Home Care & Hospice Standardizing Infection Surveillance

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Objectives

- Identify evidence-based infection surveillance definitions for home care and hospice patients.
- Describe our experience applying standardized infection surveillance definitions to our home care and hospice patient populations.
- Evaluate the results of instituting a centralized infection surveillance program.
- Discuss next steps and the future of home care and hospice infection surveillance.

Terms/Acronyms

- APIC – Association for Professionals in Infection Control and Epidemiology
- CDC – Centers for Disease Control and Prevention
- NHSN – National Healthcare Safety Network
- LTCF – Long-term Care Facility
- HICPAC – Healthcare Infection Control Practices Advisory Committee
- HAI – Healthcare-Associated Infection

Importance

- Home health care and hospice are rapidly growing sectors of the national healthcare spectrum.
- Home care and hospice are unique healthcare settings with regards to patient characteristics, goals for patient care, and the physical care environment.
- Infections are common at the end of life.
- “The purpose of surveillance in home health and hospice care is to assess the safety and quality of patient care provided by establishing a baseline at each agency, to monitor trends within the agency, to use findings to improve care, and to prevent HAI and other complications.” (HICPAC, 2008)

Existing Literature

- Approximately 1.2 million patients out of the estimated 8 million receiving home care in the United States have infections annually. (Menangan et al., 2002)

- One study using a random sample of 8,255 home health care agencies from 2010 national Outcome and Assessment Information Set (OASIS) data found 3.5% of patients sought emergency care or were hospitalized due to an infection developing during their home health care stay. (Shang et al., 2015)

Existing Literature

- In 2013, a nationally representative study of nursing home residents and persons receiving home health care and hospice care was conducted to estimate infection prevalence and analyze associated risk factors.
- Found about 12 percent of individuals receiving home health care had an infection at the time of survey interview, and 10 percent of individuals receiving hospice care had an infection at the time of discharge.
- The most common types of infections were urinary tract infections, pneumonia, and cellulitis.
- Home health and hospice patients who were inpatients before admission had infection rates 1.5 and 2.5 times higher, respectively, than individuals who were not inpatients (Dwyer et al., 2013)

Existing Literature

- A national survey of U.S. home health agencies was conducted in 2018-2019 to assess infection prevention and control policies, infrastructure, and procedures.
- At that time, most home health personnel in charge of infection prevention and control had other job duties.
  - One third had no formal infection prevention and control training.
  - Agencies reported challenges in collecting and reporting infection data.
- The authors concluded that infection prevention and control was suboptimal among U.S. home health agencies. (Shang et al., 2021)

Research

- There is still a lack of evidence-based infection surveillance programs for home care and hospice settings.

- In 2001, Rhinehart wrote that additional studies were needed to develop surveillance systems for home care and increase knowledge of the risk factors for home care acquired infections.

- This research and the gaps in it helped guide us in establishing our own home care and hospice infection prevention program.

Our Experience

- Our Home Care and Hospice services were in a similar state.
- Prior to hiring an Infection Preventionist (IP) dedicated to these areas, the Home Care and Hospice personnel responsible for infection control and surveillance activities had other job roles and did not have formal infection prevention training.
- In addition, the programs used different methodologies to identify, review, and classify HAIs between 2019 and 2020.
  - For instance, Hospice counting reported clinical infections as HAIs in 2020 and not differentiating Home Hospice patients from the health system's inpatient Hospice House infections.
- Because of this, it was difficult to truly determine the programs' respective HAI surveillance baselines using the institution's previously collected data.
- Our health system recognized the need for a trained IP designated to focus on the health system's Home Care and Hospice programs, not only to implement a standardized infection surveillance program but also to centrally coordinate infection prevention related activities and act as a dedicated trained resource.

Goal

- The goal for this quality improvement project was to determine true baseline incidence of HAIs for Home Care, Home Hospice, and Hospice House by having a trained IP apply evidence-based infection surveillance criteria appropriate for each healthcare setting.

Methods

- Near the end of 2020, our health system hired 1 IP to review all reported suspected infections from Home Care and Hospice.
  - The IP was trained and became board certified in Infection Control by the Certification Board for Infection Control and Epidemiology.

- Conducted a quality improvement project utilizing set surveillance definitions and comparing data.
  - 2019 and 2020 data are pre-implementation
  - 2021 data is post-implementation

Surveillance Definitions

- In 2008, HICPAC advised that a standard set of HAI definitions for home care and home hospice was needed to implement a surveillance program, analyze surveillance data, and determine realistic infection incidence.
  - Thus, the APIC – HICPAC Surveillance Definitions for Home Health Care and Home Hospice Infections were created
- NHSN Long-Term Care Facilities Component: to track infections and prevention process measures, systematically, to identify problems, improve care, and determine progress toward national healthcare-associated infection goals.
- McGreer Criteria: these definitions were intended for skilled nursing facilities and nursing homes that care for post-acute and frail elder populations, as well as other long-term residential care environments that deliver medical and skilled nursing services.
  - Surveillance Definitions for Infections in Long-Term Care Facilities: Revisiting the McGreer Criteria

