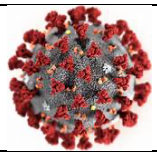
National COVID-19 Science Task Force (NCS-TF)



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COVID-19 and the influenza vaccination strategy for influenza season 2020 / 2021

Summary of request/problem

It is probable that SARS-CoV-2 will be circulating during the influenza season 2020/21. This situation might result in a double burden of disease with both viruses spreading, causing similar symptoms. It is, therefore, crucial that we have plans in place to protect those at risk, prevent ill health, and minimize the impact on the health care system. A question submitted by the cantonal health authorities /GDK to the NCS-TF relates to this issue: "What is the importance of influenza vaccination concerning COVID-19?".

Executive summary

- Both influenza and COVID-19 are respiratory viral infections. They share symptoms (e.g., fever, cough) and approaches to prevention (e.g., hand hygiene, staying home when sick, physical distancing, respiratory etiquette). Further, risk groups for influenza and COVID-19 are similar; both include older people and people with chronic illnesses.
- Influenza vaccination has been shown to prevent death, morbidity, hospital admissions, particularly among chronically ill people, but also in children and pregnant women. The Federal Office of Public Health (FOPH) has had influenza vaccine recommendations in place for several years. These target older adults, but also those with chronic illnesses, premature infants, pregnant women, residents in long-term health care facilities or those in regular contact with vulnerable populations, most importantly, healthcare workers.
- Already in 2003, the World Health Assembly adopted a resolution urging member states to "increase influenza vaccination coverage of all people at high risk and to attain coverage of 75% among the elderly by 2010." Unfortunately, in Switzerland, influenza vaccination coverage is low in older and chronically ill people, and also low in healthcare workers (around 30-40%).
- We recommend implementing strategies to substantially increase the vaccination coverage for influenza for the upcoming influenza season. Strategies should target the risk groups for both influenza and COVID-19, their contacts, as well as health care workers. Because shortages of influenza vaccination are likely in the coming season, clear vaccination priorities should be defined. The strategies should be promoted on a national level using effective communication. In parallel, strategies that include the vaccination of children should be evaluated.

Introduction

Seasonal influenza

Seasonal influenza is a challenge for surveillance, control, and treatment [1,2]. Worldwide, it causes 3 to 5 million cases of severe illness each year and kills from 250,000 to 500,000 people [3], particularly infants, the elderly, and the chronically ill. In Switzerland, influenza is responsible for

111,000 to 331,000 medical consultations yearly and 1,000 to 5,000 hospitalizations [4].

Influenza and COVID-19

Both influenza and COVID-19 are contagious respiratory diseases caused by viruses, and they share some of the same symptoms (e.g., fever, cough) and approaches to prevention (e.g., hand hygiene, staying home when sick, physical distancing, respiratory etiquette) [5,6]. Further, risk groups for influenza and COVID-19 are similar and include older adults and people with chronic illnesses (Table 1) [4,7–9]. There are also important differences: super spreader events are more common for COVID-19 [10,11]; the infection fatality rate is higher for COVID-19 [12,13], and transmission during the pre-symptomatic phase is considered more important for COVID-19 than for influenza [2,14].

Table 1: Comparison between influenza and COVID-19, including symptoms in adults and risk groups as defined by the Federal Office of Public Health [4,8,9,25].

	Influenza	**COVID-19:**
Symptoms		
Fever	Common	Common
Dry cough	Common	Common
Shortness of breath	Common	Common
Headaches	Sometimes	Common
Aches and pains	Common	Common
Sore throat	Sometimes	Common
Fatigue	Sometimes	Common
Diarrhea	Rare	Sometimes
Runny nose	Rare	Sometimes
Anosmie and dysgeusia	No	Common
IFR (%)	0.01-0.1	Modelled IFR: 0.68 (95% CI 0.53-0.82)
Vaccination available	**Yes**	**No**
Risk groups (for more details see appendix)		
	People over the age of 65 People with chronic illnesses (including children older than six months) People, who live in a nursing home or long-term care facility Preterm infants Pregnant women People, who are in regular contact with vulnerable populations (from risk group or with infants < 6 months of age)	People over the age of 65 Adults with co-morbidities (hypertension, chronic respiratory diseases, diabetes, immunocompromised, cardiovascular disease, cancer or Obesity (BMI≥ 30) People, who live in a nursing home or long-term care facility Pregnant women

IFR, infection fatality rate, based on systematic reviews [12,13]. The IFR is not well defined at present for COVID-19.

