

CIC 2014 CCI

December 2-4
2 - 4 décembre
OTTAWA

**Canadian Immunization Conference
Conférence canadienne sur l'immunisation**

**Seasonal influenza vaccine effectiveness
in healthy Canadian adults**


Influenza Cohort Study 2010/11-2013/14

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Disclosure Statement



- I have no affiliation (financial or otherwise) with a pharmaceutical, medical device or communications organization.
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Background



- Influenza is a serious disease
- Annual vaccination required
- Efficacy is lower than for most vaccines
 - 59% (51-67) Osterholm (2012)

Objective



- To estimate influenza vaccine effectiveness in a cohort of adults 18-69 years old over 4 influenza seasons

Factors impacting effectiveness



- Vaccine
 - Match with circulating strains
 - Manufacturing processes, adjuvanted, live/inactivated...
 - Post-manufacturing issues (cold chain...)
- Individual
 - Immune system, past exposure/vaccination, herd immunity, exposure to influenza...

Factors impacting estimates



- Measure
 - Vaccine-specific, any strain
 - Timing of vaccination, self report...
 - Illness definition: ILI , ARI
 - PCR, culture, serology...
 - Illness, hospitalization, death...
- Population
 - Fixed or dynamic

Estimation of effectiveness



- Odds vs risk vs hazard ratios
- Case-control vs case-cohort vs test-negative

Influenza Cohort Study (ICS)



- Toronto, Hamilton, & Halifax
- 2010-11 through 2013-14
- Eligibility
 - Working, 18-69 years
 - Available through influenza season
 - Not attending school or living in communal setting
 - Non-hospital employees -> no regular exposure to large numbers of children or general public

ICS Procedures



- **Baseline**
 - questionnaire
- **Influenza season**
 - weekly questionnaires
 - acute respiratory illnesses
 - swabs
 - illness diaries
 - Vaccination status

Analyses



- Repeated measures – GEE
 - Within & between seasons
- 4582 observations (1-22)
- 3162 people
- Test negative: 1249 observations (1-20)