Surveillance Definitions Used

- Home Care and Home Hospice:
  - APIC – HICPAC

- Hospice House:
  - APIC - HICPAC
  - NHSN LTCF
  - McGreer

Home Care and Home Hospice Surveillance

- Home care and home hospice HAIs are those infections that were neither present nor incubating at the time of initiation of care in the patient's place of residence.
- For those infections appearing in a patient within 48 hours of discharge from a healthcare facility, the infection(s) is reported back to the facility that discharged the patient prior to their home care services.
- We use NHSN infection window period (IWP) when reviewing charts/infections
  - IWP: 7 days during which all site-specific infection criteria must be met (3 days before and 3 days after the date of event).

Home Care and Home Hospice Surveillance

HICPAC surveillance definitions for:

1. Urinary Tract Infections (UTI)
   - Symptomatic Urinary Tract Infection (SUTI)
   - Catheter-Associated Urinary Tract Infection (CAUTI)
2. Respiratory Tract Infections (RTI)
   - Influenza-like Illness (ILI)
   - Lower Respiratory Infections (LRI) (i.e., bronchitis, pneumonia)
3. Bloodstream Infections (BSI)
   - Laboratory-confirmed bloodstream infections (LCBSI)
   - Clinical Sepsis (CSEP)
4. Skin and Soft Tissue Infections (SSTI)
   - Cellulitis/soft tissue/non-surgical wound/decubitus ulcer/ foreign body site
   - Fungal Skin Infection
   - Herpes Simplex or Zoster Infection
   - Surgical Site Infections
5. Eye, Ear, Nose, and Mouth Infections (EENM)
   - Conjunctivitis
   - Ear Infection
   - Sinusitis
   - Oral Infection
6. Gastrointestinal Infections (GI)
   - Gastroenteritis
   - Clostridium difficile-Associated Diarrhea (CDAD)

HICPAC Definition Example

Urinary Tract Infections (UTI)

Symptomatic Urinary Tract Infections (SUTI)
Symptomatic urinary tract infections (SUTI) can occur without prior instrumentation (e.g., intermittent catheterization), but this is rare.
Catheter-associated Urinary Tract Infections (CAUTI)
Catheter-associated urinary tract infections (CAUTI) are associated with instrumentation of the patient's urinary tract prior to onset. To associate these infections with an indwelling urinary catheter requires presence of an indwelling urinary catheter at the time of or within 7 days before the onset of the symptomatic UTI.
Symptomatic and catheter-associated urinary tract infections must meet **one** of the following criteria:

1. **Two** of the following four signs or symptoms:
    a. Fever **OR** chills with no other external urinary source noted
    b. Flank pain **OR** suprapubic pain **OR** tenderness **OR** frequency **OR** urgency
    c. Worsening of mental **OR** functional status
    d. Changes in urine character (e.g., new bloody urine, foul odor, increased sediment) **AND** urinalysis or culture is not done
2. **One** of the following two signs or symptoms:
    a. Fever **OR** chills
    b. Flank pain **OR** suprapubic pain **OR** tenderness

    AND both bacteriuria (determined by a positive urine culture for a potential pathogen or a positive nitrite assay by dipstick) **and** pyuria (determined by 10 or more wbc/hpf on urinalysis or positive leukocyte esterase assay by dipstick).

NOTE: Asymptomatic urinary tract infections are not included in these definitions.

Surveillance Definitions Used

- Home Care and Home Hospice:
  - APIC – HICPAC Surveillance Definitions for Home Health and Home Hospice Infections

- Hospice House:
  - APIC – HICPAC (day 1-2)
  - NHSN LTCF (day 3+)
  - McGreer (day 3+)

Hospice House Surveillance

- Hospice House Day 1-2 of admission: APIC-HICPAC definitions, as infections identified during the first 2 days represent community-associated rather than Hospice House onset.
- Day 3+ of admission:
  1. NHSN LTCF criteria for:
     - UTI
     - C. diff
     - MDROs
  2. NHSN criteria for:
     - CLABSI
     - VAE
  3. McGreer criteria for all other Hospice House-onset HAIs:
     - RTI, GI, EENM, SSTI

NHSN LTCF Definition Example

Table 3. Criteria for Catheter-associated Symptomatic Urinary Tract Infection (CA-SUTI)

