Productivity Impact of Cell-Based Versus Egg-Based Influenza Vaccines in U.S. Pediatric and Adult Populations: A Modeling Study

Van H. Nguyen[1], Joaquin F. Mould-Quevedo[2]

[1]VHN Consulting, Lyon, France; [2]CSL Seqirus, Summit, NJ, USA

Poster No: EPH175
Contact: joaquin.mould-quevedo@seqirus.com

CSL Seqirus

Study Objective

To compare the economic and productivity benefits, in terms of reductions in lost workdays, with cell- versus egg-based influenza vaccines in U.S. individuals aged 6 months to 64 years.

Background

- Influenza imposes a substantial economic burden in the U.S., with indirect costs due to lost workdays contributing significantly alongside direct medical expenditures.[1]
- Egg-adapted mutations are a drawback of traditional egg-based vaccine production, and these adaptive mutations can alter antigenicity and reduce vaccine effectiveness (VE).[2]
- A large body of real-world evidence has demonstrated improved VE of cell-based influenza vaccines relative to egg-based influenza vaccines among individuals aged <65 years.[2–5]

Methods

- We employed a dynamic, age-stratified transmission model (previously published)[6] to estimate influenza-associated productivity losses, assuming a 50% immunization rate for individuals aged 6 months to 64 years.
  - Two distinct influenza seasons were modeled: low incidence (2011–2012) and high incidence (2017–2018).
- Total cost outcomes considered included indirect costs from lost workdays due to adult illness (≥18 years) and caregiver absenteeism for pediatric influenza cases (0–17 years). It was assumed that every pediatric case of influenza was associated with one lost workday for their caregiver. Event costs were taken from peer-review-published literature; all costs were adjusted to 2025 U.S. dollars (USD$).[7]
- Absolute VE (representing egg-based vaccines) was averaged from the U.S. Centers for Disease Control and Prevention reports over the past 10 seasons (58% [children], 40% [adults]),[8] and relative VE (rVE) of cell- versus egg-based vaccines was set at 12.5%, based on the straight average of estimates from a series of retrospective test-negative design studies conducted over five U.S. influenza seasons in individuals aged 4–64 years (2017–2020) or 6 months–64 years (2022–2024).[3–5]

Conclusions

Findings from this modeling analysis show cell-based influenza vaccines are associated with substantial reductions in lost workdays among U.S. individuals aged 6 months to 64 years compared with egg-based vaccines.

Adopting cell-based influenza vaccines for pediatric and adult populations could alleviate economic and productivity burdens on U.S. payers and employers, thereby supporting national public health objectives.

Results

- Cell-based influenza vaccines were projected to reduce influenza-associated productivity losses versus egg-based vaccines, with estimates of between 6.9 and 13.3 million workdays gained across the modeled seasons (**Figure 1**).
- These reductions in productivity loss translated into substantial economic benefits, with estimated cost savings of $1,594M in high-incidence seasons and $822M in low-incidence seasons (**Figure 2**).

Figure 1. Number of lost workdays with cell- versus egg-based influenza vaccines in U.S. population aged 6 months–64 years