Data on COVID-19 in children and adolescents remain scarce. Studies in children and adolescents showed that COVID-19 disease was generally mild [15–17]. Only very few children develop severe disease requiring ICU admission and ventilation [18]. The available evidence indicates that

younger children are less likely to transmit SARS-CoV-2 compared to adolescents and adults [17]. This is in contrast to seasonal influenza where transmission rates in children and adolescents are high, for example in schools, and children and adolescents frequently transmit the virus to parents and grandparents [19–22].

In the UK, the national vaccination programme for influenza based on an intranasal live attenuated influenza vaccine (LAIV) was extended to include healthy children and adolescents aged 2 to <17 years [23]. The programme's positive impact on influenza-related outcomes has been documented, both in terms of providing direct protection to children and indirect protection to the wider population, including risk groups. Interestingly, beneficial effects were also evident in the 2014/15 influenza season, despite the circulation of drifted A and B influenza strains [24]. In the USA, several school-based influenza vaccination studies showed relative reductions in influenza-like illness in both children and adults, school days lost and in adult workdays lost [21].

COVID-19 will be circulating during the upcoming influenza season 2020/21. This situation might result in a double burden of disease with both viruses spreading, causing similar symptoms. It is, therefore important that we have effective plans in place for the 2020/21 influenza season to protect those at risk, prevent ill health, and minimize the further impact on the health care system.

Influenza vaccination

Influenza vaccination and recommendation by the FOPH

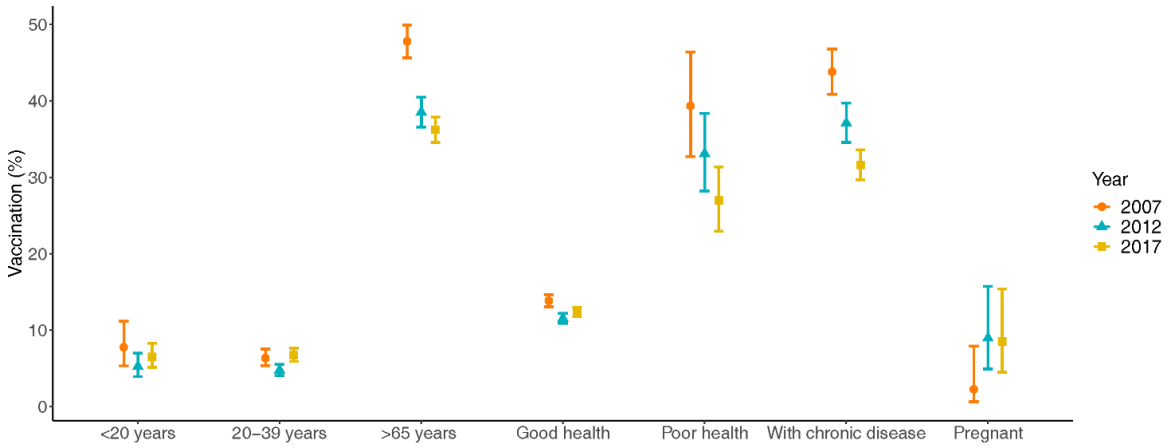
Influenza vaccination has been shown to prevent death, morbidity, hospital admissions, and other negative health-related outcomes, particularly among chronically ill people [26–31], but also in children [32] and pregnant women [33].

The Federal Office of Public Health (FOPH) has had influenza vaccine recommendations in place for many years. The recommended indications target mainly older adults, but also patients of any age with chronic illnesses (including children older than six months), premature infants, pregnant women, and residents in long-term health care facilities or those who are in regular contact with the mentioned vulnerable populations, including health care workers [4,9]. Importantly, in 2003, the World Health Assembly adopted a resolution urging member states to "increase influenza vaccination coverage of all people at high risk and to attain coverage of 75% among the elderly by 2010" [7].

