Ask an IP
Learning and Communication Series

Week 4-Disease Surveillance /Office Hours

Wednesday October 13th, 2021

County of Los Angeles Public Health

Acute Communicable Disease Control Program
Los Angeles County Department of Public Health

Disclosures

There is no commercial support for today's call

Neither the speakers nor planners for today's call have disclosed any financial interests related to the content of the meeting

This call is meant for healthcare facilities and is off the record and reporters should log off now

DPH Infection Prevention Team

Walteena Brooks, LVN

Rachel Gibbs, RN, BSN

Marco Marquez, MPH, CIC

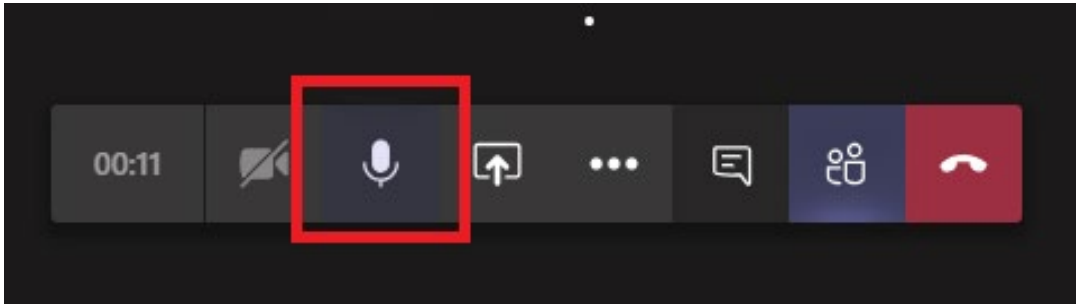
Harriett Pitt, MS, RN

Krystal Smith, MSc, CIC

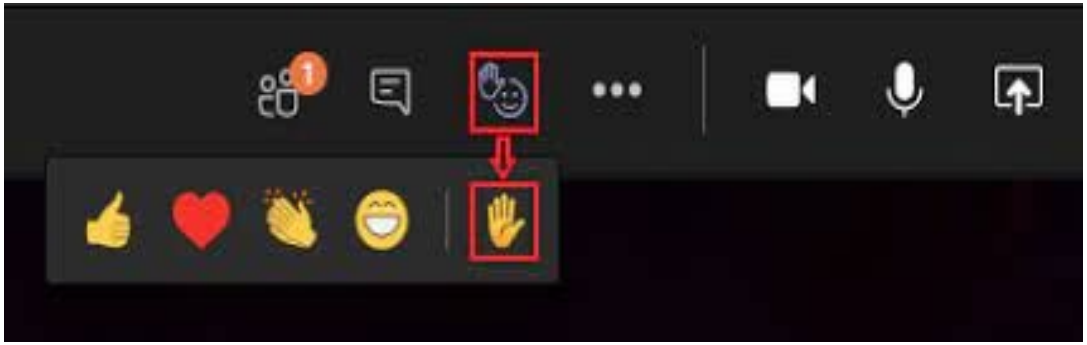
Contact Us: LACSNF@ph.lacounty.gov

Housekeeping

- How to Mute/Unmute (Crtl+ Shift+ M):

