.530		
MG 13: Vitamin D and other Vitamin supplements	0.95 (0.89-1.01)	0.087	0.96 (0.90-1.02)	0.180
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	1.02 (0.30-3.41)	0.980		
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	0.86 (0.70-1.06)	0.160		
MG 19: Immunoglobulins	2.39 (1.25-4.56)	0.008	2.57 (1.32-4.99)	0.005
MG 20: Interferons and CSF	1.24 (1.02-1.52)	0.032	1.22 (1.00-1.49)	0.055
MG 21: NSAR and other anti-inflammatory drugs	1.02 (0.97-1.08)	0.410		
MG 22: Gout medications	1.05 (0.96-1.14)	0.320		
MG 23: Antiepileptics	1.14 (1.07-1.22)	<0.001	1.17 (1.10-1.25)	<0.001
MG 24: Antipsychotics	1.08 (1.02-1.14)	0.006	1.10 (1.04-1.16)	<0.001
MG 26: inhaled anti-obstructive drugs	1.05 (0.98-1.11)	0.160	1.06 (1.00-1.13)	0.054
MG 27: inhaled steroids	0.85 (0.74-0.98)	0.022		
MG 28: other COPD drugs	0.97 (0.78-1.21)	0.790		
MG 30: Systemic Antihistamines	0.93 (0.85-1.03)	0.150		

Table A.98. Competing risk regression results examining time to all-cause re-hospitalization after hospitalization for Influenza among patients aged 75 and older. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: ≥75			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Sex: F (ref: M)	0.87 (0.81-0.94)	<0.001	0.88 (0.82-0.95)	0.001
Age Group: 86-90 (ref: >90)	1.06 (0.92-1.22)	0.440	1.08 (0.93-1.24)	0.320
Age Group: 81-85 (ref: >90)	1.06 (0.92-1.21)	0.450	1.06 (0.92-1.21)	0.450
Age Group: 75-80 (ref: >90)	1.02 (0.89-1.17)	0.740	1.01 (0.88-1.15)	0.930
Medicament Groups: 2-5 (ref: 0-1)	1.27 (1.10-1.46)	<0.001	1.20 (1.03-1.38)	0.016
Medicament Groups: 6-10 (ref: 0-1)	1.67 (1.45-1.93)	<0.001	1.40 (1.19-1.65)	<0.001
Medicament Groups: ≥11 (ref: 0-1)	2.16 (1.76-2.64)	<0.001	1.52 (1.19-1.94)	<0.001
Wave: 2016/2017 (ref: Wave 2015/2016)	0.86 (0.66-1.14)	0.300	0.86 (0.65-1.12)	0.270
Wave: 2017/2018 (ref: Wave 2015/2016)	0.89 (0.68-1.15)	0.370	0.87 (0.67-1.13)	0.310
Wave: 2018/2019 (ref: Wave 2015/2016)	0.87 (0.66-1.14)	0.310	0.84 (0.64-1.10)	0.220
Wave: 2019/2020 (ref: Wave 2015/2016)	0.77 (0.59-1.01)	0.062	0.75 (0.58-0.99)	0.040
Wave: 2020/2021 (ref: Wave 2015/2016)	0.56 (0.22-1.43)	0.220	0.54 (0.21-1.41)	0.210
Length of hospital stay (days)	1.02 (1.01-1.02)	<0.001	1.02 (1.01-1.02)	<0.001
MG 1: Anticoagulants	1.03 (0.94-1.13)	0.500		
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.09 (1.00-1.18)	0.039	1.07 (0.99-1.16)	0.090
MG 3: Insulins and other Antidiabetics	0.93 (0.84-1.02)	0.130		
MG 4: "heart" drugs	1.05 (0.95-1.17)	0.310		
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	0.96 (0.87-1.05)	0.330		
MG 6: Beta Blockers	1.03 (0.94-1.12)	0.540		
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.96 (0.88-1.04)	0.280		
MG 8: Immunosuppressants and Immunomodulators	1.44 (1.12-1.84)	0.005	1.31 (1.01-1.69)	0.038
MG 9: Systemic Steroids	1.23 (1.11-1.37)	<0.001	1.21 (1.09-1.34)	<0.001
MG 10: Chemotherapy	1.07 (0.89-1.29)	0.490		
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.11 (0.98-1.25)	0.090	1.12 (0.99-1.26)	0.067
MG 12: Antacids incl. Antihistamines	1.00 (0.91-1.10)	0.990		
MG 13: Vitamin D and other Vitamin supplements	1.02 (0.93-1.13)	0.630		
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	1.64 (1.06-2.53)	0.027	1.57 (1.04-2.38)	0.033
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	0.95 (0.76-1.20)	0.670		
MG 19: Immunoglobulins	3.26 (1.46-7.28)	0.004	2.89 (1.34-6.24)	0.007
MG 20: Interferons and CSF	1.60 (1.19-2.14)	0.002	1.46 (1.08-1.97)	0.014
MG 21: NSAR and other anti-inflammatory drugs	0.92 (0.85-1.01)	0.080	0.92 (0.85-1.01)	0.084
MG 22: Gout medications	1.08 (0.94-1.23)	0.290		
MG 23: Antiepileptics	1.10 (0.99-1.22)	0.084	1.13 (1.01-1.25)	0.027
MG 24: Antipsychotics	1.01 (0.93-1.10)	0.820		
MG 26: inhaled anti-obstructive drugs	1.19 (1.09-1.31)	<0.001	1.18 (1.08-1.30)	<0.001
MG 27: inhaled steroids	0.93 (0.77-1.13)	0.460		
MG 28: other COPD drugs	1.03 (0.77-1.38)	0.830		
MG 30: Systemic Antihistamines	0.93 (0.79-1.08)	0.340		

Table A.99. Competing risk regression results comparing time to all-cause re-hospitalization between COVID-19 propensity score matched and Influenza patients aged 75 and older. For all medication groups (MG 1–30), coefficients represent prescription in reference to no prescription.