Criterion	For residents **with** an indwelling catheter in place or removed within 2 calendar days prior to event onset, where day of catheter removal is equal to day 1:
	One or more of the following (Signs and Symptoms and Laboratory and Diagnostic Testing): 1. Fever[+][Single temperature ≥ 37.8°C (>100°F), or >37.2°C (> 99°F) on repeated occasions (more than once), or an increase of >1.1°C (>2°F) over baseline] 2. Rigors 3. New onset hypotension, with no alternate non-infectious cause 4. New onset confusion/functional decline with no alternate diagnosis **AND** Leukocytosis [defined by NHSN as > 10,000 cells/mm^3, or Left shift (> 6% or 1,500 bands/mm^3)] 5. New or marked increase in suprapubic tenderness 6. New or marked increase in costovertebral angle pain or tenderness 7. Acute pain, swelling, or tenderness of the testes, epididymis, or prostate 8. Purulent discharge from around the catheter insertion site **AND** A positive urine culture with no more than 2 species of microorganisms, at least one of which is a bacterium of ≥10^5 CFU/ml **Footnote:** [+] Since fever is a non-specific symptom, it should be used to meet CA-SUTI criteria even if the resident has another possible cause for the fever (for example,

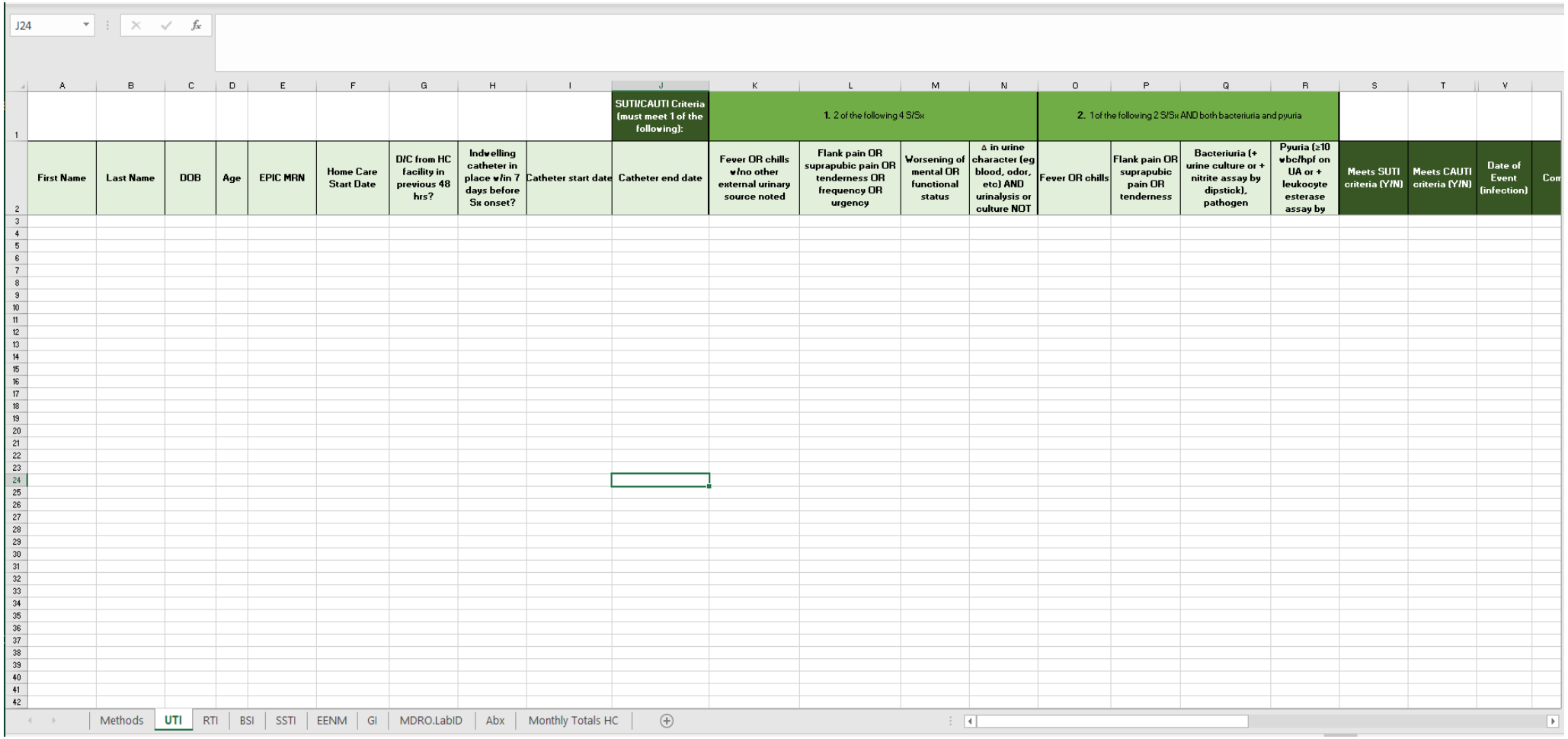
Table 2. Criteria for Symptomatic Urinary Tract Infection (SUTI)

Criterion	*For residents **without** an indwelling catheter in place or removed >2 calendar days prior to the date of event, where day of catheter removal is equal to day 1:*
1	**Either** of the following (Signs & Symptoms): 1. Acute dysuria 2. Acute pain, swelling, or tenderness of the testes, epididymis, or prostate **AND** A positive urine culture with no more than 2 species of microorganisms, at least one of which is a bacterium of ≥10^5 CFU/ml
2	**Either** of the following: 1. Fever[+] [Single temperature ≥ 37.8°C (>100°F), or >37.2°C (> 99°F) on repeated occasions (more than once), or an increase of >1.1°C (>2°F) over baseline] 2. Leukocytosis [defined by NHSN as > 10,000 cells/mm^3, or Left shift (> 6% or 1,500 bands/mm^3)] **AND** **One or more** of the following (New and/or marked increase): 1. Costovertebral angle pain or tenderness 2. Suprapubic tenderness 3. Visible (Gross) hematuria 4. Incontinence 5. Urinary urgency 6. Urinary frequency **AND** A positive urine culture with no more than 2 species of microorganisms, at least one of which is a bacterium of ≥10^5 CFU/ml
3	**Two or more** of the following (New and/or marked increase): 1. Costovertebral angle pain or tenderness 2. Incontinence 3. Urinary urgency 4. Urinary frequency 5. Suprapubic tenderness 6. Visible (gross) hematuria **AND** A positive urine culture with no more than 2 species of microorganisms, at least one of which is a bacterium of ≥10^5 CFU/ml **Footnote:** +Since fever is a non-specific symptom, it should be used to meet SUTI criteria even if the resident has another possible cause for the fever (for example, pneumonia).

Recording Data

- Microsoft Excel was used to create infection surveillance databases for Home Care and Home Hospice.
- Each main category of infection (UTI, RTI, BSI, etc.) was designated its own tab in the spreadsheet.
- Criteria for each sub-type of surveillance definition (e.g., SUTI, CAUTI) were built into the spreadsheet along with patient demographics and columns for documentation and comments.
- Incorporating surveillance criteria directly in the spreadsheet facilitated more efficient review of suspected infections.

Home Care Infection Surveillance Database



	First Name	Last Name	DOB	Age	EPIC MRN	Home Care Start Date	D/C from HC facility in previous 48 hrs?	Indwelling catheter in place w/in 7 days before Sx onset?	Catheter start date	Catheter end date	SUTI/CAUTI Criteria (must meet 1 of the following):	1. 2 of the following 4 S/Sx				2. 1 of the following 2 S/Sx AND both bacteriuria and pyuria				Meets SUTI criteria (Y/N)	Meets CAUTI criteria (Y/N)	Date of Event (infection)	Com
												Fever OR chills w/no other external urinary source noted	Flank pain OR suprapubic pain OR tenderness OR frequency OR urgency	Worsening of mental OR functional status	Δ in urine character (eg blood, odor, etc) AND urinalysis or culture NOT	Fever OR chills	Flank pain OR suprapubic pain OR tenderness	Bacteriuria (+ urine culture or + nitrite assay by dipstick), pathogen	Pyuria (≥10 wbc/hpf on UA or + leukocyte esterase assay by				

Methods | UTI | RTI | BSI | SSTI | EENM | GI | MDRO.LabID | Abx | Monthly Totals HC

Home Care Infection Surveillance Database

First Name	Last Name	DOB	Age	EPIC MRN	Home Care Start Date	D/C from HC facility in previous 48 hrs?	Indwelling catheter in place w/in 7 days before Sx onset?

	SUTI/CAUTI Criteria (must meet 1 of the following):	**1.** 2 of the following 4 S/Sx				**2.** 1 of the following 2 S/Sx AND both bacteriuria and pyuria			
Catheter start date	Catheter end date	Fever OR chills w/no other external urinary source noted	Flank pain OR suprapubic pain OR tenderness OR frequency OR urgency	Worsening of mental OR functional status	Δ in urine character (eg blood, odor, etc) AND urinalysis or culture NOT done	Fever OR chills	Flank pain OR suprapubic pain OR tenderness	Bacteriuria (+ urine culture or + nitrite assay by dipstick), pathogen	Pyuria (≥10 wbc/hpf on UA or + leukocyte esterase assay by dipstick)

Meets SUTI criteria (Y/N)	Meets CAUTI criteria (Y/N)	Date of Event (infection)	Comments

HICPAC UTI Surveillance Criteria

Urinary Tract Infections (UTI)

Symptomatic Urinary Tract Infections (SUTI)
Symptomatic urinary tract infections (SUTI) can occur without prior instrumentation (e.g., intermittent catheterization), but this is rare.
Catheter-associated Urinary Tract Infections (CAUTI)
Catheter-associated urinary tract infections (CAUTI) are associated with instrumentation of the patient's urinary tract prior to onset. To associate these infections with an indwelling urinary catheter requires presence of an indwelling urinary catheter at the time of or within 7 days before the onset of the symptomatic UTI.
Symptomatic and catheter-associated urinary tract infections must meet **one** of the following criteria:

