

The Newfoundland & Labrador Centre for Applied Health Research (NLCAHR) sends this COVID-19 e-bulletin to our health system stakeholders on a bi-weekly basis. This e-bulletin includes results from recent searches of health evidence and grey literature on the pandemic under specific subject headings, highlighting those findings considered to be of particular relevance to you.

We welcome your [feedback and suggestions](#).

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You can find all NLCAHR e-bulletins and COVID-19 *Quick Response Reports* [online here](#).

Articles about **COVID-19 VARIANTS** are **highlighted in RED** below.

CLINICAL PRESENTATION & BIOLOGY

CBC: Risk of death more than 130% higher with Delta variant than original COVID virus, research suggests (October 5, 2021)

“A new study using Canadian data suggests the Delta variant of the COVID-19 virus causes more serious disease and is associated with an increased risk of death compared to previous strains — dangers that are drastically reduced with vaccination. Among Delta cases, they found a 108 per cent increased risk for hospitalization, 235 per cent increased risk for ICU admission and 133 per cent increased risk for death compared to the original virus strain.” [LINK](#)

- [Original research: Evaluation of the relative virulence of novel SARS-CoV-2 variants: a retrospective cohort study in Ontario, Canada](#)

Nature Communications: Possible future waves of SARS-CoV-2 infection generated by variants of concern with a range of characteristics (September 30, 2021)

“The authors demonstrate that a Variant of Concern (VOC) with a substantial transmission advantage over resident variants, or with immune escape properties, can generate a wave of infections and hospitalizations comparable to the winter 2020-2021 wave. Moreover, a variant that is less transmissible, but shows partial immune-escape could provoke a wave of infection that would not be revealed until control measures are further relaxed.” [LINK](#)

Nature: SARS-CoV-2 Variants of Concern Delta: a great challenge to prevention and control of COVID-19 (September 27, 2021)

“Key points:

- Vaccination should be actively carried out regardless of whether infected by SARS-CoV-2 previously, and second dose vaccination should be taken on time;
- Relevant information about vaccine seed strain should be updated in time according to the variants with higher infectivity and immune escape abilities;

- New vaccination strategies containing multiple variant antigens in one vaccination should be considered and priorly scheduled;
- Variants with higher transmission and immune escape abilities are likely to appear in the very soon future, scientific and effective epidemic prevention measures including vaccination, wearing masks, washing hands frequently, maintaining social distance and avoiding crowd gathering should be strictly observed.”

[LINK](#)

Nature: [Distinct immune signatures discriminate between asymptomatic and presymptomatic SARS-CoV-2 positive subjects](#) (September 22, 2021)

“The authors found that a potentially immunosuppressive CD4+ NKT cellular subset was selectively increased in the presymptomatic cases. The frequency of this NKT subset was positively and tightly associated with an immune module involving the activation of proinflammatory pathways rather than with the other monocytic or T lymphocytic module just described above. Its specific association with the certain proinflammatory factors such as PAK3 and CCR5 provides a potential intervention avenue to test its contribution to the establishment of presymptomatic fate.” [LINK](#)

The Atlantic: [‘Post-Vax COVID’ Is a New Disease](#) (September 21, 2021)

“We’re not yet at the point where we can officially label post-vaccination COVID-19 cases as “modified”; maybe we never will be. Some immunized people are still getting dangerously sick. But the shots are softening COVID-19’s sharp edges: on average, breakthrough infections seem to be briefer, milder, and less contagious. Among the fully immunized, catching the coronavirus doesn’t mean the same thing it did last year. ‘It’s a very different kind of infection than in people who are immunologically naive,’ Lindsey Baden, an infectious-disease physician and COVID-19 vaccine researcher at Brigham and Women’s Hospital in Boston, says.” [LINK](#)

Public Library of Science (PLOS) Medicine: [Incidence, co-occurrence, and evolution of long-COVID features: A 6-month retrospective cohort study of 273,618 survivors of COVID-19](#) (September 28, 2021)