	Age Group: ≥75			
	Simple Regression		Multivariable Regression	
	Hazard Ratio (CI - 95%)	p-value	Hazard Ratio (CI - 95%)	p-value
Group: Influenza (ref: COVID-19)	1.47 (1.39-1.55)	<0.001	1.46 (1.39-1.54)	<0.001
Sex: F (ref: M)	0.86 (0.82-0.91)	<0.001	0.86 (0.82-0.91)	<0.001
Age Group: 86-90 (ref: >90)	1.14 (1.04-1.26)	0.008	1.16 (1.05-1.28)	0.004
Age Group: 81-85 (ref: >90)	1.13 (1.03-1.24)	0.012	1.15 (1.04-1.26)	0.005
Age Group: 75-80 (ref: >90)	1.11 (1.02-1.22)	0.022	1.14 (1.04-1.26)	0.005
Medicament Groups: 2-5 (ref: 0-1)	1.26 (1.15-1.38)	<0.001	1.09 (0.99-1.20)	0.093
Medicament Groups: 6-10 (ref: 0-1)	1.66 (1.51-1.82)	<0.001	1.18 (1.05-1.34)	0.008
Medicament Groups: ≥11 (ref: 0-1)	2.17 (1.89-2.49)	<0.001	1.24 (1.02-1.51)	0.028
Length of hospital stay (days)	1.01 (1.01-1.01)	<0.001	1.01 (1.01-1.01)	<0.001
MG 1: Anticoagulants	1.10 (1.04-1.17)	0.001	1.13 (1.06-1.20)	<0.001
MG 2: Antibiotics, Antivirals, Antiprotozoals or Anthelmintics	1.10 (1.04-1.16)	<0.001	1.12 (1.06-1.18)	<0.001
MG 3: Insulins and other Antidiabetics	1.03 (0.96-1.10)	0.430		
MG 4: "heart" drugs	1.10 (1.02-1.17)	0.011	1.12 (1.04-1.20)	0.002
MG 5: Antihypertensives incl. Diuretics and Renin-angiotensin-aldosterone system inhibitors	1.03 (0.97-1.10)	0.360		
MG 6: Beta Blockers	1.00 (0.94-1.06)	0.950		
MG 7: Statins, Fibrates incl. Proprotein convertase subtilisin/kexin type 9 inhibitors and Inclisiran	0.96 (0.90-1.01)	0.120		
MG 8: Immunosuppressants and Immunomodulators	1.05 (0.87-1.27)	0.630		
MG 9: Systemic Steroids	1.11 (1.04-1.20)	0.004	1.13 (1.05-1.22)	0.001
MG 10: Chemotherapy	1.10 (0.97-1.24)	0.140		
MG 11: Iron supplements, Erythropoietic stimulating agents, Vitamin B12, folic acid	1.11 (1.02-1.21)	0.011	1.13 (1.04-1.23)	0.003
MG 12: Antacids incl. Antihistamines	1.02 (0.96-1.09)	0.560		
MG 13: Vitamin D and other Vitamin supplements	0.97 (0.91-1.04)	0.410		
MG 14: Caplacizumab	NA (NA-NA)			
MG 15: Systemic Hemostatics	1.13 (0.51-2.49)	0.760		
MG 16: Hereditary angioedema Therapeutics	NA (NA-NA)			
MG 17: Peripheral Vasodilators	0.67 (0.47-0.95)	0.027	0.72 (0.50-1.03)	0.071
MG 19: Immunoglobulins	2.14 (0.98-4.67)	0.057	1.94 (0.91-4.12)	0.086
MG 20: Interferons and CSF	1.34 (1.07-1.67)	0.010	1.34 (1.07-1.67)	0.010
MG 21: NSAR and other anti-inflammatory drugs	0.96 (0.91-1.02)	0.200		
MG 22: Gout medications	1.05 (0.95-1.15)	0.340		
MG 23: Antiepileptics	1.12 (1.04-1.20)	0.002	1.14 (1.06-1.22)	<0.001
MG 24: Antipsychotics	1.06 (1.01-1.13)	0.027	1.08 (1.02-1.15)	0.005
MG 26: inhaled anti-obstructive drugs	1.08 (1.01-1.15)	0.019	1.11 (1.04-1.19)	0.002
MG 27: inhaled steroids	0.86 (0.75-0.99)	0.039	0.86 (0.74-0.99)	0.032
MG 28: other COPD drugs	1.02 (0.78-1.33)	0.900		
MG 30: Systemic Antihistamines	0.93 (0.83-1.03)	0.160		