INFLUENZA VACCINATION IN DIABETES MELLITUS: EXPLORING PATIENT BURDEN AND STRATEGIES TO INCREASE UPTAKE

Background

- Annually, influenza virus is contracted by approximately 1 billion people and causes serious illness, hospitalization, and death in 3-5 million, with upwards of 600,000 influenza-associated deaths, globally. People with diabetes mellitus are at increased risk of complications from influenza, including hospitalization, increased risk of complications, and death. 1

- Influenza vaccine can reduce complications, 2 and guidelines from various health authorities recommend it annually for patients with diabetes, regardless of age. 3

- However, influenza vaccination rates in people living with diabetes remain suboptimal, below vaccination rates in many other high-risk populations. 4

- The reasons for suboptimal vaccination rates are highly varied and include patient factors, disease factors, and societal factors, including limited knowledge of the vaccine’s impact, engagement in vaccination recommendations, and perceived risk. 5

- Previous research has shown that patients with diabetes are more likely to be vaccinated if they have additional risk factors, such as comorbid conditions. 6 Therefore, there may be value in learning from vaccination strategies in other high-risk populations.

Discussion

- Six prospective or retrospective cohort or case-control studies on either type 1 or type 2 diabetes mellitus patients were accepted for meta-analysis to examine the impact of influenza vaccination on mortality and hospitalization.

- Meta-analysis showed that in unvaccinated patients with diabetes the rate of all-cause mortality was approximately 4%, with VE = 49% (95% CI 33 to 59%), (F = 79% (Figure 1). Hospitalization in unvaccinated patients with diabetes was 9%, with VE = 62% (95% CI -23 to 88%), I² = 90% (Figure 2).

- Due to the diversity of study designs and the use of observational studies, the results of this analysis show strong between-study heterogeneity, and therefore provide only an approximate estimate of the impact of influenza vaccination on diabetes patients. There may be factors that confound or moderate these results. For example, Loerbroks et al. 7 examined rates of influenza in patients with diabetes. All reasons for mortality or hospitalization were included, so the outcomes do not solely measure the impact of influenza infections. However, they are currently the best surrogate to measure the influenza complications in the existing literature.

- Noticeably absent from the literature are outcomes measuring any improvement in mortality and hospitalization alone do not adequately capture the direct burden of influenza in people with diabetes. All reasons for mortality or hospitalization were included, so the outcomes do not solely measure the impact of influenza infections. However, they are currently the best surrogate to measure the influenza complications in the existing literature.

- Meta-analysis comparing all-cause mortality in people with diabetes who received the influenza vaccination with those who did not, in a meta-analysis combining 21 studies. 

- Figure 1: Meta-analysis comparing all-cause mortality in people with diabetes who received the influenza vaccination with those who did not. (Figure 1) 

- Figure 4: CDC FluSurv-NET hospitalization data, adult high-risk population influenza associated hospitalizations, 2017-2018 season (Figure 4).

- Based on the findings, it is recommended vaccination rates in diabetes mellitus are similar or slightly higher than those of other conditions. 8 But nearly 50% of patients hospitalized for influenza related complications had a metabolic condition during the 2017-2018 flu season. (Figure 4).

Conclusions

- Evidence suggests that influenza vaccination is beneficial in reducing complications, hospitalizations, and mortality in the diabetes population and should be emphasized, especially considering its implications in alleviating a substantial economic burden.

- Patient history and vaccination status are not well captured along the patient journey, including hospitalization.

- Additional research is needed to explore and quantify the burden of influenza in these populations.

Implications and Recommendations

- While influenza vaccination is still under target levels, the impact of vaccination has benefited from both an individual and societal perspective and should be an important focus of public health campaigns and patient education.

- Further research is needed to reexamine the direct burden influenza has on the patient. This research could be used to direct more targeted and effective interventions to increase vaccination rates.

- Better and more uniform surveillance reporting on flu vaccination utilization and complications in chronic disease populations, including diabetes mellitus to fully understand the rate of vaccination and burden of influenza in these populations.

- Standardized data collection on vaccination status within the electronic health record (EHR) system at the point of EHR visit, intake administration, and vaccination to ensure complete, and systematic.

- Access to both a physical and economic perspective and good communication with the target population have been shown to be key factors in successful vaccination campaigns in high-risk groups, but further research is needed to explore applicability to diabetes mellitus populations specifically.

- Patient care protocols should include standing orders for vaccination to high-risk populations, which would likely lead to increased vaccination utilization.

References

1. Jan Liska, Olivia Banyon, Sandrine Samson, Craig Whittington. Sanofi Pasteur, Global Medical Affairs, Lyon, France | Sanofi Pasteur, Global Medical Affairs, Lyon, France | Sanofi US, Innovative Solutions, Bridgewater, USA.


6. Favors vaccinated Favors unvaccinated

