

# What are the wider effects of influenza on people with **specific risk factors**?

The global burden from influenza is substantial with **~1 billion cases per year**<sup>1</sup>



Source: WHO Global Influenza Strategy 2019-2030.<sup>1</sup>  
\*Influenza-related respiratory deaths: WHO estimate at December 2017.<sup>2</sup>

People at higher risk from influenza include those with:<sup>3,4</sup>



Cardiovascular disease (CVD)



Diabetes

Influenza infection may act as a trigger for myocardia infarction (MI) and CV deaths<sup>5</sup>

**3.1% and 3.4%**  
of MI-related deaths  
in England and Wales

**3.9% to 5.6%**  
of MI-related deaths  
in Hong Kong

attributed to influenza

Influenza-like illness (ILI) may double the risk of an MI<sup>3</sup>



People with diabetes are at increased risk of severe influenza infection and death from influenza<sup>4</sup>

**+** **3x** risk of influenza hospitalisation

**⚡** **4x** risk of intensive care admission

**☠** **2x** risk of fatal infection

Influenza vaccination can significantly reduce these risks<sup>6-8</sup>

**36%** reduction in major CV events (in one meta-analysis)

**79%** reduction in hospitalisations in people with diabetes during 2 UK flu epidemics (1989-90 & 1993)

What are the experts saying?

GII steering committee member, Raina MacIntyre, University of New South Wales, Sydney, Australia.

**“Influenza vaccination is now more important than ever because of the low incidence and waning immunity”**

For further information, see issue 3 of InFluNews from the Global Influenza Initiative, available here: [www.nivel.nl/en/FluCov](http://www.nivel.nl/en/FluCov)

References. 1. WHO. Global Influenza Strategy 2019-2030. Available at: [https://www.who.int/influenza/Global\\_Influenza\\_Strategy\\_2019\\_2030\\_Summary\\_English.pdf?ua=1](https://www.who.int/influenza/Global_Influenza_Strategy_2019_2030_Summary_English.pdf?ua=1). Accessed July 2021. 2. WHO infographic. Estimate of influenza deaths due to respiratory disease. Available at: [https://www.who.int/influenza/surveillance\\_monitoring/bod/WHO-INFLUENZA-MortalityEstimate.pdf?ua=1](https://www.who.int/influenza/surveillance_monitoring/bod/WHO-INFLUENZA-MortalityEstimate.pdf?ua=1). Accessed July 2021. 3. Kwok CS *et al.* Influenza, influenza-like symptoms and their association with cardiovascular risks: a systematic review and meta-analysis of observational studies. *Int J Clin Pract* 2015;69(9):928-937. 4. Marshall RJ, *et al.* Glycemic variability in diabetes increases the severity of influenza. *mBio* 2020;11(2):e02841-19. Available at: <https://mbio.asm.org/content/mbio/11/2/e02841-19.full.pdf>. Accessed July 2021. 5. Warren-Gash C, *et al.* Circulating influenza virus, climatic factors, and acute myocardial infarction: a time series study in England and Wales and Hong Kong. *J Infect Dis* 2011;203:1710-1718. 6. Udell JA *et al.* Association between influenza vaccination and cardiovascular outcomes in high-risk patients: a meta-analysis. *JAMA* 2013; 310(16): 1711-1720. 7. Goeijenbier M, *et al.* Benefits of flu vaccination for persons with diabetes mellitus: A review. *Vaccine* 2017;35(38):5095-5101. 8. Colquhoun AJ, *et al.* Effectiveness of influenza vaccine in reducing hospital admissions in people with diabetes. *Epidemiol Infect* 1997; 119:335-341.