



# Influenza and Challenges for Healthcare: The Nursing Home Perspective

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# Glossary

- ADL – Activity of Daily Living
- ATB – Antibiotics
- HCW – Healthcare Worker
- HHS – Health & Human Services
- IADL – Independent Activity of Daily Living
- ICP – Infection Control Practitioner
- ILI – Influenza-like Illness
- LTCF – Long-term Care Facility
- MMWR – Morbidity and Mortality Weekly Report
- MOU – Memorandum of Understanding
- NH – Nursing Home
- RTI – Respiratory Tract Infection
- RR – Risk Ratio
- SNF – Skilled Nursing Facility

# Nursing Homes

## Influenza Preparedness

- What is a skilled nursing facility (SNF)?
- What resources do SNFs have?
- What is the role of SNFs in a pandemic?
- Diagnostic issues in older adults
- Vaccination issues in NH residents
- Vaccination of NH HCW
- Antiviral use in NH residents
- Summary

# Skilled Nursing Facilities United States – 1997

- Residents - 1.5 million
- Facilities - 16,000
- What do SNFs provide?
  - Chronic skilled nursing care
  - Subacute care
  - Rehabilitation

# Skilled Nursing Facilities United States – 1997

- SNFs do not include:
  - Assisted Living
    - Independent apartments
    - Food service available
    - Access to social/medical resources
  - Unskilled Care
    - Assistance in ADLs, IADLs
    - Medication set up

# Pandemic Influenza

## Care Missions LTCFs vs Hospitals

### LTCFs

- Comfort
- Preservation of function
- Prevention illness
- Nurse-centered care
- Verbal orders common
- Diagnostics off-site
- Capitation

### Hospitals

- Diagnosis illness
- Rx acute illness
- MD-centered care
- Written orders
- Diagnostics on-site
- Fee-for-service

# Pandemic Influenza Response

## Role of SNFs

Charge	Reality	Possible?
Virus detection Surveillance	Labs off-site	↑ Screening ↑ Rapid Testing ↑ Communication
Detection ILI Pts and HCW	Flu atypical RTI common ICPs part-time	Absenteeism Transfers Definitions ILI
Outbreak control Identify, triage, isolate,	↓ Airborne capacity ↓ Private rooms	↑ Cohorting Limit transfers Limit visitation

# Pandemic Influenza Response

## Role of SNFs

Charge	Reality	Possible?
Communication Pts, family, HCW Media	Doable	Yes
Education Training	↑Turnover staff Understaffed ↓HCW skills	Yes
Occupational Health Treat HCW Vaccinate HCW	MD not onsite Who pays? Vaccine issues	Medical Director? For-profit corp? ↑ vaccination

# Pandemic Influenza Response

## Role of SNFs

Charge	Reality	Possible?
Use of Vaccines Antivirals Priority Distribution	↓ Priority NH pt ↓ Antibody ↓ Hospitalization Vaccine protective	↑ Vaccine HCW ↑ Antiviral use
Surge capacity Evaluation Supplies, staffing MOU hospitals	HCW limited Capitation For-profit	? ? ?

# Pandemic Preparedness SNFs – Michigan

Characteristics	Results
Beds (range)	71-120
For-profit	1/5
Affiliated	1/5
Chain ownership	1/5
Staffing (min/day/pt)	62-118
Designated ICP	4/5

# Pandemic Preparedness SNFs – Michigan

Written Plan	Results
Part of disaster planning	1/5 (in progress = 1)
Pandemic planning team	0/5 (in progress = 2)
Pandemic coordinator	1/5
Local contacts identified	0/5 (in progress = 2)
HHS pandemic plan copy	2/5 (in progress = 1)
Communication plan	0/5 (in progress = 1)

# Pandemic Preparedness SNFs – Michigan

Written Plan	Results
Education plan	0/5 (in progress = 2)
Pandemic flu control plan	3/5 (in progress = 1)
Cohorting plan	3/5
Occupational plan	1/5 (in progress = 1)
Vaccine/antiviral plan	2/5
Surge capacity	0/5 (in progress = 1)

