Improving the Quality of Elderly Care in Indiana: Reducing the Incidence of Vaccine-Preventable Pneumonia and Related Morbidity and Mortality

Final Outcomes Report

Ψ SCHOOL OF MEDICINE
INDIANA UNIVERSITY

ACHL
ACADEMY *for* CONTINUED HEALTHCARE LEARNING

Activity Overview

- State-based quality Improvement activity with live in-service meetings
- Partnered with 18 assisted living facilities (ALFs) and Continuing Care Retirement Communities (CCRCs), to improve pneumococcal vaccination rates within the elderly population in Indiana
  - 15 facilities in intervention group (5 additional facilities cancelled participation in Stages A/B)
  - 3 facilities in control group
- Live in-service workshops certified for physicians, pharmacists, nurses and case managers
- Manuscript to be submitted in Fall 2014 to a peer-reviewed education journal
- Online toolkit will be available at www.achlqicme.org/alzheimers/toolkit, and submitted to AHRQ for online posting
- Educational Partners: Indiana University School of Medicine (accredited provider); Academy for Continued Healthcare Learning; LeadingAge Indiana

- *Performance measures utilized: documentation and/or vaccination status (pneumococcal and influenza) for elderly and healthcare personnel*
- *Performance improvement realized in all three performance measures, two increases statistically significant, resulting in improved documentation and vaccination status in elderly population and health care workers in Indiana.*

ACHL

QI Activity Design

Stage A: Learning from current practice performance assessment

- A Champion at each facility entered data from 20 patient charts and 10 staff members into online portal
- Clinicians and Champions reviewed baseline performance
- Baseline data collected in advance of influenza season

Stage B: Learning from application of performance improvements to patient care

- Expert faculty conducted live in-service workshop at facilities, held in advance of influenza season
- Based on performance, each facility outlined goals relative to performance measures
- Clinicians and Champions identified an action plan specific to their facility and needs, and implemented additional, customized interventions
- Interventions done September - February

Stage C: Learning from evaluation of their effort

- Champion at each facility entered data from 20 unique patient charts and 10 unique staff members; performance compared to Stage A baseline data
- Champions reviewed updated performance, and responded to reflection questions
- Data collected following influenza season, in March

Summary: Stage A and C Performance Comparisons

Performance Measures – Intervention Group	Stage A	Stage C	% Change
Residents aged 70 years and older with documentation of pneumococcal immunization status	67%	90%	34% *P*=0.0023
Residents aged 70 years and older who have ever received pneumococcal immunization	93%	97%	4%
Healthcare personnel who have received the influenza vaccination	79%	89%	19% *P*=0.045

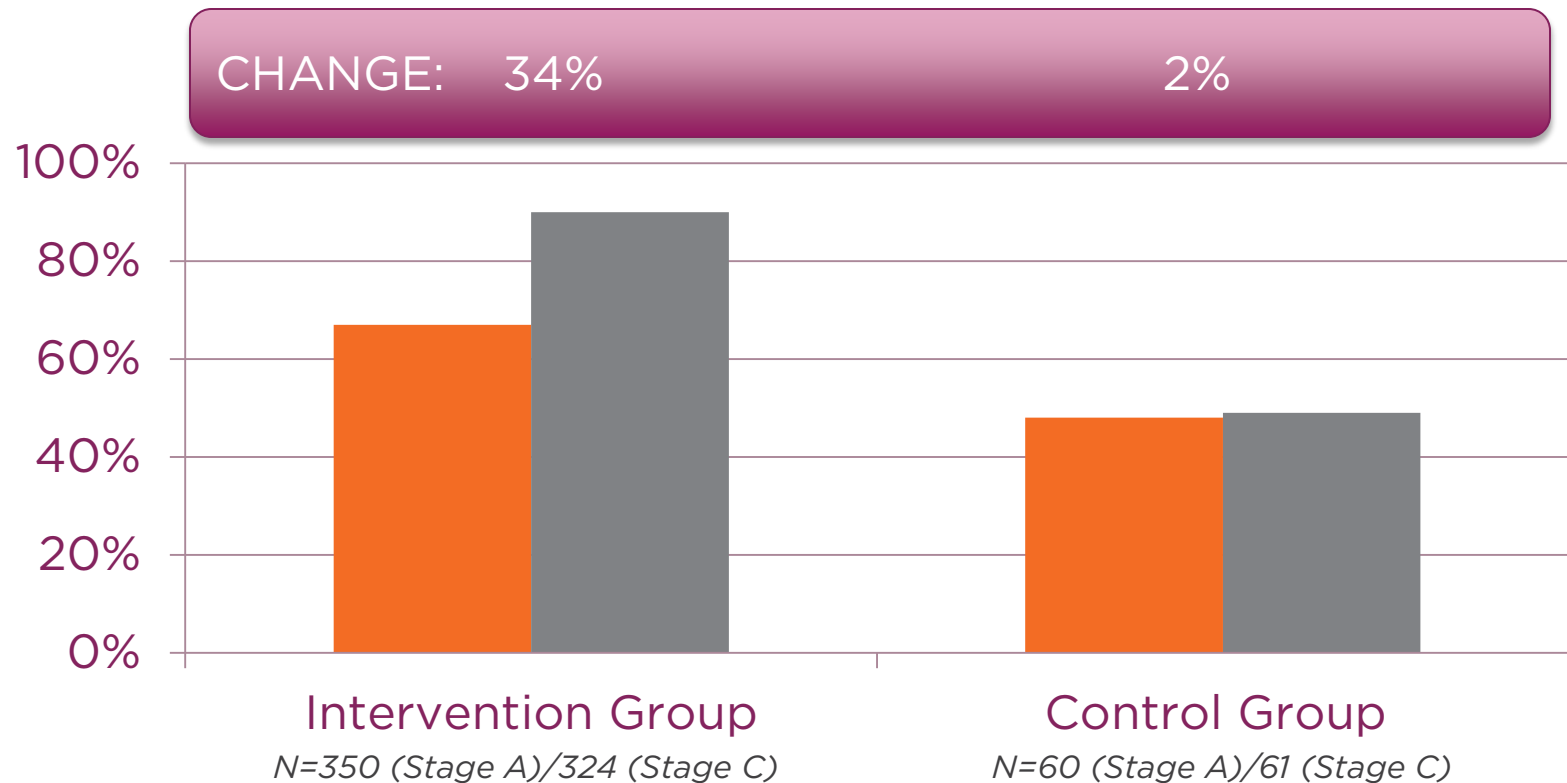*Stage A: N=350 residents; 152 healthcare personnel*
Stage C: N=324 residents; 110 healthcare personnel