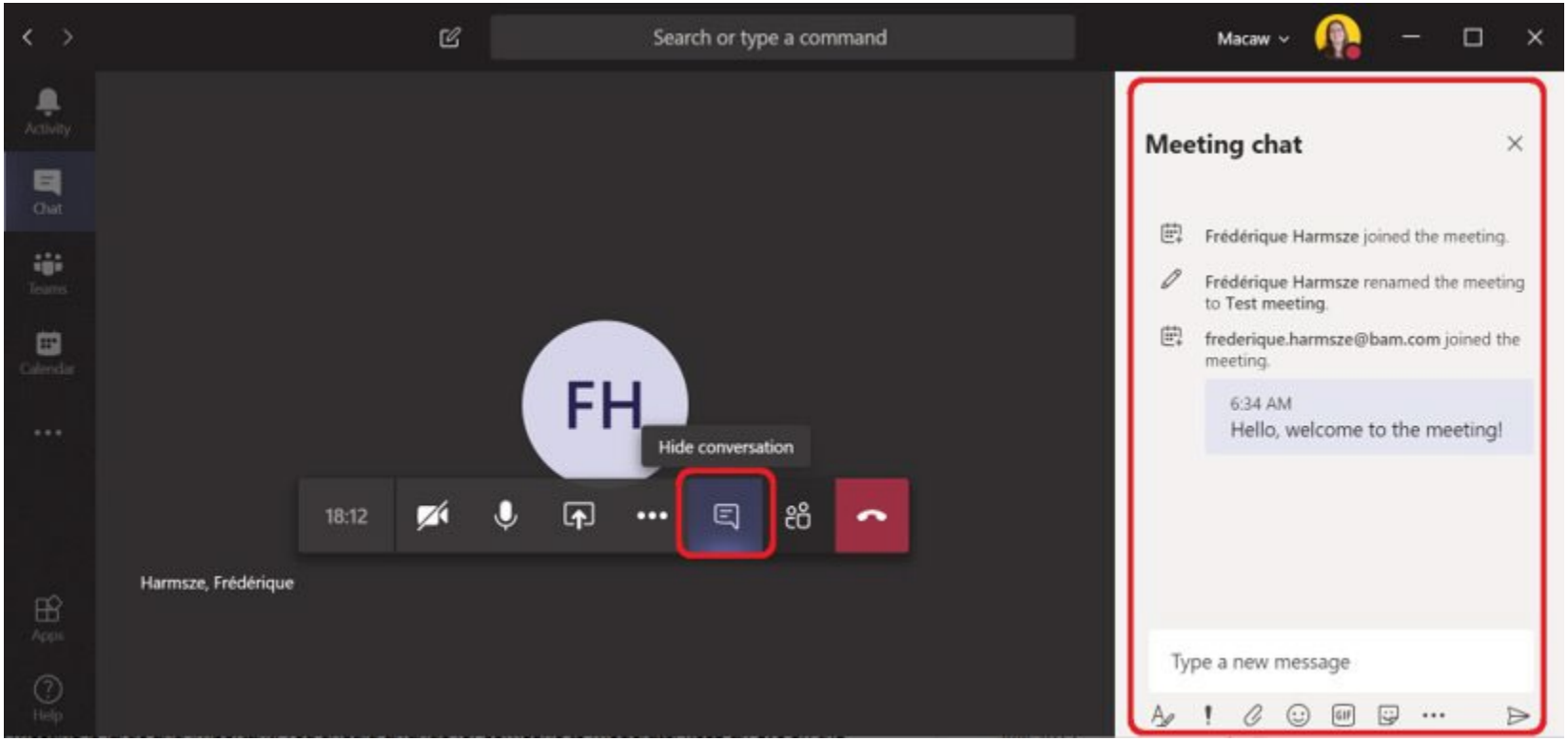


- How to Raise Hand:



Housekeeping

- How to use chat:



GUEST SPEAKER TODAY

- Wendy Manuel, MPH
  Epidemiologist, HAI Surveillance Team
  LA County DPH

Objectives

- Continue the discussion of epidemiology and how they apply to healthcare-associated infection (HAI) surveillance
- Describe surveillance outcome and process measures for infection prevention
- Foster discussion among LA County Skilled Nursing Facilities about infection control practices

Healthcare-Associated Infections (HAI)

- Infections acquired while receiving healthcare for another condition
- Significant cause of illness and death-including financial and medical consequences
- Preventable with basic infection control practices

