

Immunogenicity of Twice-annual Influenza Vaccination in Older Adults in Hong Kong: A Randomized Controlled Trial



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BACKGROUND

Older adults are advised to receive inactivated influenza vaccination (IIV) annually in Hong Kong. Vaccine protection may not span 12 months to provide adequate protection in locations with year-round activity. Repeated vaccinations may lead to blunted antibody response.

METHODS

1. Conducted a RCT of once- versus twice-annual IIV vaccination
2. 3 rounds of pre- winter/summer vaccinations between December 2016 – November 2017
3. **Once-annual IIV group:** NH QIV before winter, placebo before summer
Twice-annual IIV group: NH QIV before winter, SH TIV before summer
4. Sera collected immediately before (day 0) and 30 days after vaccination to be tested by HAI assay

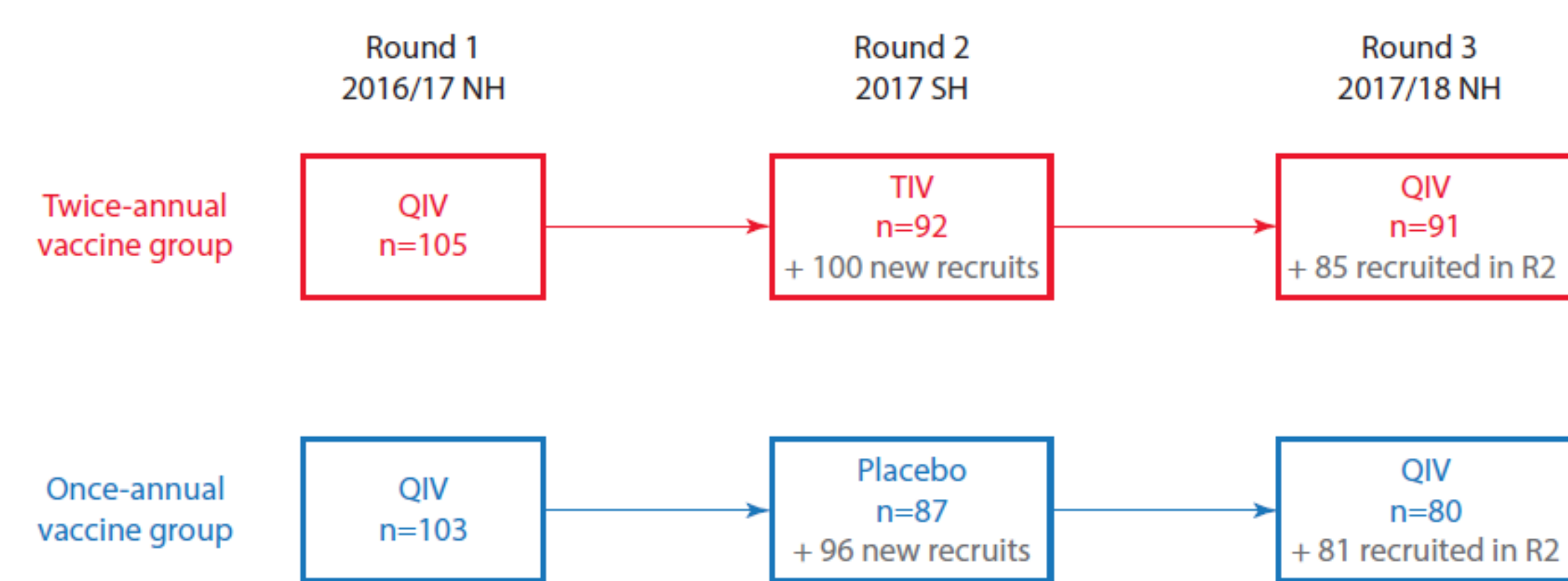


Figure 2. Study flow chart. Additional recruits in Round 2 all had documented evidence of receipt of 2016/17 NH QIV.

Abbreviations:

NH: northern hemisphere; SH: southern hemisphere; QIV: quadrivalent influenza vaccine; TIV: trivalent influenza vaccine; HAI: hemagglutination inhibition; GMTs: geometric mean titers

For **elderly** in locations where **year-round influenza activities** is common, additional **influenza vaccination in spring/summer** provided **improved HAI antibody titers** to bridge protection against influenza between annual winter vaccinations.