# Pandemic Planning SNFs

## Non-pharmacologic Interventions

- Droplet/contact isolation not achievable
- Strict hand hygiene
- Cough etiquette
- Maintain standard precautions
  - No special use gowns and gloves
- Disinfect between patient use
  - Equipment
  - Environmental surfaces
- Usual laundry/waste handling

# Pandemic Planning – SNFs

## Droplet vs Airborne

- Droplet major mode
- Benefits pandemic unclear
- Surgical masks
  - 1-use
  - Dry
- Face to face contact
- All coughing persons
- Benefit community?
- Aerosols possible
- Transmission > 3 ft
- N95 masks suggested
- Applicable SNFs?
- Isolation feasible?
  - VA NH 12,538 beds
  - Isolation - 1404 beds

# Pandemic Planning – SNFs

## Inter-facility Transfers

- Ideally treat within SNF
- Communication SNFs and acute care
- Transfers – active or passive immunity
- SNF has already had pandemic flu
- If flu-free – exposed admits from acute care
  - 3-feet separation + masks + hand hygiene
  - 3 days if remains symptom-free
  - 7 days if symptoms of influenza

# Influenza Surveillance Predictive Symptoms

Symptom (%)	OR (95% CI)	P value*
T >100°F	3.26 (3.87-2.75)	<.001
Cough	2.85 (3.68-2.21)	<.001
Congestion	1.98 (2.54-1.54)	<.001
Weakness	1.54 (2.22-1.07)	.008
Anorexia	1.43 (1.86-1.10)	.008

\*especially if symptoms severe

Fever+cough	PPV 79%/NPV 49%	<.001
< 48 hrs	Sensitivity 63%	
	Specificity 67%	

# Older Hospitalized Patients Influenza Diagnosis

- Epidemic influenza documented
- Lab-confirmed cases
- Symptom complex
  - $T > 38^{\circ}\text{C}$ , cough, illness  $< 7$  days
- Flu (58%) vs Non-flu (18%)
  - RR 2.99 (95% CI 1.9-4.8)
  - Sensitivity 78%; Specificity 73%
  - PPV 47%; NPV 91%

# Influenza in LTCF

## Rapid Diagnostics – Calgary

- Controlled study use vs non-use
- Test all suspected flu cases
- Similar influenza attack rates
- Outcomes testing vs non-testing
  - Reduction in outbreak: 9 vs 16 days;  $P = .03$
  - No difference use: amantadine, ATB, labs, isolation, hospitalization