“Among COVID-19 survivors (mean [SD] age: 46.3 [19.8], 55.6% female), 57.00% had one or more long-COVID feature recorded during the whole 6-month period (i.e., including the acute phase), and 36.55% between 3 and 6 months. The incidence of each feature was: abnormal breathing (18.71% in the 1- to 180-day period; 7.94% in the 90- to 180-day period), fatigue/malaise (12.82%; 5.87%), chest/throat pain (12.60%; 5.71%), headache (8.67%; 4.63%), other pain (11.60%; 7.19%), abdominal symptoms (15.58%; 8.29%), myalgia (3.24%; 1.54%), cognitive symptoms (7.88%; 3.95%), and anxiety/depression (22.82%; 15.49%). All 9 features were more frequently reported after COVID-19 than after influenza (with an overall excess incidence of 16.60% and hazard ratios between 1.44 and 2.04, all $p < 0.001$), co-occurred more commonly, and formed a more interconnected network.” (n=273,618)

[LINK](#)

Nature (Preprint): [One-year Risks and Burdens of Incident Cardiovascular Disease in COVID-19: Cardiovascular Manifestations of Long COVID](#) (October 7, 2021)

“We show that beyond the first 30 days of infection, people with COVID-19 are at increased risk of incident cardiovascular disease spanning several categories... The risks and burdens were evident among those who were non-hospitalized during the acute phase of the infection and increased in a graded fashion according to care setting of the acute infection (non-hospitalized, hospitalized, and admitted to intensive care). Taken together, our results provide evidence that risk and 1-year burden of cardiovascular disease in survivors of acute COVID-19 are substantial. (n=151,195)” [LINK](#)

- See also: [Painless, Silent Organ Damage Seen in COVID ‘Long Hauler’ Study](#), and
- [Kidney Outcomes in Long COVID](#)

HEALTH EQUITY AND ETHICS (VULNERABLE GROUPS)

Canadian Medical Association Journal: [Protecting Canada's children from the consequences of the fourth wave of the COVID-19 pandemic](#) (September 27, 2021)

"Delayed ramifications from SARS-CoV-2 infections (e.g., multisystem inflammatory syndrome and post-COVID conditions) may have a greater impact on the health of children than acute illness, and the burden of these should be considered and studied, particularly in the context of the Delta variant. Because children under 12 years of age are not yet able to receive COVID-19 vaccines in Canada, it is important to ensure vaccination of all those who are eligible and to maintain other mitigation measures, such as masking and improved ventilation, to protect children as a new school year begins." [LINK](#)

Canadian Medical Association Journal: [Characteristics of children admitted to hospital with acute SARS-CoV-2 infection in Canada in 2020](#) (September 27, 2021)

"Risk factors for severe outcomes of SARS-CoV-2 infection are not well established in children. We sought to describe pediatric hospital admissions associated with SARS-CoV-2 infection in Canada and identify risk factors for more severe disease. Among children who were admitted to hospital with SARS-CoV-2 infection in Canada during the early COVID-19 pandemic period, incidental SARS-CoV-2 infection was common. In children admitted with acute COVID-19, obesity and neurologic and respiratory comorbidities were associated with more severe disease." [LINK](#)

Archives of Disease in Childhood: [Clinical ethics: consent for vaccination in children](#) (September 27, 2021)

"There are no in-principle differences between COVID-19 vaccines and other vaccines. When COVID-19 vaccination becomes available for young people under 16, the same principles should apply as for other routine immunizations in childhood/adolescence. Vaccine hesitancy, either among young people or their parents, may reduce the uptake of a COVID-19 vaccine. Some of these issues may make the expansion of vaccine programs to young people more complicated and resource intensive than vaccination in adults. As with the HPV vaccination, lack of parental consent is likely to be the main barrier to adolescents receiving the vaccination, and self-consent by Gillick competent adolescents (or those over the age of 16) should be supported." [LINK](#)

Public Library of Science (PLOS) One: [Association of pre-existing comorbidities with mortality and disease severity among 167,500 individuals with COVID-19 in Canada: A population-based cohort study](#) (October 5, 2021)

"The novel coronavirus disease 2019 (COVID-19) has infected 1.9% of the world population by May 2, 2021) Since most previous studies that examined risk factors for mortality and severity were based on hospitalized individuals, population-based cohort studies are called for to provide evidence that can be extrapolated to the general population. Therefore, we aimed to examine the associations of comorbidities with mortality and disease severity in individuals with COVID-19 diagnosed in 2020 in Ontario, Canada." [LINK](#)