Statistically significant increases were realized in 2 of 3 measures

ACHL

Summary: Stage A and C Performance Comparisons

Measure 1: Residents aged 70 years and older with documentation of pneumococcal immunization status
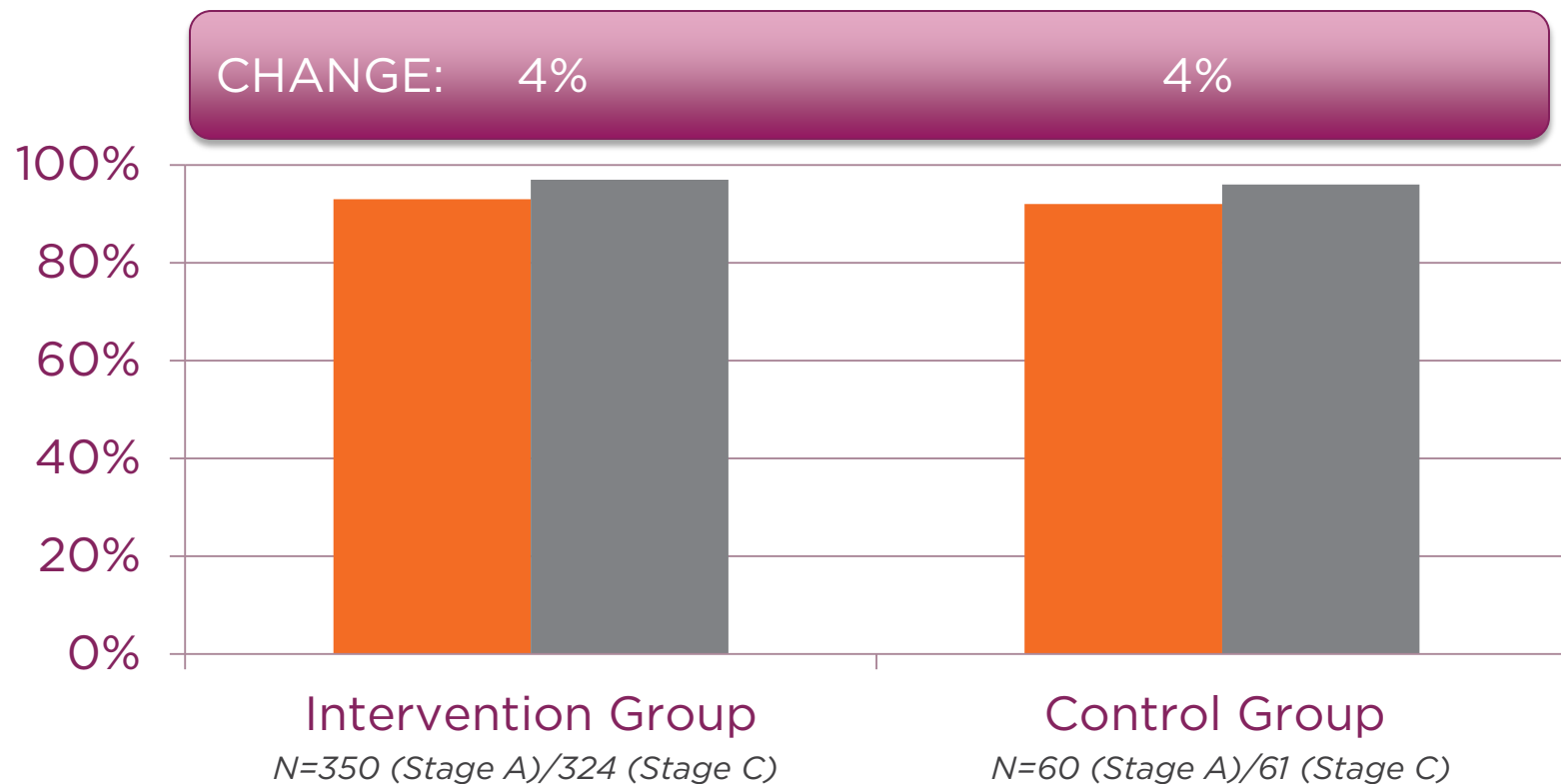*Source: National Quality Measures Clearinghouse 4460*

| CHANGE: | 34% | 2% |

Intervention Group
N=350 (Stage A)/324 (Stage C)

Control Group
N=60 (Stage A)/61 (Stage C)