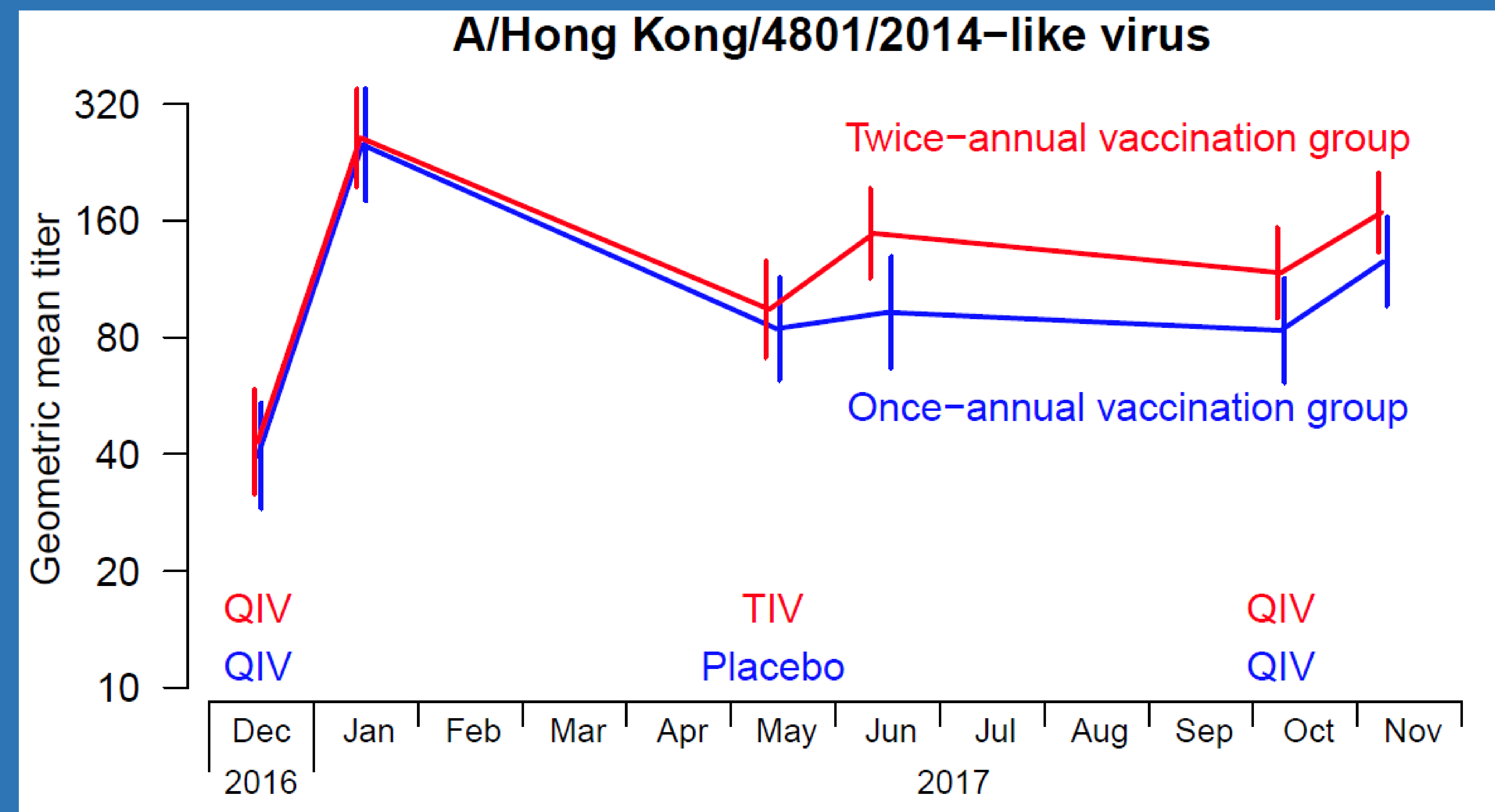


Figure 1. The HAI antibody titers against influenza A(H3N2) in the twice-annual vaccination group (red line) and the once-annual vaccination group (blue line) at day 0 and day 30 for each vaccination. The vertical bars indicate the 95% confidence intervals of the GMTs.