Epidemiology

- Study of distribution, frequency, and factors affecting health of populations

Clinical care: focus on the individual
– vs –
Epidemiology: focus on the group

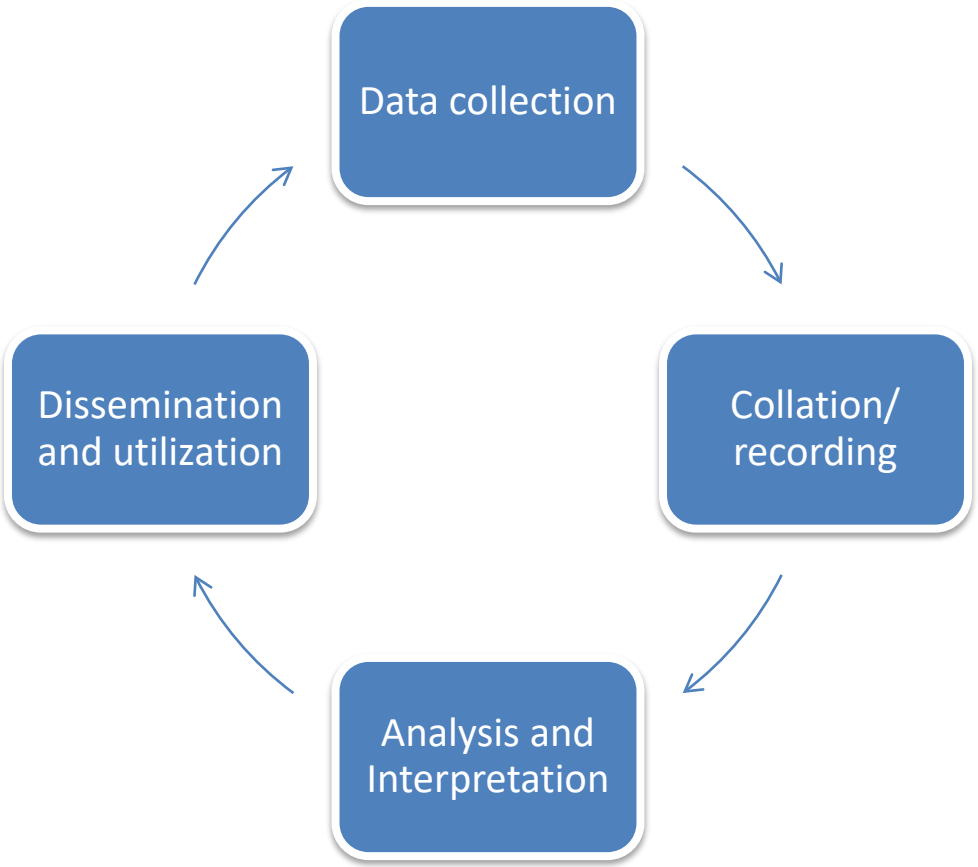
- In healthcare, answers questions such as:
  - What patient populations are at higher risk for developing HAIs?
  - Has the intervention reduced HAI incidence?

Applying Epidemiology in Healthcare

- HAI Surveillance
- Assessment of intervention, new product
- Characterization of disease burden
- Outbreak identification

Surveillance

- A surveillance system is an **information** loop or cycle
- Starts and ends with communication and action