Statistically significant increase seen (P=0.0023)
Odds of documentation increased from 1.9 to 5.5

ACHL

Summary: Stage A and C Performance Comparisons

<u>Measure 2:</u> Residents aged 70 years and older who have ever received pneumococcal immunization

*Source: National Quality Measures Clearinghouse 2751*

CHANGE: 4%   4%

Intervention Group
N=350 (Stage A)/324 (Stage C)

Control Group
N=60 (Stage A)/61 (Stage C)

High performance was seen in both Intervention and Control Groups, with slight improvement in both

ACHL

Summary: Stage A and C Performance Comparisons

Measure 3: Healthcare personnel who have received the influenza vaccination

Source: National Quality Forum 0431

| CHANGE: | 19% | -7% |

Intervention Group
N=350 (Stage A)/324 (Stage C)

Control Group
N=60 (Stage A)/61 (Stage C)
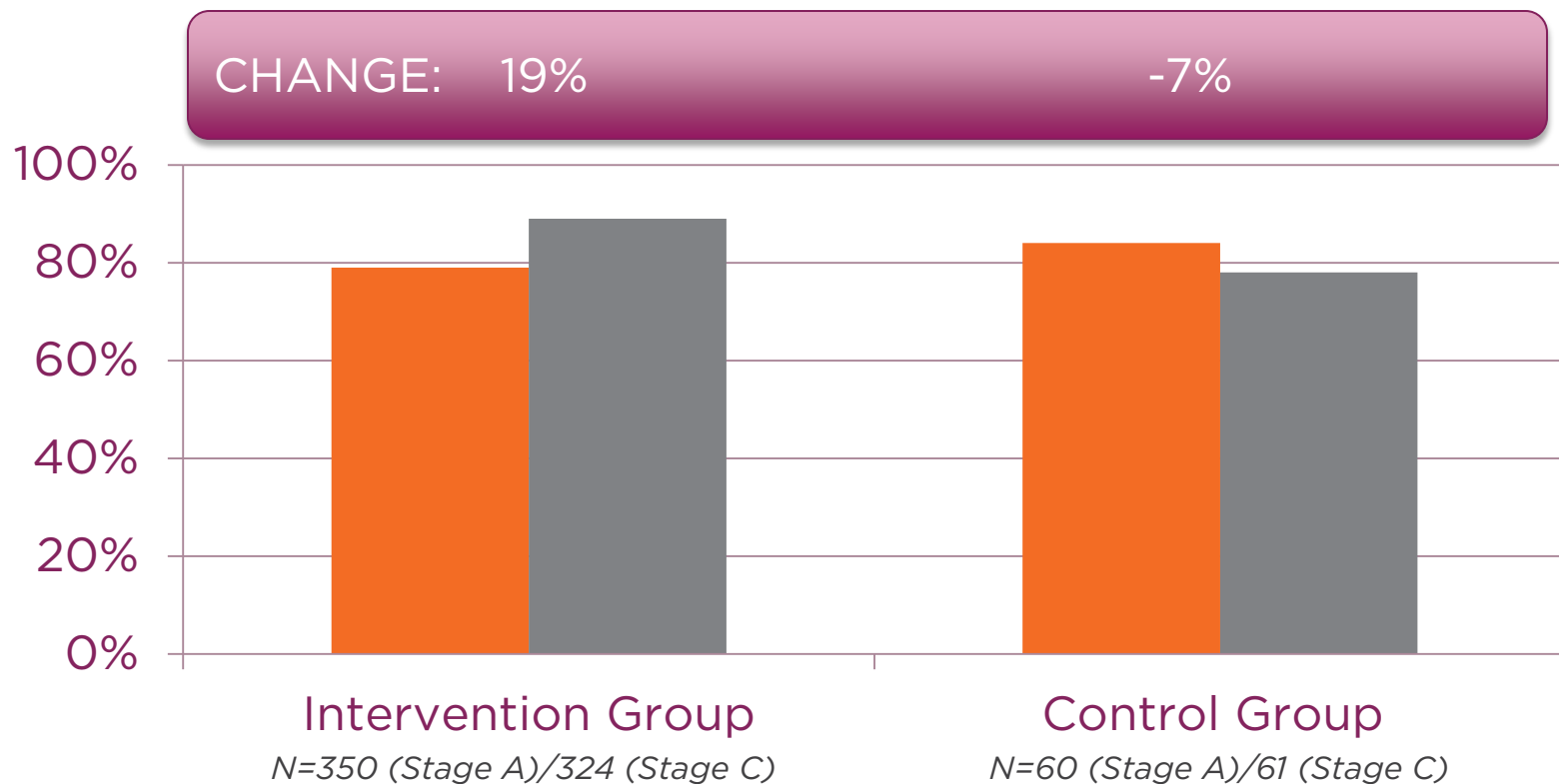
Statistically significant increase seen (P=0.045)
Odds of receiving vaccine increased from 3.0 to 7.8

ACHL

Summary: Stage A and C Performance Analysis

Measure 1: Residents aged 70 years and older with documentation of pneumococcal immunization status

❑ As evidenced by only 67.4% with documentation of vaccination status in Stage A, ALFs and CCRCs do not routinely have vaccination records for their residents. Facilities who participated in the activity seem to have implemented processes to improve documentation of vaccinations.

❑ Of non-Caucasian participants, only 25% had documentation of pneumococcal vaccination in Stage A, increasing to 100% in Stage C. While this is based on a small sample size, it suggests racial/ethnic health disparities existed at baseline.

