Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

COVID-19 Hospital Based Surveillance CH-SUR
Federal Department of Home Affairs FDHA
Federal Office of Public Health FOPH
University of Geneva Institute of Global Health UNIGE (IGH)

Surveillance sentinelle hospitalière du COVID-19

État des données au: 20 mars 2023

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

COVID-19 Hospital Based Surveillance CH-SUR
Federal Department of Home Affairs FDHA
Federal Office of Public Health FOPH
University of Geneva Institute of Global Health UNIGE (IGH)

1. Rapport mensuel du CH-SUR – introduction :

Le *système sentinelle de surveillance hospitalière pour l'influenza* a été mis en place en 2018 pour compléter les systèmes de déclaration obligatoire des cas de grippe en Suisse et combler les lacunes dans le monitorage des maladies. Quatre jours après l'annonce du premier cas confirmé de COVID-19 en Suisse, il a été adapté pour enregistrer les hospitalisations liées à cette maladie.

Actuellement, 18 hôpitaux situés partout en Suisse participent activement au **système sentinelle de surveillance hospitalière du COVID-19 (CH-SUR)**. Le CH-SUR a pour objectif principal de récolter des données cliniques et épidémiologiques complètes sur la charge de morbidité. Les données recueillies renseignent entre autres sur le nombre et la durée des hospitalisations ainsi que sur les séjours en unité de soins intensifs (USI). Il enregistre également si le patient est décédé du (ou avec le) COVID 19 ou de la grippe pendant l'hospitalisation. Pour plus de définitions et de détails sur les données, veuillez consulter le glossaire et les informations complémentaires à la fin de ce rapport.

Le présent rapport couvre la période allant du moment où le variant Omicron est devenu dominant (1er janvier 2022), à la dernière date d'extraction des données (19 mars 2023). Durant cette période, les données ont été récoltées à partir de 22 637 épisodes d'hospitalisation pour le COVID-19 et 4 281 pour la grippe. Pendant le même laps de temps, 23 344 épisodes d'hospitalisation dus à une infection au SARS-CoV-2 confirmée en laboratoire ont été déclarés à l'OFSP dans le cadre du système de déclaration obligatoire en vigueur au niveau national. Le système CH-SUR a ainsi couvert près de 97,0 % de toutes les hospitalisations dues au SARS-CoV-2 déclarées en Suisse. Un aperçu des données collectées au cours des deux derniers mois est présenté dans les figures **1** et **2**.

Synthèse de l'évolution au cours des deux derniers mois (du 1.2.2023 au 20.3.2023) :

- Au total, 22637 épisodes de COVID-19 ont été enregistrés dans le système de surveillance sentinelle hospitalière (CH-SUR), dont 4 977 (22,0%) étaient associés à des infections nosocomiales (fig. **1** et section 2.1).

- Au total, 1 503 épisodes de COVID-19 (7.2 %) ont nécessité au moins un séjour en USI et 918 (4.4 %) au moins un séjour en unité de soins intermédiaires. Ces proportions sont restées relativement stables depuis le 1er janvier 2022 (section 4.1).

- Le taux global de létalité pour les épisodes de COVID-19 a atteint 4,4 %, un niveau légèrement supérieur aux 3,0 % enregistrés entre janvier 2022 et janvier 2023 (section 3.1).

- Au total, 3052 épisodes d'influenza ont été enregistrés, dont 436 (14 %) étaient associés à des infections nosocomiales (section 6).

Le rapport de ce mois-ci consacre un chapitre spécifique à l'évolution de la durée d'hospitalisation des patients atteints du COVID-19 dans le système CH-SUR depuis le début de la pandémie (section 5).

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

COVID-19 Hospital Based Surveillance CH-SUR
Federal Department of Home Affairs FDHA
Federal Office of Public Health FOPH
University of Geneva Institute of Global Health UNIGE (IGH)
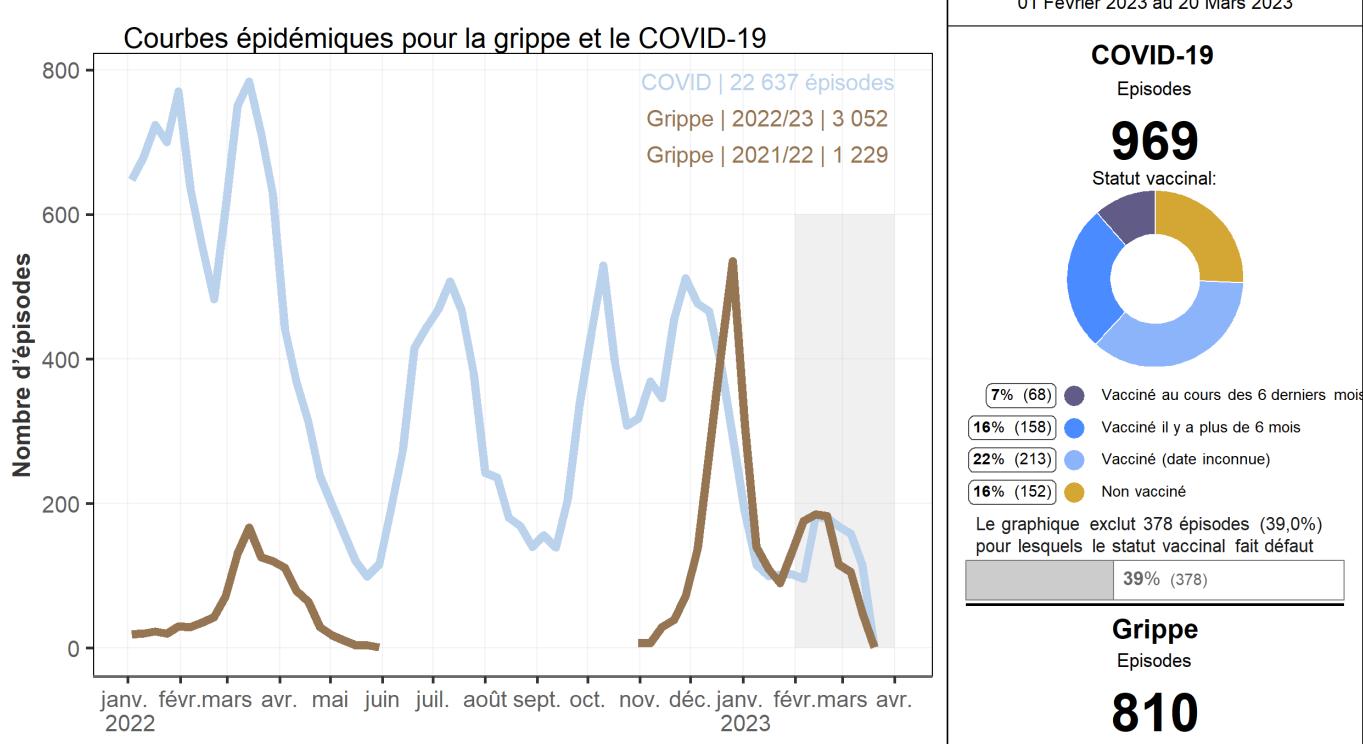
Figure 1: *Aperçu des données les plus récentes sur les épisodes d'hospitalisation. Les données issues des deux derniers mois sont considérées comme provisoires en raison des retards dans l'enregistrement, raison pour laquelle elles n'ont pas été prises en compte. Pour la saison grippale 2021/22 : seuls les épisodes commençant après janvier 2022 sont inclus. Nombre d'hôpitaux participants pour la grippe : 19 pour la saison 2021/22, 18 pour la saison 2022/23. Ce graphique exclut les épisodes d'un hôpital en raison de données incomplètes pour COVID-19.*

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

COVID-19 Hospital Based Surveillance CH-SUR
Federal Department of Home Affairs FDHA
Federal Office of Public Health FOPH
University of Geneva Institute of Global Health UNIGE (IGH)

Aperçu CH-SUR des épisodes, des admissions en SI et des décès **du 01 Février 2023 au 20 Mars 2023**

COVID-19

Episodes avec soins intermédiaires

32

Statut vaccinal:

22% (7)	●	Vacciné au cours des 6 derniers mois
22% (7)	●	Vacciné il y a plus de 6 mois
9% (3)	●	Vacciné (date inconnue)
22% (7)	●	Non vacciné

Le graphique exclut 8 épisodes (25,0%)
pour lesquels le statut vaccinal fait défaut

| **25%** (8) |

COVID-19

Episodes avec un séjour en SI

50

Statut vaccinal:

6% (3)	●	Vacciné au cours des 6 derniers mois
8% (4)	●	Vacciné il y a plus de 6 mois
22% (11)	●	Vacciné (date inconnue)
16% (8)	●	Non vacciné

Le graphique exclut 24 épisodes (48,0%)
pour lesquels le statut vaccinal fait défaut

| **48%** (24) |

COVID-19

Décès

17

Statut vaccinal:

(2)	●	Vacciné au cours des 6 derniers mois
(3)	●	Vacciné il y a plus de 6 mois
(2)	●	Vacciné (date inconnue)
(4)	●	Non vacciné

Le graphique exclut 6 épisodes
pour lesquels le statut vaccinal fait défaut

| (6) |

Grippe

Episodes avec soins intermédiaires

42

Données manquantes pour 78 épisodes (9,6%)

| **10%** (78) |

Grippe

Episodes avec un séjour en SI

56

Données manquantes pour 123 épisodes (15,2%)

| **15%** (123) |

Grippe

Décès

17

Données manquantes pour 200 épisodes (24,7%)

| **25%** (200) |

Figure 2: *Aperçu des données les plus récentes sur les épisodes d'hospitalisation. Ce graphique exclut les épisodes d'un hôpital en raison de données incomplètes pour COVID-19.*

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

COVID-19 Hospital Based Surveillance CH-SUR
Federal Department of Home Affairs FDHA
Federal Office of Public Health FOPH
University of Geneva Institute of Global Health UNIGE (IGH)

2. Hospitalizations and patient characteristics

Between January 01, 2022 and March 20, 2023 and among the 18 hospitals actively participating in CH-SUR, 22,637 episodes were registered, accounting for a total of 23,182 hospitalizations. There were more hospitalizations than episodes because some episodes include multiple hospitalizations (for more details see section glossary and supplemental information).

From January 01, 2022 to March 20, 2023, most patients (97.8% [22,131 of 22,637]) were hospitalized only once during an episode, while 2.2% of the registered episodes (506 of 22,637) included two to four hospitalizations. Only one episode included five hospitalizations.

Among all episodes, 51.7% (11,702 of 22,637) of the episodes concerned male patients and 48.2% (10,921 of 22,637) episodes concerned female patients. Sex type was defined as *other* for 14 patients. The age distribution was skewed towards older persons (Figure **3**a and b). The largest age category corresponded to patients aged 80 and above (46.0% [443]).