# Influenza in the Elderly

## National Health Objective – 2010

- > 90% vaccination high risk patients
- Vaccination rates > age 65

1973-1985                      22%-33%

1993\*                              52%

1999                                66%

2005                                66%

- NH patients vaccinated

1997                                64%-82%

1998                                83%

\*Medicare benefit initiated

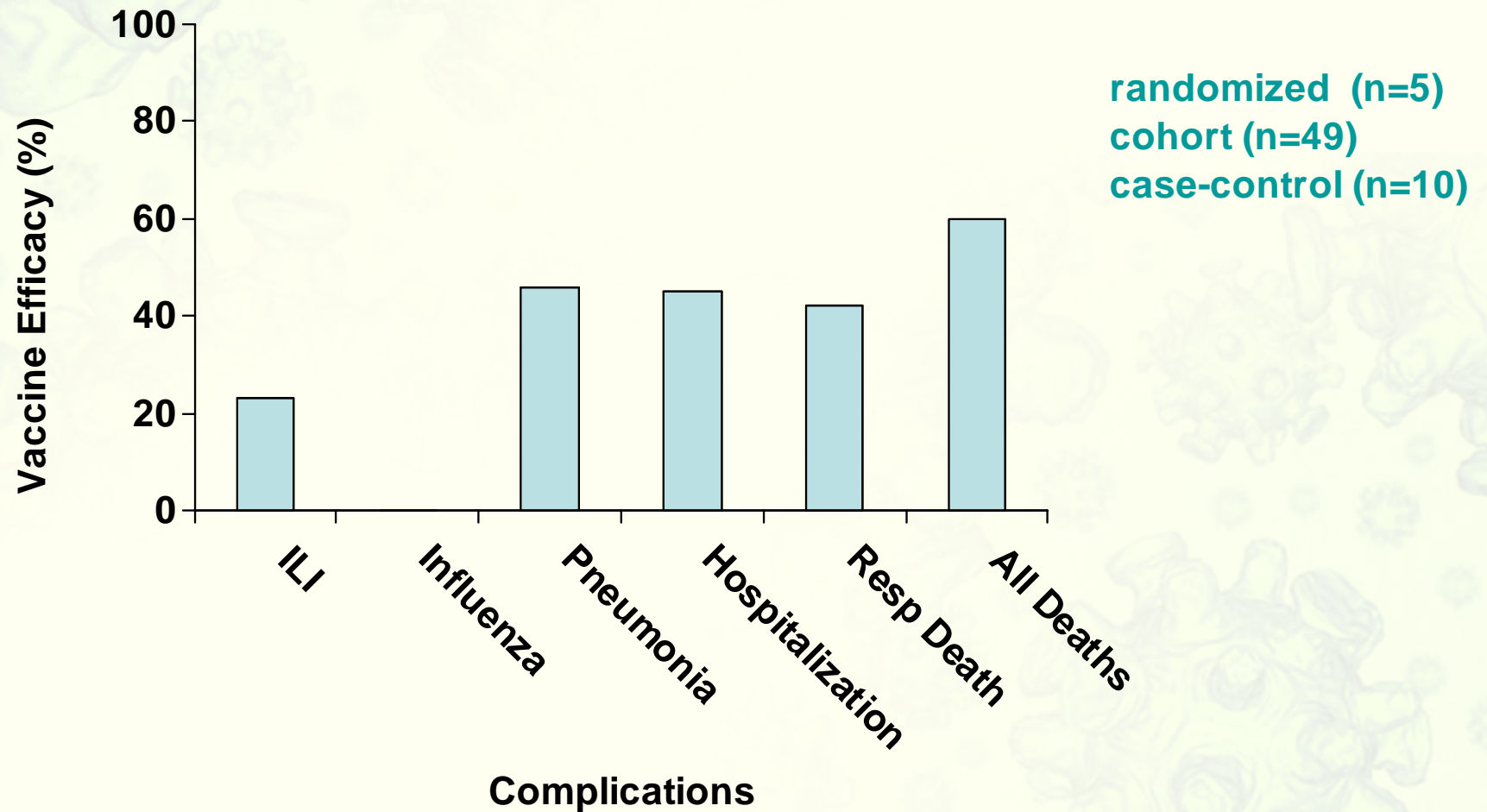
*MMWR.* 2006;55 (RR-10):1-42.

*MMWR.* 1995;44:506-507,513-515.

# Influenza Vaccine Prevention Complications

- Influenza-like illness
  - Young (70%-90%)
  - > 60 yrs (58%)
  - NH patients (30%-40%)
- Hospitalization pneumonia/flu
  - 65 yrs (30%-70%)
  - NH pts (50%-60%)
- Mortality NH patients (80%)