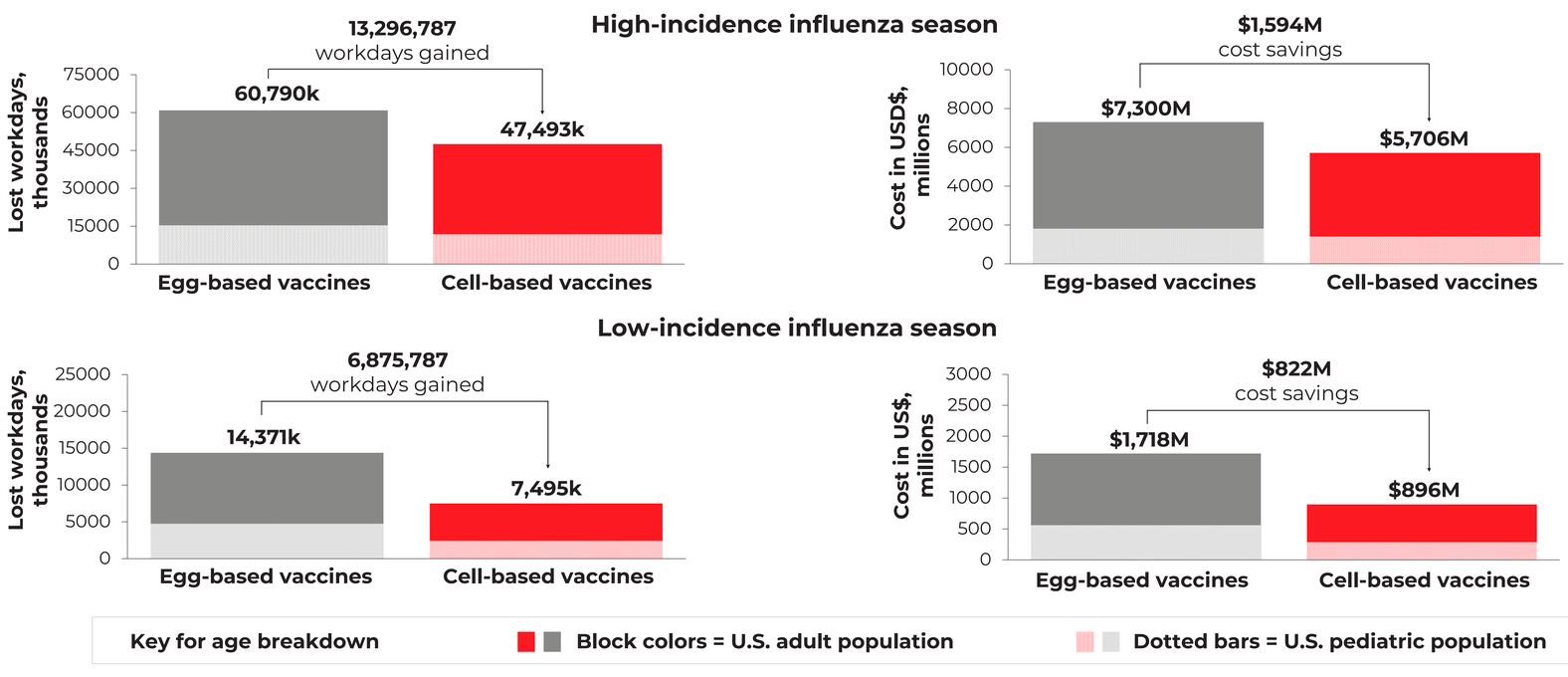

Figure 2. Cost of lost workdays with cell- versus egg-based influenza vaccines in U.S. population aged 6 months–64 years

Key for age breakdown — **Block colors = U.S. adult population** — **Dotted bars = U.S. pediatric population**

Assumed costs for workday losses were $15–106, depending on age. K, thousand; M, millions; U.S., United States; USD, United States Dollar.

Acknowledgements
This study is sponsored by CSL Seqirus. Medical writing and editorial support, under the direction of authors, were provided by Liesel Laubscher and Sherriden Beard of Ashfield MedComms, an Inizio company, and funded by CSL Seqirus.

Disclosures
Joaquin F. Mould-Quevedo is an employee of CSL Seqirus and owns shares in CSL. Van H. Nguyen has received consultant honoraria from CSL Seqirus for conducting the research presented in this poster.

References
1. Putri WCWS, et al. *Vaccine*. 2018;36:3960–3966.
2. Ashraf M, et al. *Vaccine*. 2025;62:127393.
3. Stein AN, et al. *Infect Dis Ther*. 2025;14:2693–2718.
4. Stein AN, et al. *Influenza Other Respir Viruses*. 2025;19(11):e70180.
5. Stein AN, et al. *Open Forum Infect Dis*. 2024;11(5):ofae175.
6. Nguyen VH, Mould-Quevedo JF. *Vaccines*. 2022;10(11):1908.
7. de Boer PT, et al. *Value Health*. 2016;19(8):964–975.
8. Nguyen VH, Mould-Quevedo JF. *Hum Vaccin Immunother*. 2026;22(1):2640759.

Presented at International Society for Pharmacoeconomics and Outcomes Research (ISPOR) 2026, 17–20 May 2026, Philadelphia, PA, USA.