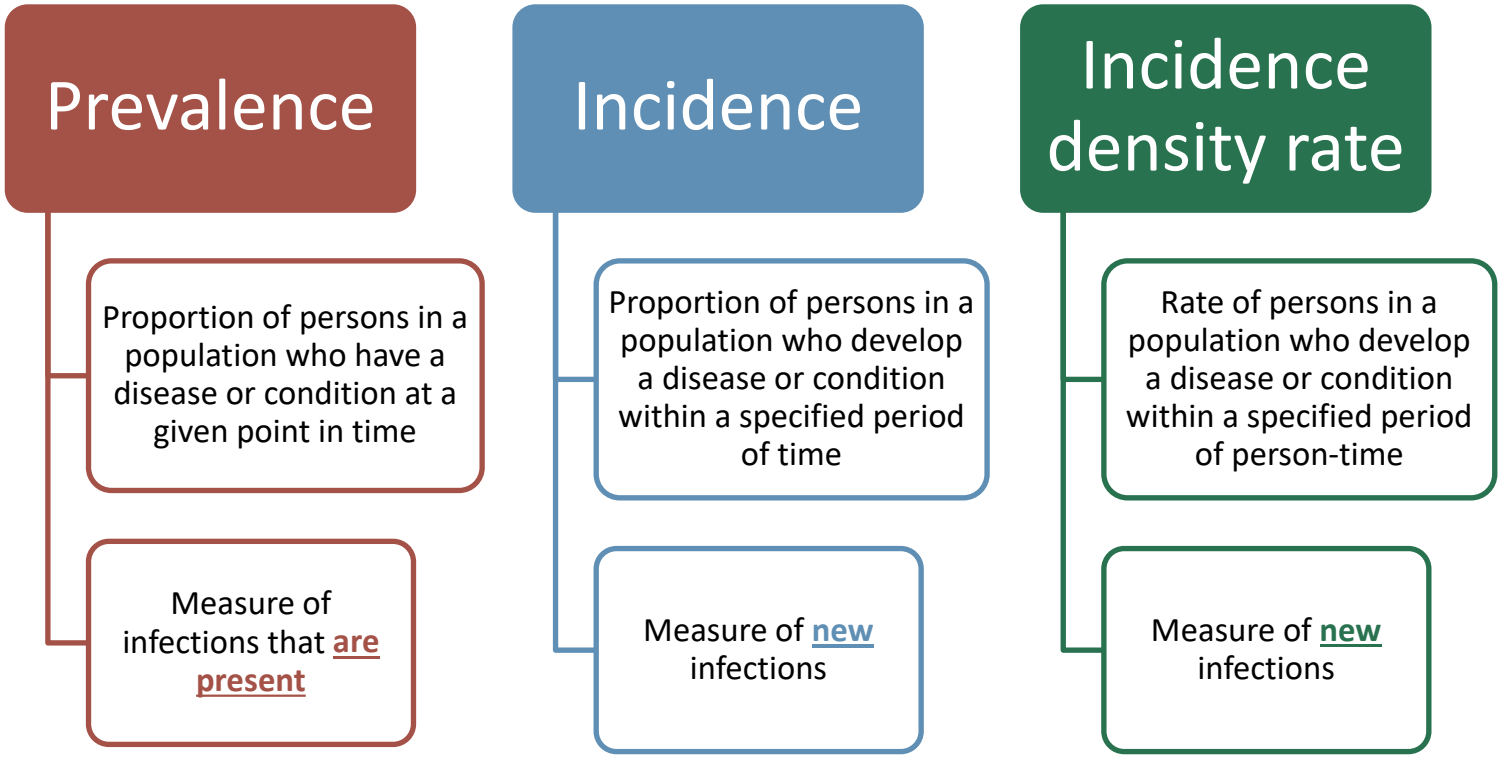


Quality HAI Surveillance

- Key tenets:
- A written plan should serve as the foundation
  - What HAIs am I tracking? Why?
  - How will data be used?
  - If only to meet mandates, how **can** data be used?
  - Where are opportunities to prevent HAI in **MY** facility?
- The intensity of surveillance needs to be maintained over time
- Stay consistent over time; apply same surveillance definitions

Rate calculations

Types of numerical measurements



Incidence

- Proportion of an initially **disease-free** population that develops disease during a specified period of time

$$\frac{\text{\# of new cases during time period}}{\text{Size of at-risk population during time period}}$$

- Also referred to as attack rate or risk
- Healthcare epidemiology example:

$$\frac{\text{5 new scabies infections}}{\text{180 residents}} * 100 = \text{2.7 new infections per 100 residents in the facility during March 2021}$$

Prevalence

- Measures disease status in a population at a particular time

$$\frac{\text{\# of existing cases during a given time period}}{\text{Size of population during the same time period}}$$

- Can be point (i.e., single day) or period (i.e., one month)
- Healthcare epidemiology example:

CRE colonization point prevalence rate = $\frac{\text{11 patients colonized with CRE}}{\text{32 patients in subacute unit}} = 0.34$

- 34% of subacute unit is colonized with CRE

Incidence vs. Prevalence

C. auris example: Your subacute unit (SAU) has 5 C. auris cases in-house. During the month of October, your laboratory notifies you of 2 new C. auris positive individuals in the SAU (one positive in urine, one positive in sputum). The unit has had 30 total residents in October.