RESULTS

- In twice-annual group, participants had significantly higher GMTs against influenza A(H3N2) vaccine strains between Rounds 2 and 3 (Figure 1)
- In both once- and twice-annual groups, mean-fold rises and post-vaccination GMTs against all vaccine strains were statistically significantly lower in Round 3 than Round 1 (Figure 3)

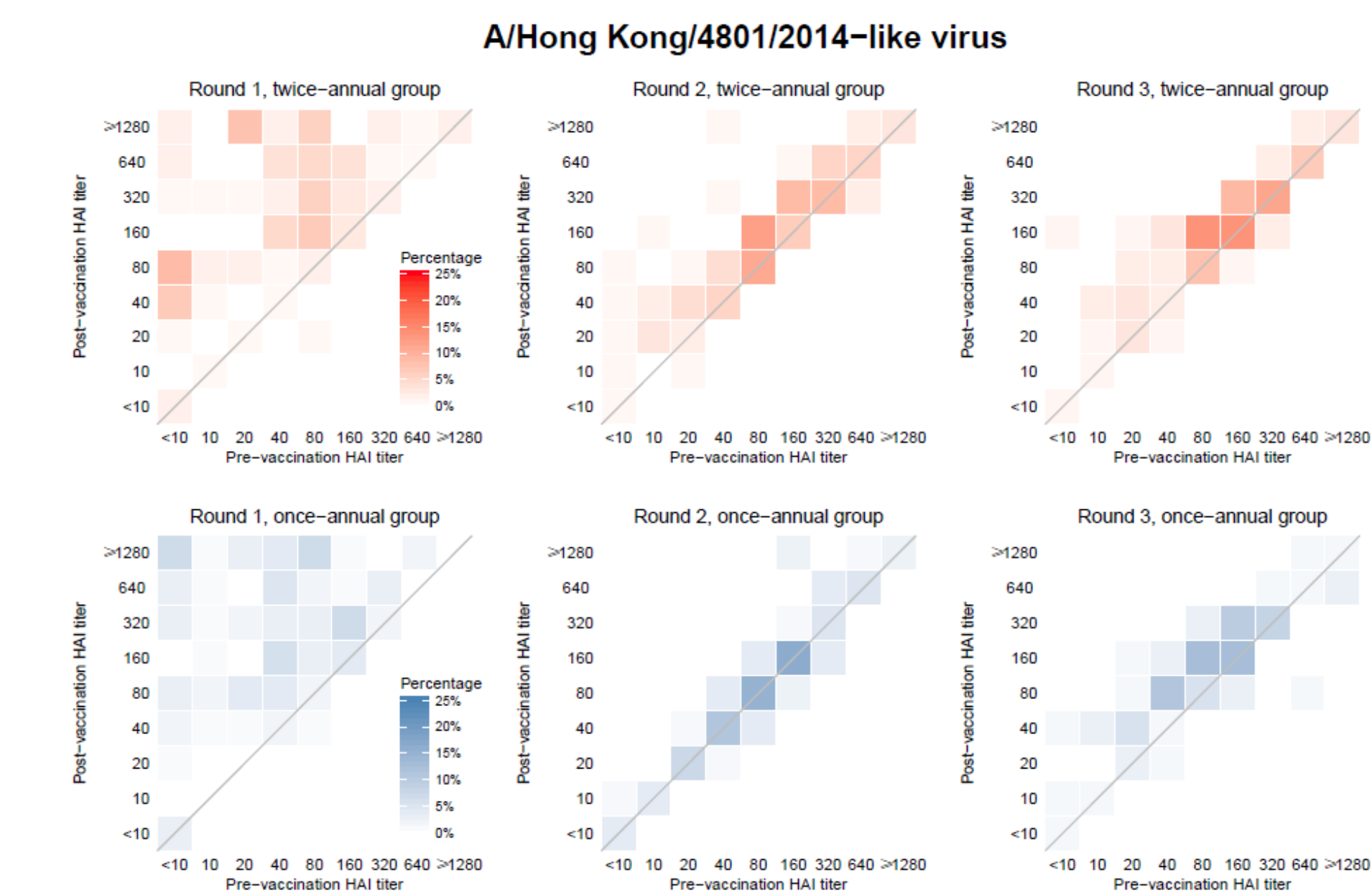


Figure 3. Heat map comparing the pre-vaccination versus post-vaccination participant HAI titers against influenza A(H3N2) by round and by vaccination group.

DISCUSSION

The trial is continuing to explore:

- patterns of antibody titers after repeated vaccinations of multiple years
- patterns of antibody titers after repeated vaccinations with vaccine strains change

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