Figures **3**c and **3**d show the sex and age distribution ratio over time. During most months, more men than women were admitted. During the period of observation, the proportion of episodes concerning patients aged 50 years old and above was the lowest in February 2022 with 68.7% (1,649 of 2,401). In October 2022, 89.5% (1,631 of 1,822) of episodes concerned patients 50 years old and above (Figure **3**d).
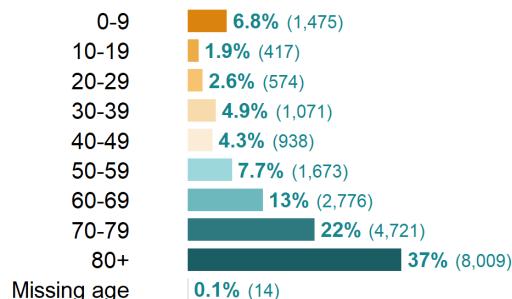
Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

COVID-19 Hospital Based Surveillance CH-SUR
Federal Department of Home Affairs FDHA
Federal Office of Public Health FOPH
University of Geneva Institute of Global Health UNIGE (IGH)
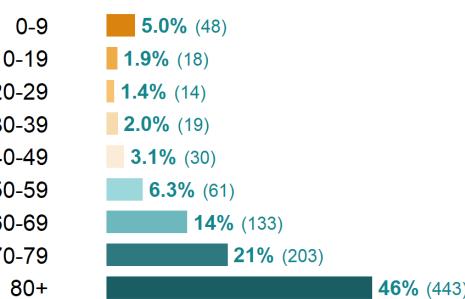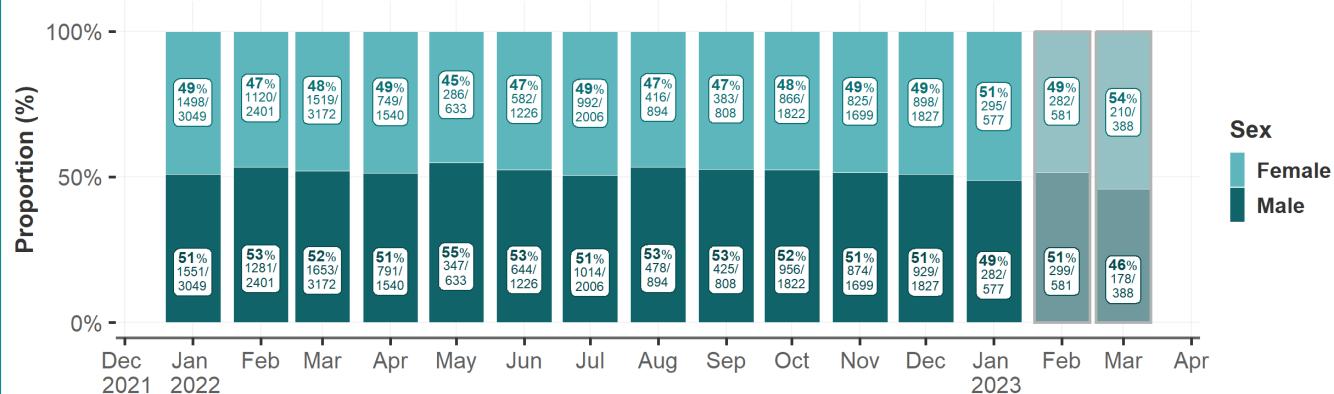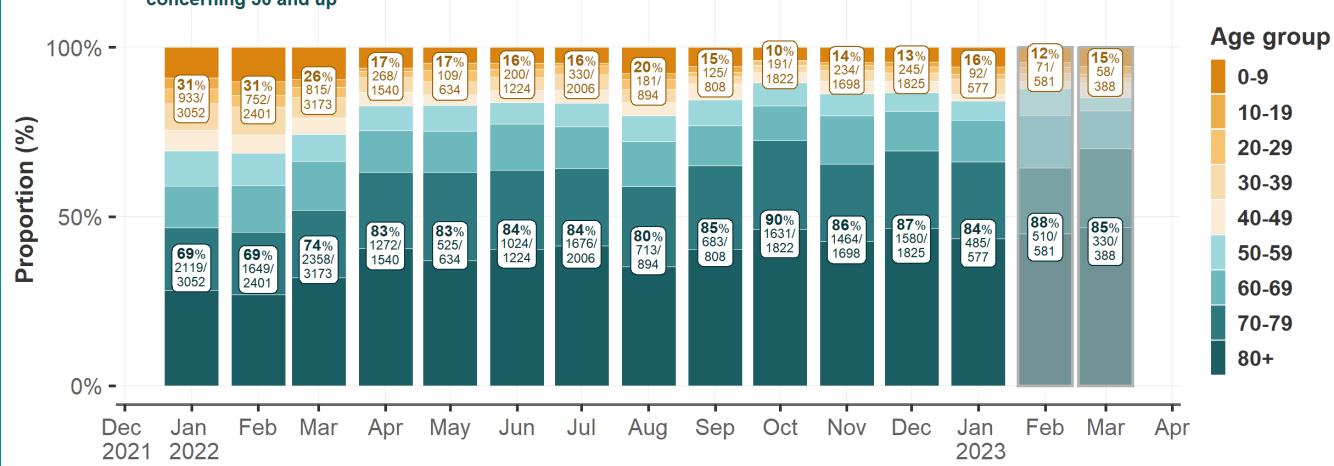
Figure 3: *Demographic characteristics: sex and age distribution of hospitalized patients, overall and per month. For episodes with multiple hospitalizations, the admission date of the first hospitalization was used. Data from the last two months (highlighted gray) is considered provisional due to entry delays. The 'other' sex category was removed from panel c, and the missing age group was removed from panel d.*

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

COVID-19 Hospital Based Surveillance CH-SUR
Federal Department of Home Affairs FDHA
Federal Office of Public Health FOPH
University of Geneva Institute of Global Health UNIGE (IGH)

2.1. Origin of infection

From January 01, 2022 to March 20, 2023, the overall percentage of nosocomial infections among all documented episodes was 22.0% (4,977 of 22,637) while episodes linked to community acquired infections accounted for 75.2% (17,018 of 22,637) (Figure **4**). For 2.8% of the episodes, it is unknown if the infection was nosocomial or community acquired.
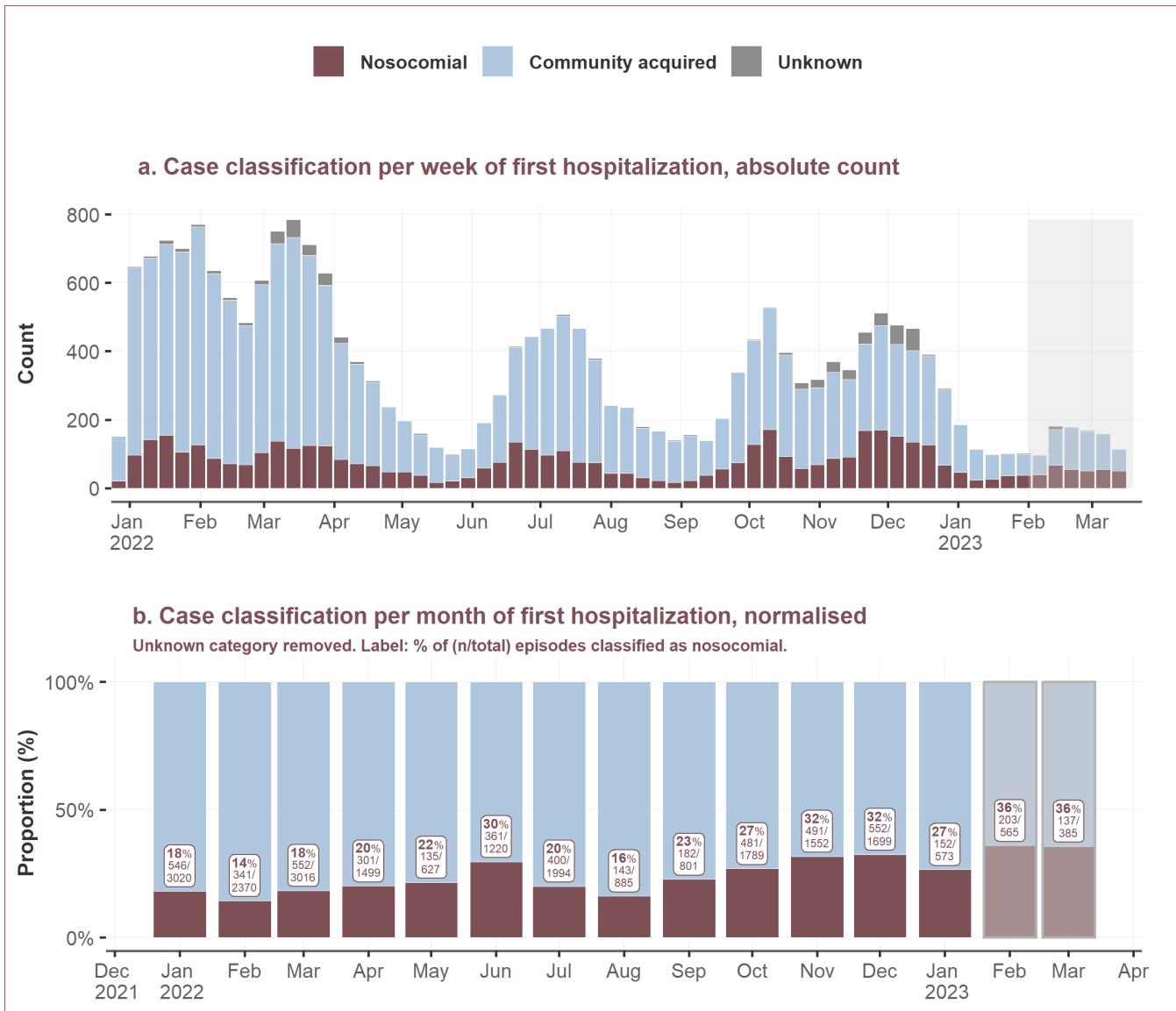

Figure 4: *Case classification (origin of infection) of the episodes. The absolute count of episodes over time (panel a) and the proportion (normalized in %) of episodes by origin of infection (panel b). For episodes with multiple hospitalizations, the case classification of the first hospitalization was considered. Data from the last two months (highlighted gray) are considered provisional due to data entry delays.*

Compared to other age groups, patients aged 80 years and above were most affected by nosocomial infections, accounting for 2,105 (45.4%) of the nosocomial episodes from January 01, 2022 to January 31, 2023. Furthermore, patients aged 80 years and above also account for a majority of community-acquired infections with 5,725 (34.9%) episodes from January 01, 2022 to January 31, 2023 (Figure **5**a).

a. Community acquired and nosocomial episodes from Jan 2022 to Jan 2023

Community acquired 16,408 episodes	Nosocomial 4,637 episodes

Sex (Community acquired)
- Male: **52%** (8,601)
- Female: **47%** (7,803)
- Other: **0.0%** (3)
- Missing data: **0.0%** (1)

Sex (Nosocomial)
- Male: **49%** (2,294)
- Female: **50%** (2,339)
- Other: **0.0%** (2)
- Missing data: **0.0%** (2)

Age Group (Community acquired)
- 0-9: **8.3%** (1,355)
- 10-19: **2.0%** (325)
- 20-29: **2.9%** (470)
- 30-39: **5.5%** (904)
- 40-49: **4.6%** (750)
- 50-59: **7.9%** (1,301)
- 60-69: **12%** (2,033)
- 70-79: **21%** (3,541)
- 80+: **34%** (5,725)
- Missing data: **0.0%** (4)

Age Group (Nosocomial)
- 0-9: **1.4%** (67)
- 10-19: **1.4%** (66)
- 20-29: **1.7%** (81)
- 30-39: **2.9%** (134)
- 40-49: **3.3%** (151)
- 50-59: **6.8%** (315)
- 60-69: **13%** (641)
- 70-79: **23%** (1,074)
- 80+: **45%** (2,105)
- Missing data: **0.1%** (3)
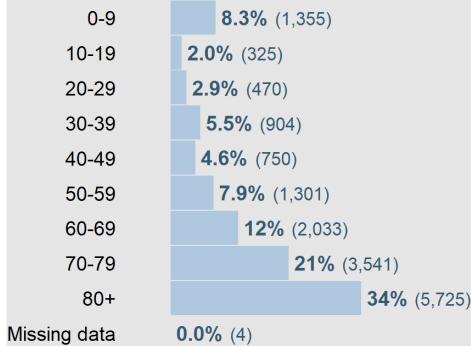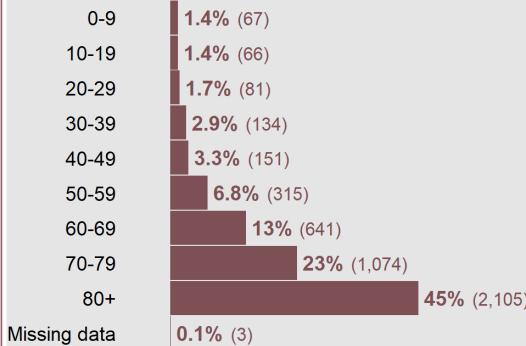
b. Community acquired and nosocomial episodes from Feb 2023 to Mar 2023

Community acquired 610 episodes	Nosocomial 340 episodes

Sex (Community acquired)
- Male: **51%** (315)
- Female: **48%** (295)
- Other: **0.0%** (0)
- Missing data: **0.0%** (0)