ICS Participants

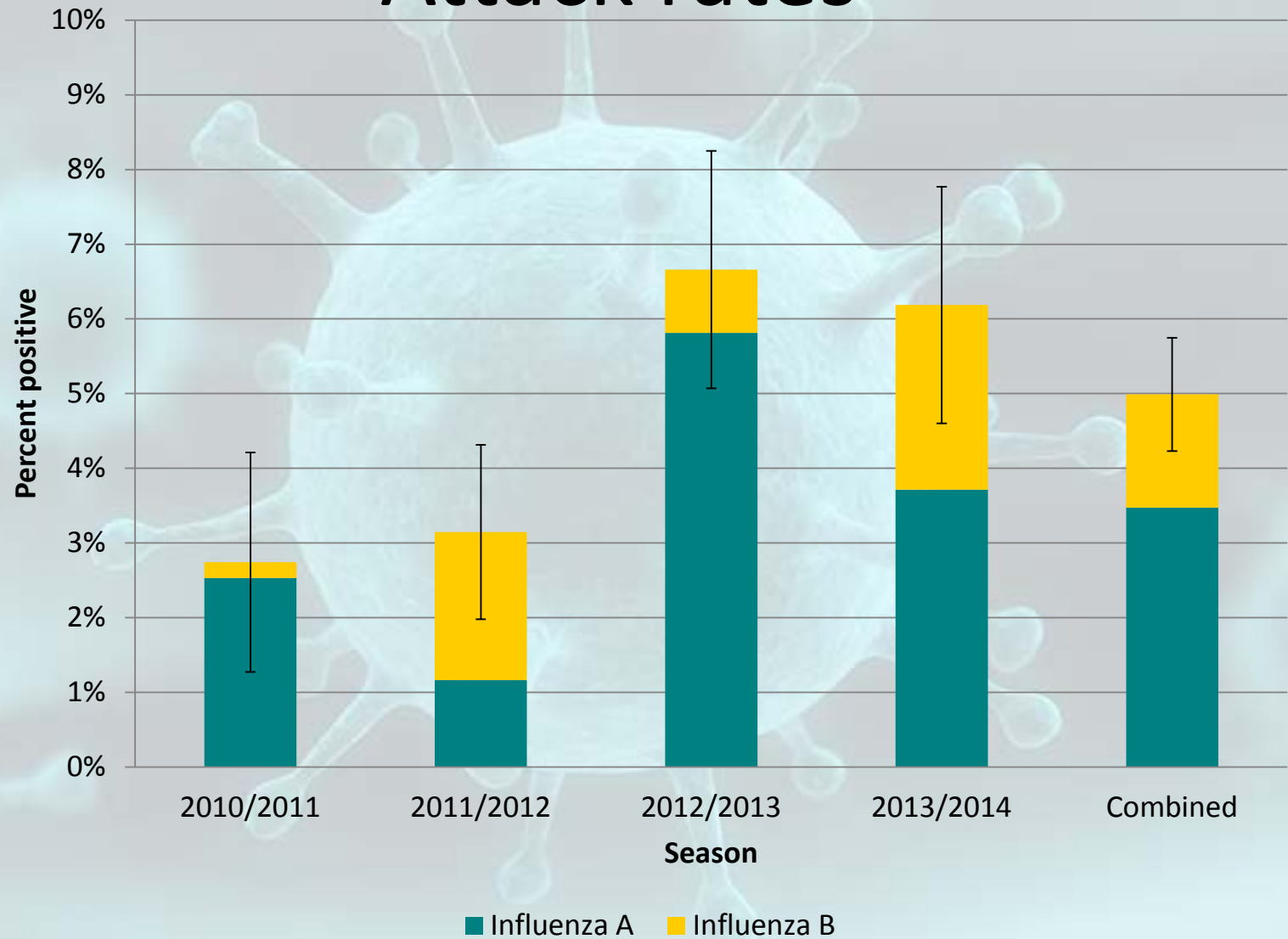
Not vaccinated

- N=764
- 87% female
- 42 (21-67) years old
- 3.0% diabetes/heart disease
- 89% work at a hospital
- 7.6% vaccinated 3/3 previous
- 26 (2-27) weeks in study
- Varied by hospital

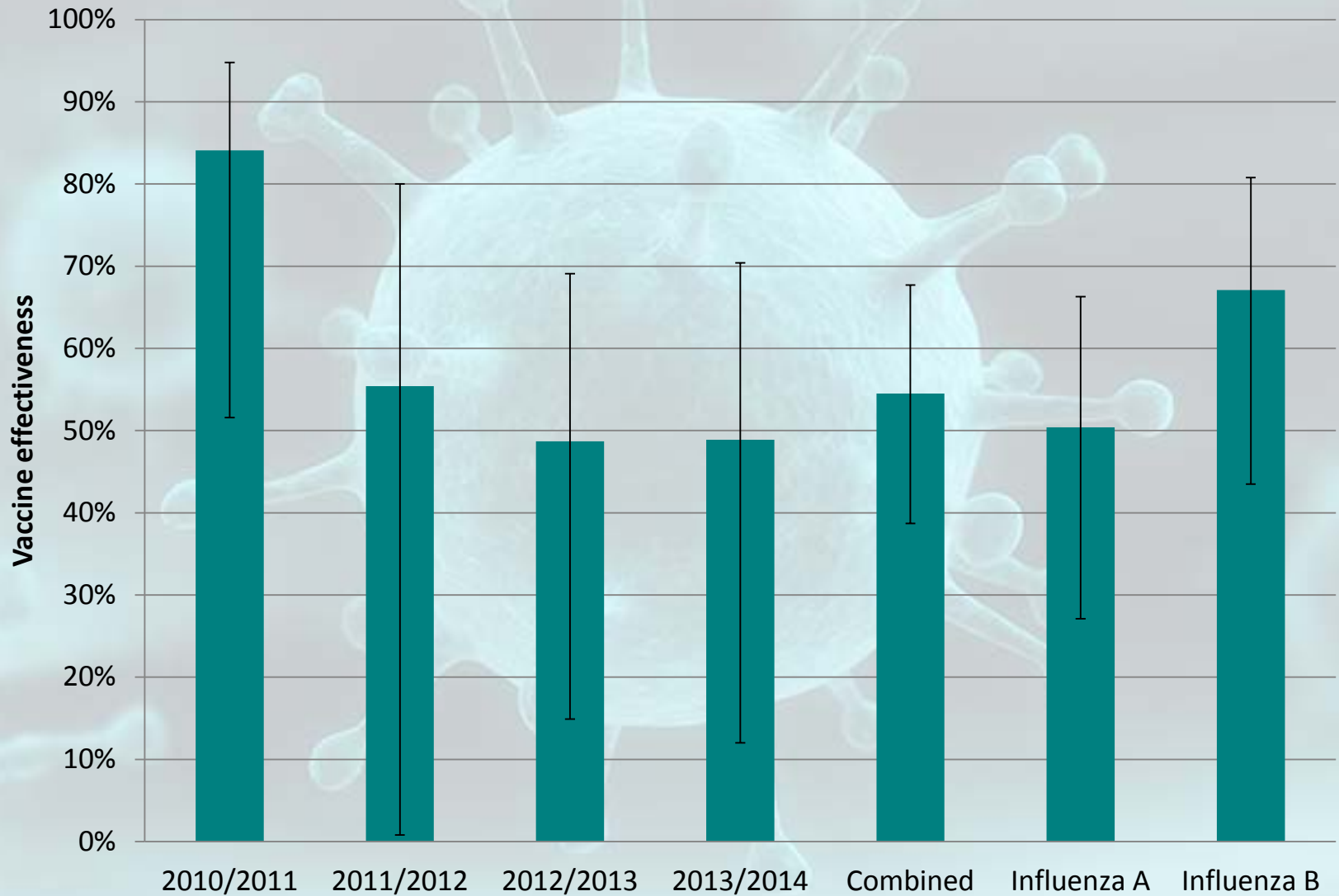
Vaccinated

- N=2398
- 83% female*
- 45 (21-69) years old*
- 6.5% diabetes/heart disease*
- 88% work at a hospital
- 53% vaccinated 3/3 previous*
- 26 (2-27) weeks in study

