Effectiveness of influenza vaccine in health care professionals
JAMA 1999;281:908-13 (March 10, 1999)

Study Type: MOE
Purpose: Does the influenza vaccine reduce infection, illness and absence from work in young health professionals?
Patients: n = 264 (361 person-winters), mean age = ~28 yrs, 57% female, 86% white, 75% resident MD’s, 2% attendings, 15% RN’s, 5% medical students and RT’s
Trial Design: prospective, double-blinded, randomized, placebo-controlled trial, control vaccines were meningococcal (1992), pneumococcal (1993), or placebo (1994), blood was drawn at baseline, 1 mth after vaccine (identify response to vaccine) and 1 mth after local flu activity had ended (identify those infected)
Inclusion: < 50 years, good health, HOSPITAL physicians, nurses, respiratory therapist from dept of IM, Peds, ER
Exclusion: allergy to egg or vaccine, pregnancy, any conditions placing patient at high risk (COPD, asthma, real, metabolic disease, severe cardiac disease, immunosuppression, DM
Outcome Events:
Primary outcome was serologic evidence of infection.
Secondary outcomes were respiratory illness, days of febrile illness, days absent from work

1. Are the results valid?
* randomized? yes
* double-blinded? yes
* were groups similar? yes
* all patients accounted for? yes

2. What were the results?

<table>
<thead>
<tr>
<th>Season</th>
<th>Influenza</th>
<th>Control</th>
<th>RRR</th>
<th>ARR</th>
<th>P</th>
<th>NNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1.1%</td>
<td>8.9%</td>
<td>88%</td>
<td>7.8%</td>
<td>.001</td>
<td>13</td>
</tr>
<tr>
<td>B</td>
<td>0.6%</td>
<td>5.0%</td>
<td>89%</td>
<td>4.4%</td>
<td>.02</td>
<td>23</td>
</tr>
</tbody>
</table>

Clinical parameters
* most subjects had no days of illness or work absence
* mean absence from work for the vaccinated group was 0.1 days as compared to 0.2 days for the unvaccinated
  the median for absence was 0 for both groups
* mean febrile respiratory illness for the vaccinated group was 0.29 days as compared to 0.41 days for unvaccinated
  median for absence due to febrile respiratory illness was 0 for both groups
* cumulative days of febrile respiratory illness - NS for both groups
* work absence - NS for both groups

3. Will the results help me?
* conclusions only apply to the hospital setting
* reduction in infection is based on serology studies

Study quote: The results from this 3-year study of health care professionals indicate that influenza vaccine is effective in preventing infection and may help reduce cumulative days absent from work during the influenza epidemic REALLY?
* no culture-proven infections

Conclusion: Of every 1000 hospital health care professionals vaccinated, 28 cases of serologic-proved influenza A or B will be prevented. The vaccine made no difference in the number of days with a febrile respiratory illness or number of days absent from work.

For the fun of it!
If the vaccine cost $5 per dose (our hospital acquisition cost), then it would cost $5,000 to prevent 28 cases of serology-proven flu. If you give an incentive of $20, then the cost goes up to $25,000, which equates to around $900 paid per flu case prevented. If the average nurse makes $20/hour or $800 per week, then it is cheaper on the employer for the nurse to stay home and the cost doubles if the nurse gets the flu in spite of vaccination.