



Emerging infections program: Healthcare associated infections and antimicrobial use prevalence survey in nursing homes

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Key policy drivers for infection prevention and antibiotic stewardship in nursing homes, recent examples

- 2013 – HHS National Action Plan to Prevent Healthcare-associated Infections (HAIs) in LTCF: *Measure progress in HAI activities & prevention nationally*
- 2015 – National Action Plan for Combating Antibiotic Resistant Bacteria: *Antibiotic stewardship activities in all healthcare settings, including long-term care*
 - 2015 – CDC Core Elements of Antibiotic Stewardship for Nursing Homes: *Defines, promotes stewardship for Nursing Homes*
- 2016 – CMS Regulatory Requirements for Long-term care facilities are finalized, including new infection prevention and antibiotic stewardship activities
 - 2017 implementation

Understanding the impact of policy

- DATA are essential to evaluate impact or measure progress
- Types of questions that need to be answered
 - *How many HAIs are there in NH? What types of HAI?*
 - *Between year x and year y did HAIs: ↑ ↔ ↓*
 - *How many residents in NHs get antibiotics?*
 - *What antibiotics are most common?*
 - *How and why are antibiotics used?*
 - *What % of antibiotic use is unnecessary?*
 - *Between year x and y did unnecessary use: ↑ ↔ ↓*

Prevalence surveys: an efficient approach to surveillance

- Faster to implement, easier to conduct compared to ongoing surveillance
 - Short duration: Less staff time, less costly
 - Can include large numbers of NHs residents
 - Rapidly provide data for analysis and feedback
- Ideal for data collection on HAI and antimicrobial use (AU)
 - CDC performed HAI and AU prevalence surveys in ~180 acute care hospitals in 2011 and 2016
- Ideal for data collection in nursing homes

- CDC NH prevalence survey design informed by
 - European CDC
 - U.S. Dept. Veterans Affairs in LTCF
 - CDC in acute care hospitals

**Point prevalence survey of
healthcare-associated infections and
antimicrobial use in European
long-term care facilities**

April–May 2013

Nursing home-associated infections in Department of Veterans Affairs community living centers

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Washington, DC; Atlanta, Georgia; Amarillo, Texas; Ann Arbor, Michigan; and Cincinnati, Ohio

Original Investigation

Prevalence of Antimicrobial Use in US Acute Care Hospitals, May-September 2011

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Sarah J. Janelle, MPH; Marion A. Kainer, MBBS, MPH; Ruth Lynfield, MD; Joelle Nadle, MPH;
Melinda M. Neuhauser, PharmD, MPH; Susan M. Ray, MD; Katherine Richards, MPH; Richard Rodriguez, MPH;
Deborah L. Thompson, MD, MSPH; Scott K. Fridkin, MD; for the Emerging Infections Program
Healthcare-Associated Infections and Antimicrobial Use Prevalence Survey Team