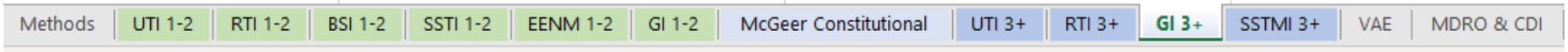
1. **Two** of the following four signs or symptoms:
    a. Fever **OR** chills with no other external urinary source noted
    b. Flank pain **OR** suprapubic pain **OR** tenderness **OR** frequency **OR** urgency
    c. Worsening of mental **OR** functional status
    d. Changes in urine character (e.g., new bloody urine, foul odor, increased sediment) **AND** urinalysis or culture is not done
2. **One** of the following two signs or symptoms:
    a. Fever **OR** chills
    b. Flank pain **OR** suprapubic pain **OR** tenderness
    AND both bacteriuria (determined by a positive urine culture for a potential pathogen or a positive nitrite assay by dipstick) **and** pyuria (determined by 10 or more wbc/hpf on urinalysis or positive leukocyte esterase assay by dipstick).

NOTE: Asymptomatic urinary tract infections are not included in these definitions.

	January	February	March	April	May	June	July	August	September	October	November	December	Yr. Total
Urinary Tract Infection (UTI)													
Symptomatic Urinary Tract Infection (SUTI)													
Catheter-associated Urinary Tract Infection (CAUTI)													
Respiratory Tract Infection (RTI)													
Influenza-like Illness (ILI)													
Lower Respiratory Infection (LRI)													
Bloodstream Infection (BSI)													
Labratory Confirmed Bloodstream Infection (LCBSI)													
Clinical Sepsis (CSEP)													
Skin & Soft Tissue Infection (SSTI)													
Skin and Soft Tissue Infection (SSTI)													
Fungal Skin Infection													
Herpes Simplex or Zoster (HS/HZ)													
Surgical Site Infection (SSI)													
Eyes, Ears, Nose, & Mouth (EENM)													
Conjuntivitis													
Ear Infection													
Sinusitis													
Oral Infection													
Gastrointestinal (GI)													
Gastroenteritis (GE)													
C.diff-associated Diarrhea (CDAD)													
C. diff Infection													
Multi Drug Resistant Organism (MDRO)													
# Home Care Identified (VRE, ESBL, CRE, MDRO, etc.)													
Monthly Total													

Hospice House Surveillance

- A similar infection surveillance database was created in Microsoft Excel to investigate and track suspect infections for Hospice House patients.
  - This database was more complex to build because IPE uses multiple sets of surveillance criteria for Hospice House patients dependent on the day of admission and the type of HAI.
- The tabs in the Hospice House spreadsheet are color-coded based on day of admission.
  - Green tabs indicate the first 2 days of admission using APIC-HICPAC surveillance criteria.
  - Blue tabs indicate day 3 of admission and after (ie, Hospice House-onset infections) using NHSN LTCF criteria and McGeer criteria depending on infection type.



- Like the Home Care and Home Hospice database, surveillance criteria were built into the respective spreadsheet tabs for easier determination of which cases meet surveillance criteria.
- All surveillance databases include tabs to record monthly totals of all HAI infection types.

Hospice House Infection Surveillance Database

H	I	J	K	L	M	N	O	P	Q	R	S
NHSN LTC SUTI Criteria (must meet 1 of the following): *(For pts w/o indwelling catheter in place or removed >2 calendar days prior to DOE, where day of cath removal =day 1)*		**SUTI #1.** Either J or K AND column T		**SUTI #2.** Either L or M, AND at least 1 of columns N-S AND column T		**SUTI #3.** New or marked increase in 2 or more S/Sx from columns N-S AND column T					
Catheter start date	**Catheter end date**	**Acute dysuria**	**Acute pain, swelling, or tenderness of the testes, epididymis, or prostate**	**Fever** (even if d/t another possible cause), see Const. criteria (any site)	**Leukocytosis** (see Const. criteria)	**Costovertebral angle pain or tenderness**	**Suprapubic tenderness**	**Visible (gross) hematuria**	**Incontinence**	**Urgency**	**Frequency**

T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE
Positive Urine Culture	**NHSN LTC CA-SUTI Criteria:** *(For pts w/ indwelling catheter in place or removed w/in 2 calendar days prior to DOE, where day of cath removal =day 1)*	**CA-SUTI:** 1 or more of columns V-AC AND column T								**NHSN LTC ABUTI Criteria:** *(For pts w/ or w/o indwelling catheter)*	**ABUTI:** No qualifying fever* or S/Sx (specific urgency, frequency, acute dysuria, suprap tenderness, or costovertebral angle pain/ten AND column T AND column AE **if no cath in place, fever alone would not exclu if other criteria are met*
No more than 2 species, at least 1 is bacterium of ≥10^5 CFU/mL		**Fever** (even if d/t another possible cause), see Const. criteria (any site)	**Rigors**	**New onset hypotension w/no other cause (BP under 90/60)**	**New onset confusion/functional decline w/no other dx AND leukocytosis (>11 WBC) (see Const. criteria)**	**New or marked ↑ suprapubic tenderness**	**New or marked ↑ costovertebral angle pain or tenderness**	**Acute pain, swelling, or tenderness of the testes, epididymis, or prostate**	**Purulent discharge from around cath insertion site**		**Positive Blood Culture w/at least 1 matching to urine culture**

	January	February	March	April	May	June	July	August	September	October	November	December	Yr. Total
Urinary Tract Infection (UTI)													**0**
Symptomatic Urinary Tract Infection (SUTI)													0
Catheter-associated Urinary Tract Infection (CAUTI)													0
Asymptomatic Bacteremic Urinary Tract Infection (ABUTI)													0
Respiratory Tract Infection (RTI)													**0**
Common Cold or Pharyngitis													0
Influenza-like Illness (ILI)													0
Pneumonia													0
Lower Respiratory Infection (LRI)													0
Bloodstream Infections (BSI)													
Central Line-associated Bloodstream Infection (CLABSI)													**0**
Gastrointestinal (GI)													**0**
Gastroenteritis (GE)													0
Norovirus													0
C. diff Infection													0
Soft Skin & Tissue Infections (SSTMI)													**0**
Skin and Soft Tissue Infection (SSTI)													0
Scabies													0
Fungal Skin Infection													0
Fungal Oral Infection													0
Herpes Simplex or Zoster (HS/HZ)													0
Conjunctivitis													0
Ventilator Associated Events (VAE)													**0**
Ventilator Associated Conditions (VAC)													0
Infection-related Ventilator Associated Complication (IVAC)													0
Possible Ventilator-associated Pneumonia (PVAP)													0
LabID													**0**
C. diff													0
MRSA bacteremia													0
Other Multi Drug Resistant Organism (MDRO)													
# Identified on day 3+ of admission													**0**
Monthly Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Day 3 forward, NHSN LTC and McGeer criteria

Communication

- Worked to improve communication with the Home Care and Hospice teams.
- New Community Care IPE Committee which meets monthly. Representation from
  - Home Care and Hospice Leadership
  - Facilities
  - Employee Health
  - Environmental Services
  - Biomed
  - Pharmacy
- IP reports infection data each month to the Committee.
- IP also contacts clinicians and notifies program managers of cases that may require further follow up, Caregiver education (e.g., Caregiver not reporting suspected infections), or sentinel events (e.g., Home Care patient infections resulting in hospitalization) as needed.

Communication

"Describing an infection as home health and/or hospice healthcare associated does not necessarily indicate that the infection was caused by the home health agency or hospice personnel. The association is temporal (related to a time, place, or event), not causal. In addition, culpability, preventability, and etiology of the organism involved are not part of the definition of a HAI that occurs in the home health care or hospice setting. Because patients are in their own residence and receiving care over a prolonged period, many intercurrent illnesses and infections likely reflect exposure to microbes from other family members, visitors, or home environments. Additionally, there are parallels that can be drawn to long term care wherein exposure and infection incidents may not necessarily reflect association with medical devices" (HICPAC, 2008)

Communication

Surveillance vs. Clinical Infections

"Surveillance definitions are designed to study and identify trends in a population. The application of these standardized criteria, and only these criteria, in a consistent manner allows confidence in aggregation and analysis of data. Alternatively, clinical diagnoses are patient specific. Unlike surveillance definitions, ALL available diagnostic data are considered in a clinical diagnosis, including additional clinical, epidemiological and laboratory data not used for NHSN surveillance. Therefore, a clinical diagnosis may be made even when a surveillance definition may not be met and vice versa is also true. Failure to meet a surveillance definition should never impede or override clinical judgment during diagnosis, management, or treatment of patents. Nor should failure to meet clinical definitions result in non-reporting to NHSN infections meeting the NHSN surveillance criteria." (CDC, 2021)

In Summary

- Methods to achieve our goal:
  1. Assign and train an IP
  2. Review past surveillance methods
  3. Adjust surveillance methods as needed for consistent, appropriate surveillance definitions
  4. Determine methods to record data
  5. Communicate findings

- The goal for this quality improvement project was to determine true baseline incidence of HAIs for Home Care, Home Hospice, and Hospice House by having a trained IP apply evidence-based infection surveillance criteria appropriate for each healthcare setting.

Results: Pre-Implementation

- Infection data for 2019-2020 (i.e., pre-implementation of this quality improvement project) were as follows:

Home Care	2019	2020
UTI Cases	31	33
SSTI Cases	19	15

Hospice*	2019	2020
UTI Cases	38	17
SSTI Cases	13	7

**Home Hospice and Hospice House reported combined data.*

Results: Post-Implementation

- Post implementation is January – April 2021

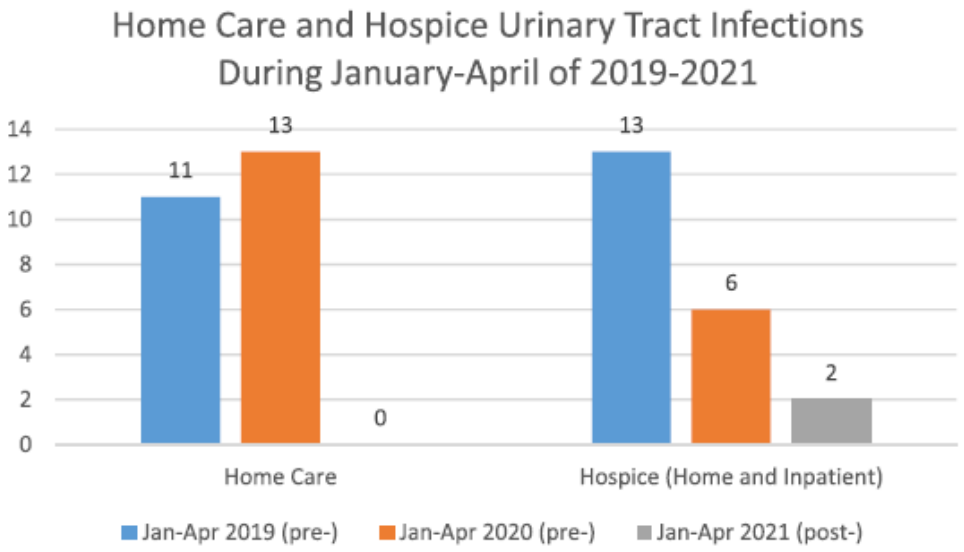
Home Care
- UTI: 0 cases
- SSTI: 2 cases

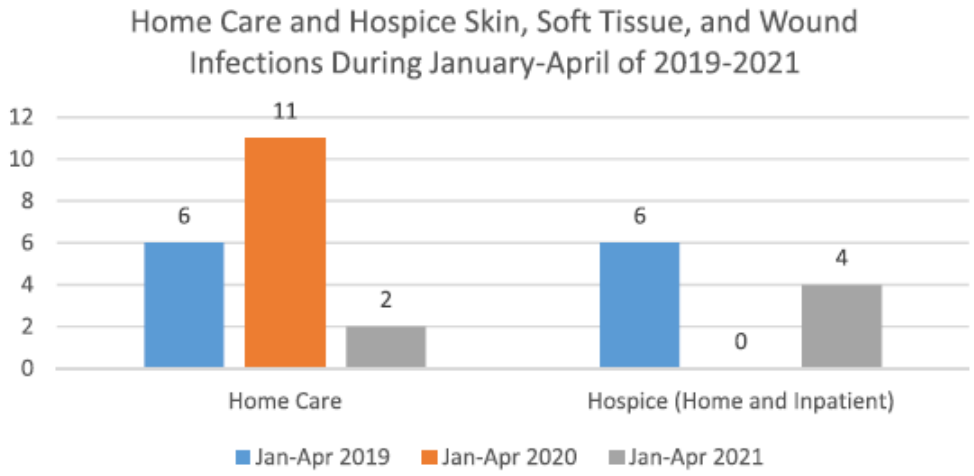
Home Care	Only January - April		
	2019	2020	2021
UTI Cases	11	13	0
SSTI Cases	6	11	2

Hospice
- UTI: 2 cases
- SSTI: 4 cases

Hospice	Only January - April		
	2019	2020	2021
UTI Cases	13	6	2
SSTI Cases	6	0	4

Results


Home Care and Hospice Urinary Tract Infections During January-April of 2019-2021
14
12
10
8
6
4
2
0
11
13
0
13
6
2
Home Care
Hospice (Home and Inpatient)
Jan-Apr 2019 (pre-)
Jan-Apr 2020 (pre-)
Jan-Apr 2021 (post-)


Home Care and Hospice Skin, Soft Tissue, and Wound Infections During January-April of 2019-2021
12
10
8
6
4
2
0
6
11
2
6
0
4
Home Care
Hospice (Home and Inpatient)
Jan-Apr 2019
Jan-Apr 2020
Jan-Apr 2021

Discussion

- Our health system instituted a centralized infection surveillance program for Home Care and Hospice using evidence-based surveillance definitions.
- Except for January-April 2020 Hospice SSTIs, there have been less infections among Home Care and Hospice patients during January-April 2021 using evidence-based surveillance criteria than when comparing to the same period in 2019- 2020.
  - This is likely due to multiple factors including having a formally trained infection preventionist applying strict surveillance criteria, different staff using different methodologies in the past to identify infections, and under-reporting by clinical staff of patients' infections in 2021.
- An example of how using surveillance criteria has impacted the number of HAIs can be seen with Home Care UTIs.
  - During January-April 2021, IPE reviewed 10 suspected UTIs among Home Care patients, but none of these met surveillance criteria. In past years, reviewing clinical infections may have artificially increased the number of reported infections.

Next Steps

- Continue to compare 2021 HAIs with past years' data to ascertain whether infections were previously under- or overestimated.
- Use 2021 HAI data to inform future risk assessments of these patient populations and guide future infection prevention priorities and activities.
- In addition, the Home Care and Hospice programs are joining the health system's electronic medical record (EMR) program in June 2021.
  - This will help coordinate infection prevention activities, as all Home Care and Hospice patient data will be centrally located rather than stored in multiple computer programs.
  - IP will work with the health system's Information Technology department to create new reports in the EMR system to better facilitate identifying infections among these patients based on lab report data, infection symptoms, etc.
- IP also plans to work with providers on antibiotic appropriateness among Home Care and Hospice patients. Such an act will ensure that the patients in both Home Care and Hospice receive recommended antibiotics appropriately.

Present Day

- Joined our health system's EMR program
- Worked with our IT team to build reports that pull information such as:
  - Last blood and urine culture date and results
  - Last positive c. diff test date
  - MDRO type and onset date
  - Active antibiotics the last 30 days
  - Last positive COVID-19 test date
- Still room for improvement
- Denominator data

Complete 2021 and 2022 Data

Home Care	2019	2020	2021	2022
UTI	31	33	4	6
SSTI	19	15	3	11

Hospice*	2019	2020	2021 Hospice House	2021 Home Hospice	2022 Hospice House	2022 Home Hospice
UTI	38	17	3	1	0	6
SSTI	13	7	9	1	7	1

Hospice House Denominator Data

2022 Monthly Hospice House Onset Events

	CAUTI Cases	CAUTI Cases per 1,000 Device Days	CLABSI Cases	CLABSI Cases per 1,000 Device Days	VAE Cases	VAE Cases per 1,000 Vent Days	RTI Cases	RTI Cases per 1,000 Patient Days	C.diff Cases	C. diff Cases per 10,000 Patient Days	MRSA Bacteremia Cases	MRSA Bacteremia Cases per 1,000 Patient Days	SSTI Cases: Wounds	SSTI Cases: Wounds per 1,000 Patient Days	SSTI Cases: Other	SSTI Cases: Other per 1,000 Patient Days	Patient Days	Admits	Central Line Days	Urinary Catheter Days	Vent Days
January	0		0		0		0		0		0		0		0						
February	0		0		0		0		0		0		2		0						
March	0		0		0		0		0		0		1		0						
April	0		0		0		0		0		0		1		0						
May	0		0		0		0		0		0		0		0						
June	0		0		0		0		0		0		0		1						
July	0	0.00	0	0.00	0	n/a	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	611	18	10	304	0
August	0	0.00	0	0.00	0	n/a	1	1.62	0	0.00	0	0.00	0	0.00	2	3.23	619	16	27	345	0
September	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	574	27	43	320	2
October	0	0.00	0	0.00	0	n/a	1	1.66	0	0.00	0	0.00	2	3.32	0	0.00	603	20	90	322	0
November	0	0.00	0	0.00	0	n/a	0	0.00	0	0.00	0	0.00	1	1.91	0	0.00	523	21	43	324	0
December	0	0.00	0	0.00	0	n/a	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	562	29	38	290	0
2022 YTD Total	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**	**2**	**0.57**	**0**	**0**	**0**	**0.00**	**7**	**0.86**	**3**	**0.57**	**3492**	**131**	**251**	**1905**	**2**

Conclusion

- Having a program,
  1. With a designated IP
  2. With an IPE committee to discuss the annual infection prevention plan including surveillance details
  3. That follows surveillance definitions appropriate for these settings
- Helps identify the population at risk by providing accurate data utilizing evidence-based surveillance criteria and methodologies.
- Future studies are needed to continue to understand the prevalence of infections among home care and hospice patients using standardized sets of infection surveillance criteria.
- Because there continues to be a lack of published findings related to implementing evidence-based infection surveillance among home care and hospice programs, our health system wanted to share our experience.

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Practice Forum

Establishing an evidence-based infection surveillance program for home care and hospice: A large Midwest health system's experience

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Key Words:
Home care
Hospice
Infection surveillance

Home care and hospice are unique and rapidly growing healthcare settings. However, there is a lack of published findings related to evidence-based infection surveillance programs among these settings. Our health system hired a Home Care and Hospice Infection Preventionist to implement an infection surveillance program using evidence-based infection surveillance criteria appropriate for these settings, the Association for Professionals in Infection Control and Epidemiology (APIC) and Healthcare Infection Control Practices Advisory Committee (HICPAC) definitions for home health care and home hospice infections, National Healthcare Safety Network long-term care facility (LTCF) criteria, and McGeer criteria for LTCFs. These surveillance criteria were built into new surveillance databases for Home Care, Home Hospice, and inpatient Hospice House. Infection Prevention reported infections and trends to respective departments monthly and as needed in the event of any significant infections. For most infection types, there were less infections identified during January-April 2021 than for the same period in 2019-2020. Having Infection Prevention coordinate the Home Care and Hospice infection surveillance program will help establish reliable healthcare-associated infection baseline data and help identify the population at risk. Future enhancements to automatically identify infections among this patient population are planned once Home Care and Hospice begin using the health system's electronic medical record.

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