Health Affairs: [Risk and Resilience Factors Influencing Postpartum Depression and Mother-Infant Bonding During COVID-19](#) (October 4, 2021)

"Adverse childhood experiences, prenatal depression and anxiety, and COVID-19-related distress predicted a greater likelihood of postpartum depression. Prenatal depression was the only unique predictor of impaired maternal-infant bonding after postpartum depression was controlled for. Women reporting greater emotion regulation, self-reliance, and nonhostile relationships had healthier postpartum outcomes. Policies to increase the number of nonspecialty providers providing perinatal mental health services as well as reimbursement for

integrated care and access to mental health screening and care are needed to improve lifelong outcomes for women and their children." [LINK](#)

Respiratory Care: [Impact of Asthma on Severity and Outcomes in COVID-19](#) (September 28, 2021)

"We conducted this systematic review to evaluate whether asthma increases the risk of severe disease and adverse outcomes among subjects with COVID-19. Comorbid asthma increases risk of COVID-19-related hospitalization but not severe disease or other adverse outcomes in subjects with COVID-19." [LINK](#)

HEALTH SYSTEM ADMINISTRATION

Annals of Internal Medicine: [Getting Through COVID-19: Keeping Clinicians in the Workforce](#)

(September 28, 2021)

"To keep physicians and other clinicians in the workforce, the entities that employ us must move beyond suggesting stress-reduction activities, such as yoga and meditation, to provide the tactical support clinicians need to safely care for patients and support one another. We call upon every health system, hospital, and clinical practice to adopt the following actions." [LINK](#)

STAT News: [I fear COVID-19 is pushing young physicians out of medicine](#) (September 27, 2021)

"Almost two years into this pandemic, no one can say with any certainty what the ultimate impact of COVID-19 will be on medicine, on the U.S. health system, and on the national psyche. But it's impossible to experience it on the frontlines and not come away with feelings of awe and dread for the entire health care workforce — physicians, nurses, respiratory therapists, lab and X-ray technicians, food service providers, security personnel, housekeepers, and everyone else staffing the nation's hospitals." [LINK](#)

Psychiatric Quarterly: [COVID-19 Pandemic Support Programs for Healthcare Workers and Implications for Occupational Mental Health: A Narrative Review](#) (October 4, 2021)

"This narrative review aims to summarize initiatives developed during the COVID-19 pandemic to support healthcare workers' emotional well-being within the context of a pre-existing framework of occupational mental health guidelines. This occupational mental health framework integrates principles from multiple disciplines to optimize prevention and management of mental health issues among employees." [LINK](#)

The New England Journal of Medicine: [Resurgence of SARS-CoV-2 Infection in a Highly Vaccinated Health System Workforce](#) (September 30, 2021)

"The dramatic change in vaccine effectiveness from June to July is likely to be due to both the emergence of the Delta variant and waning immunity over time, compounded by the end of masking requirements in California and the resulting greater risk of exposure in the community. Our findings underline the importance of rapidly reinstating nonpharmaceutical interventions, such as indoor masking and intensive testing strategies, in addition to continued efforts to increase vaccinations, as strategies to prevent avoidable illness and deaths and to avoid mass disruptions to society during the spread of this formidable variant. Furthermore, if our findings on waning immunity are verified in other settings, booster doses may be indicated." [LINK](#)

Journal of the American Medical Association: [Trajectory of COVID-19 Vaccine Hesitancy over Time and Association of Initial Vaccine Hesitancy with Subsequent Vaccination](#) (September 24, 2021)

"This cohort study found that COVID-19 vaccine hesitancy is not a stable trait precluding vaccination but, instead, is labile. Hesitancy decreased between late 2020 and early 2021, with nearly one-third (32%) of persons who were initially hesitant being vaccinated at follow-up and more than one-third (37%) transitioning from vaccine hesitant

into vaccine willing. Early plans regarding vaccination frequently deviated from later action in vaccine seeking. Self-reported vaccination status was congruent with biological tests, indicating that it is a valid metric." [LINK](#)

British Medical Journal Thorax:

COVID-19 risk and mortality in hospitals: this is not a time to let our guard down

(September 27, 2021)

