# Effectiveness of High-Dose Influenza Vaccine in HIV-positive Patients for the Winter 2017-2018 Season

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## Background

- High-dose influenza vaccine (HDIV) is approved for people 65 years or older
- No national guideline currently recommends HDIV to HIV-positive individuals younger than 65 years
- Antibody response after HDIV is superior to standard-dose vaccine in people with HIV infection
- We investigated the effectiveness of HDIV compared to standard dose quadrivalent vaccine (SDIV) in our HIV clinic

## Methods

- Retrospective cohort study in 2017-2018 influenza season
  - exposed group: HIV + HDIV
  - referent group: HIV + SDIV
- Phone survey + review of electronic medical record
  - vaccination status
  - interval development of influenza like illness (ILI)
  - modified CDC definition of ILI:
    - fever + cough, sore throat OR shortness of breath
  - protocol defined ILI:
    - fever, chills, headache OR myalgia + sore throat, cough OR shortness of breath

## Results

### HIV Patients characteristics and influenza vaccine status

| Characteristics n=219 | Standard vaccine n=77 | High-dose vaccine n=119 | Not vaccinated n=23 |
|---|---|---|---|
| **Male** | 71 (92.2%) | 106 (89.1%) | 20 (87.0%) |
| **Female** | 6 (7.9%) | 12 (10.1%) | 3 (13.0%) |
| **Trans female** | 0 (0.0%) | 1 (0.8%) | 0 (0.0%) |
| **Age, mean, years** | 50.6 | 49.9 | 50.9 |
| **Age 18-49 years** | 27 (35.1%) | 52 (43.7%) | 9 (39.1%) |
| **Age 50-64 years** | 46 (59.7%) | 47 (39.5%) | 12 (52.2%) |
| **Age >=65 years** | 4 (5.2%) | 20 (16.8%) | 2 (8.7%) |
| **BMI, mean, kg/m²** | 27.7 | 27.4 | 27.3 |
| **BMI >=40 kg/m²** | 3 (3.9%) | 2 (1.7%) | 0 (0.0%) |
| **CD4 <200 cells/uL** | 5 (6.5%) | 4 (3.4%) | 2 (8.7%) |
| **CD4 200-499 cells/uL** | 16 (20.8%) | 27 (22.7%) | 5 (21.7%) |
| **CD4 >=500 cells/uL** | 56 (72.7%) | 88 (73.9%) | 16 (69.6%) |
| **HIV Viral load >40 copies/mL** | 8 (10.4%) | 15 (12.6%) | 7 (30.4%) |

BMI = body mass index

### Influenza like illness in HIV patients

| | Not vaccinated n=23 | Standard vaccine n=77 | High-dose vaccine n=119 | p-value* |
|---|---|---|---|---|
| **Confirmed influenza** | **0 (0.0%)** | **2 (2.6%)** | **4 (3.4%)** | **1.00#** |
| No influenza | 23 (100.0%) | 75 (97.4%) | 115 (96.6%) | |
| **Modified CDC ILI** | 0 (0.0%) | **8 (10.4%)** | **6 (5.0%)** | **0.16** |
| No modified CDC ILI | 23 (100.0%) | 69 (89.6%) | 113 (94.9%) | |
| **Protocol defined ILI** | 3 (13.0%) | **16 (20.8%)** | **12 (10.1%)** | **0.04** |
| No protocol defined ILI | 20 (87.0%) | 61 (79.2%) | 107 (89.9%) | |

ILI = Influenza like illness, CDC Center for Disease Control
*P-value, comparing standard vs high-dose vaccines
# Fisher's exact test

### Vaccine side effects

| | Standard vaccine N=77 | High-dose vaccine N=119 | p-value |
|---|---|---|---|
| Mild (sore arm, fatigue, low grade fever) | 11 (14.3%) | 13 (10.9%) | 0.5 |
| Moderate – Severe (sought medical attention) | 0 | 0 | N |

## Conclusion

- During the 2017-2018 winter season, the CDC reported an influenza attack rate of 14.7% in adults in the US and an overall vaccine effectiveness of 38%
- Our study demonstrated a 50% relative reduction in protocol-defined ILI with the HDIV compared to standard-dose vaccine in our HIV clinic in 2017-2018 season
- A large randomized controlled trial is warranted in this population

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