Trends of influenza vaccinations status over time in Switzerland

A recent preprint reports trends and associations of sociodemographic characteristics and health-related factors with influenza vaccination practices in Switzerland, based on data from the Swiss Health Surveys 2007, 2012, and 2017 [34]. The proportion of survey participants reporting a history of influenza vaccination overall was 31.9% (95% confidence intervals 31.4-32.4%). It dropped from 34.5% in 2007 to 28.8% in 2017. The overall uptake of vaccination for influenza within the past 12 months was 16% in 2007 and around 14% in 2012 and 2017. In people with chronic disease, uptake dropped from 43.8% in 2007 to 37.1% in 2012 and 31.6% in 2017 ($p<0.001$). In older people (≥65 years), uptake dropped from 47.8% in 2007 to 38.5% in 2012 to 36.2% in 2017 ($p<0.001$). A decrease over time was also seen in those with poor health status (Figure 1).

Figure 1: Temporal trends of self-reported influence vaccination in the last 12 months for selected groups of the Swiss population. Adapted from [34].



COVID-19 and seasonal influenza: implications for prevention

The majority of the population remains susceptible to SARS-CoV-2, even in regions with a high burden of COVID-19 cases. For example, sero-surveys from Geneva showed a SARS-CoV-2 seroprevalence of 10·8% (95% CI 8·2–13·9) for their 5th study week in May 2020 [35]. The stress on health care systems will be greatest should the COVID-19 and influenza epidemic overlap and peak around the same time.

A modelling study from China examined the impact of mass influenza vaccination on COVID-19 epidemics with limited detection capabilities [36]. The modelling examined the effect of mass influenza vaccination on the spread of COVID-19 should an outbreak coincide with the influenza season. The authors found that increasing influenza vaccine uptake or enhancing the non-pharmaceutical public health interventions would facilitate the management of respiratory outbreaks coinciding with the peak flu season. In particular, such an increase in vaccine uptake could partly compensate for the shortage of diagnostic resources.

In Australia, the COVID-19 related increase in non-pharmaceutical interventions (NPIs) such as improved hand hygiene and social distancing appears to have had a substantial impact on the mortality of seasonal influenza [37]. From January to June 2020, there were just 36 deaths from the flu, compared to 430 deaths in the same period in 2019. School closures and border closures probably also played a role in reducing influenza transmission. Similarly, in Singapore, influenza activity declined steeply following the implementation of NPIs [38]. The experience in Australia and Singapore shows that NPIs are effective measures to reduce transmission of both influenza and COVID-19.

Conclusion and Recommendations

The stress on health care systems will be most significant, should the COVID-19 and influenza epidemic overlap and peak around the same time during influenza season 2020/21. The majority of the population is still susceptible to COVID-19. Influenza and COVID-19 are difficult to distinguish based on clinical assessment [5]. A recent study [34] has shown that influenza vaccination coverage in Switzerland has decreased from 2012 to 2017. This decrease was also observed among those at the highest risk for influenza as well as COVID-19 (>65 years, chronically ill). Overall vaccine coverage among risk populations was 36.2% in 2017, well below the recommended WHO target.

We urgently recommend that strategies to increase the vaccination coverage for influenza are implemented for the upcoming influenza season. Strategies should target the risk groups for both influenza and COVID-19 as well as health care workers (Table 1).

Targeting children may reduce hospitalizations among adults who frequently contract influenza from children. However, this will be difficult to achieve in Switzerland in the short term. The general vaccination of children has never been recommended in our country, and the intranasal LAIV is not available. The NCS-TF believes that firm recommendations for vaccinating children cannot be made at this stage, but that the licensing of the intranasal vaccine in Switzerland would be highly desirable.

Expanding vaccine coverage requires multiple strategies:

- To expand influenza vaccination coverage, especially in **high-risk groups**, the government should implement a **campaign with general and targeted information/communication** focusing on solidarity and personal protection. This could be a cross-platform campaign, including newspapers, social media, and television, among others.
- Strategies to increase vaccination coverage among **health care workers** should include
    - Coverage of costs by the employer
    - An educational program for staff
    - Establishing a culture of prevention, for example with a "vaccine day"
    - A campaign via e-mail, posters, employee newsletters etc.
    - Action research using group discussion groups to understand why some staff is declining vaccination.

An important aspect is **increasing access to influenza vaccination:**

- **The cost of the vaccination should be covered through the "obligatorische Krankenpflegeversicherung (OKP)**", with franchise exemption for patients at high risk and their contacts.
- Strategies to improve access to vaccination, such as the provision of **vaccinations at pharmacies or mobile vaccine teams**, as it is already in place in some places in Switzerland.

All strategies should integrate **effective communication:**

- Communication strategies should include **general and setting-specific communication** strategies (see also NCS-TF Policy brief communication and SARS-CoV-2 from July 2020).

Finally, we recommend strengthening other fundamental elements, such as **non-pharmaceutical interventions (NPI)**, in the prevention of influenza transmission. Most of these interventions have already been promoted at the start and during the COVID-19 pandemic:

- Maintaining and strengthening **hand hygiene**, **respiratory hygiene**, including the wearing of **masks**
- Promotion of social distancing as well as "**test and stay home when sick**".
- The use of **triple tests** that detect SARS-CoV-2 as well as influenza A and B infections should be considered during the flu season.

Unresolved issues

Further studies are required to quantify the likely impact of influenza vaccination on the COVID-19 epidemic, and the comparative impact of NPIs on Covid-19 and influenza. Further studies are needed on the IFR of COVID-19 as well as the frequency and clinical impact of coinfections with influenza and other respiratory infections.

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Appendix

1. COVID-19: Kategorien besonders gefährdeter Personen[1] [8]

Das BAG berücksichtigt bei der Präzisierung der Kategorien der besonders gefährdeten Personen den aktuellen Stand der Wissenschaft und die Einschätzungen der medizinischen Fachgesellschaften der Schweiz. Das BAG führt die Kategorien der besonders gefährdeten Personen laufend nach.

Gemäss aktuellem Stand der Wissenschaft ist nur bei erwachsener Personen von einer besonderen Gefährdung auszugehen. Die nachfolgenden Kriterien beziehen sich deshalb nur auf erwachsene Personen.

Als besonders gefährdet gelten:

I. Personen ab 65 Jahren

II. Erwachsene mit folgenden Vorerkrankungen:

1. Bluthochdruck

– Arterielle Hypertonie mit Endorganschaden
– Therapie-resistente arterielle Hypertonie

2. Herz-Kreislauf-Erkrankungen

2.1 Generelle Kriterien

– Patient/innen mit Dyspnoe funktionelle Klasse NYHA II–IV und NT-Pro BNP > 125 pg/ml
– Patient/innen mit mindestens 2 kardiovaskulären Risikofaktoren (einer davon Diabetes oder arterielle Hypertonie)
– Vorgängiger Schlaganfall und/oder symptomatische Vaskulopathie
– Chronische Niereninsuffizienz (Stadium 3, GFR <60ml/min)

2.2 Andere Kriterien

2.2.1 Koronare Herzkrankheit

– Myokardinfarkt (STEMI und NSTEMI) in den letzten 12 Monaten
– Symptomatisches chronisches Koronarsyndrom trotz medizinischer Therapie (unabhängig von allfälliger vorheriger Revaskularisierung)

2.2.2 Erkrankung der Herzklappen

– Mittelschwere oder schwere Stenose und/oder Regurgitation zusätzlich zu mindestens einem generellen Kriterium
– Jeglicher chirurgischer oder perkutaner Klappenersatz zusätzlich zu mindestens einem generellen Kriterium

2.2.3 Herzinsuffizienz

– Patient/innen mit Dyspnoe funktionelle Klasse NYHA II–IV oder NT-Pro BNP > 125pg/ml trotz medizinischer Therapie jeglicher LVEF (HFpEF, HFmrEF, HFrEF)
– Kardiomyopathie jeglicher Ursache
– Pulmonalarterielle Hypertonie

2.2.4 Arrhythmie

– Vorhofflimmern mit einem CHA2DS2-VASc Score von mindestens 2 Punkten
– Vorgängige Schrittmachereinlage (inkl. ICD und/oder CRT Implantation) zusätzlich zu einem generellen Kriterium

2.2.5 Erwachsene mit kongenitaler Herzerkrankung

– Kongenitale Herzerkrankung nach individueller Beurteilung durch den behandelnden Kardiologen
/ die behandelnde Kardiologin

3. Diabetes

– Diabetes mellitus, mit Spätkomplikationen oder HbA1c von > 8%

4. Chronische Atemwegserkrankungen

– Chronisch Obstruktive Lungenerkrankungen GOLD Stadium II-IV
– Lungenemphysem
– Unkontrolliertes, insbesondere schweres Asthma bronchiale
– Interstitielle Lungenerkrankungen
– Aktiver Lungenkrebs
– Pulmonalarterielle Hypertonie
– Pulmonalvaskuläre Erkrankung
– Aktive Sarkoidose
– Zystische Fibrose
– Chronische Lungeninfektionen (atypische Mykobakteriosen, Bronchiektasen etc.)
– Beatmete Patient/innen

5. Krebs

– Krebs unter medizinischer Behandlung

6. Erkrankungen/Therapien, die das Immunsystem schwächen

– Schwere Immunsuppression (z.B. CD4+< 200µl)
– Neutropenie ≥ 1 Woche
– Lymphozytopenie <0.2x109/L
– Hereditäre Immundefekte
– Einnahme von Medikamenten, die die Immunabwehr unterdrücken (wie z. B. Langzeit-Einnahme von Glukokortikoide, monoklonale Antikörper, Zytostatika, etc.)
– Aggressive Lymphome (alle Entitäten)
– Akute Lymphatische Leukämie
– Akute Myeloische Leukämie
– Akute Promyelozytenleukämie
– T-Prolymphozytenleukämie
– Primäre Lymphome des zentralen Nervensystems
– Stammzelltransplantation
– Amyloidose (Leichtketten (AL)- Amyloidose)
– Aplastische Anämie unter immunsuppressiver Therapie
– Chronische Lymphatische Leukämie

– Asplenie / Splenektomie
– Multiples Myelom
– Sichelzellkrankheit

7. Adipositas

– Patient/innen mit einem Body-Mass-Index (BMI) von 40 kg/m2 oder mehr

[1] Vormals Anhang 6 der Verordnung 2 über Massnahmen zur Bekämpfung des Coronavirus (COVID-19- Verordnung 2), SR 818.101.24

2. **DIE SAISONALE GRIPPEIMPFUNG WIRD EMPFOHLEN FÜR** [25]**:**

A) Personen mit einem erhöhten Komplikationsrisiko bei einer Grippeerkrankung. (Für diese Gruppe werden die Kosten der Impfung von der obligatorischen Kranken pflegeversicherung übernommen, sofern die Franchise bereits erreicht wurde.) Dies sind:
– Personen ab 65 Jahren;
– Schwangere Frauen und Frauen, die in den letzten 4 Wochen entbunden haben;
– Frühgeborene (geboren vor der 33. Woche oder mit einem Geburtsgewicht unter 1500 g) ab dem Alter von 6 Monaten für die ersten zwei Winter nach der Geburt*;
– Personen (ab dem Alter von 6 Monaten) mit einer der folgenden chronischen Erkrankungen: Herzerkrankung; Lungenerkrankung (z. B. Asthma bronchiale); Stoffwechselstörungen mit Auswirkung auf die Funktion von Herz, Lungen oder Nieren (z. B. Diabetes oder morbide Adipositas, BMI ≥40); neurologische (z. B. M. Parkinson, zerebrovaskuläre Erkrankung) oder muskuloskelettale Erkrankung mit Auswirkung auf die Funktion von Herz, Lungen oder Nieren; Hepatopathie; Niereninsuffizienz; Asplenie oder Funktionsstörung der Milz (inkl. Hämoglobinopathien); Immundefizienz (z. B. HIV-Infektion, Krebs, immunsuppressive Therapie)*/**;
– Patientinnen und Patienten in Pflegeheimen und in Einrichtungen für Personen mit chronischen Erkrankungen.

B) Personen, welche in der Familie oder im Rahmen ihrer privaten oder beruflichen Tätigkeiten* regelmässigen Kontakt haben mit:**
– Personen der Kategorie A);
– Säuglingen unter 6 Monaten (diese haben ein erhöhtes Komplikationsrisiko und können aufgrund ihres jungen Alters nicht geimpft werden).
Die Grippeimpfung ist insbesondere empfohlen für alle Medizinal- und Pflegefach-personen, alle im paramedizinischen Bereich tätigen Personen, Mitarbeitende von Kinderkrippen, Tagesstätten sowie Alters- und Pflegeheimen, inklusive Studierende sowie Praktikantinnen und Praktikanten.

Die saisonale Grippeimpfung kann ausserdem für alle Personen in Betracht gezogen werden, die ihr Risiko für eine Grippeerkrankung aus privaten und/oder beruflichen Gründen vermindern möchten.