Sex (Nosocomial)
- Male: **44%** (151)
- Female: **55%** (189)
- Other: **0.0%** (0)
- Missing data: **0.0%** (0)

Age Group (Community acquired)
- 0-9: **7.2%** (44)
- 10-19: **2.3%** (14)
- 20-29: **2.1%** (13)
- 30-39: **2.3%** (14)
- 40-49: **3.4%** (21)
- 50-59: **6.1%** (37)
- 60-69: **13%** (79)
- 70-79: **20%** (127)
- 80+: **42%** (261)
- Missing data: **0.0%** (0)

Age Group (Nosocomial)
- 0-9: **1.2%** (4)
- 10-19: **1.2%** (4)
- 20-29: **0.3%** (1)
- 30-39: **1.5%** (5)
- 40-49: **2.6%** (9)
- 50-59: **6.5%** (22)
- 60-69: **13%** (47)
- 70-79: **22%** (75)
- 80+: **50%** (173)
- Missing data: **0.0%** (0)
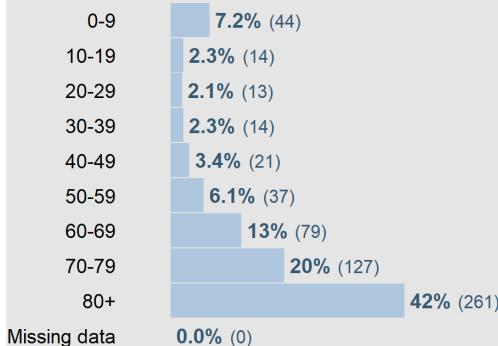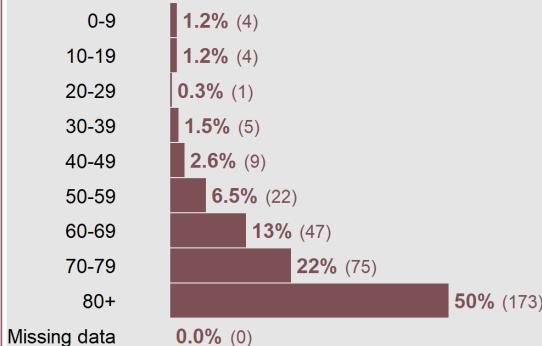
Figure 5: *Comparison of community acquired and nosocomial cases by demographic characteristics.*

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

COVID-19 Hospital Based Surveillance CH-SUR
Federal Department of Home Affairs FDHA
Federal Office of Public Health FOPH
University of Geneva Institute of Global Health UNIGE (IGH)

2.2. Vaccination status at admission over time

For these analyses, the vaccination status of a patient considers the vaccine doses received up to the time of a positive COVID-19 test, specifically up to the time when the sample for the test was collected.

From January 01, 2022 to March 20, 2023, 72.2% of the Swiss population was vaccinated with at least one dose. In March 20, 2023 11.6% of hospitalized individuals were vaccinated within the last 6 months. It is important to note that we can know the percentage of the population which is vaccinated (through administrative records), but only approximate the proportion of the population which is immunized. Recent studies from Corona Immunitas are indicating that the population immunization (by vaccination and/or previous infection) is nearing 100%.
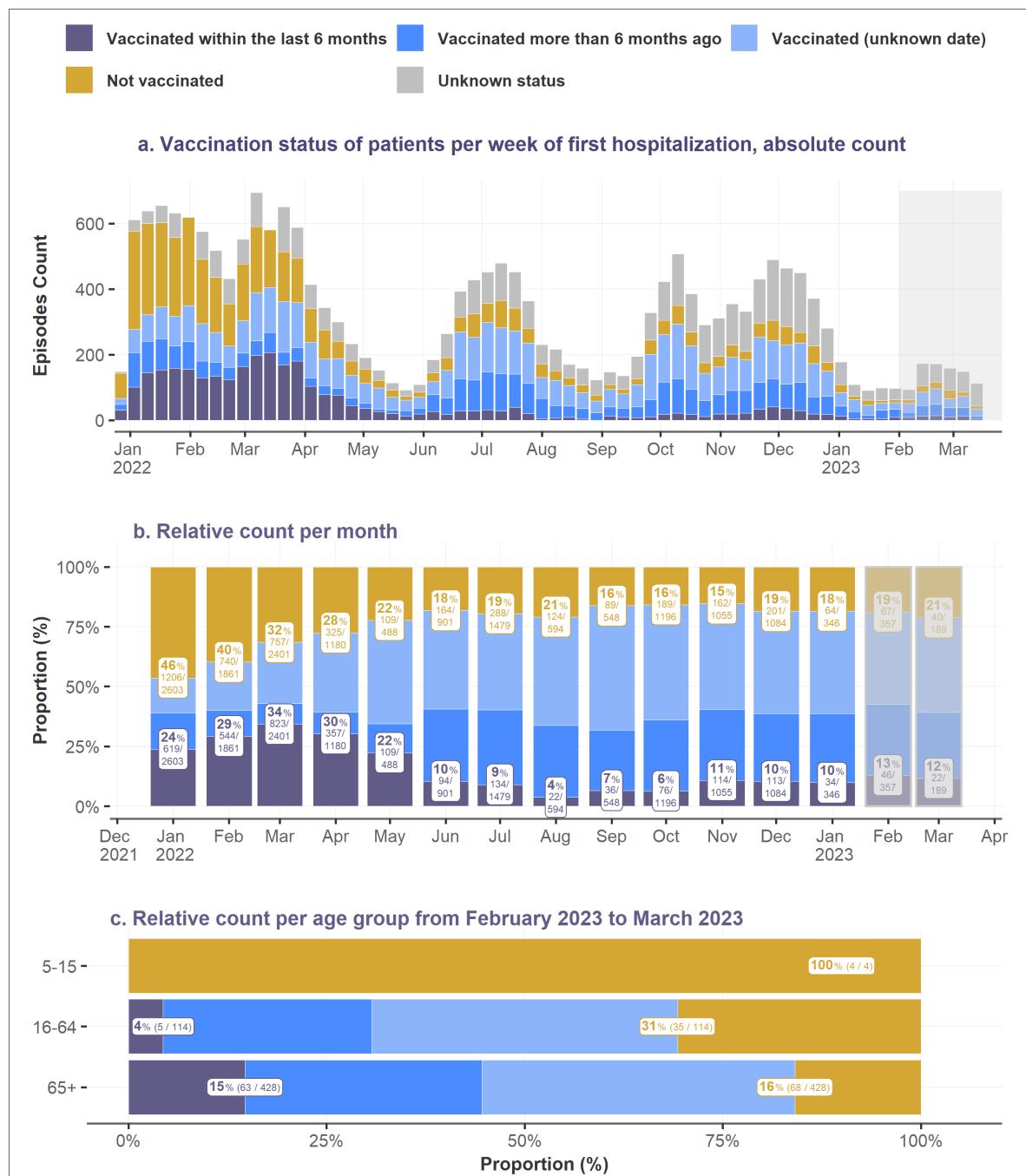
Figure 6: *Episodes by vaccination status over time and by age group. For episodes with multiple hospitalizations, the vaccination status for the first hospitalization was considered. Episodes with first admission date after January 31, 2023 were excluded due to data completeness considerations. For Figure 5c only: Episodes with missing ages and children between 0 to 4 years old (following vaccination recommendations) were excluded from the analysis.*

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

COVID-19 Hospital Based Surveillance CH-SUR
Federal Department of Home Affairs FDHA
Federal Office of Public Health FOPH
University of Geneva Institute of Global Health UNIGE (IGH)

3. Outcomes

3.1. Outcomes over time

Figure **7** shows the final outcomes of episodes over time (Figure **7**a & **7**b). Episodes resulting in in-hospital death, for which COVID-19 was the cause of death (died *of* COVID-19) are shown separately from those with an alternative cause of death (died *with* COVID-19, but not *of* COVID-19). A medical doctor at the hospital for each CH-SUR participating center determined whether a patient died of COVID-19 or another cause during the COVID-19 hospitalization. Episodes where the cause of death was not certain, but there was a COVID-19 diagnosis (in conformity with inclusion criteria for CH-SUR) were counted as died of COVID-19 or suspected death of COVID-19. The outcome "discharged" includes patients who were transferred out of the CH-SUR system. Episodes with "pending or missing outcomes" correspond to either patients who were still hospitalized or whose outcomes were not yet recorded in the database at the date of data extraction. Because of the higher proportion of incomplete data during the most recent months, case fatality rates from these months should be interpreted with caution.
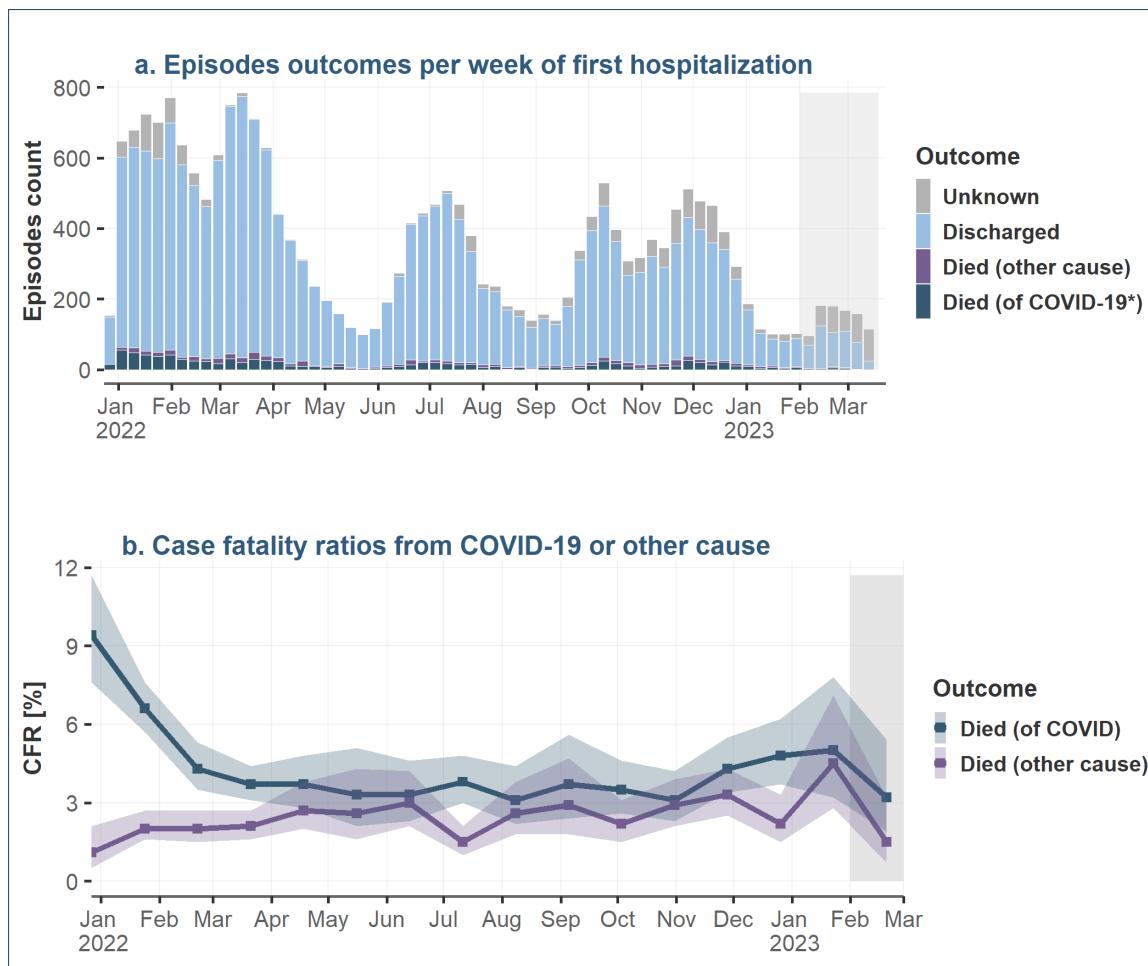

Figure 7: *Outcomes for COVID-19 related episodes over time. Includes records up to March 20, 2023. Data from the two last months (highlighted in gray) are considered provisional due to data entry delays. Episodes where the cause of death was not certain, but there was a COVID-19 diagnosis (in conformity with inclusion criteria for CH SUR) were counted as Died of COVID-19 or suspected death of COVID. (* Died of COVID-19 as a confirmed or suspected cause of death). The coloured bands on this plot indicate the 95% confidence interval around the estimated CFR.*

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

COVID-19 Hospital Based Surveillance CH-SUR
Federal Department of Home Affairs FDHA
Federal Office of Public Health FOPH
University of Geneva Institute of Global Health UNIGE (IGH)

3.2. Case fatality rate (CFR) across demographic and risk groups

Since January 2022 until January 2023, the case fatality rate (CFR) increased with increasing age, from 0.1% (1 of 1,414) in episodes of patients aged 0-9, to 2.1% (33 of 1,548) in episodes of patients aged 50-59, and to 7.2% (526 of 7,343) in episodes of patients aged 80+. CFR% was greater in men than in women: 4.9% (510 of 10,406) vs 3.8% (363 of 9,595) respectively. (Figure **8**a)

The overall CFR% of the most recent period for which enough data is available (months February 2023 and March 2023, Figure **8**b) was 4.4% compared to 3.0% from January 2022 until January 2023.