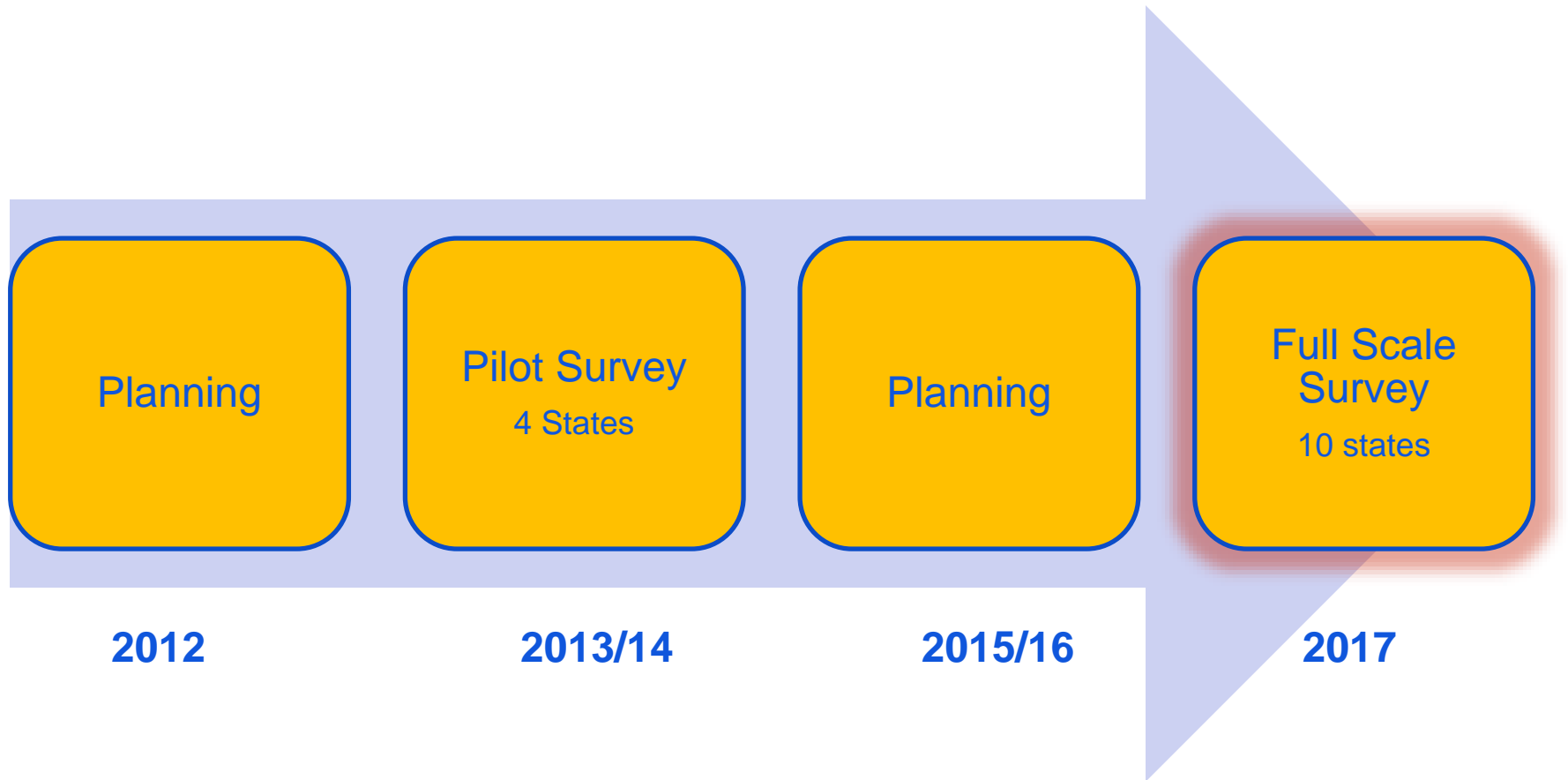
THE NEW ENGLAND JOURNAL OF MEDICINE

ORIGINAL ARTICLE

Multistate Point-Prevalence Survey of Health Care–Associated Infections

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Marion A. Kainer, M.B., B.S., M.P.H., Ruth Lynfield, M.D., Meghan Maloney, M.P.H.,
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Deborah L. Thompson, M.D., M.S.P.H., Lucy E. Wilson, M.D.,
and Scott K. Fridkin, M.D., for the Emerging Infections Program
Healthcare-Associated Infections and Antimicrobial Use Prevalence Survey Team*

Overview: U.S. Nursing Home HAI and AU Prevalence Surveys



CDC NH prevalence survey pilot, 2013-14

- 1-day HAI and AU prevalence survey pilot
 - 9 NHs in 4 states: CT, MN, NM, NY
 - Facility eligibility: Certified nursing home, voluntary participation
- Goals
 - Test data collection forms and procedures
 - Gain experience using revised McGeer infection definitions for use in LTC, published in 2012
 - Inform design and implementation of large scale prevalence survey in US
- Participating facilities
 - Median number of beds 130, range 104 – 229
 - 1,272 residents
 - Median age 85 years, range 22 – 91
 - 14% “Short stay” → post-acute care population

