Kirby Institute

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Timing for influenza vaccination uptake

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Background and data

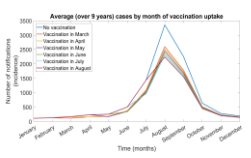
- More than 18000 influenza-attributable hospitalization annually
- Influenza vaccine, the most effective in preventing
- Growing evidence of vaccine waning over time from vaccination: need to determine the optimal time for vaccine uptake
- Data from 2007 to 2016 (excluded 2009):
  - –Monthly influenza notifications
  - –Vaccine effectiveness estimations
  - –Vaccine coverage
  - –Waning of effectiveness between 0-3 and 4-6 months following vaccination is 33% for A(H3N2), 19% for B and 8% for A(H1N1) (non significant), as showed in a systematic review [1].

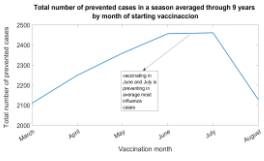
[1] Young, B., et al., *Duration of Influenza Vaccine Effectiveness: A Systematic Review, Meta-analysis, and Meta-regression of Test-Negative Design Case-Control Studies.* The Journal of Infectious Diseases, 2018. **217**(5): p. 731-741

Methods

1. Average of waning % specific for each year based on the proportion of each strain circulating, (A(H3N2), B and A(H1N1));
2. Yearly waning immunity function over months from linear interpolation of the waning % found between 0-3 and 4-6 months following vaccination for each year;
3. Applied the yearly waning function to each yearly vaccine effectiveness and got vaccine effectiveness by months from vaccination for each year;
4. We used vaccine coverage and effectiveness estimates to compute an incidence series over years without vaccination effect;
5. Then we computed a new incidence series where the vaccine effectiveness is adjusted for a monthly shift in timing of vaccination for each month from March to August
6. Results are showed as number of prevented cases

Results showed for age group 65+





Month vaccination	Prevented cases by month over an average season												Total
	1	2	3	4	5	6	7	8	9	10	11	12	
March	0	0	53	72	74	133	346	756	473	123	49	31	2110
April	0	0	0	77	79	144	378	828	519	136	54	35	2249
May	0	0	0	0	84	155	409	900	565	148	59	38	2359
June	0	0	0	0	0	166	441	972	611	160	64	42	2456
July	0	0	0	0	0	0	472	1044	657	172	69	45	2461
August	0	0	0	0	0	0	0	1116	704	185	74	49	2128