# Flu Vaccine Systematic Review LTCF Residents



# HCW Vaccination (UK)

## Effect on Deaths in 12 LTCF

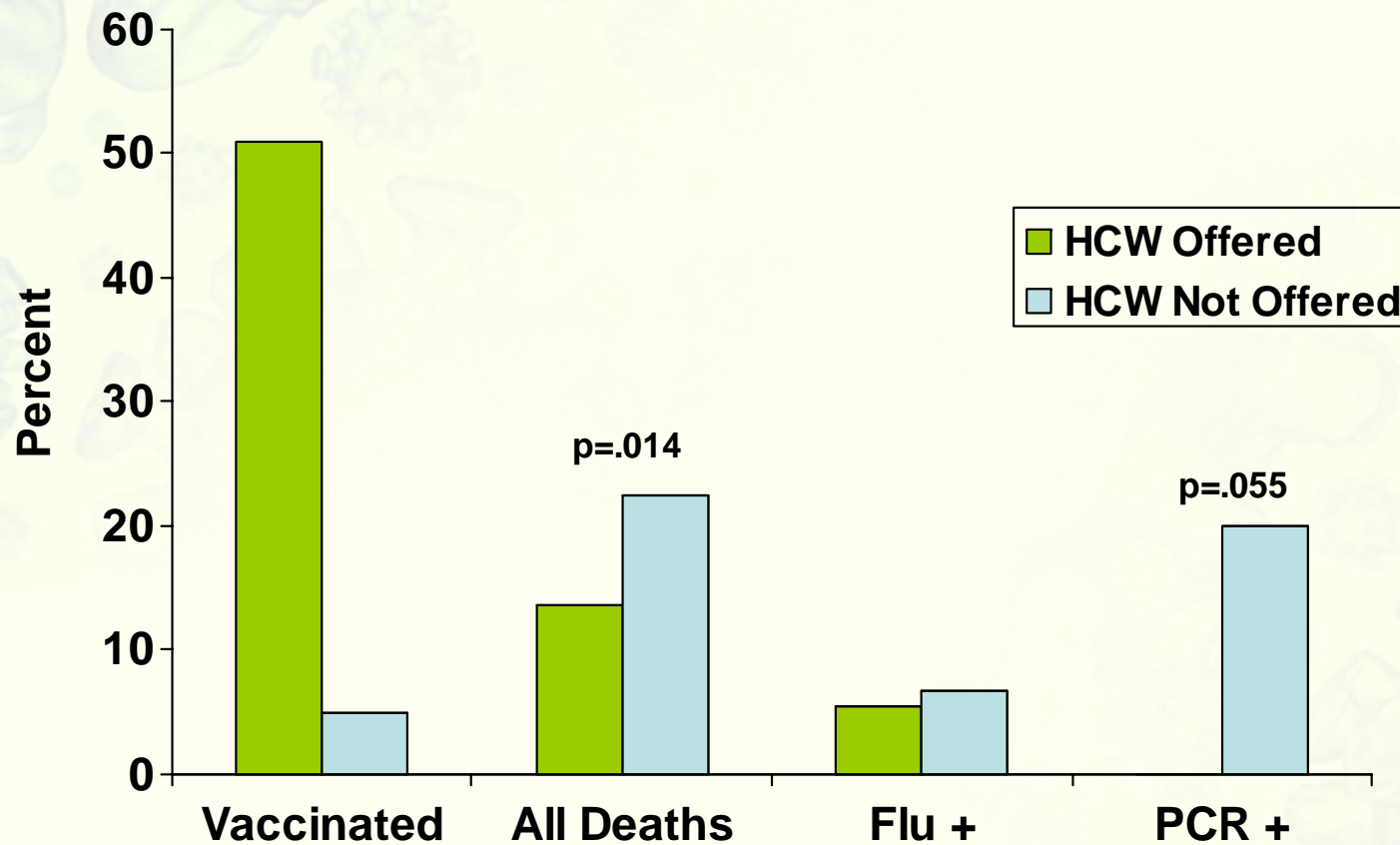
- Healthcare workers vaccinated (61%)

	OR	CI (95%)
Patient mortality	0.56	(0.40-0.80)
Patient ILI	0.57	(0.34-0.94)

- Just patients vaccinated

Patient mortality	1.15	(0.81-1.64)
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# HCW Vaccination (UK) Effect on Residents 20 LTCF