"Over a year into this pandemic, the global community affected by COVID-19 has come a long way. Successful vaccination drives in many countries, and treatments such as dexamethasone and tocilizumab which attenuate the disease process, are proof that the efforts of the research community are fruitful. On the flipside, there is the ever-evolving threat of COVID-19 variants and populations which may never achieve herd immunity for many reasons. For those reasons, the importance of continuing to be vigilant in order to prevent nosocomial infection remains paramount." [LINK](#)

INFECTION PREVENTION AND CONTROL

Nature: Real-world data show that filters clean COVID-causing virus from air

(October 6, 2021)

"Research at a hospital swamped by people with COVID-19 has confirmed that portable air filters effectively remove SARS-CoV-2 particles from the air — the first such evidence in a real-world setting. The results suggest that air filters could be used to reduce the risk of patients and medical staff contracting SARS-CoV-2 in hospitals, the study's authors say." [LINK](#)

- Original research: [The removal of airborne SARS-CoV-2 and other microbial bioaerosols by air filtration on COVID-19 surge units](#)

Microbiology of the Built Environment BioBE Preprint: Controlled Chamber COVID Study

(October 4, 2021)

"Data from near field aerosol trials with high expiratory activities suggest that respiratory particles of smaller sizes (0.3 μm - 1 μm) best characterize the variance of near field aerosol viral load. Moreover, our findings indicate that building operation practices such as ventilation, filtration, and humidification substantially reduce the environmental aerosol viral load, and therefore inhalation dose, and should be prioritized to improve building health and safety." [LINK](#)

- Original research: [Quantifying human and environmental viral load relationships amidst mitigation strategies in a controlled chamber with participants having COVID-19.](#)

Public Library of Science (PLOS) ONE: The protective performance of reusable cloth face masks, disposable procedure masks, KN95 masks and N95 respirators: Filtration and total inward leakage

(October 6, 2021)

"In this study we have reported on the fabric filtration efficiency and total inward leakage protection factor for five groups of masks of relevance to the SARS-CoV-2 pandemic... Our study has clearly shown that there is a variation in the level of particle penetration through materials used in the construction of masks. This is a function of the physical characteristics of the filtering layer, including porosity, fibre type, fabric/membrane structure, as well as electrostatic properties." [LINK](#)

The British Medical Journal Thorax: [On the psychology and politics of wearing masks](#) (September 28, 2021)

"However, having stressed this bottom line, it does remain true that mask wearing is slipping and that it is important to address the factors which impact levels of adherence. One is simple accessibility. People fail to wear masks either because they can't afford them or because they forget them. One study in Oslo found that distribution of free masks outside shops cut non-usage by nearly two-thirds from 8.3% to 2.9%. Another factor is perceived need. While adherence to mask-wearing often declines with time, it has less to do with "fatigue" than with a sense of declining risk, for if there is no risk, why wear a mask? Hence messaging about the importance of masks as an efficacious means of stopping infections is critical." [LINK](#)

The Lancet: [The race between vaccination and evolution of COVID-19 variants](#) (September 28, 2021)

"Aside from mu [B.1.621], the variants of interest list is made up of eta (B.1.5250), iota (B.1.526), kappa (B.1.617.1), and lambda (C.37). Variants are added to the list if they harbour genetic changes that look as if they could make the virus more transmissible, more virulent, or more likely to escape the vaccine... The only way to reduce the risk of variants is to cut transmission of SARS-CoV-2 wherever the virus is found. But the rollout of the COVID-19 vaccines continues to favour high-income nations." [LINK](#)

The British Medical Journal: [COVID-19 vaccination: evidence of waning immunity is overstated](#) (September 23, 2021)

"Additional vaccine doses are reasonable for people who might not achieve an adequate response to the primary vaccination because of immunosuppression or advanced age, but overstating evidence of waning immunity for the general population has already had important ramifications, including affecting vaccine confidence. In addition, a focus on waning immunity in high income countries diverts attention and limited vaccine supplies away from the urgent need for primary vaccination of people with no immunity, particularly in low and middle income countries. This will worsen unacceptable vaccine inequities, prolong the pandemic and its devastating public health and socioeconomic impacts, and increase the risk of new variants." [LINK](#)

The British Medical Journal: [Vaccinating against COVID and flu at same time is safe, study shows](#) (October 1, 2021)