Data regarding CFR% and vaccination status can be found in section 3.3.

a. CFR % : 20,008 episodes with first hospitalization between January 2022 and January 2023

CFR % (deaths/episodes)

	CFR %	(deaths/episodes)
All episodes	**4.4%**	(874 of 20,008)
Age groups		
0-9	**0.1%**	(1 of 1,414)
10-19	**0.3%**	(1 of 387)
20-29	**0.0%**	(0 of 518)
30-39	**0.4%**	(4 of 993)
40-49	**0.4%**	(3 of 855)
50-59	**2.1%**	(33 of 1,548)
60-69	**3.0%**	(76 of 2,557)
70-79	**5.2%**	(230 of 4,385)
80+	**7.2%**	(526 of 7,343)
Missing age	**0.0%**	(0 of 8)
Sex		
Male	**4.9%**	(510 of 10,406)
Female	**3.8%**	(363 of 9,595)
Other	**0.0%**	(0 of 5)
BMI		
< 18.5 (Underweight)	**4.5%**	(94 of 2,088)
18.5 - 24.9	**4.5%**	(315 of 6,938)
25 - 30 (Overweight)	**3.5%**	(164 of 4,712)
> 30 (Obese)	**3.7%**	(105 of 2,845)
Missing BMI	**5.7%**	(196 of 3,425)
Episode source		
Domicile	**4.0%**	(694 of 17,186)
Long term care	**10.3%**	(104 of 1,011)
Other hospital	**4.0%**	(54 of 1,334)
Other...	**3.7%**	(17 of 463)
Origin of infection		
Community acquired	**4.0%**	(616 of 15,460)
Nosocomial	**5.9%**	(249 of 4,218)
Unknown	**2.7%**	(9 of 330)

b. CFR % : 570 episodes with first hospitalization between February 2023 and March 2023

CFR % (deaths/episodes)

|	CFR %	(deaths/episodes)
All episodes	**3.0%**	(17 of 570)
Age groups		
0-9	**0.0%**	(0 of 39)
10-19	**0.0%**	(0 of 9)
20-29	**0.0%**	(0 of 11)
30-39	**0.0%**	(0 of 15)
40-49	**0.0%**	(0 of 13)
50-59	**0.0%**	(0 of 38)
60-69	**2.4%**	(2 of 82)
70-79	**1.6%**	(2 of 124)
80+	**5.4%**	(13 of 239)
Missing age	NA	
Sex		
Male	**3.5%**	(10 of 283)
Female	**2.4%**	(7 of 287)
Other	NA	
BMI		
< 18.5 (Underweight)	**5.0%**	(3 of 60)
18.5 - 24.9	**2.9%**	(6 of 204)
25 - 30 (Overweight)	**2.2%**	(3 of 135)
> 30 (Obese)	**1.3%**	(1 of 79)
Missing BMI	**4.3%**	(4 of 92)
Episode source		
Domicile	**2.6%**	(13 of 504)
Long term care	**16.0%**	(4 of 25)
Other hospital	**0.0%**	(0 of 32)
Other...	**0.0%**	(0 of 9)
Origin of infection		
Community acquired	**2.0%**	(8 of 391)
Nosocomial	**5.2%**	(9 of 172)
Unknown	**0.0%**	(0 of 7)

Figure 8: *Case fatality rate (CFR) % among demographic and risk groups: percentage of hospitalization episodes, which ended in the death of the patient of COVID-19 in hospital. Records with incomplete data (ongoing hospitalization episodes or with a pending outcome in the database) were not included.*

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

COVID-19 Hospital Based Surveillance CH-SUR
Federal Department of Home Affairs FDHA
Federal Office of Public Health FOPH
University of Geneva Institute of Global Health UNIGE (IGH)

3.3. CFR by age group and vaccination status

For the most recent time period for which reliable data is available, the case fatality rate is displayed by age group and vaccination status (Figure **9**).

The data should be interpreted with caution, as local peaks most often result from a small number of cases (for example, the peak in CFR% concerning patients vaccinated within the last 6 month in the age group of 80 and above patients in August 2022 is due to 1 death out of 6 episodes).
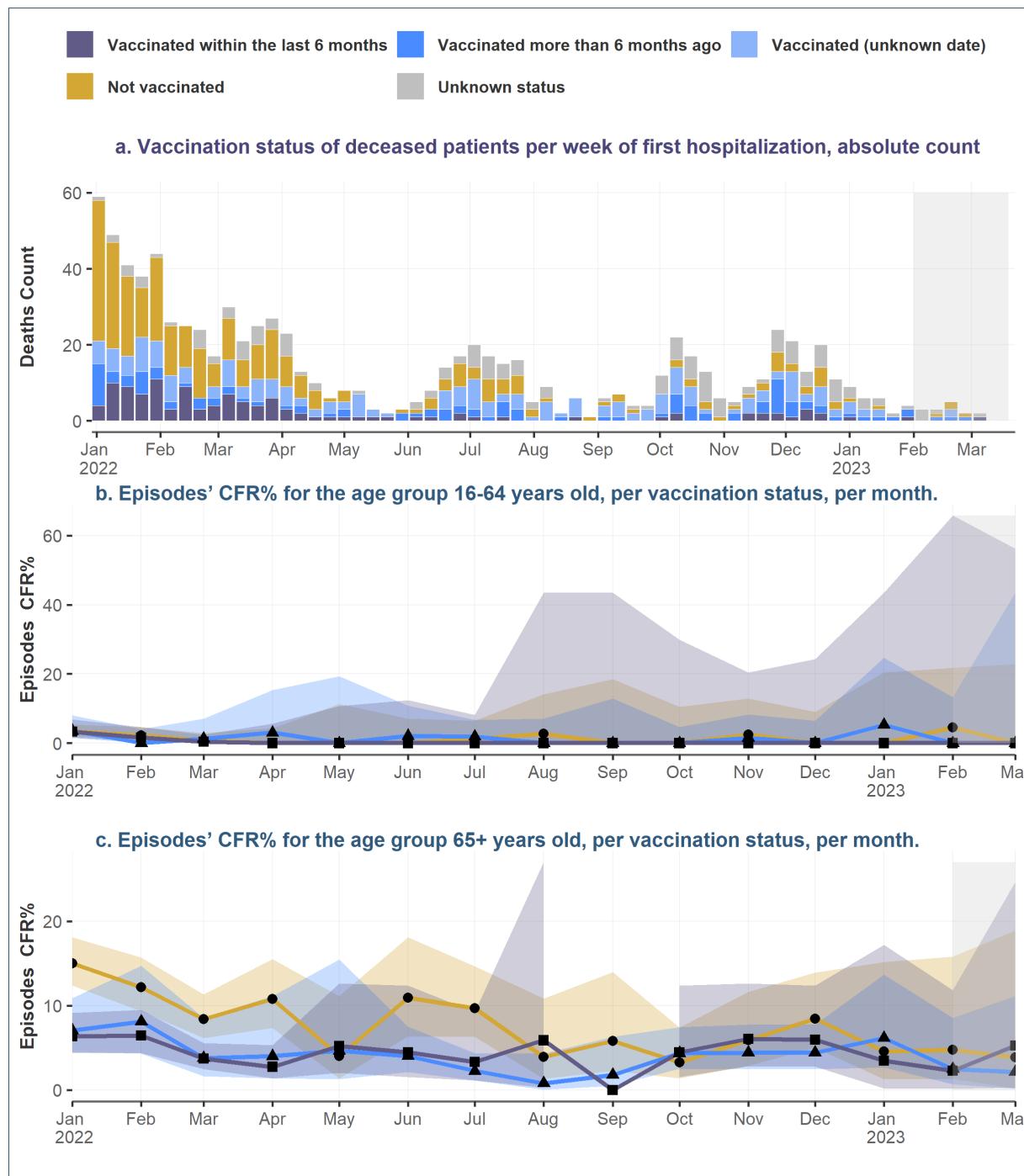
Figure 9: *Case fatality rate (CFR%) by age and by vaccination status over time: percentage of episodes, which ended in the death of the patient of COVID-19 in hospital. Records with incomplete data were not included. Data from the two last months (highlighted in gray) are considered provisional due to data entry delays. The coloured bands on this plot indicate the 95% confidence interval around the estimated CFR. A gap in the coloured band means that the confidence interval goes beyond the displayed range of the plot.*

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

COVID-19 Hospital Based Surveillance CH-SUR
Federal Department of Home Affairs FDHA
Federal Office of Public Health FOPH
University of Geneva Institute of Global Health UNIGE (IGH)

4. Intensive care unit (ICU) admission

4.1. ICU, IMCU admission and use of ventilation over time

ICU and intermediate care unit (IMCU) admissions include patients that were hospitalized *because* of COVID-19 as well as *with* COVID-19.

Figure **10** shows the distribution of episodes over time which required ICU, IMCU admissions or both, as well as the type of ventilation used.

Figure **10**b only includes episodes with known information on ICU and IMCU stay. Figure **10**b shows that the proportion (in %) of ICU admission has remained relatively stable over time since January 2022. A total of 1,503 (7.2%) episodes required ICU admission, 918 (4.4%) episodes required IMCU admission and 211 (1%) episodes required both ICU and IMCU admission. For 17,353 episodes no ICU nor IMCU admission was required. It is unknown if ICU, IMCU admissions or both was required for 865 episodes.

Figure **10**c only includes episodes with known information on ICU and IMCU stay requiring ventilation. In a total of 371 (32.9%) episodes with an IMCU stay, the patient required non invasive ventilation. For 756 episodes with IMCU stay, it is unknown if non-invasive ventilation was required. Among episodes with ICU admissions, a total of 39 (2.3%) episodes required ECMO ventilation, 591 (34.5%) episodes required invasive ventilation, and 577 (33.7%) episodes required non-invasive ventilation. For 896 episodes with ICU stay, it is unknown if any ventilation was required.