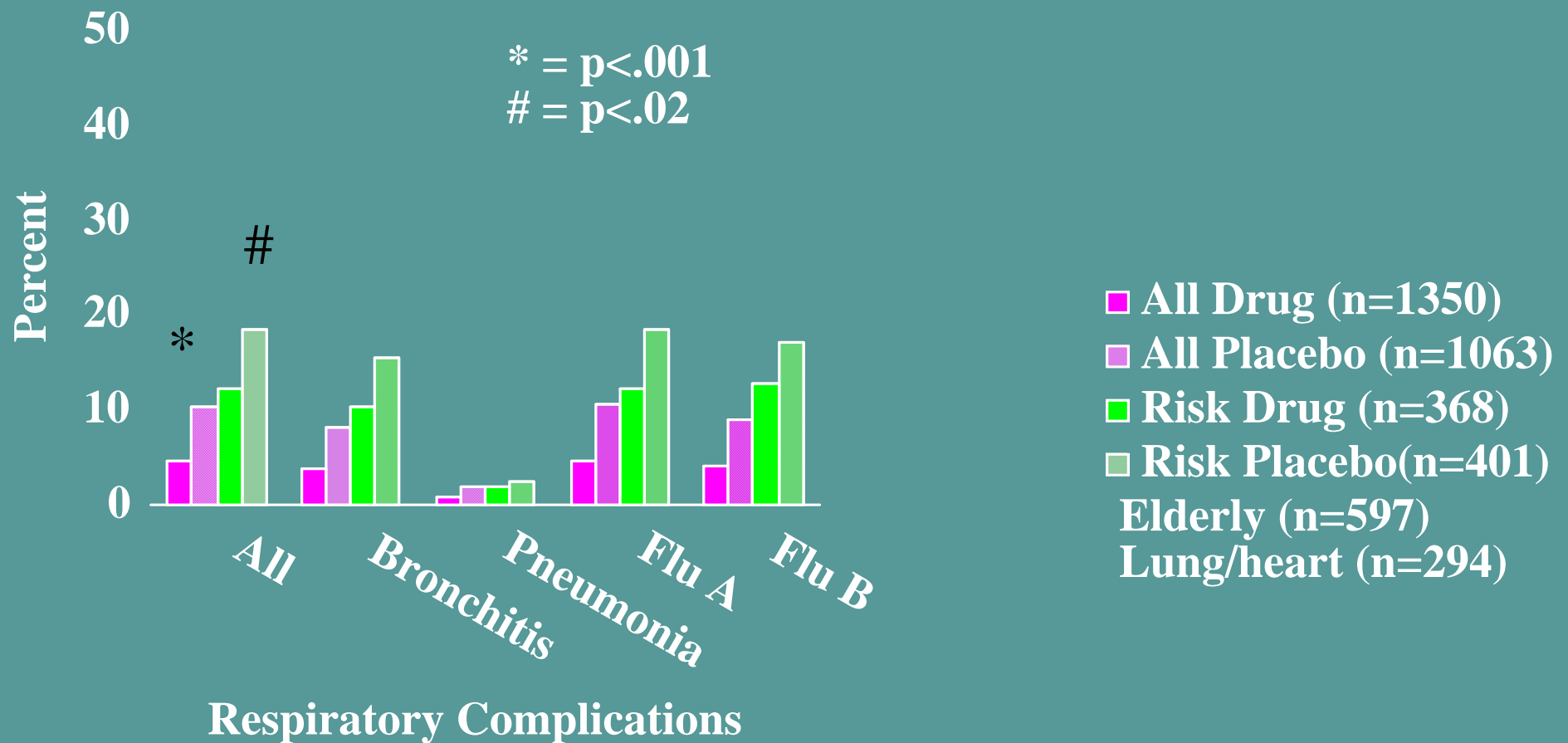
# Influenza in SNF

## Vaccine Shortage 2004-2005

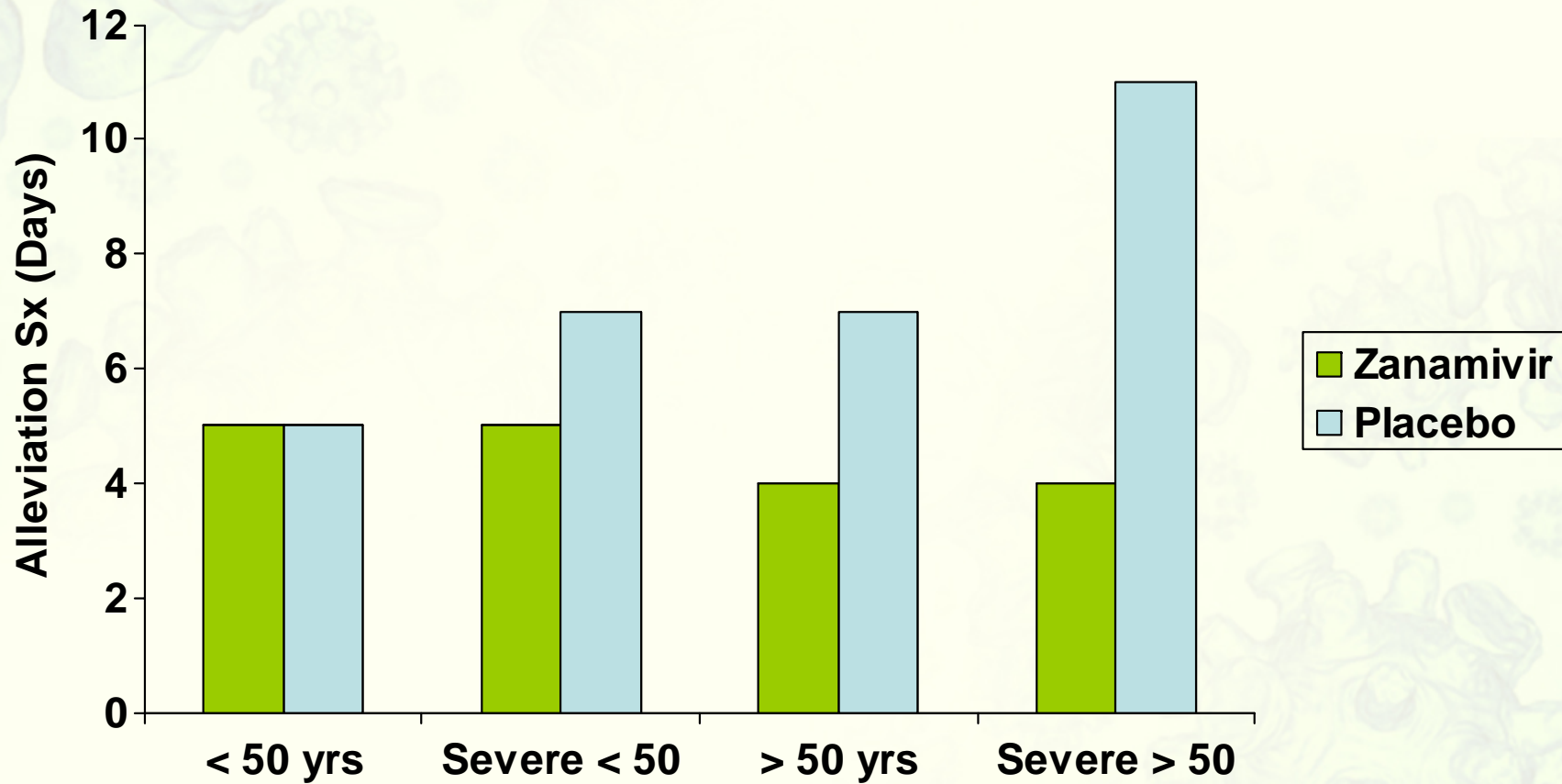
- Retrospective survey
- Response 386 SNF (46%) > 38,000 beds
- Influenced immunization program (42%)
- Immunization rates