Key findings: HAI & AU prevalence

- HAI prevalence 5.3 per 100 residents
 - 2-times prevalence of HAI in residents with devices
 - HAI types: 1. Respiratory 2. Gastrointestinal 3. Skin/soft tissue
- AU prevalence 11.7 per 100 residents
 - 2-times prevalence of antimicrobials in short-stay* residents
 - Most common antimicrobials used

Rank	Rationale: Treatment	Rationale: Prophylaxis
1	Cephalexin	Oseltamivir
2	Doxycycline	Sulfamethoxazole/trimethoprim
3	Ciprofloxacin and sulfamethoxazole/trimethoprim	Nitrofurantoin

*Post acute care population

Epstein et al. [Infect Control Hosp Epidemiol.](#) 2016 Dec;37(12):1440-1445

Thompson et al;. [J Am Med Dir Assoc.](#) 2016 Dec 1;17(12):1151-1153

Antimicrobial use assessments

- Among 160 drugs given, documentation of 5 prescribing elements assessed ¹
 - Start date, duration, route, rationale & therapeutic site
 - 62% had all 5 prescribing elements documented
 - Range 50% -84% per nursing home
- UTI most common therapeutic site, 1/3 of all drugs given¹
 - 1/3 of antibiotics for UTI documented as prophylaxis
 - Limited evidence to support this practice in elderly NH residents
- Appropriateness for antibiotic *initiation for UTI*²
 - 45% deemed appropriate

1: Thompson et al; J Am Med Dir Assoc. 2016 Dec 1;17(12):1151-1153

2: Eure et al. ICHE 2017 38(8); 998-1001

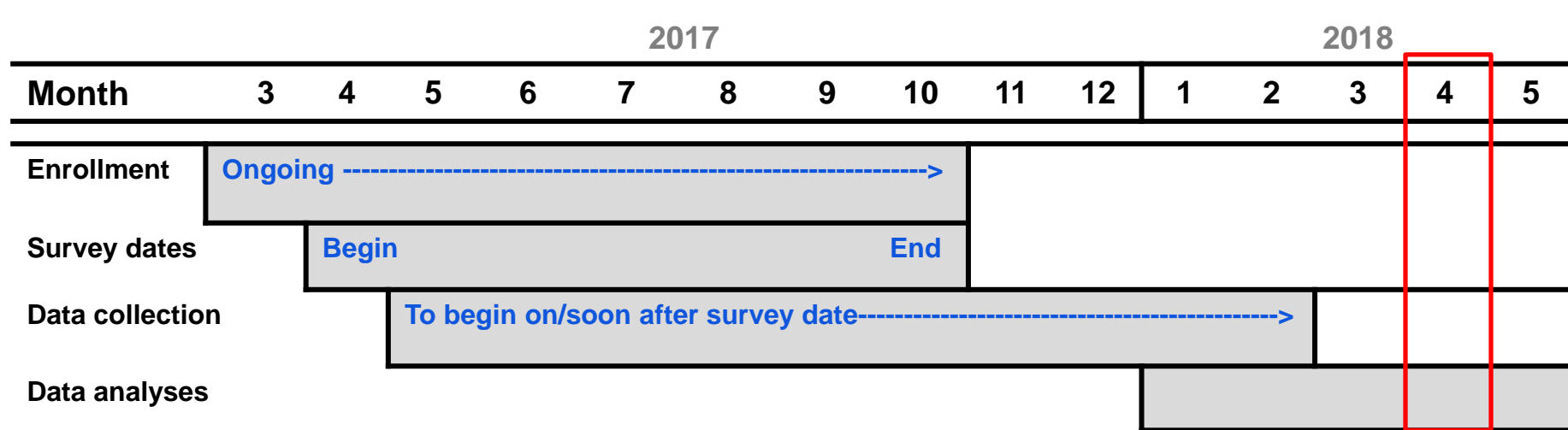
CDC NH Prevalence Survey, 2017

- Expansion to 10 Emerging Infections Program (EIP) states
- Unique expertise of EIP staff
 - Highly trained surveillance officers
 - HAI and AU data collection via medical chart review
 - Experienced in survey methods and data collection approaches
 - Local proximity to NHs being recruited
- Within each state, EIP staff implement the project
 - NH project promotion and recruitment
 - Performed most of survey data collection & applied surveillance definitions
 - Reduce burden on participating NH
 - Increase likelihood of NH participation
 - High quality & standardized data collection