- **Incidence:**
  - 2 new C. auris cases/ 25 subcaute residents= 0.08 x 100 = 8.0 new C. auris infections per 100 residents

- **Prevalence**:
  - 7 total C. auris cases/30 residents in October= 23.3% of the unit is positive for C. auris

Incidence density rate

- Measure of incidence that incorporates time directly into the denominator (i.e., central line-days, patient/resident-days, person-time)

$$\frac{\text{\# of new cases during specified time period}}{\text{person-time at risk}}$$

- Healthcare epidemiology example:

$$= \frac{48 \text{ CAUTI}}{11{,}400 \text{ catheter days}} * 1000 = 4.21 \text{ CAUTI per } 1000 \text{ catheter days}$$

OR

$$= \frac{5 \text{ UTI}}{1050 \text{ resident days}} * 1000 = 4.76 \text{ UTI per } 1000 \text{ resident days}$$

Urinary tract infections

- Urinary tract infections (UTI) are defined using
  - **Symptomatic UTI** (SUTI) criteria for residents without an indwelling urinary device,
  - **Catheter-Associated Symptomatic UTI** (CA-SUTI) criteria for residents with an indwelling urinary device, or
  - **Asymptomatic Bacteremia UTI** (ABUTI) criteria for residents with or without an indwelling urinary device.

https://www.cdc.gov/nhsn/pdfs/ltc/ltcf-manual-508.pdf

Definitions for UTI Data

- **Catheter-days** are calculated using the daily count of residents in the facility with an indwelling urinary device each day of the month
- **Resident-days** are calculated using the daily census of residents in the facility each day of the month
- **New antibiotic starts for UTI indication** refers to a new prescription for an antibiotic ordered for a resident who is suspected of having or diagnosed with a UTI, either catheter-associated or non-catheter associated
- **Number of urine cultures ordered** refers to new urine cultures ordered for a resident

Calculated UTI Rates and Metrics

Calculated Metrics	Calculations	Comments
Total UTI incidence rate per 1,000 resident-days	$\frac{\text{Total Number of UTI Events}}{\text{Total resident days}} x\ 1{,}000$	Includes: SUTI, CA-SUTI, and ABUTI
• *Percent* that are SUTI	$\frac{\text{Number of SUTI Events}}{\text{Total number of UTI Events}} \text{ x } 100$	
• *Percent* that are CA-SUTI	$\frac{\text{Number of CA} - \text{SUTI Events}}{\text{Total number of UTI Events}} x\ 100$	

Calculated UTI Rates and Metrics continued

Calculated Metrics	Calculations	Comments
SUTI incidence rate per 1,000 non-catheter days	$\frac{\text{Number of SUTI Events}}{\text{Total non} - \text{catheter days}} x\ 1{,}000$	Only SUTIs that are NOT catheter-associated will be included in the SUTI incidence rate. Non-catheter days is equal to Resident Days *minus* Catheter Days
CA-SUTI incidence rate per 1,000 catheter-days	$\frac{\text{Number of CA} - \text{SUTI Events}}{\text{Total catheter} - \text{days}} x\ 1{,}000$	
Urinary Catheter Utilization Ratio	$\frac{\text{Total urinary catheter} - \text{days}}{\text{Total resident} - \text{days}}$	
Urine Culture Rate per 1,000 total resident days	$\frac{\text{Number of urine cultures order}}{\text{Total resident} - \text{days}} x\ 1{,}000$	
UTI treatment ratio	$\frac{\text{New antibiotic starts for UTI}}{\text{Total number of UTI events}}$	When the UTI treatment ratio is **<1**, there are **fewer** reported antibiotic starts for UTI than symptomatic UTI events submitted; when the UTI treatment ratio **equals 1**, there are the same number of new antibiotics starts for UTI

MDRO Definitions

- **MDRO Laboratory-identified (LabID) Event**: (1) MDRO positive isolate collected from a resident while physically housed in the reporting LTCF at the time of specimen collection, regardless of specimen source (examples include blood, sputum, and urine); or (2) MDRO positive isolate collected from a resident during a brief outpatient visit (not admission) to an emergency department or medical office when the resident returns to the reporting LTCF on the same calendar day or the next calendar day.