   ❑ Of this group, only 67% received pneumococcal immunization at stage C, compared to 97% among the full study population

Summary: Stage A and C Performance Analysis

Measure 2: Residents aged 70 years and older who have ever received pneumococcal immunization

❑ Observed rates of pneumococcal vaccination at baseline in this study were higher than other reports in the state of Indiana
- ❑ One explanation is that facilities collect and capture primarily only positive documentation of vaccination from an outside physician or nontraditional setting
- ❑ Another explanation is that residents who enter an ALF or CCRC might visit a care provider and receive preventive care prior to admission

❑ Relatively similar changes were observed in the intervention and control groups
- ❑ Awareness of the activity may have influenced the control group (Hawthorne effect)
- ❑ Concurrent state- or government-based initiatives may have impacted the activity

Measure 3: Healthcare personnel who have received the influenza vaccination

❑ The number of staff members receiving the 2013-2014 influenza vaccine increased significantly after participating in this activity

PI CME Web Portal

Stage A: Assess ▸ Stage B: Apply ▸ Stage C: Re-asse

Data Collection Form

Please note that numbering of the questions might not be in sequential order. This is due to some questi
questions were answered.

1. **Resident/Staff ID**

   P00001

2. **Chart Number (for your**

   01

* 3. **Is this record for a resi**

   ⦿ Resident ○ Staff

4. **Resident gender**

   ○ Man ⦿ Woman

5. **Ethnicity**

   ○ African American
   ○ Asian
   ⦿ Caucasian
   ○ Latino/Hispanic
   ○ Other

* 6. **Is the resident 70 year**

   ⦿ Yes ○ No

* 7. **Birth year of resident**

   1922

8. **Resident's date of reside**

   2011

ACHL QI CME

| Home | Faculty | CME | FAQs | Contact Us |

→ Welcome **Sabine**, you are logged in fo ▓▓▓▓▓▓▓▓▓▓▓▓▓   Logout

Stage A: Assess ▸ Stage B: Apply ▸ Stage C: Re-assess

Welcome to the online portal for the quality improvement activity, "Improving the Quality of Elderly Care in Indiana: Reducing the Incidence of Vaccine-Preventable Pneumonia and Related Morbidity and Mortality." During this quality improvement activity, your data will be measured based on the performance measures as outlined in the dashboard below. Performance measures are used to demonstrate your facility's performance and to inform health care decisions.

Resident/Staff Charts

Performance Data Dashboard

Performance Measure Description	Baseline measurement in Stage A	Initial Performance Goal	Final measurement in Stage C	Revised Performance Goal
Percentage of residents aged 70 years and older with documentation of pneumococcal immunization status	65%	100%	67%	Add Goal
Percentage of residents aged 70 years and older who have ever received pneumococcal immunization	60%	75%	67%	Add Goal
Percentage of healthcare personnel who have received the influenza vaccination	60%	100%	80%	Add Goal

👁 **View All**

Toolkit
http://achlqicme.org/pneumonia/toolkit

A Toolkit similar to the one below will be posted upon completion of the manuscript

Faculty

<u>Chair</u>
Evelyn Bose, MD, CMD
Medical Director for Extended Care Nursing Home Services;
Indiana University Geriatrics
Medical Director Center for Senior Health; Wishard Hospital Senior Center
Indianapolis, Indiana

<u>Steering Committee</u>
Azita Chehresa, MD, PhD
Geriatrician, Community Health Network
Carmel, Indiana

Debbie Beers, RN
Public Health Nurse Surveyor, Indiana State Department of Health
Indianapolis, Indiana

<u>Nurse Planner</u>
Betty Hargan, RN, MSN
Quality Improvement Specialist
Lakes Regional Healthcare
Spirit Lake, Iowa

<u>Faculty Presenters</u>
Olusegun Apata, MD
Assistant Professor of Medicine, Indiana University
Consultant Pulmonologist/Sleep Specialist
Great Lakes Pulmonary and Sleep Associates
Gary, Indiana

Daniel Nafziger, MD, MS
Hospital Epidemiologist, IU Health Goshen Hospital
Goshen, Indiana
Health Officer, Elkhart County Health Department
Elkhart, Indiana

Ammar Shaheen, MD
Pulmonologist, Methodist Hospital
Merrillville, Indiana

ACHL

Participating Facilities/ Participants

15 Facilities in intervention group:

- 7 CCRC
- 6 Assisted Living
- 1 CCRC/Assisted Living
- 1 Skilled Nursing

3 Facilities in control group:

- 2 CCRC
- 1 Assisted living

Study sample was primarily Caucasian (95%), older than 70 years (89%) and mostly women (63% at stage A and 55% at stage C). The population of this sample is more homogenous than we hoped for, and might be an explanation for why performance in this activity is higher than state-based reports.

Additionally, in analyzing the four lowest performing facilities at baseline, little correlation was found between the facilities or their residents and any profile/demographic information (facility type, location, resident age, etc). Further study might be warranted with mid-size facilities, as they had lowest performance at Stage A.

The gender and ethnicity of the residents aged 70 and older in the intervention and controls groups were similar (P>0.20) both at stage A and C.