	2003-04	2004-05	<i>P</i> value
NH Patients	85%	82%	.025
HCWs	51%	38%	< .0001

# Oseltamivir Treatment Confirmed Influenza



# Zanamivir Treatment Confirmed Influenza



# Influenza in Older Adults

## Antiviral Rx ILI

### Unvaccinated

- Test+oseltamivir
- Empiric oseltamivir

### QALY

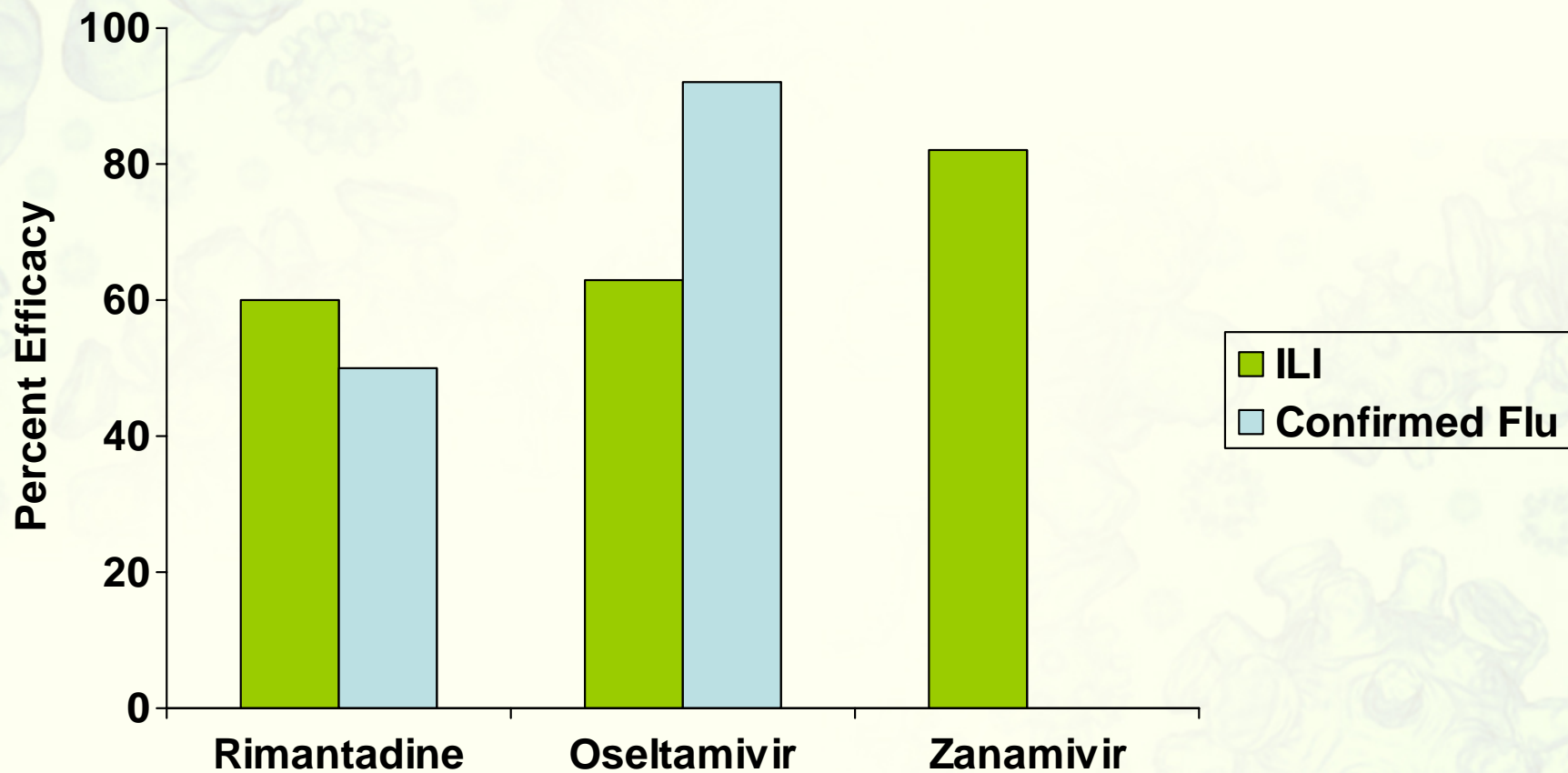
\$5025  
\$10,296

### Vaccinated

- Test+oseltamivir
- Empiric oseltamivir

\$29,839  
\$70,300

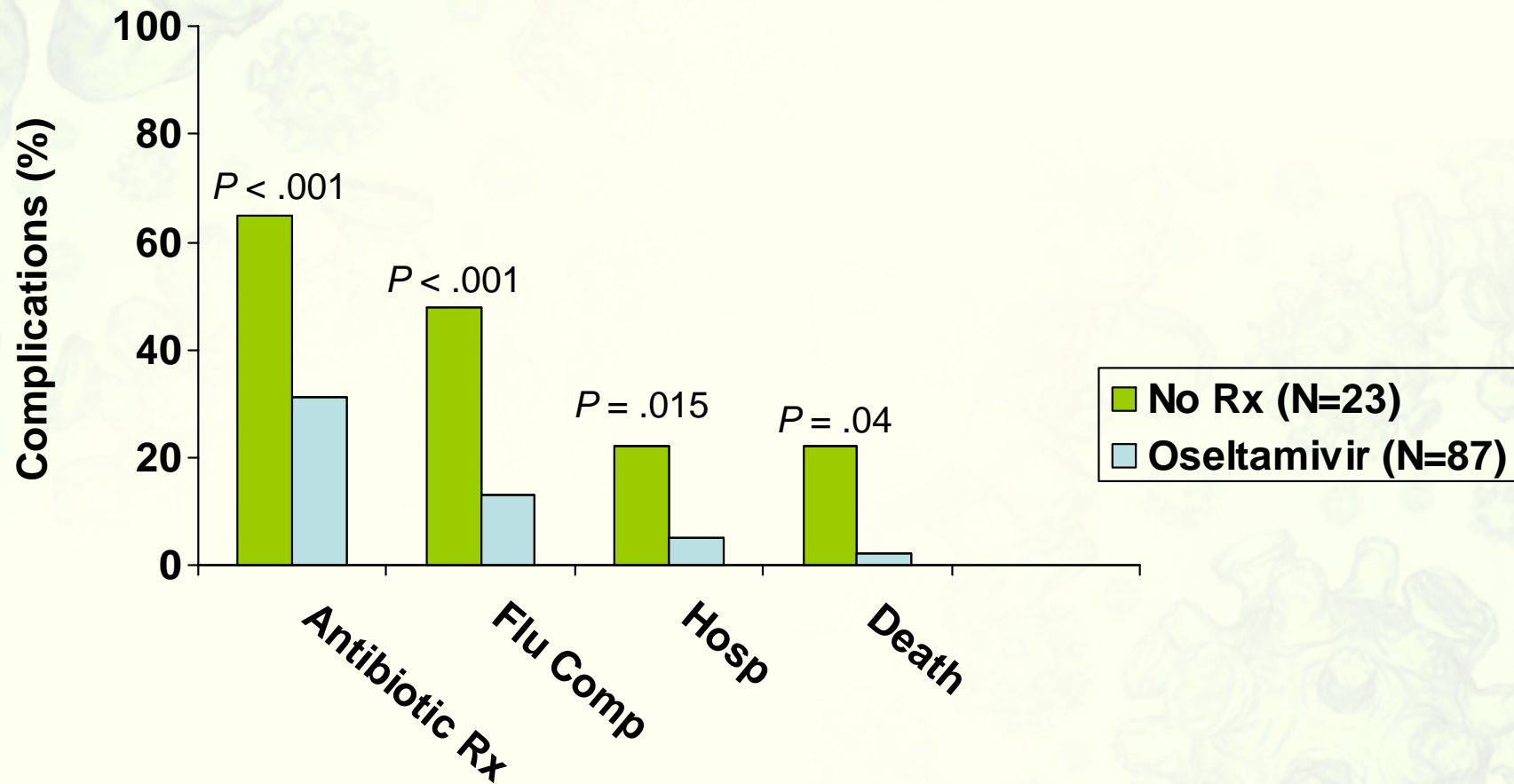
# Influenza Prophylaxis Efficacy LTCF



Risebrough et al. *JAGS*. 2005;53:444.

Hirji et al. *ICHE*. 2002;23:604.

# Influenza Prophylaxis Nursing Homes



# Influenza Prophylaxis Nursing Homes

<b>Prophylaxis</b>	<b>Savings (\$CDN) per 100 patients/30 days</b>
oseltamivir vs none	3357
amantadine vs none	2106
oseltamivir vs amantadine	1249
prevention flu cases	3-4

# Pandemic Preparedness Influenza in SNF

- Preparedness data in SNF is limited
- Flu recognition will be difficult
- Isolation capacity is limited
- Vaccination of NH patients
  - Well accepted, prevents hospitalization
  - Avian flu vaccine efficacy?
- Vaccination of HCW prevents flu in NH patients
  - Acceptance an issue
- Antivirals reduce/prevent
  - Illness, respiratory complications in NH patients