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

COVID-19 Hospital Based Surveillance CH-SUR
Federal Department of Home Affairs FDHA
Federal Office of Public Health FOPH
University of Geneva Institute of Global Health UNIGE (IGH)

a. Episodes with ICU and/or IMCU stay, absolute counts per month
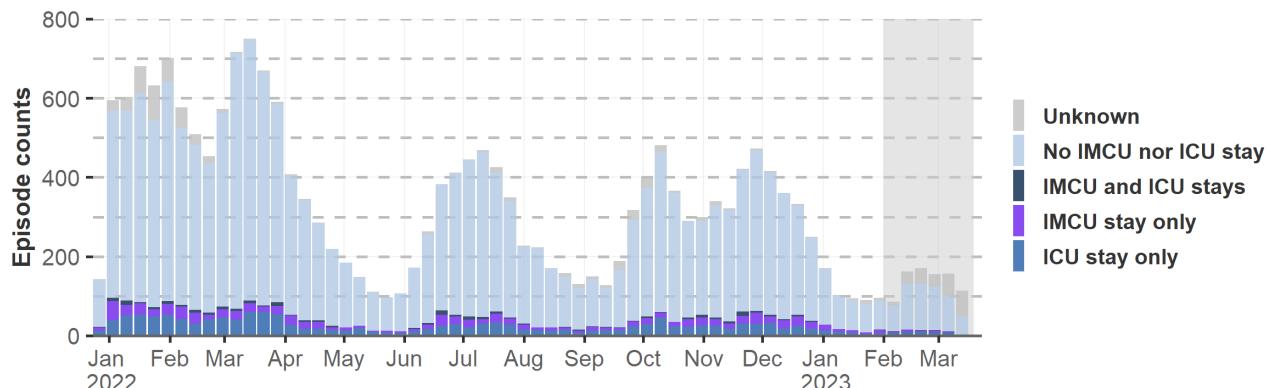
b. Episodes with ICU and/or IMCU stay, proportions per month
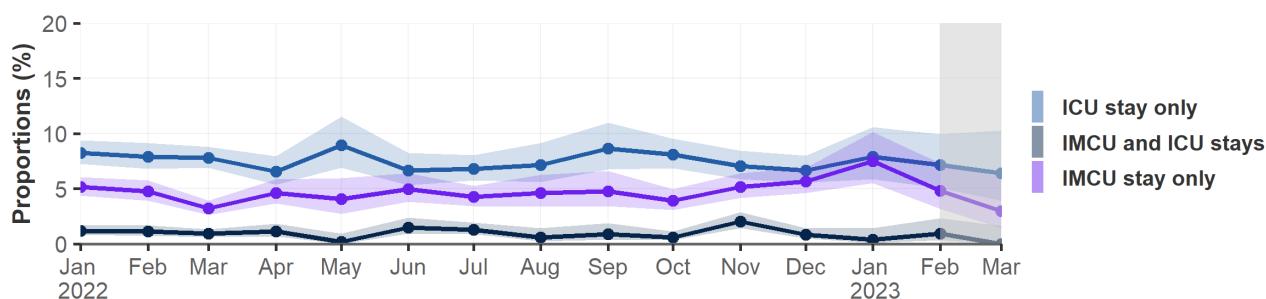
c. Episodes with ICU or IMCU stay requiring ventilation, proportions per month
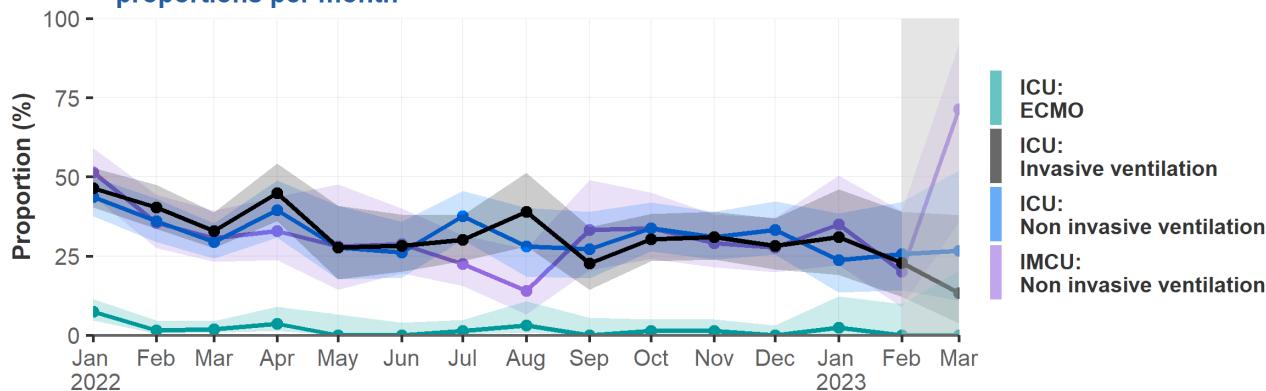
d. Counts of ICU and/or IMCU stay: 19,985 episodes with first hospitalization between Jan 01, 2022 and Mar 20, 2023
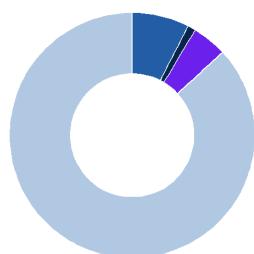
7.5% (1,503) ICU stay only
1.1% (211) IMCU and ICU stays
4.6% (918) IMCU stay only
86.8% (17,353) No IMCU nor ICU stay

*Plot excludes 865 episodes (4.1%) with pending or missing data
4.1% pending or missing

Figure 10: *Counts and proportion of episodes with at least one ICU or IMCU admission over time. Evolution over time of the use of invasive, non-invasive and ECMO for ICU or IMCU admissions. Data from the last two months (highlighted gray) are considered provisional due to data entry delays.*

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

COVID-19 Hospital Based Surveillance CH-SUR
Federal Department of Home Affairs FDHA
Federal Office of Public Health FOPH
University of Geneva Institute of Global Health UNIGE (IGH)

4.2. ICU admission across demographic and risk groups

From January 2022 to January 2023, ICU admission probability across ages was roughly bimodal with a peak for the 10-19-year age group and for the 60-69 age group. The 60-69 age group had the highest probability of admission to the ICU, with 14.4% (366 of 2,546) of episodes including at least one ICU admission. During the same period, individuals aged 80 and above were least likely to be admitted to the ICU, with 4.2% (309 of 7,339) of the episodes including at least one ICU admission. Males were more likely to be admitted to the ICU than females. Overall, admissions to the ICU were registered for 9.9% of the episodes concerning males, compared to 6.6% of the episodes concerning females. Episodes of patients transferred from other hospitals had a high probability of ICU admission: 21.6% of such episodes (286 of 1,324) required at least one ICU admission, compared to an overall admission rate of 8.3% (Figure **11**a).

a. ICU% : Episodes with first hospitalization between January 2022 and January 2023

% admitted to ICU

All episodes	**8.3%** (1,664 of 19,944)
Age groups	
0-9	**8.5%** (119 of 1,400)
10-19	**12.6%** (50 of 398)
20-29	**5.6%** (30 of 535)
30-39	**7.0%** (69 of 990)
40-49	**9.4%** (80 of 847)
50-59	**12.7%** (195 of 1,536)
60-69	**14.4%** (366 of 2,546)
70-79	**10.2%** (444 of 4,341)
80+	**4.2%** (309 of 7,339)
Missing age	**16.7%** (2 of 12)
Sex	
Male	**9.9%** (1,030 of 10,361)
Female	**6.6%** (634 of 9,570)
Other	**0.0%** (0 of 5)
BMI	
< 18.5 (Underweight)	**7.2%** (144 of 2,005)
18.5 - 24.9	**7.7%** (526 of 6,810)
25 - 30 (Overweight)	**8.7%** (408 of 4,667)
> 30 (Obese)	**10.0%** (284 of 2,841)
Missing BMI	**8.3%** (302 of 3,621)
Episodes source	
Domicile	**7.4%** (1,269 of 17,070)
Long term care	**6.0%** (60 of 1,004)
Other hospital	**21.6%** (286 of 1,324)
Other...	**9.8%** (48 of 490)
Origin of infection	
Community acquired	**8.3%** (1,261 of 15,227)
Nosocomial	**8.4%** (368 of 4,364)
Unknown	**9.9%** (35 of 353)

b. ICU% : Episodes with first hospitalization between February 2023 and March 2023

% admitted to ICU

All episodes	**5.5%** (50 of 906)
Age groups	
0-9	**4.2%** (2 of 48)
10-19	**5.6%** (1 of 18)
20-29	**7.1%** (1 of 14)
30-39	**0.0%** (0 of 17)
40-49	**11.1%** (3 of 27)
50-59	**8.9%** (5 of 56)
60-69	**9.5%** (12 of 126)
70-79	**6.3%** (12 of 189)
80+	**3.4%** (14 of 411)
Missing age	NA
Sex	
Male	**5.7%** (25 of 442)
Female	**5.4%** (25 of 464)
Other	NA
BMI	
< 18.5 (Underweight)	**4.5%** (4 of 88)
18.5 - 24.9	**4.3%** (14 of 329)
25 - 30 (Overweight)	**6.1%** (12 of 197)
> 30 (Obese)	**9.4%** (11 of 117)
Missing BMI	**5.1%** (9 of 175)
Episodes source	
Domicile	**5.1%** (38 of 738)
Long term care	**10.9%** (5 of 46)
Other hospital	**7.4%** (5 of 68)
Other...	**13.3%** (2 of 15)
Origin of infection	
Community acquired	**6.6%** (38 of 573)
Nosocomial	**3.8%** (12 of 314)
Unknown	**0.0%** (0 of 19)

Figure 11: *Percentage of hospitalization episodes with at least one ICU admission, grouped by demographic and risk factors, over two time intervals. For episodes with multiple hospitalizations, we considered whether they were admitted to the ICU during any of their hospitalizations. Records with incomplete data were not included.*

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

COVID-19 Hospital Based Surveillance CH-SUR
Federal Department of Home Affairs FDHA
Federal Office of Public Health FOPH
University of Geneva Institute of Global Health UNIGE (IGH)

4.3. ICU admission rate by vaccination status

Figure **12** shows the ICU admission rate, which is the number of episodes requiring an admission to the ICU over all episodes registered, stratified by vaccination status.

The percentage of not vaccinated patients among episodes with ICU stay decreased sharply from January to April from 61.6% to 25.9% and has fluctuated since then. (Figure **12**b)

The relative counts for the age groups of 5-15 must be interpreted with caution due to the small numbers. (Figure **12**c)
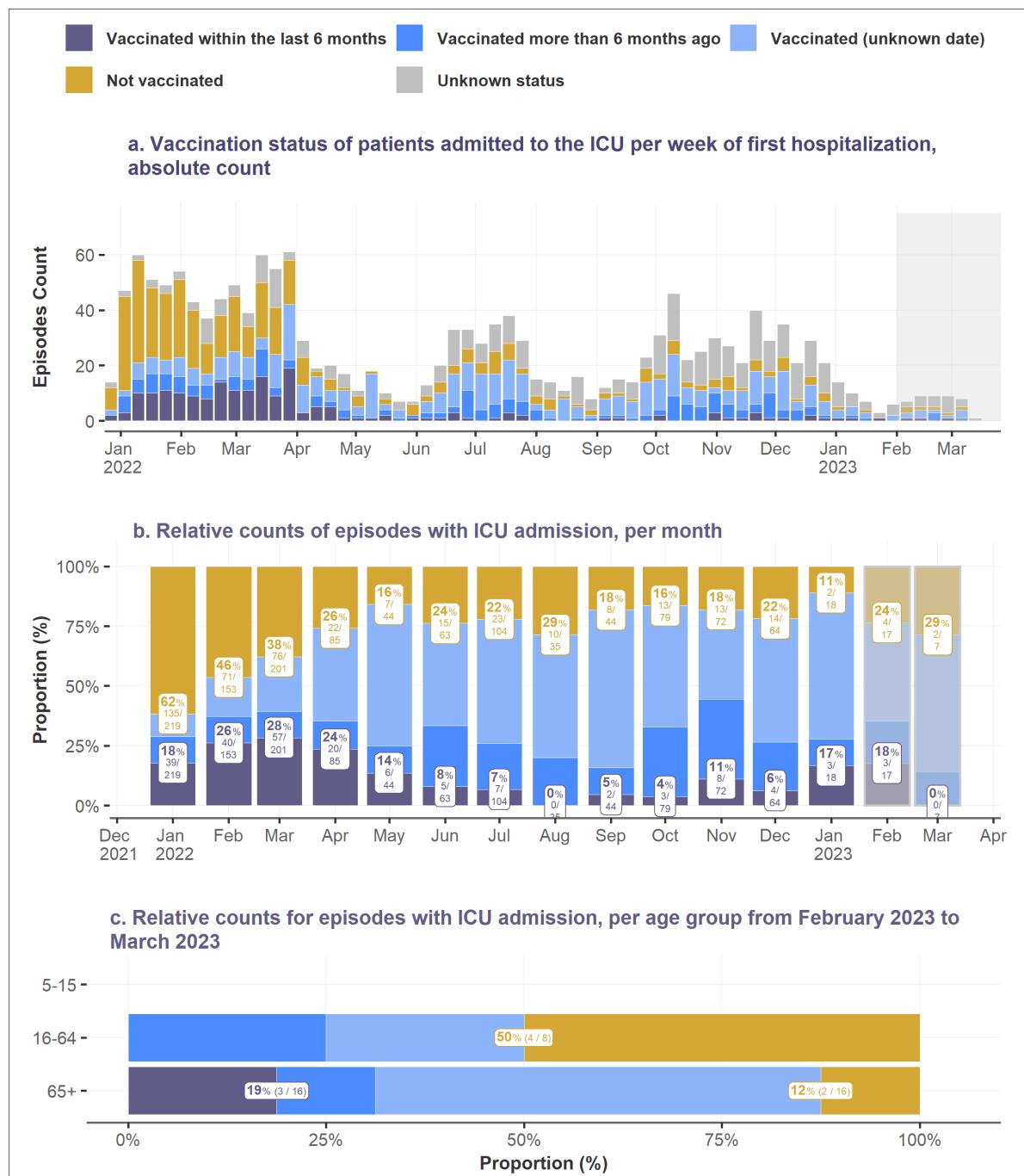
Figure 12: *Demographic characteristics of hospitalized patients by immune status and immune status of patients over time. For episodes with multiple hospitalizations, the immune status for the first hospitalization was considered. For Figure 5c only: Episodes with missing ages and children between 0 to 4 years old (following vaccination recommendations) were excluded from the analysis.*