Participating Facilities

	Intervention Group	Control Group
Occupancy	Average: 106 Range: 32-280	Average: 165 Range: 60-318
Total affiliated physicians	Average: 11 Range: 0-24	Average: 10 Range: 2-20
Ownership type	11 Nonprofit 4 For profit 1 Government	2 Nonprofit 1 For profit
Facilities licensed by state	Yes: 14 No: 1	Yes: 2 No: 1
Facility keeps charts/records on residents	Yes: 14 No: 1	Yes: 2 No: 1

ACHL

Stage B: In-service Workshop

Expert faculty conducted live a in-service workshop at each of 15 facilities, with an average of 10 participants attending each workshop

Workshop Agenda (average 2 hours)

- Customized performance data collected during Stage A presented to participants
    - Review of facility's performance relative to measures
    - Discussion of barriers and perceptions of vaccination rates at facility
    - Review of national benchmark data
- Didactic presentation of core slide deck, customized by faculty member to meet the needs of each facility
    - *S. pneumonia*
    - Morbidity and mortality of pneumococcal disease
    - Available pneumococcal vaccines and seasonal influenza vaccination
    - Barriers to vaccination
    - Strategies to improve vaccination rates
- Group discussion on current processes and performance, development and implementation of action plans

The following slides are based on the 15 in-service workshops.

ACHL

Level 1: Participating Clinicians

- 15 in-service meetings
- 145 participants
  - 94 Nurses
  - 44 Other staff
  - 2 Physicians
  - 2 Pharmacists
  - 1 Case manager

- 113 credit or participation certificates provided
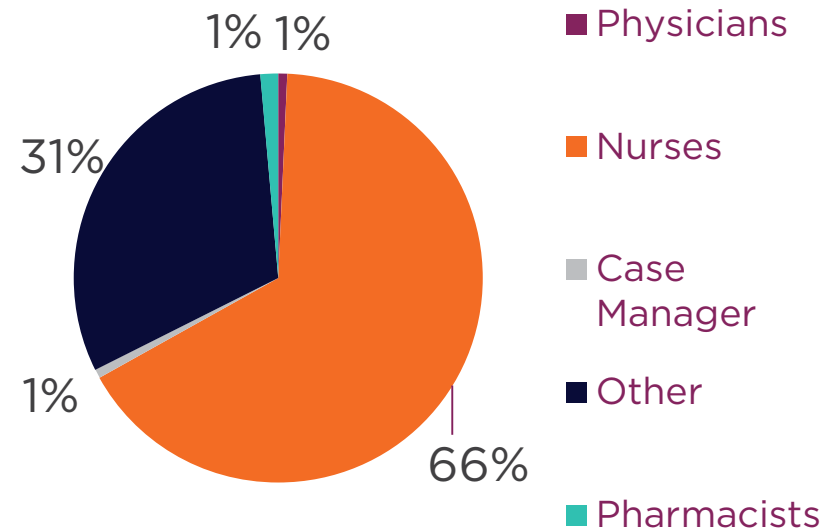
The primary audience of clinicians, administrators and staff working in CCRCs, low income senior housing and/or licensed ALFs was reached.

99% of participants indicated the activity matched the scope of their professional activities.

Chart legend:
- Physicians
- Nurses
- Case Manager
- Other
- Pharmacists

Chart values: 1% 1% 31% 1% 66%

ACHL

Level 2: Learning Objectives

| Please rate the following objectives to indicate if you are better able to:	Analysis of Respondents 5 = Excellent 1 = Poor
Discuss the morbidity and mortality of invasive pneumococcal disease in elderly populations	4.72
Outline pneumococcal and influenza vaccine recommendations and schedules	4.71
Identify organizational changes and tools to overcome barriers to immunization	4.68
Develop an action plan to improve pneumococcal and influenza vaccination rates in residents and healthcare providers of senior housing settings	4.65

In general, participants agreed that the activity met the learning objectives.
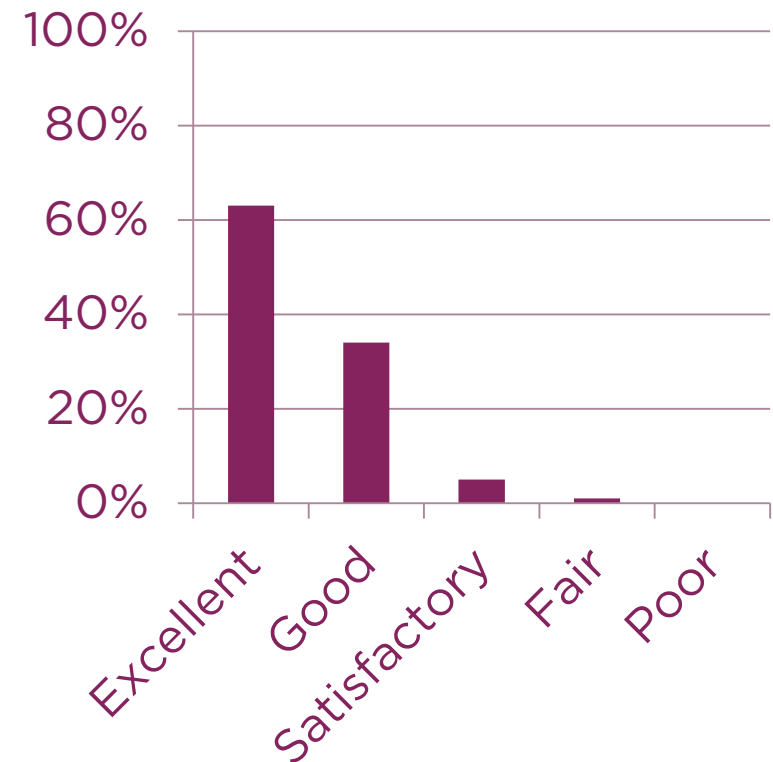
ACHL