"Two COVID vaccines and three flu vaccines were tested, giving a total of six combinations... The most common side effects were pain around the injection site and fatigue. No significant difference was found in four of the six group combinations; in two combinations there was a slight increase in the number of people who reported at least one side effect when both COVID-19 and flu vaccine were given together, but the reactions were mostly mild or moderate. The study also found that the immune responses to both the influenza and COVID-19 vaccine were preserved when given together." [LINK](#)

- Original research: [The Safety and Immunogenicity of Concomitant Administration of COVID-19 Vaccines \(ChAdOx1 or BNT162b2\) with Seasonal Influenza Vaccines in Adults: A Phase IV, Multicentre Randomised Controlled Trial with Blinding \(ComFluCOV\)](#)

MedRxiv: [The importance of sustained compliance with physical distancing during COVID-19 vaccination rollout](#) (September 26, 2021)

"Our results suggest that the combination of fast waning compliance in non-vaccinated population, low compliance in vaccinated population and more transmissible virus variants may result in a higher cumulative number of new infections than in a situation without vaccination. These adverse effects can be alleviated if vaccinated individuals do not revert to pre-pandemic contact rates, and if non-vaccinated individuals remain compliant with physical distancing measures. Both require convincing, clear and appropriately targeted communication strategies by public health authorities." [LINK](#)

TREATMENT

CBC: [A Canadian COVID-19 study that turned out to be wrong has spread like wildfire among anti-vaxxers](#) (September 25, 2021)

“An inaccurate Canadian study suggesting an extremely high rate of heart inflammation after COVID-19 vaccines has been retracted due to a major mathematical error — but not before it spread like wildfire on anti-vaccination websites and social media. The [preprint study](#), which was released by researchers at the Ottawa Heart Institute last week but has not been peer-reviewed, looked at the rate of myocarditis and pericarditis cases after Moderna and Pfizer-BioNTech vaccinations in Ottawa from June 1 to July 31. The study identified 32 patients with the rare side effects out of a total of 32,379 doses of mRNA vaccines given in Ottawa in the two-month period, finding an inordinately high rate of close to 1 in 1,000 — significantly higher than other international data has shown. The true rate of side effects is closer to 1 in 25,000 — not 1 in 1,000.” [LINK](#)

Aging: [Efficacy and safety of current medications for treating severe and non-severe COVID-19 patients: an updated network meta-analysis of randomized placebo-controlled trials](#) (September 16, 2021)

“The authors conclude that marked variations exist in the efficacy and safety of medications between severe and non-severe patients with COVID-19. It seems that monoclonal antibodies (e.g., low dosage bamlanivimab, baricitinib, imatinib, and sotrovimab) are a better choice for treating severe or non-severe COVID-19 patients. Clinical decisions to use preferentially medications should carefully consider the risk-benefit profile based on efficacy and safety of all active interventions in patients with COVID-19 at different levels of infection.” [LINK](#)

Centres for Disease Control: [Interim Clinical Considerations for Use of COVID-19 Vaccines Currently Approved or Authorized in the United States](#) (September 27, 2021)

“These clinical considerations provide additional information to healthcare professionals and public health officials on use of COVID-19 vaccines.” [LINK](#)

CNBC: [Pfizer COVID shot protects people from hospitalization even as effectiveness against infection falls, Lancet study confirms](#) (October 4, 2021)

“Researchers found the effectiveness of the Pfizer vaccines against Delta variant infections was 93% a month after the second dose and fell to 53% after four months. By comparison, effectiveness against other non-Delta variants was 97% after a month and declined to 67% after four months, according to the study.” [LINK](#)

- Original research: [Effectiveness of mRNA BNT162b2 COVID-19 vaccine up to 6 months in a large integrated health system in the USA: a retrospective cohort study](#)

StatNews: [Merck’s antiviral pill reduces hospitalization of COVID patients, a possible game-changer for treatment](#) (October 1, 2021)

“A five-day course of molnupiravir, developed by Merck and Ridgeback Biotherapeutics, reduced both hospitalization and death compared to a placebo. In the placebo group, 53 patients, or 14.1%, were hospitalized or died. For those who received the drug, 28, or 7.3%, were hospitalized or died.” [LINK](#)

- See also: [Discovery, Development, and Patent Trends on Molnupiravir: A Prospective Oral Treatment for COVID-19](#)

Centres for Disease Control: [Use of Pfizer-BioNTech COVID-19 Vaccine in Persons Aged ≥16 Years: Recommendations of the Advisory Committee on Immunization Practices — United States, \(September 2021\)](#) (September 24, 2021)

“Continued use of the Pfizer-BioNTech COVID-19 vaccine, now fully approved by the FDA in persons aged ≥16 years, is recommended based on increased certainty that its benefits (prevention of asymptomatic infection, COVID-19, and associated hospitalization and death) outweigh vaccine-associated risks.” [LINK](#)

MENTAL HEALTH & WELLNESS

Mental Health Research Canada: [Mental Health during COVID-19 Outbreak: Poll #8](#) (September 2021)

“Unvaccinated people indicate significantly more symptoms of mental distress, as well as higher levels of anxiety and depression compared to vaccinated people. Concern about virus-related restrictions was indicated by a significantly higher (28%) proportion of people who haven’t taken the vaccine compared to those who have (12%). 75% of vaccinated individuals indicated concern about the continuing potential threat of COVID-19, compared to 38% of unvaccinated people. These are some of the key findings of MHRC’s eighth poll in our ongoing series of polls on “Mental Health in Crisis: How COVID-19 Is Impacting Canadians.” The poll captures Canadians’ perceptions of their levels of anxiety and depression through the pandemic in order to identify and evaluate the factors that influence mental health.” [LINK](#)

The Public Health Agency of Canada: [Positive mental health and perceived change in mental health among adults in Canada during the second wave of the COVID-19 pandemic](#) (September 2021)

“Canadian surveys from spring/summer 2020 suggest the prevalence of some positive mental health (PMH) outcomes have declined compared to pre-pandemic levels. However, less is known about the state of PMH during the second wave of the COVID-19 pandemic.” [LINK](#)

The Public Health Agency of Canada: [Measuring self-reported change in alcohol and cannabis consumption during the second wave of the COVID-19 pandemic in Canada](#) (September 2021)

“This study presents nationally representative estimates of self-reported changes in alcohol and cannabis consumption since the onset of COVID-19 in Canada. We used data from the Survey on COVID-19 and Mental Health (collected from (September to December 2020) to calculate the prevalence of self-reported change in alcohol and cannabis consumption. We found that 15.7% of respondents self-reported an increase in alcohol consumption and 5.4% in cannabis consumption since the start of the pandemic. Sociodemographic disparities were also observed, indicating that increased alcohol and cannabis consumption may be more prevalent among certain populations.” [LINK](#)

The Public Health Agency of Canada: [Suicide ideation in Canada during the COVID-19 pandemic](#) (September 2021)

“Many Canadians report decreased mental health during the COVID-19 pandemic, and concerns have been raised about possible increases in suicide. This study investigates the pandemic’s potential impact on adults’ suicide ideation.” [LINK](#)

Statistics Canada: [Youth—but not adults—reported less physical activity during the COVID-19 pandemic](#) (September 17, 2021)

“Fewer youth aged 12 to 17 met Canadian physical activity recommendations during the COVID-19 pandemic. Over one-third (37.2%) of youth aged 12 to 17 met the Canadian physical activity recommendations during the COVID-19 pandemic compared with half (50.8%) of youth pre-pandemic (Chart 1). In contrast, there was no significant

change in the percentage of adults aged 18 to 64 meeting the recommendations. Seniors increased their physical activity: 35.4% of older adults aged 65 and over met the recommendations in 2018 versus 40.3% in 2020.” [LINK](#)

This **COVID-19 e-bulletin** was prepared by researchers at the Newfoundland & Labrador Centre for Applied Health Research (Kazeem Adefemi, Waseem Abu Ashour, Wendy Lasisi, and Pablo Navarro) to summarize research evidence and grey literature produced by a variety of sources that were accessed online in September and October of 2021.

Given the rapidly changing nature of the coronavirus pandemic, some of the references included in this e-bulletin may quickly become out-of-date.

We further caution readers that researchers at the Newfoundland & Labrador Centre for Applied Health Research are not experts on infectious diseases and are relaying work produced by others.

This report has been produced quickly and it is not exhaustive, nor have the included studies been critically appraised.

QUESTIONS/ SUGGESTIONS? CONTACT:

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