  - **MDRO positive clinical isolate**: Any specimen, obtained for clinical decision making, testing positive for an MDRO (i.e., sputum for respiratory infection of unknown etiology). Indicates an infection.

  - **MDRO positive surveillance isolate**: Any specimen collected for surveillance purposes, testing positive for an MDRO (i.e., rectal swab for CRE, groin/axilla swab for C. auris). Indicates colonization.

Categorizations of MDRO LabID Events

- **Community-onset (CO) LabID Event**: Date specimen collected ≤ 3 calendar days after date of current admission to the facility (specifically, days 1, 2, or 3 of admission).
- **Hospital-onset (HO) or Long-term Care Facility-onset (LO) LabID Event**: Date specimen collected > 3 calendar days after date of current admission to the facility (on or after day 4).
  - LO LabID Events can be further sub-classified as:
    - Acute Care Transfer-Long-term Care Facility-onset (ACT-LO): LTCF-onset (LO) LabID Event with date specimen collected ≤ 4 weeks following date of last transfer from an Acute Care Facility (hospital, long-term acute care hospital, or acute inpatient rehabilitation facility only) to the LTCF

MDRO Case Scenarios

1. Ms. T was first admitted to SNF A on June 4th. On June 5th she complained of burning during urination and had a low-grade fever, and on June 6th a urine culture specimen was collected and tested positive for MRSA. A MRSA LabID Event was entered for June 6th (date of specimen collection). This event was categorized as CO since the specimen was collected within the first 3 days of her current admission into the facility.

2. Ms. Smith was transferred to SNF B from an acute care facility on July 1st and had a urine culture collected on July 10th that tested positive for CRE. A CRE LabID Event was submitted to NHSN and subsequently categorized as ACT-LO (HO) since the specimen was collected more than 3 days after her current admission and she was transferred to your facility from an acute care facility in the previous 4 weeks.

Calculated MDRO Rates and Metrics

Calculated Metrics	Calculations	Comments
Total MDRO Rate per 1,000 resident days	$\frac{\textbf{Number of MDRO LabID Events}}{\textbf{Total resident} - \textbf{days}} \boldsymbol{x\ 1,000}$	Includes CO and LO LabID Events per month
• *Percent* of MDRO CO LabID events	$\frac{\textbf{Number of CO MDRO LabID Events}}{\textbf{Total number of MDRO LabID Events}} \boldsymbol{x\ 100}$	
• *Percent* of MDRO LO LabID events	$\frac{\textbf{Number of LO MDRO LabID Events}}{\textbf{Total number of MDRO LabID Events}} \boldsymbol{x\ 100}$	
○ *Percent* of LO MDRO LabID Events that are ACT-LO LabID events	$\frac{\textbf{Number of ACT} - \textbf{LO MDRO LabID Events}}{\textbf{Total number of LO MDRO LabID Events}} \boldsymbol{x\ 100}$	
MDRO LO Rate per 1,000 resident days	$\frac{\textbf{Number of LO MDRO LabID Events}}{\textbf{Total resident} - \textbf{days}} \boldsymbol{x\ 1,000}$	

LACDPH MDRO Reporting

Organism	Disease categories	Criteria	Who reports
Candida auris *(C. auris)*	*C. auris*	*Candida auris*	Lab and provider
	Presumptive *C. auris*	Commonly misidentified organisms per laboratory instrument (Refer to https://www.cdc.gov/fungal/candida-auris/recommendations.html)	Provider only
Carbapenem-resistant Enterobacterales (CRE)*	CRE	Enterobacterales that are resistant to one or more carbapenems (independent of any carbapenemase testing)	**Provider only**
	CP-CRE	• Carbapenemase positive (CP)-CRE by phenotypic or molecular test OR • Carbapenemase unknown (no carbapenemase test performed)	**Lab only**
Carbapenemase-producing ***Acinetobacter baumannii***	CP-*Acinetobacter* spp.	*Acinetobacter* spp. positive for carbapenemase by phenotypic or molecular test	**Lab only**
Carbapenemase-producing ***Pseudomonas aeruginosa***	CP- P. aeruginosa	*P. aeruginosa* positive for carbapenemase by phenotypic or molecular test	**Lab only**
Vancomycin-resistant ***Staphylococcus aureus*** (VRSA)	VRSA	*S. aureus* with a vancomycin MIC ≥16	Lab only
Pan-resistant organisms (Suspect PDR)	Suspect PDR	Gram negative bacteria that are non-susceptible to all antibiotics tested	Lab only