N=113

Level 2: Objectivity & Bias
(From evaluation of in-service meeting)

Did you perceive bias?
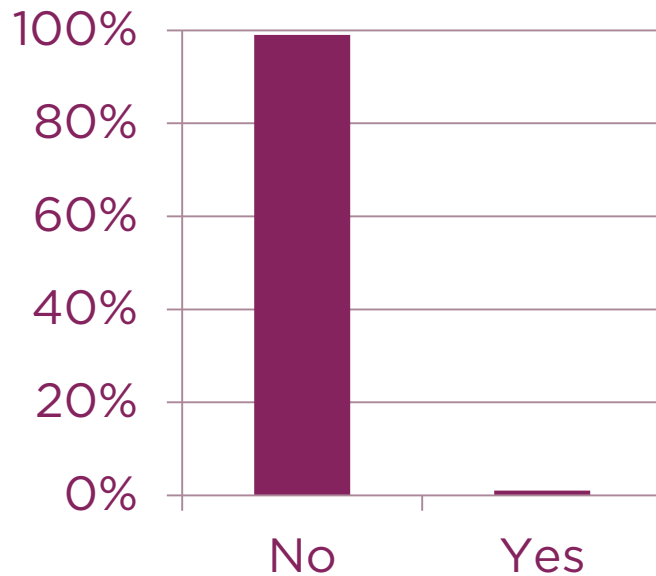
Rating of Objectivity & Balance

99% of participants indicated that the activity was free of commercial bias or influence.

ACHL

N=111

Level 2: Satisfaction

Overall Evaluation	Analysis of Respondents 5 = Excellent 1 = Poor
Quality of educational content	4.65
Scientific rigor	4.52
Level of instruction	4.61
Usefulness of course handouts	4.50
Effectiveness of teaching method used	4.48
Appropriateness of active learning strategies	4.49
Time allotted for presentation of information	4.58
Time allotted for Q&A	4.64
Facilities, technical arrangements efficiently supported activity	4.54

*99% would recommend
the in-service meeting to a colleague.*

ACHL

N=113

Level 2: Reasons for Attending

Please rate the importance of your reasons for attending:	Analysis of Respondents 5 = Extremely 1 = Not at all
Topics	4.52
Convenient Location	4.44
Faculty Reputations	4.11
Interaction with Colleagues	4.14
CME/CE Credit	3.32

"Topic" was the most important reason for attending the in-service meetings. Because many participants weren't clinicians, it makes sense that CME/CE credit was not important to this group.

ACHL

Level 2: Faculty

	Dr. Shaheen	Dr. Nafziger	Dr. Bose	Dr. Apata
# of presentations	4	3	1	7
Ability to effectively convey the subject matter	4.40	4.58	4.92	4.82
Ability to deliver an objective and balanced presentation	4.40	4.61	5.00	4.78
Ability to present scientifically rigorous information	4.55	4.68	4.83	4.70
Ability to adjust to the knowledge and experience level of the audience	4.45	4.68	4.92	4.73
Expertise on the subject matter	4.60	4.77	5.00	4.84

5=Excellent; 1=Poor

All faculty were highly rated, with 4.40 the lowest rating across all faculty/categories

ACHL

Levels 3-5: Self Assessment

This activity increased my knowledge:

Yes: 96%   No: 0%   No Change: 4%

Comments:

- Better prepared to discuss with/educate patients, families, staff (3)
- Statistics provided increased knowledge
- Statistics and pneumo vaccine info
- FAQ's for vaccines
- This information including statistics will increase % of people receiving vaccines and affect infection rates
- Influenza and pneumo vaccines can be given at same time
- Nice to know pneumo rate in this area
- I know more positives about vaccines
- Overall more knowledgeable / learned facts I was unaware of (2)
- Understanding importance of vaccinations
- I didn't know the different types of flu shot

N=113

ACHL

Levels 3-5: Self Assessment

This activity increased my competence:

Yes: 87%   No: 1%   No Change: 12%

Comments:
- Better able to use these facts to educate others
- I am better able to explain to others (2)

This activity will improve my performance:

Yes: 81%   No: 3%   No Change: 17%

Comments:
- More injections, knowledge
- Being more knowledgeable increases my credibility
- More knowledgeable - will get shots
- I will be in charge of agency education process

ACHL

N=113

Levels 3-5: Self Assessment

This activity will improve my patient outcomes:

Yes: 87%   No: 0%   No Change: 13%

Comments:

- Educate residents, staff and family; get vaccinated/decrease infections (3)
- With better education, we can better educate our residents
- New regulations on pneumo vaccine
- Should make a difference in residents' health
- Hopefully my patients will get vaccinated; employees as well

ACHL

N=113

Facility Action Plans

During each in-service meeting, facility participants collectively identified an Action Plan for increasing vaccination rates. Action Plans included the following components:

- Quality improvement area(s)
- Key success factors
- Barriers
- Action steps needed to achieve goal
- Responsible parties
- Resources needed
- Timeline/benchmarks

ACHL

Facility Action Plans

The following Goals were identified in facility action Ppans:

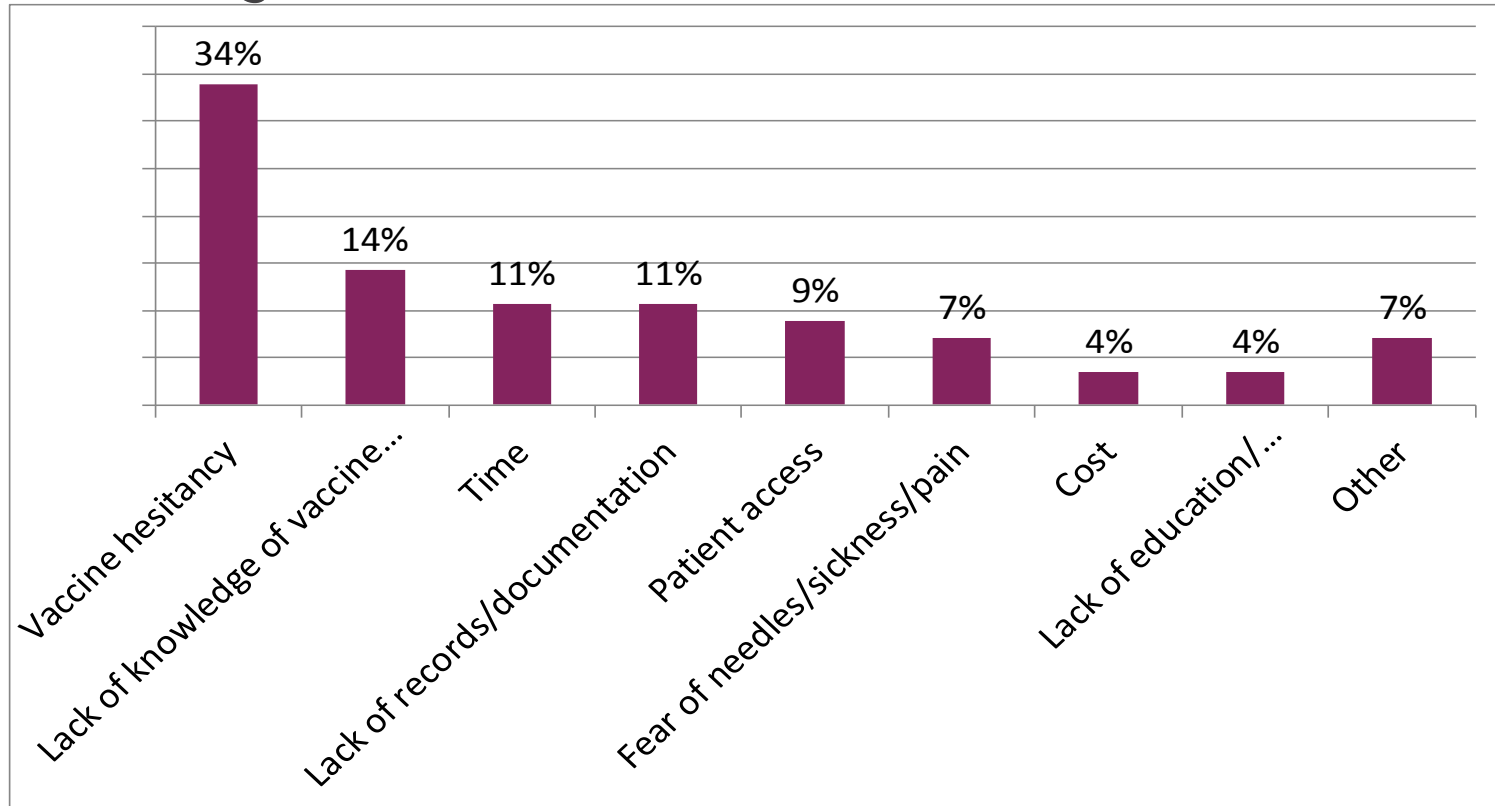| Goal Identified	% of facilities with goal included:
Increased # of residents receiving/interested in receiving pneumococcal vaccine	87%
Increased # of staff receiving influenza vaccine	67%
Increased documentation of vaccines in resident charts	33%
Increased # of staff receiving/interested in receiving pneumococcal vaccine	20%

Sample of specific actions steps identified to achieve goals: identify new ways to communicate to staff and residents, education, post information in break rooms, implement mandatory staff vaccinations, enter vaccine status into system on day of admission.

91% of goals identified in Action Plans were achieved

ACHL

Barriers

The following barriers were identified in Action Plans:

Bar chart:
- Vaccine hesitancy: 34%
- Lack of knowledge of vaccine...: 14%
- Time: 11%
- Lack of records/documentation: 11%
- Patient access: 9%
- Fear of needles/sickness/pain: 7%
- Cost: 4%
- Lack of education/...: 4%
- Other: 7%

Others (1 response each): Staff turnover, lack of motivation, transportation, staff ability to education on subject

Vaccine hesitancy among both residents and staff is the biggest barrier identified

N=56

ACHL

Patient Impact

95% of participants perceive that changes they make as outlined in facility's action plan will have impact on residents:

Comments:

- Better able to education residents and families / education opportunities (28)
- Increased vaccination rates/compliance, resulting in longer lifespan (13)
- Improved documentation (6)
- Better staff vaccination/health resulting in decreased resident infection (5)
- Encouraging and motivating staff and/or residents to receive vaccinations (5)
- Better overall health, decreased hospitalizations, increased quality of life (5)
- Decrease in pneumonia (2)
- Increased acceptance by staff and patients (2)
- Decrease in faculty - acquired infections (respiratory)
- Less sickness with residents - less spreading of virus to staff; staff taking off less time
- Will review emergency medical information and make necessary changes