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

COVID-19 Hospital Based Surveillance CH-SUR
Federal Department of Home Affairs FDHA
Federal Office of Public Health FOPH
University of Geneva Institute of Global Health UNIGE (IGH)

4.4. ICU admission rate by age group and vaccination status

Figure **13** shows the ICU admission rate by age group and by vaccination status. Plots for the age groups 5-15 should be interpreted with caution, as the ICU% is calculated on a small number of episodes. The same caution applies in recent months, where peaks may be due to the small number of episodes.
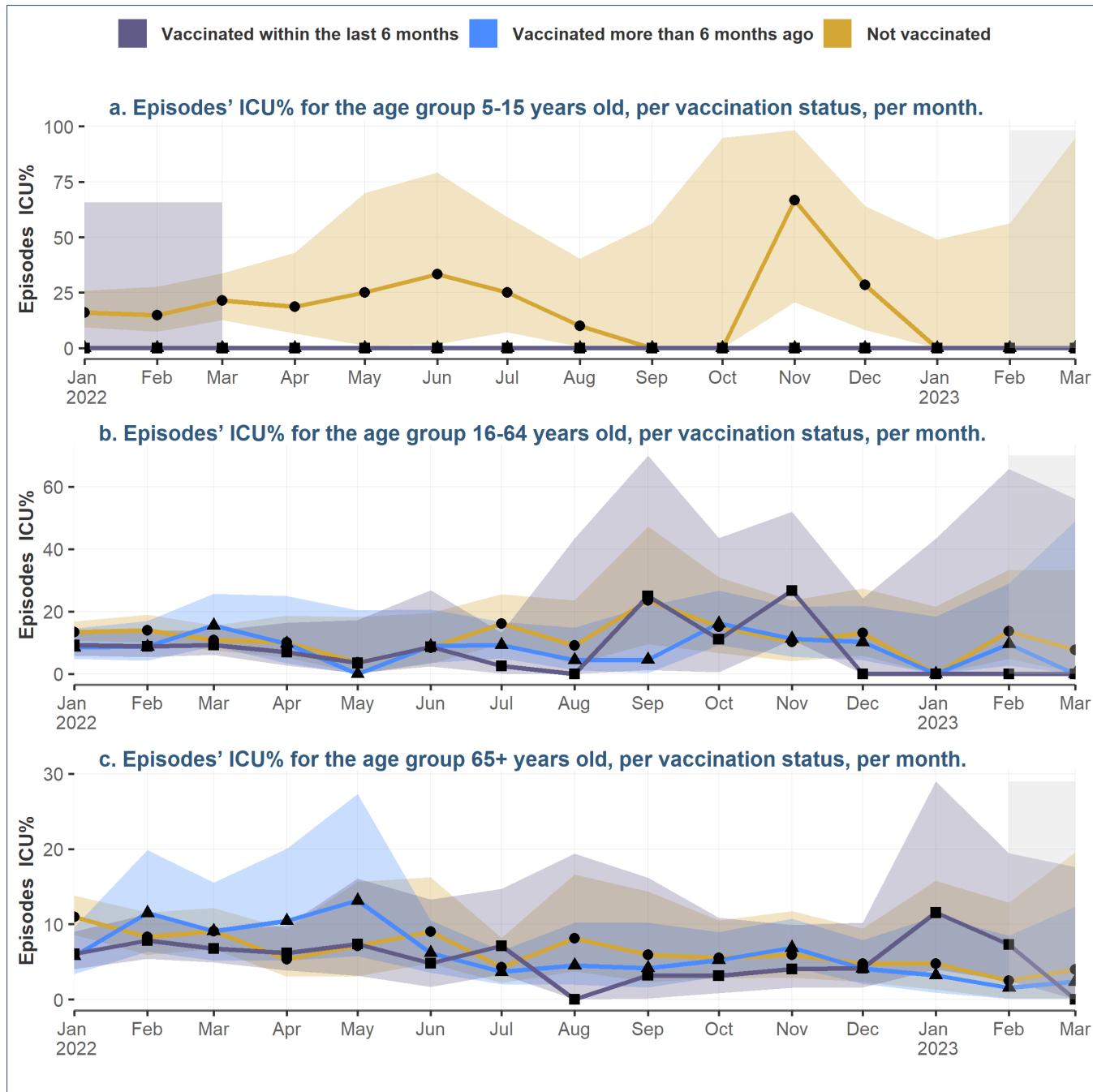
Figure 13: *ICU admission rate (ICU%) by age and by vaccination status over time: percentage of episodes, which resulted in ICU admission. Records with incomplete data were not included. Data from the two last months (highlighted in gray) are considered provisional due to data entry delays. The coloured bands on this plot indicate the 95% confidence interval around the estimated ICU%. A gap in the coloured band means that the confidence interval goes beyond the displayed range of the plot.*

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

COVID-19 Hospital Based Surveillance CH-SUR
Federal Department of Home Affairs FDHA
Federal Office of Public Health FOPH
University of Geneva Institute of Global Health UNIGE (IGH)

5. Length of hospital stay

From February 01, 2020 to December 31, 2021 the median length of overall hospital stay was 8 days, with an interquartile range of 5 to 16 days. From January 01, 2022 to March 20, 2023 the median length of overall hospital stay was 7 days, with an interquartile range of 3 to 13 days. Analyses include patients who stayed in the hospital for more than 24 hours and less than 60 days. Rare outliers of episodes with extremely long stays would skew the analysis, therefore a cutoff at 60 days was chosen. From February 01, 2020 to March 20, 2023, 97.5% of patients stayed shorter than this duration and 2.5% of patients had stays longer than 60 days. For episodes linked to nosocomial infections, the date of the positive SARS-CoV-2 test was used as a "corrected" hospital entry date instead of the actual admission date. Figure **14** depicts the interquartile range and distribution of the length of stay over time with a focus on ICU/IMCU admissions and origin of infection per month.

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

COVID-19 Hospital Based Surveillance CH-SUR
Federal Department of Home Affairs FDHA
Federal Office of Public Health FOPH
University of Geneva Institute of Global Health UNIGE (IGH)

a. Length of stay for episodes with or without ICU/IMCU admission, per month from Mar 01, 2020 to Mar 20, 2023
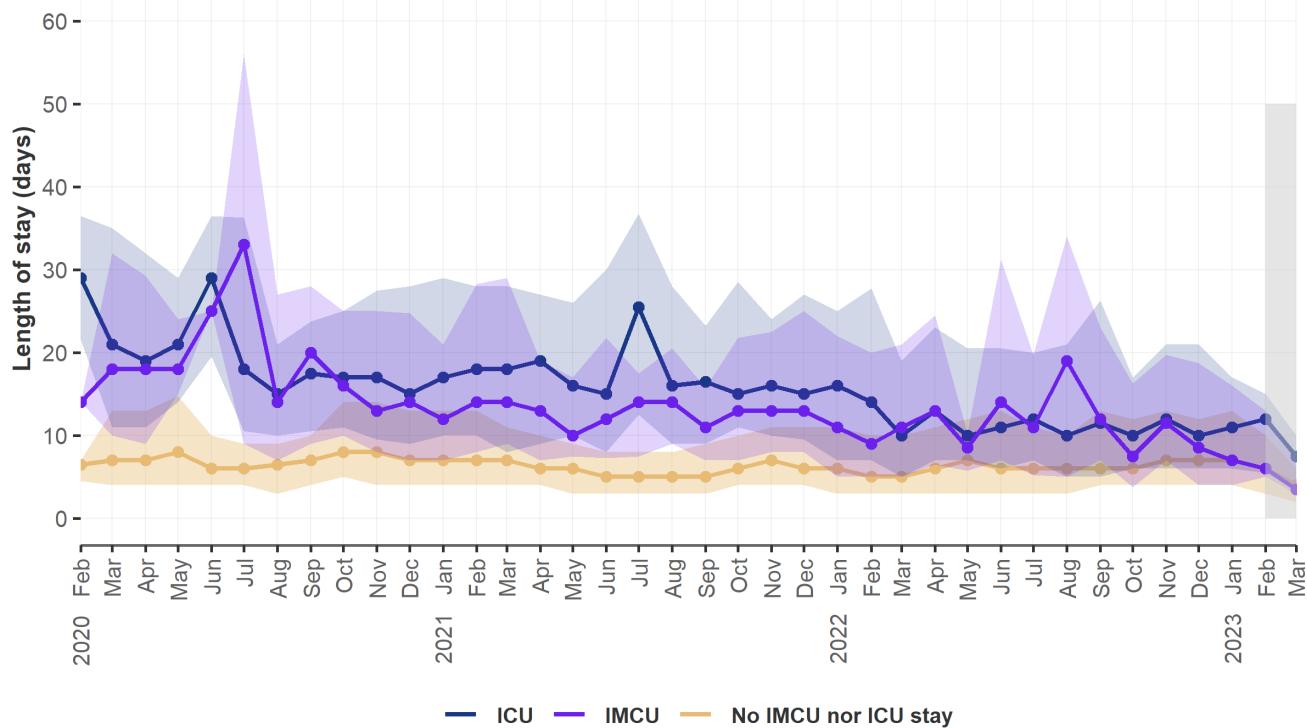
b. Length of stay by origin of infection, per month from Mar 01, 2020 to Mar 20, 2023
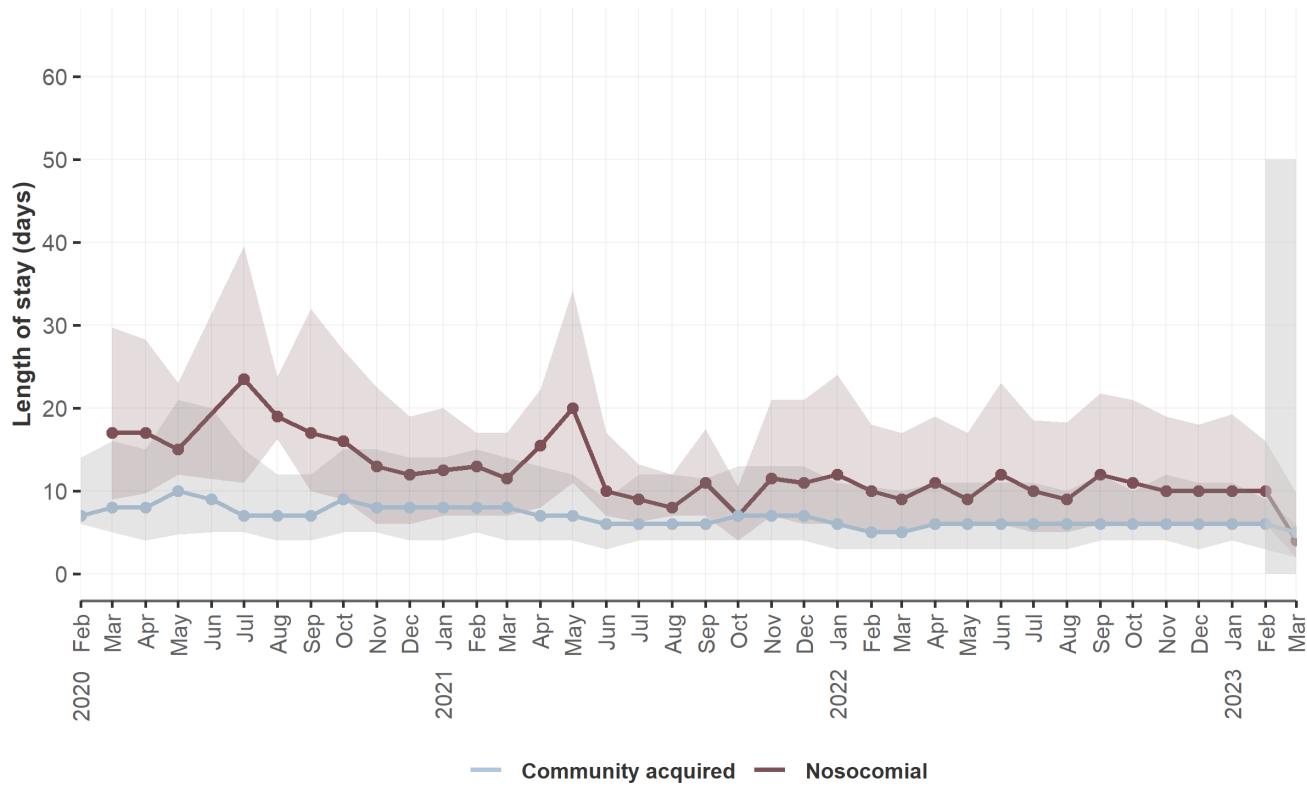
Figure 14: *COVID-19 length of hospital stay over time. Lines indicate the median of the length of stay. The colored bands on this plot indicate the lower and the upper quartile around the median length of stay. Data from the last month is highlighted in gray.*