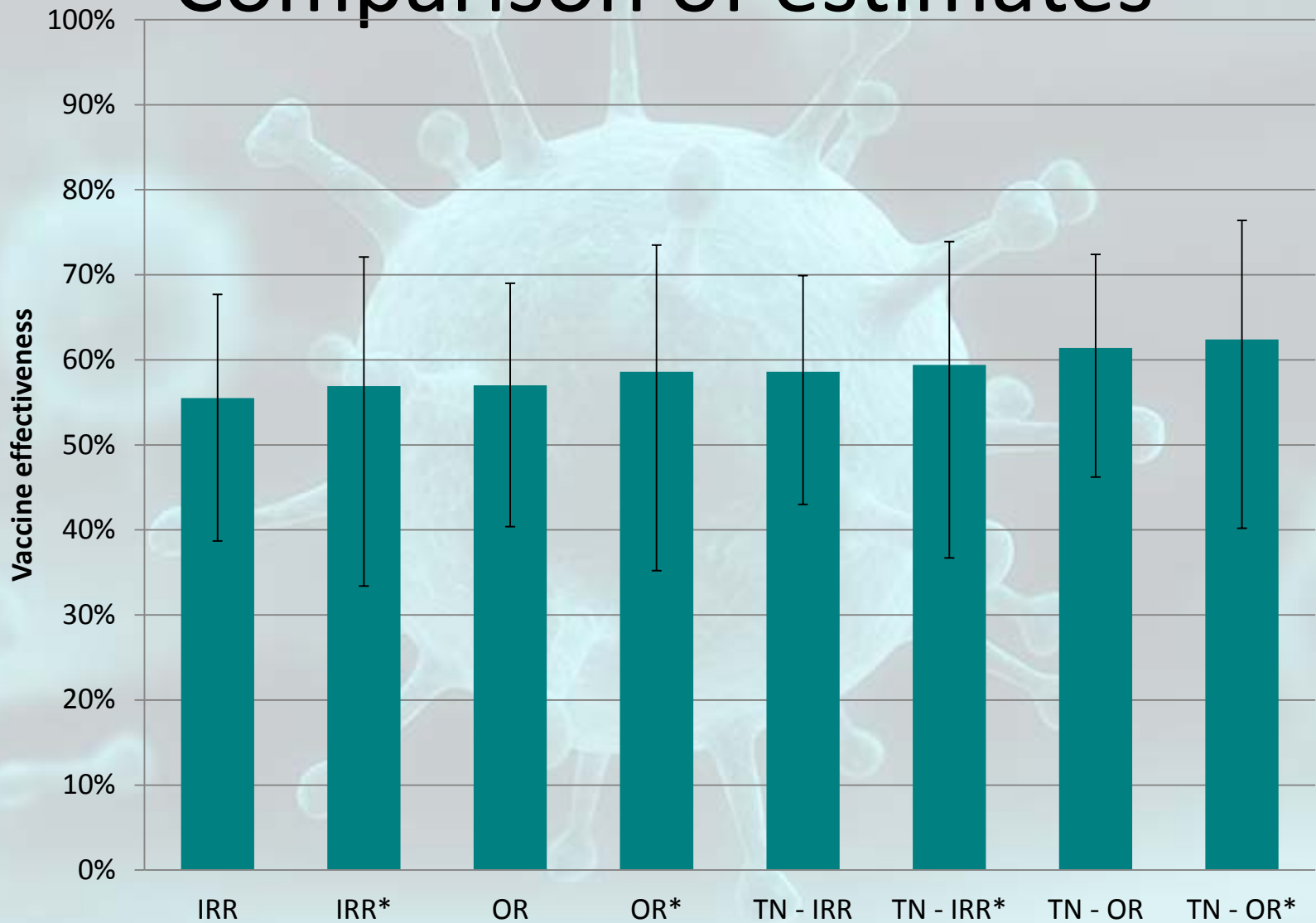
Attack rates



Crude vaccine effectiveness



Comparison of estimates



Conclusions



- Estimated effectiveness is 57% (33,72%)
- Vaccine effectiveness is sub-optimal

Funding



Canadian Institutes of Health Research
Institute of Infection & Immunity
(Grant #111187)

Workplace Safety & Insurance Board (Ontario)
Solutions for Workplace Change
(Grant #10031)