Primary objectives

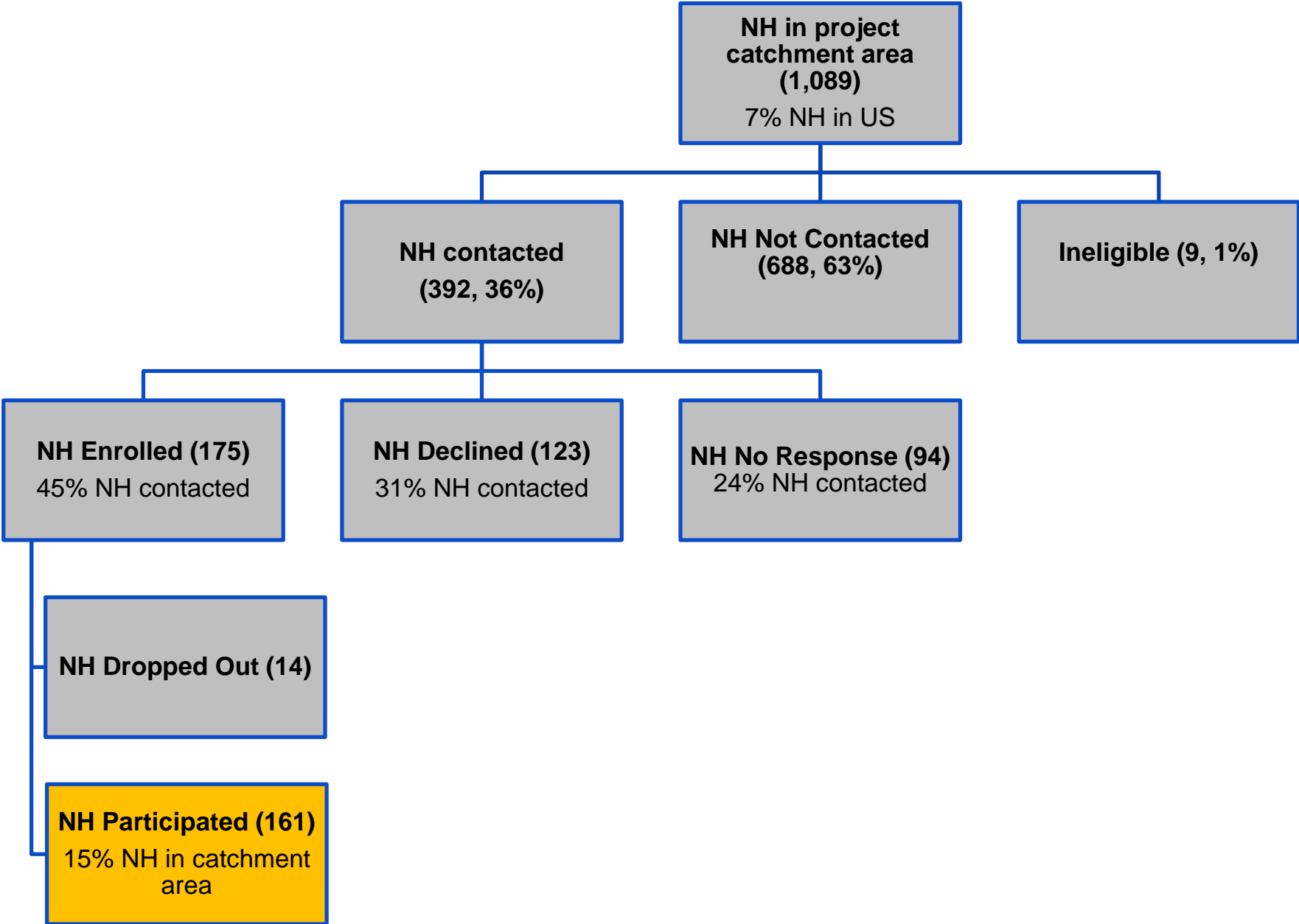
- Measure number and types of HAIs in nursing homes
 - Using revised McGeer criteria for residents in LTC
 - Urinary tract infections
 - Respiratory tract infections
 - Gastrointestinal infections
 - Skin & mucosal infections
 - Systemic infections
- Identify number and types of antimicrobial drugs used
- *Estimate burden of HAIs in US nursing homes*