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

COVID-19 Hospital Based Surveillance CH-SUR
Federal Department of Home Affairs FDHA
Federal Office of Public Health FOPH
University of Geneva Institute of Global Health UNIGE (IGH)

Table **1** presents the length of hospital stay for different age groups from January 01, 2022 to March 20, 2023. Each row represents a specific age range and the columns provide information on the median length of stay, the interquartile range, and the number of episodes for each age group.

Figure **15** presents the length of hospital stay between January 01, 2022 and March 20, 2023, with a focus on origin of infection and ICU/IMCU admission. Regarding the origin of infection, the median length of stay was 10 days for nosocomial episodes, with an interquartile range of 6 to 19 days, compared to 6 days and an interquartile range of 3 to 11 days for episodes linked to community acquired infections. For episodes with ICU admissions, the median length of stay was 12 days, with an interquartile range of 6 to 22 days, compared to 6 days and an interquartile range of 3 to 11 days for episodes without ICU admission. For episodes with IMCU admissions, the median length of stay was 11 days, with an interquartile range of 5 to 21 days, compared to 6 days and an interquartile range of 3 to 12 days for episodes without IMCU admission.

The analyses did not consider other factors that may affect the length of stay, such as comorbidities.

How to read a violin plot:

A violin plot is a type of data visualization that is similar to a box plot, but it also includes information about density to show the distribution of a variable.

- The shape of the "violin" represents the distribution of the data. The wider the violin, the more values there are at that particular data point. Conversely, if the violin is narrow, there are fewer values there.
- The thick black line in the middle of the violin represents the median value of the data.
- The thin lines on either side of the violin represent the range of the data, excluding outliers.
- Outliers are shown as individual points.

Table 1: *COVID-19 length of hospital stay by age group: median, interquartile range, and number of episodes. Between January 01, 2022 and March 20, 2023*

Age Group	Median Length of Stay (days)	Interquartile Range (days)	Number of Episodes
0-9	2	2-4	6112
10-19	4	2-7	2787
20-29	4	2-6	3074
30-39	4	2-6	6442
40-49	5	3-9	6756
50-59	6	3-11	14172
60-69	7	4-13	26298
70-79	7	4-14	48427
80+	8	5-15	87202

Distribution of length of stay in hospital between Jan 01, 2022 and Mar 20, 2023
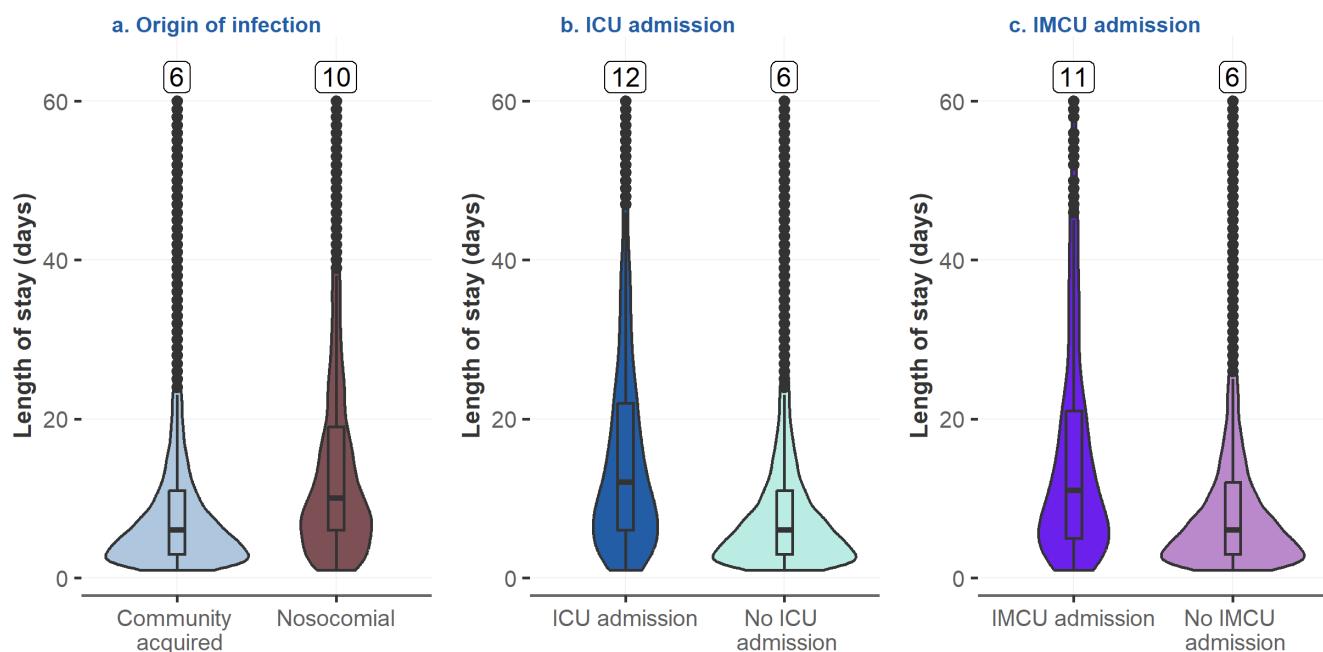
Figure 15: *Distribution of the length of hospital stay for COVID-19 by origin of infection, ICU and IMCU admission. Each plot includes a box indicating the median length of hospital stay and interquartile range for each group.*

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

COVID-19 Hospital Based Surveillance CH-SUR
Federal Department of Home Affairs FDHA
Federal Office of Public Health FOPH
University of Geneva Institute of Global Health UNIGE (IGH)

6. Influenza

Data status: March 20, 2023

6.1. Influenza epidemic curves

The influenza's seasonal data collection within CH-SUR begins each November. In Figure **16**, the current influenza epidemic curve is represented in light of the past seasons' epidemic curves. Epidemic curves should be compared with caution, due to a varying number of hospitals which reported data over each specific season. Essential demographic information for the ongoing influenza season is also displayed. For additional weekly updates about the current influenza season please refer to Saisonale Grippe – Lagebericht Schweiz.

This data is not representative for the whole nation of Switzerland, but represents the situation among CH-SUR participating hospitals.
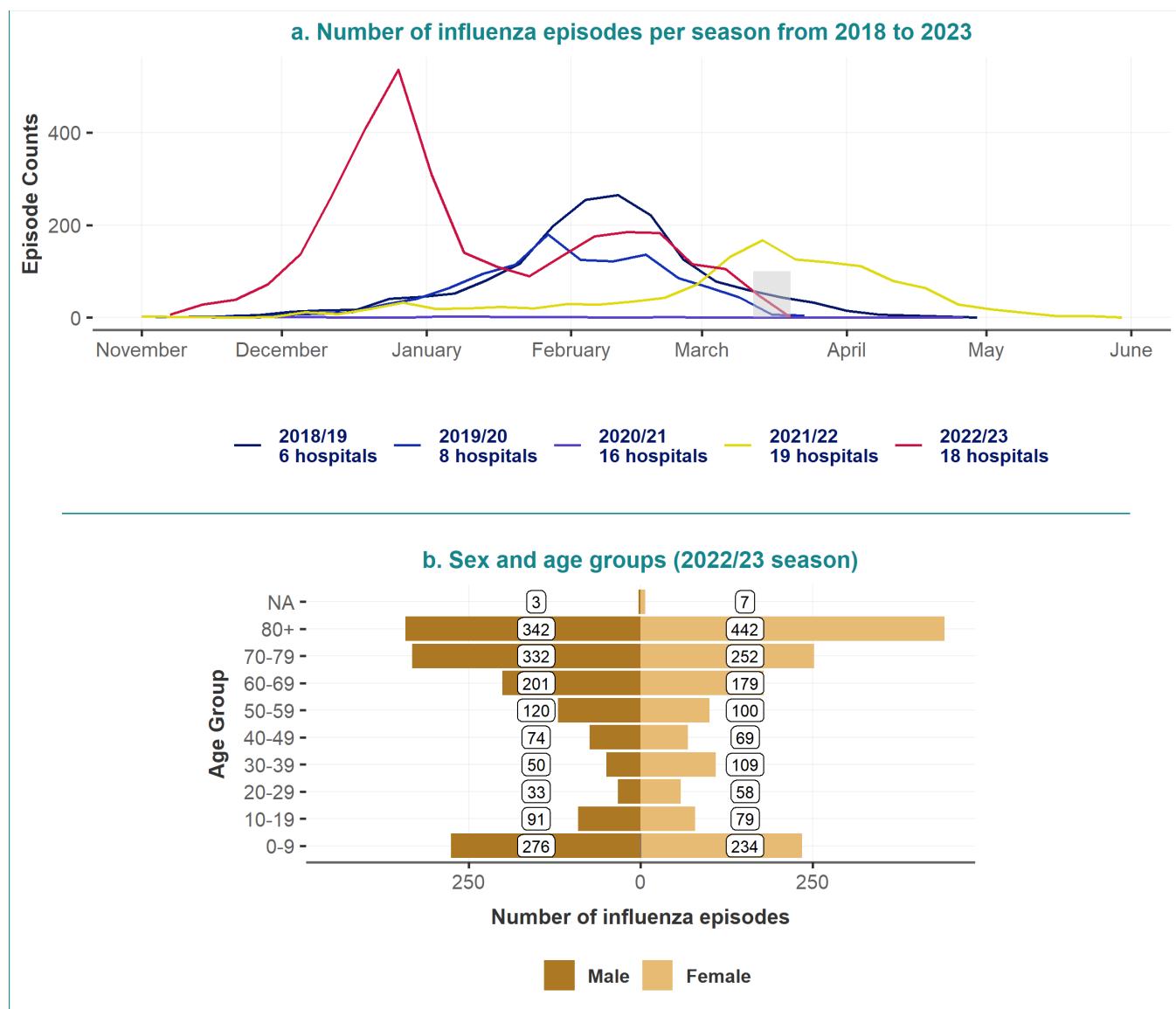
Figure 16: *Number of episodes per influenza seasons, with the age and sex demographic characteristics of the ongoing season. Data from the last two weeks (highlighted gray) is considered provisional due to entry delays.*

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

COVID-19 Hospital Based Surveillance CH-SUR
Federal Department of Home Affairs FDHA
Federal Office of Public Health FOPH
University of Geneva Institute of Global Health UNIGE (IGH)

6.2. Summary of influenza episodes for the season 2022-2023:

Important note:

Given the limited number of patients and events, all epidemiological and clinical data included in this report are to be interpreted with caution. **Additional registrations are expected**.