ACHL

N=102

ABMS/IOM Competencies Addressed

☐ Select all that apply:
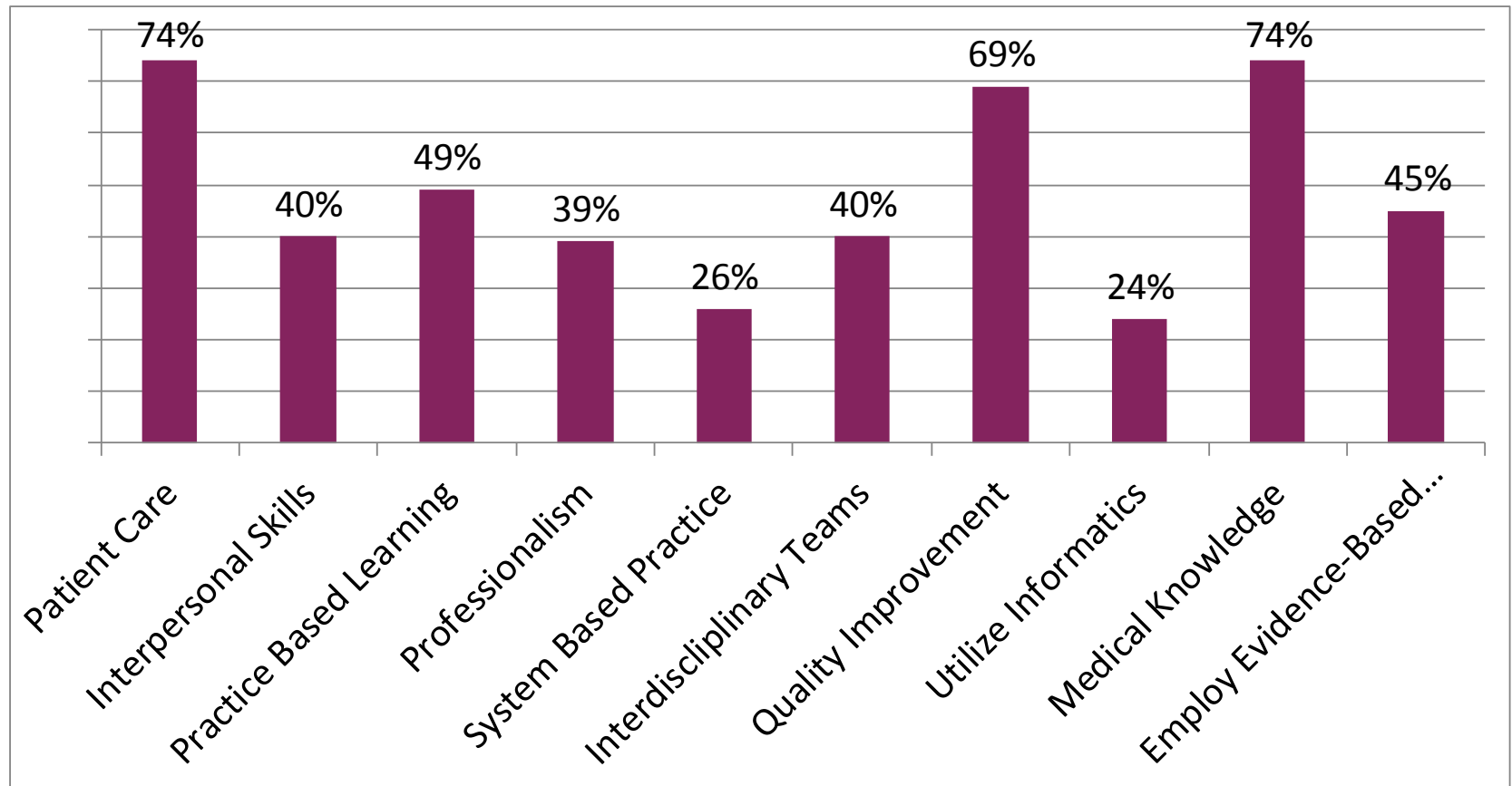
Most participants identified multiple competencies addressed by this activity, with patient care and medical knowledge topping the list.

N=85

General Comments:
(*From evaluation of in-service meeting*)

- Awesome in-service! I usually do not get the flu vaccine but after attending this in-service, I will be getting the vaccine this year.
- Awesome! Very knowledgeable, kept me involved.
- Great program (3)
- Presenter very knowledgeable and infused some humor to make it more lighthearted and fun
- Very informative and educational
- Dr. Shaheen was very informed and was able to convey this to our nurses / great job explaining the information and its importance to our elderly community (2)
- Very good –professional (2)
- Presenter was very knowledgeable

ACHL

Performance Analysis/Next Steps

- Results from this QI activity will be used to develop an algorithm and toolkit to further improve performance in vaccination practices in elderly housing settings
  - Communications will be sent out to LeadingAge facilities in Indiana and nationally
- Manuscript describing the activity and its results will be submitted to a peer-reviewed education journal (Fall 2014)
- Continue to educate clinicians, staff, residents, and families in elderly housing settings on importance of pneumococcal vaccination to reduce morbidity and mortality
  - Encourage adoption of identified best practices to improve assessment and documentation of vaccination status
  - Address vaccine hesitancy in residents and families; educate diverse populations and address misconceptions
- Tailor vaccine education to clinicians and staff who treat patients in minority and low sociodemographic groups
- Develop additional education to address recent updates to pneumococcal vaccination for adults aged 65 years and older
  - In August 2014, ACIP recommended routine use of both available pneumococcal vaccines for all adults aged 65 years and older
  - Educate on recommendations for sequential administration and intervals for vaccinations