E. coli, Klebsiella oxytoca, Klebsiella pneumoniae, Enterobacter spp.

CDI Definitions

- **Resident admissions** refer to total number of residents admitted to the facility including both new and re-admissions (specifically, a resident was out of the facility for more than two (2) calendar days and then returned).
- **Resident-days** are calculated using the daily census of residents in the facility each day of the month. The monthly total is submitted to NHSN.
- **Number of admissions on C. difficile treatmen**t is calculated by counting the number of residents who are receiving antibiotic therapy for C. difficle infection at the time of admission to your facility during the current calendar month.
- **Number of CDI treatment starts** is the total count of new prescriptions for an antibiotic/ medication given to residents suspected or diagnosed with having a C. difficile infection in the facility for the calendar month and includes treatment with or without a positive laboratory test.

Calculated CDI Rates and Metrics

Calculated Metrics	Calculations	Comments
Total CDI Rate per 10,000 resident days	$\frac{\text{Number of CDI LabID Events}}{\text{Total resident – days}} x\ 10{,}000$	Includes CO and LO LabID Events
• *Percent* of CO CDI LabID Events	$\frac{\text{Number of CO CDI LabID Events}}{\text{Total number of CDI LabID Events}} x\ 100$	
• *Percent* of LO CDI LabID Events	$\frac{\text{Number of LO CDI LabID Events}}{\text{Total number of CDI LabID Events}} x\ 100$	Includes incident and recurrent CDI LabID Events
○ *Percent* of ACT-LO CDI LabID Events	$\frac{\text{Number of ACT – LO CDI LabID Events}}{\text{Total number of LO CDI LabID Events}} x\ 100$	
CDI LO Incidence Rate per 10,000 resident-days	$\frac{\text{Number Incident LO CDI LabID Events}}{\text{Total resident – days}} x\ 10{,}000$	Excludes recurrent CDI LabID Events
CDI Treatment Prevalence on Admission	$\frac{\text{Number of residents on CDI treatment on admission to facility}}{\text{Total number of admissions}}$	

https://www.cdc.gov/nhsn/pdfs/ltc/ltcf-manual-508.pdf

Reminder

We want to thank you all for your wonderful questions these last few weeks, during our Ask the IP Sessions. The focus of these sessions is core infection prevention practices (beyond COVID-19) that must be used in all care settings and to foster discussion among LA County Skilled Nursing Facilities about infection control practices.

We would like to remind everyone that the LACDPH COVID-19 Guidance has been updated as of 10-01-2021, please take time to review the updates and the current guidance from the County. We will not be reviewing guidelines during these sessions.

Link to Guidelines:
http://publichealth.lacounty.gov/acd/ncorona2019/healthfacilities/snf/prevention/

Programming

Session	Date (2021)	Covered Topics
Week 1	Wednesday, Sept 22nd	Antimicrobial Stewardship
Week 2	Wednesday, Sept 29th	Office Hours
Week 3 (Today!)	Wednesday, Oct 6th	Disease Surveillance
Week 4	Wednesday, Oct 13th	Office Hours
Week 5	Wednesday, Oct 20th	Outbreak Investigation
Week 6	Wednesday, Oct 27th	Office Hours
Week 7	Wednesday, Nov 3rd	Regulatory Bodies
Week 8	Wednesday, Nov 10th	Office Hours
Week 9	Wednesday, Nov 17th	Communication, Education and Advocacy
~~Week 10~~	~~Wednesday, Nov 24th~~	Week of Thanksgiving (off)
Week 11	Wednesday, Dec 1st	Office Hours
Week 12	Wednesday, Dec 8th	Professional Development, Resources and Other IP Settings
Week 13	Wednesday, Dec 15th	Office Hours

Questions