- From week 2022-44 to week 2023-10, we registered a total of 3052 influenza episodes including 436 (14%) nosocomial infections among CH-SUR hospitals. For 38 influenza episodes, it is unknown if the infection is nosocomial (Figure **17**).

- At this stage of the season, influenza type A virus was detected in 2652 (87%) episodes, and influenza type B virus in 389 (13%) episodes. Influenza type was unknown for 11 episodes.

- Information regarding the patient's vaccination status is available for 856 out of the 3052 influenza episodes (2196 unknowns). 713 (83%) influenza episodes occurred among non-vaccinated patients.

- A total of 199 (7%) influenza episodes concerned patients admitted to intermediate care (101 unknowns). Among those, 85 (43%) required non-invasive ventilation.

- A total of 300 (10%) influenza episodes concerned patients admitted to ICU (149 unknowns). Among those, 131 (44%) required non-invasive ventilation, 110 (37%) required invasive ventilation and 14 (5%) required ECMO.

- A total of 66 influenza episodes resulted in death during the hospitalization in this season.
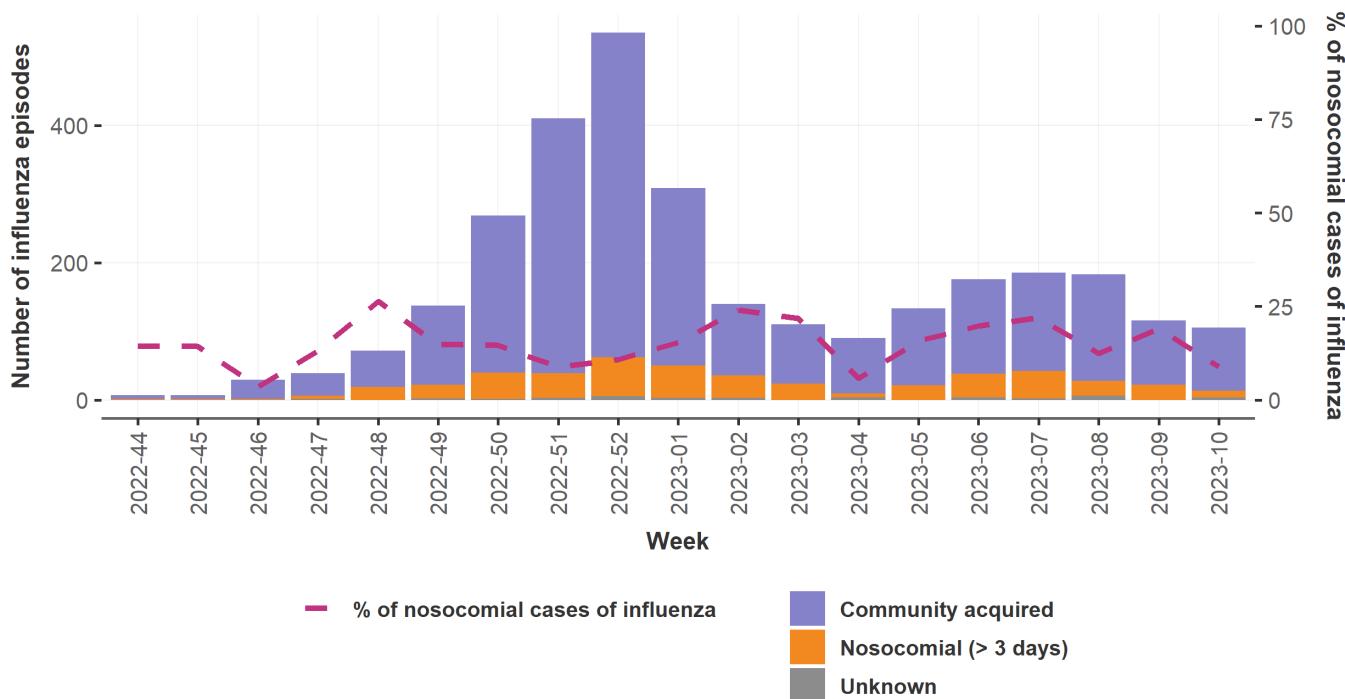
Figure 17: *Number of influenza episodes per week according to the origin of infection.*

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

COVID-19 Hospital Based Surveillance CH-SUR
Federal Department of Home Affairs FDHA
Federal Office of Public Health FOPH
University of Geneva Institute of Global Health UNIGE (IGH)

7. Glossary and supplemental information /

Hospitals participating to data collection / Hôpitaux participant à la collecte de données : La liste des hôpitaux suisses participant actuellement au système CH-SUR, est disponible à l'adresse suivante : Hospital-based surveillance of COVID-19 in Switzerland website.

Critères d'inclusion / Inclusion criteria :

Le CH-SUR recueille les données des patients hospitalisés pendant au moins 24 heures avec une infection au SARS-CoV-2 documentée. Sont considérés comme des confirmations de l'infection un résultat positif à un test PCR (polymerase chain reaction) ou à un test rapide antigénique ainsi qu'un diagnostic clinique pour le COVID 19. Les infections nosocomiales au SARS-CoV-2 sont également enregistrées dans la base de données et sont décrites dans une section spécifique à la fin de ce rapport.

Hospitalization / Hospitalisation:

Il s'agit de l'unité d'analyse la plus petite ; elle équivaut à la période écoulée entre l'admission et la sortie de l'un des hôpitaux participant à CH-SUR, cet intervalle de temps doit être supérieur à 24 heures pour être pris en compte. Une nouvelle hospitalisation est enregistrée chaque fois qu'une personne est admise à l'hôpital. Étant donné la fréquence des réadmissions au cours d'un même épisode de la maladie (dû à une seule infection), ce rapport fonde son analyse sur le nombre d'épisodes et non sur le nombre d'hospitalisations.

Episode / Épisode:

Un numéro d'épisode est attribué à chaque nouvelle admission à l'hôpital pour plus de 24 heures, qui est séparée d'au moins 30 jours d'une hospitalisation antérieure, que le patient soit hospitalisé une seule fois ou plusieurs fois pendant une période de 30 jours. Deux hospitalisations différentes du même patient, séparées par 30 jours, donnent lieu à deux numéros d'épisodes différents. Si un patient est transféré entre deux hôpitaux participant au CH-SUR dans la période de 30 jours suivant sa dernière sortie, alors ces hospitalisations comptent pour le même épisode. Un épisode peut donc inclure plusieurs hospitalisations et chaque hospitalisation peut inclure plusieurs admissions en unité de soins intensifs.

Reason for the hospitalization / Raison d'hospitalisation:

- *Hospitalisation en raison du COVID-19*:sur la base des informations disponibles au moment de l'admission, le patient est hospitalisé parce qu'il présente des symptômes dus au COVID-19 ou qu'il souffre de la décompensation d'une maladie chronique manifestement causée par le COVID-19.

- *Hospitalisation avec une infection au SARS-CoV-2*: sur la base des informations disponibles au moment de l'admission, le patient a un test positif pour le SARS-CoV-2 mais est hospitalisé sans symptômes de COVID 19 pour un problème autre que le COVID 19. En d'autres termes, le problème prédominant est un accident ou une maladie autre que le COVID 19.

Origin of the infection / Origine de l'infection:

- *Infection acquise dans la communauté*: le COVID 19 a été détecté avant l'admission à l'hôpital ou dans les 5 premiers jours suivant l'admission.

- *Infection nosocomiale*: l'épisode est enregistré comme "nosocomial" si le SARS-CoV-2 est détecté au moins cinq jours après l'admission à l'hôpital.

Severity score at admission / Score de gravité à l'admission:

Pour les adultes, le score de gravité utilisé est le score CURB-65. Un point est attribué pour chacun des symptômes suivants : confusion (score abrégé du test mental < 9), urémie > 19 mg/dl, fréquence respiratoire > 30/mn, pression artérielle basse (diastolique < 60 ou systolique < 90 mmHg), âge > 65 ans. Pour les enfants, un point est attribué pour chacun des éléments suivants : détresse respiratoire, saturation en oxygène < 92 %, évidence clinique d'une

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

COVID-19 Hospital Based Surveillance CH-SUR
Federal Department of Home Affairs FDHA
Federal Office of Public Health FOPH
University of Geneva Institute of Global Health UNIGE (IGH)

déshydratation grave ou d'un choc clinique, altération de l'état de conscience. Le score de gravité correspond à la somme des points donnés.

Intermediate care unit (intermediate care or IMCU) / Unité de soins intermédiaires (U-IMC): unité de soins prenant en charge des patients qui présentent une défaillance d'une fonction vitale ou dont la charge en soins ne permet pas un retour dans une unité d'hospitalisation normale. Ces unités constituent le lien entre une unité de soins intensifs et une unité de soins normale.

Intensive care unit (ICU) / Unité de soins intensifs (USI): unité de soins prenant en charge des patients présentant une défaillance grave d'une ou plusieurs fonctions vitales ou risquant de développer des complications sévères.

Statut vaccinal / Vaccination status:

La définition du statut vaccinal se fonde sur la dernière dose reçue, le cas échéant. Il distingue les catégories suivantes :

a) *Vacciné au cours des 6 derniers mois* : patients ayant reçu leur dernière dose de vaccin au cours des 6 mois précédant le test positif au SARS-CoV-2

b) *Vacciné il y a plus de 6 mois* : patients ayant reçu leur dernière dose de vaccin plus de 6 mois avant le test positif au SARS-CoV-2

c) *Vacciné (date inconnue)* : patients ayant reçu au moins une dose des vaccins approuvés par l'OMS avant le test positif, mais dont on ne sait pas quand la dernière dose a été administrée

d) *Non vacciné* : patients n'ayant reçu aucune dose d'un des vaccins approuvés par l'OMS au moment du test positif au SARS-CoV-2

e) *Statut inconnu* : patients pour lesquels on ne dispose d'aucune information sur la vaccination

Remarque : populations spéciales Les enfants de moins de 5 ans ne sont pas inclus dans les analyses spécifiques à l'âge concernant le statut vaccinal, étant donné que la vaccination ne leur est pas recommandée.

Discharge / Sortie: lorsque le patient quitte l'hôpital vivant, le départ est qualifié de « sortie » si le patient se rend :

1. à son domicile,
2. dans un établissement de soins de longue durée,
3. dans un autre hôpital,
4. dans une autre institution ne participant pas à la surveillance du CH-SUR,
5. dans un établissement de réadaptation, ou
6. vers une destination inconnue.

Reason of death / Raison du décès: : les patients pour lesquels le COVID 19 était la cause du décès (décédés du COVID 19) sont présentés séparément des patients ayant le COVID 19 qui sont morts d'autres causes (décédés avec le COVID 19, non du COVID 19). Cette détermination de la cause du décès d'un patient, du COVID ou d'une autre cause, est faite par un médecin de l'hôpital concerné pour chaque centre participant au CH-SUR. Les cas, où la cause du décès n'est pas certaine mais où il y a eu un diagnostic de COVID 19 (en conformité avec les critères d'inclusion du CH-SUR) sont comptés comme des décès du COVID ou des décès suspectés du COVID.

Dealing with missing data / Traitement des données manquantes: lorsque cela est mentionné dans le texte, les données manquantes sont exclues de l'analyse. Sinon, les enregistrements avec des données manquantes sont inclus dans les nombres totaux et analysés en conséquence. Cela peut conduire à la situation où les dénominateurs des différentes catégories analysées ne donnent pas le même total. Lorsque cela est indiqué, les données des deux derniers mois sont considérées comme provisoires en raison des délais de saisie et sont mises en évidence en gris dans certaines illustrations.

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

COVID-19 Hospital Based Surveillance CH-SUR
Federal Department of Home Affairs FDHA
Federal Office of Public Health FOPH
University of Geneva Institute of Global Health UNIGE (IGH)

Report prepared by: