

## Background

Each year, Hong Kong experiences up to two influenza seasons that have a substantial public health burden [1]. However, influenza was absent from Hong Kong between March 2020 and March 2023 due to control measures and behavioral changes that occurred during the COVID-19 pandemic [2]. Upon relaxation of these measures, an influenza A(H1N1) epidemic occurred in April-May 2023 [3], and this was followed by a large A(H3N2) epidemic in August-September 2023.

## Aims and Objectives

Using an ongoing study in two large hospitals we aimed to estimate the vaccine effectiveness (VE) against influenza associated hospitalization. Children with ARI were enrolled and tested using PCR. VE was estimated as  $1 - aOR \times 100\%$ . It is noted that those receiving influenza vaccines may be more likely to receive COVID-19 vaccines. We also aimed to assess whether SARS-CoV-2 positives may bias the association between vaccination and the risk of influenza infection.

## Results

From 13 June through to 15 November 2023, 3,183 children aged 9 months to 17 years of age were hospitalized with acute respiratory illness in Hong Kong. Influenza A and B viruses were detected in 528 (16.6%) children, among which 419 (79.4%) were influenza A(H3N2) (Figure 1). The VE against influenza A(H3N2) was 14.3% (95% CI: -29.2%, 43.2%) (Table 1). The overall VE estimates and VE against influenza A(H3N2) were similar after the removal of children that tested positive for SARS-CoV-2.

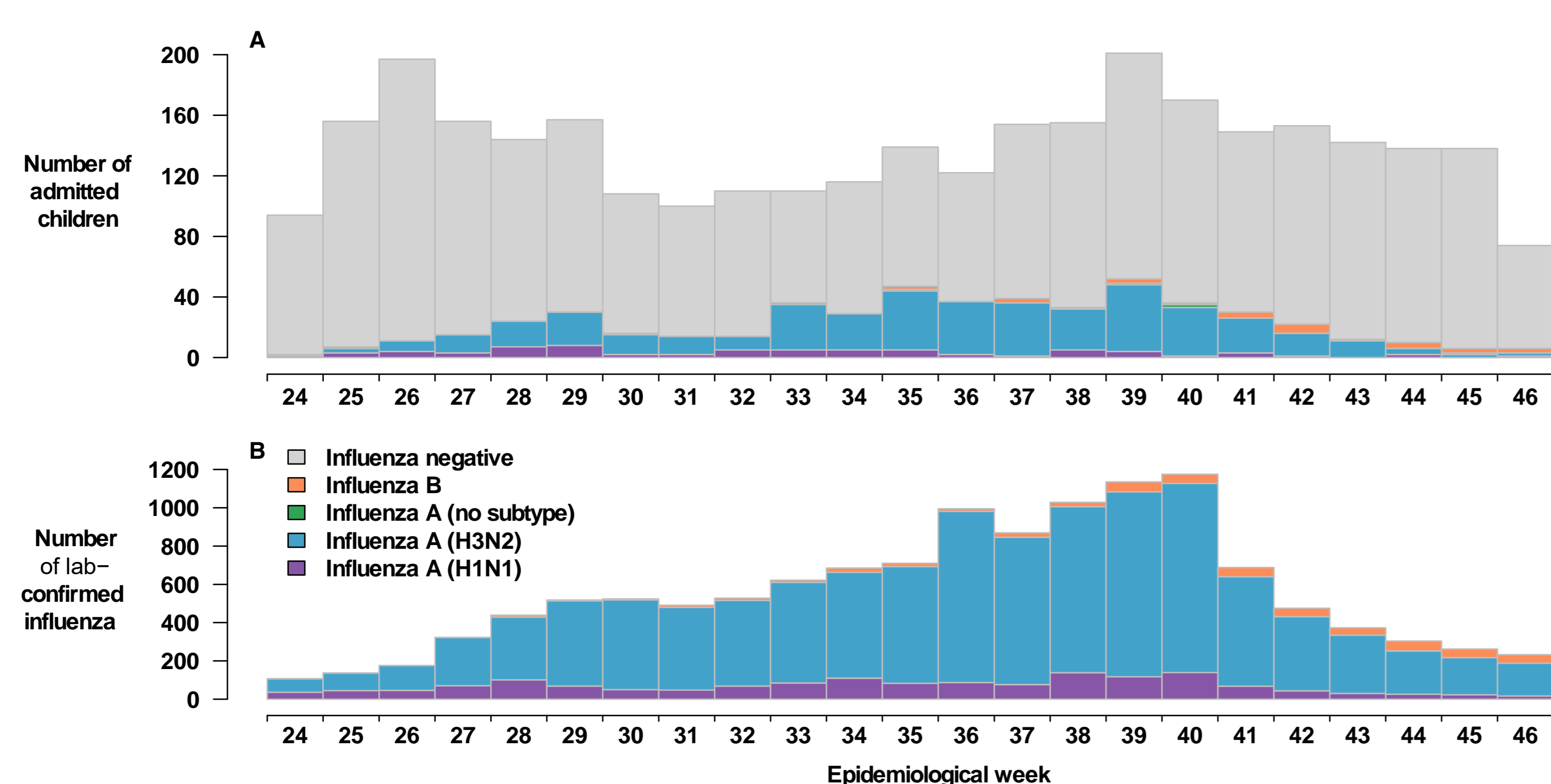


Figure 1. Number of children admitted to hospital (A) and lab-confirmed influenza through local surveillance (B) in Hong Kong between March and June 2023.

Table 1. Estimated vaccine effectiveness against influenza-associated hospitalization for all influenza by age and removing children positive for SARS-CoV-2.

	Vaccine effectiveness	
	%	95% CI
<b>Influenza A(H3N2)</b>		
<b>All ages (9m-17y)</b>	14.3	-29.3 to 43.1
9 months to 3 years	27	-53.0 to 65.2
4 to 8 years	-2.8	-86.7 to 43.4
9 to 17 years	11.3	-148.4 to 68.4
<b>Influenza A(H3N2), removing SARS-CoV-2 positives</b>		
<b>All ages (9m-17y)</b>	16.7	-26.0 to 44.9
9 months to 3 years	29.2	-47.8 to 66.1
4 to 8 years	-6.7	-94.4 to 41.5
9 to 17 years	31.5	-99.0 to 76.4

## Conclusion

We estimated a moderate to low influenza VE which may be attributed to a drift in antigens between the circulating A(H3N2) virus and the northern hemisphere vaccine antigen as well as waning immunity during a late summer influenza A(H3N2) epidemic in Hong Kong. Influenza vaccination remains an important and effective approach to reduce the impact of influenza in children.

## References

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2. Xiong W, Cowling B, Tsang T. Resurgence of influenza after relaxation of public health and social measures in Hong Kong, 2023. *Emerging Infectious Diseases* 2023; 29(12):2556-2559.
3. Cowling B, Kwan M, Murphy C, et al. Influenza vaccine effectiveness against influenza-associated hospitalization in Hong Kong children aged 9 months to 17 years, March-June 2023. *J Pediatric Infect Dis Soc* 2023;12(11):586-589.

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