Project timeline



- 2018 key milestones:
 - Completed data collection & data entry
 - Data cleaning
 - Preliminary data analysis

2017 NH Prevalence Survey: Recruitment & Participation



2017 NH Prevalence Survey: Recruitment & Participation

NHs	NH beds	Avg. census	Eligible residents
161	18,342	15,768	15,295
Sample size goal: $\geq 15,000$ eligible residents			

Georgia EIP

- 16 NH
- ~1,600 residents

How NH prevalence survey data have/can be used

- Pilot data informed survey design, approaches to data collection, data collection burden, sample size estimate for full scale effort
 - Manuscript on data collection in NHs¹
- While small, one of the larger efforts to describe antimicrobial use within US nursing homes, peer reviewed manuscripts on
 - AU prevalence/epidemiology²
 - Appropriateness for initiation of antibiotics for UTI ³

1: Epstein et al. Infect Control Hosp Epidemiol. 2016 Dec;37(12):1440-1445

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Participating Nursing Homes

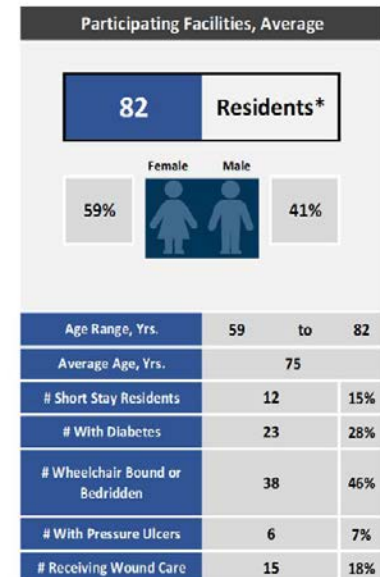
- Data from NH participating in 2017 survey to be summarized in a “Facility Feedback Report”
- EIP staff spend time with NH staff reviewing, understanding data
- Help NH identify appropriate next steps for infection surveillance, infection prevention, or stewardship activity

Assessment of Healthcare-Associated Infections & Antimicrobial Use in Nursing Homes or Skilled Nursing Facilities



Facility Feedback Report

Characteristics of Residents Included in Assessment



Anticipated data uses: State Health Departments

- Provide local/regional NH data on HAI and AU
- EIP site participation in NH prevalence survey established or strengthened relationships with state-based NH partners, e.g.
 - NH corporate groups
 - Professional organizations
 - State Quality Improvement Organizations
- New opportunities to bring NH into existing HAI surveillance, infection prevention or stewardship work
- Propagate lessons learned from working with NH to other states, share use of prevalence survey data collection tools and resources

Anticipated data uses: CDC, Nationally

- Essential descriptive data on epidemiology of HAIs and AU in NH
- Working to develop an approach for national HAI burden estimate
 - Last performed in 1990
- Inform developments to CDC NHSN surveillance for long-term care facilities¹
 - Additional HAIs should be under surveillance
 - Evaluation of revised the McGeer Criteria for surveillance
 - Which variables are important for risk adjustment of surveillance data
- Identify antibiotic stewardship priorities in NH
- Inform design and implementation of additional NH-based projects

1: www.cdc.gov/nhsn/ltc/index.html

Thank you

