Potential Benefits of Universal Influenza Vaccination on Health Outcomes and Costs in Mexico

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INTRODUCTION

Influenza continues to pose a significant public health burden. Although annual vaccination is the most effective preventive strategy, current policies in Mexico target only high-risk groups: children aged 6 to 59 months, adults over 60 years, and individuals with comorbidities, potentially limiting broader population benefits. Universal Influenza Vaccination (UIV), by contrast, includes wider age groups regardless of individual risk

OBJECTIVE

This study evaluated the potential health and economic impact of adopting a UIV approach in Mexico, compared to the current targeted vaccination program.

METHODS

A retrospective analysis was conducted using an age-stratified dynamic transmission model to simulate the effect of adopting UIV (i.e., if all age groups were included in Mexico's immunization policy) and of expanding currently eligible groups to young-seniors (50-59y) or school-aged children (5-19y) as two Scenario Analysis (SA). Epidemiological outcomes were integrated into a health economic model populated with Mexico-specific clinical and cost data.

POSTER HIGHLIGHT: Adopting a Universal Influenza Vaccination strategy in Mexico could markedly reduce the seasonal influenza burden by providing both direct protection and indirect community benefits.

Figure 1: Health Economic Model Structure[1]

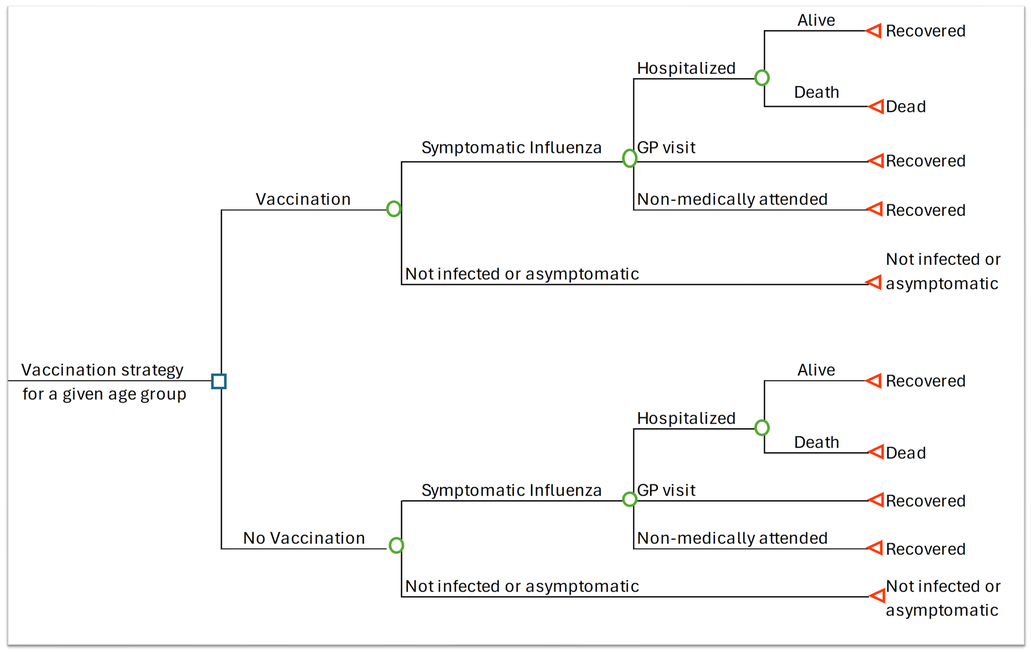


Table 1: Health Outcomes and Costs of Vaccination Scenarios

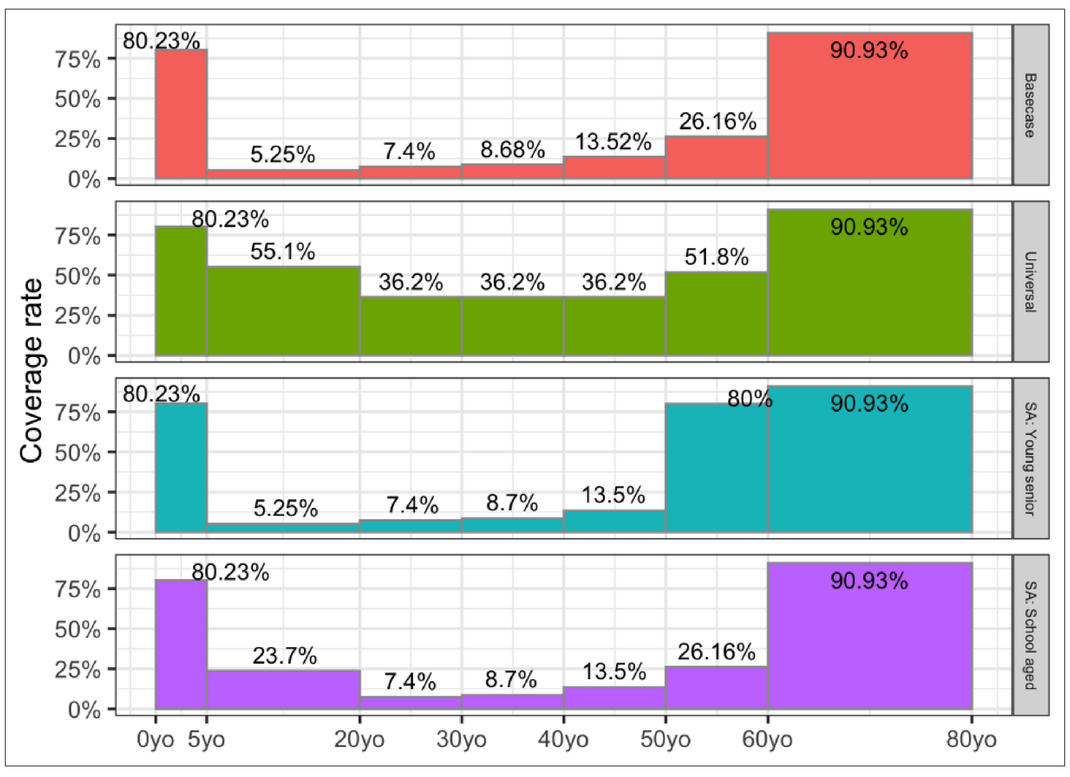
	Base case scenario (current coverage)	Universal influenza vaccination	Relative reduction UIV	Relative reduction for SA Young Senior	Relative reduction for SA School aged
Health Outcomes in number of cases [95% Confidence Interval]					
Symptomatic	13,074,000 [7,623,000 ; 19,886,000]	5,469,000 [2,220,000 ; 11,755,000]	58.17% [40.89% ; 70.88%]	3.31% [1.34% ; 5.73%]	17.31% [9.7% ; 28.78%]
GP consultations	3,166,000 [1,839,000 ; 4,852,000]	1,333,000 [541,000 ; 2,880,000]	57.90% [40.64% ; 70.58%]	3.26% [1.27% ; 5.7%]	17.20% [9.62% ; 28.65%]
Hospitalizations	72,000 [40,000 ; 118,000]	31,000 [12,000 ; 71,000]	56.94% [39.83% ; 70.00%]	6.86% [4.62% ; 9.21%]	15.94% [8.77% ; 27.12%]
Deaths	5,400 [2,980 ; 9,060]	2,390 [950 ; 5,450]	55.74% [39.85% ; 68.12%]	7.21% [4.86% ; 9.42%]	15.66% [8.7% ; 26.76%]
Life-years lost	85,000 [47,000 ; 141,000]	37,000 [15,000 ; 84,000]	56.47% [40.43% ; 68.09%]	8.39% [6.11% ; 10.55%]	15.77% [8.73% ; 26.93%]
QALY lost	187,000 [107,000 ; 295,000]	80,000 [32,000 ; 175,000]	57.22% [40.68% ; 70.09%]	5.25% [3.23% ; 7.59%]	16.76% [9.35% ; 28.14%]
Workdays lost *	4,483,000 [2,577,000 ; 6,959,000]	1,882,000 [759,000 ; 4,100,000]	58.02% [41.08% ; 70.55%]	3.96% [1.95% ; 6.41%]	16.83% [9.28% ; 28.23%]
Costs in USD (millions) [95% Confidence Interval]					
GP consultations	236 [137.13 ; 361.89]	99.38 [40.3 ; 214.69]	57.89% [40.68% ; 70.61%]	3.26% [1.27% ; 5.7%]	17.2% [9.62% ; 28.65%]
Hospitalizations	320.06 [177.17 ; 528.98]	139.18 [55.44 ; 316.16]	56.51% [40.93% ; 68.71%]	7.78% [5.55% ; 10.09%]	15.84% [8.7% ; 26.99%]
Productivity loss *	125.71 [72.28 ; 195.15]	52.77 [21.29 ; 114.99]	58.02% [41.08% ; 70.55%]	3.96% [1.95% ; 6.41%]	16.83% [9.28% ; 28.23%]

*For 0 to 19y workday and productivity loss are associated to caregivers.

RESULTS

- In a typical influenza season, the UIV program was estimated to reduce influenza cases by 58.17% (95% CI: 40.89%-70.88%), leading to 57.90% (40.64%-70.58%) fewer medical consultations, 56.94% (39.83%-70.00%) fewer hospitalizations, and a 55.74% (39.85%-68.12%) reduction in influenza-related deaths. Health gains included a 56.47% (40.43%-68.09%) reduction in life-years lost and a 57.22% (40.68%-70.09%) reduction in QALY lost.
- The UIV strategy generated cost savings of USD 321.58 million from the third-party payer perspective and USD 389.22 million from the societal perspective.
- The 80% vaccination of 50-59y adults provides direct protection against hospitalization and death, with a stronger effect on reducing mortality compared to school-based vaccination.
- The 24% vaccination of 5-19y children can substantially reduce virus circulation. This indirect protection helps prevent secondary infections, thus allowing for better health outcomes.

Figure 2: Scenarios Vaccine Coverage Rates



CONCLUSIONS

- Expanding influenza vaccination coverage through a UIV program in Mexico could substantially reduce disease burden and healthcare costs, offering both direct and indirect health benefits.
- In a stepwise pathway towards universal vaccination, both school-aged children and young-seniors vaccination should be evaluated in terms of health impact, feasibility and cost of implementation.[2,3]
- These findings support the adoption of broader immunization strategies as a cost-saving and life-saving public health intervention.

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