Surveillance Strategies for Infection Control in RCHE or Long-Term Care Facilities (LTCF)

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Definition of Surveillance

Surveillance is a systematic method of collecting, consolidating, and analyzing data concerning the distribution and determinants of a given disease or event followed by dissemination of that information to those who can improve the outcome.

*"If you cannot measure it, you c*annot improve it."
Lord Kelvin

Definition of Infections

- Healthcare-associated infections – HAIs - (formerly known as nosocomial) develop after admission to the LTCF (RCHE).

- Community-acquired infections - incubating at the time of admission, or develop within 48 to 72 hours of admission, or transfer from another facility.

Healthcare-associated Infections - Magnitude of the Problem

- IN the US, CDC estimates 1.5 million Healthcare-associated infections occur in LTCF residents each year which translates to an average of one infection per resident per year

- Approximately 20 surveys of LTCF healthcare-associated infections using a variety of surveillance techniques and definitions found rates ranging from 2.7% to 32.7% and incidence rates ranging from 10.7% to 20.1% or 2.6 to 7.1 infections per 1000 resident days.

Most Common Healthcare-associated Infections in LTCF

- Urinary tract infections (UTI's)
- Respiratory infections (influenza, pneumonia)
- Skin and soft tissue infections (infected pressure ulcers)
- Gastroenteritis
- Conjunctivitis

Infection Surveillance in LTCF

LTCF surveillance programs are widespread but problematic

- No national system for collecting data (CDC-NHSN)
- No standard definitions
- No standard surveillance methods
- Accessibility of data limited
- Computer data management limited

But there is hope!

Infection Surveillance in LTCF

Hope is almost here:

- No national system for collecting data (CDC-NHSN) – CDC has released NHSN LTC module
- No standard definitions - CDC is finalizing revised LTCF NHSN definitions
- No standard surveillance methods-NHSN
- Accessibility of data – commercial electronic surveillance programs
- Computer data management limited-becoming more widespread (PDAs)

Uses of Surveillance - *Why do surveillance?*

- Improvement of healthcare-associated infection rate
- Establishment of baseline data
- Identification of problem
- Provision of information to physicians, nursing staff and administration
- Establishment of priorities for infection control activities

Uses of Surveillance - *Why do surveillance? (cont)*

- Evaluation of control measures, policies and procedures
- Compliance with regulatory agency recommendation
- Education of personnel
- Early outbreak recognition

Common LTCF Epidemics

- Respiratory
  - Influenza
  - Tuberculosis
  - Other respiratory viruses
- Gastrointestinal
  - Salmonellosis
  - Viral gastroenteritis
  - Escherichia coli 0157:117 colitis
  - Clostridium difficile

Common LTCF Epidemics (cont)

- Other Infections
  - Scabies
  - Conjunctivitis
  - Group A Streptococcal infections
  - MRSA infection

Recommended Elements of a Surveillance System in a LTCF/RCHE

I. Assess the population
II. Select outcomes or process
III. Use surveillance HAI definitions
IV. Collect surveillance data
V. Calculate and analyze infection rates
VI. Report and use surveillance information

Recommended Practice I Assessing the population

1. Each facility serves different population with varied heath outcomes

(negatives and positives, activities of daily living)

2. Pick outcomes or processes based on population risks.

3. Target population for risk of greatest importance (highest morbidity or morality)

Recommended Practice II
Select outcomes or process

- Approaches to Surveillance- Infection Outcomes
  - 1.Total surveillance of infections – In US, required by regulatory agencies, but not recommended by CDC, APIC
  - 2. Targeted or focused surveillance - priority directed and site specific is recommended
  - 3. Surveillance or microbiological data - positive culture report and resistant organisms
  - 4. Photographic surveillance of skin problems - progression of healing wounds

Recommended Practice II
Select outcomes or process

- Approaches to Surveillance – Process measures or outcomes
  - Procedure-related surveillance - compliance with procedures (urinary drainage bag emptying, dressing changes)
  - Environmental surveillance - walking rounds

Recommended Practice III
Use Surveillance Definitions for Healthcare-associated Infections (HAIs

- 1. CDC NHSN Definitions/criteria of HAIs for hospitals
- **2. McGeer, Definitions of infections for surveillance in long-term care facilities. *AJIC*, vol 19, no 1, Feb 1991**
- **3. Criteria for Defining Infections in LTC Facilities. *Inf Cont in LTCF Newsletter*, Summer 1996, pp 6-9.**

Reality of Infection Control in RCHE

- Infection Control Professionals typically have multiple roles to fulfill
- IPs typically have less than one hour per day available to devote to infection control, including surveillance
- Given extreme time constraints, RCHE may have to select a very simple but nonspecific screening definition
- fever = RCHE acquired infection
  or adapt a set of RCHE-specific definitions

Recommended Practice IV
Data collection and tabulation

- Information gathering form - customized, preprinted cards, sheets, forms
- Linelisting form - summation of individual infection forms
- Infections tabulated according to body site (respiratory, UTI)
- Infection tabulated by geographic location (units)
- Infection tabulated by special need (catheters versus non-cath)

Sources of Information for Surveillance in LTCF

- Clinical or unit rounds
- Unit reports - temperature records, kardexs, condition report 24 hour
- Laboratory and radiographic data
- Medical records
- Antibiotic-use review
- Death certificates
- Family members

Recommended Practice IV Calculation of Infection Rates

- Acute care hospital rates are usually calculated on basis of
  - infections per 100 discharges per month
  - Infections per 1000 patient days
  - Infections per 1000 device use days
- LTCFs the average stay is over a year; the census fluctuates little so rates calculated by:
  - infections per 100 residents per month
  - infections per 100 resident months
  - infections per 1000 resident days

Analysis and Interpretation of Data

- Attack rate - is incidence rate figured per 100 residents (usually one month)
- Calculate the attack rate:

  Number of new cases of disease for a specified time period (e.g., I month)
  x 100

  Average number of residents in the LTCF during the above time period
- The denominator (number below line) persons at risk during the specified time period (average resident census or total patient day)
- Prevalence rate - residents with (both old and new) infections during a specified time or single moment of time

Infection (incidence rate) = percent

Number of new infections x 100 =(if) whole number expressed as %
Average number of resident days in the month

versus (infections per resident days)

$$\frac{15}{(30)(200)} \times 1000 = 2.5$$ infections per 1000 resident days (cannot be expressed as %

15 = total number of new infections

30 = days in month

200 = total resident days for population at risk

1000 = multiplier to reach a whole number (cannot be expressed as %)

Sample problem

Over the past month you have identified 3 UTIs on Ward A, and 6 UTIs on Ward B, and 4 UTIs on Ward C.

- 1. What do you need to know about these UTIs?
- 2. How would you calculate an infection data?
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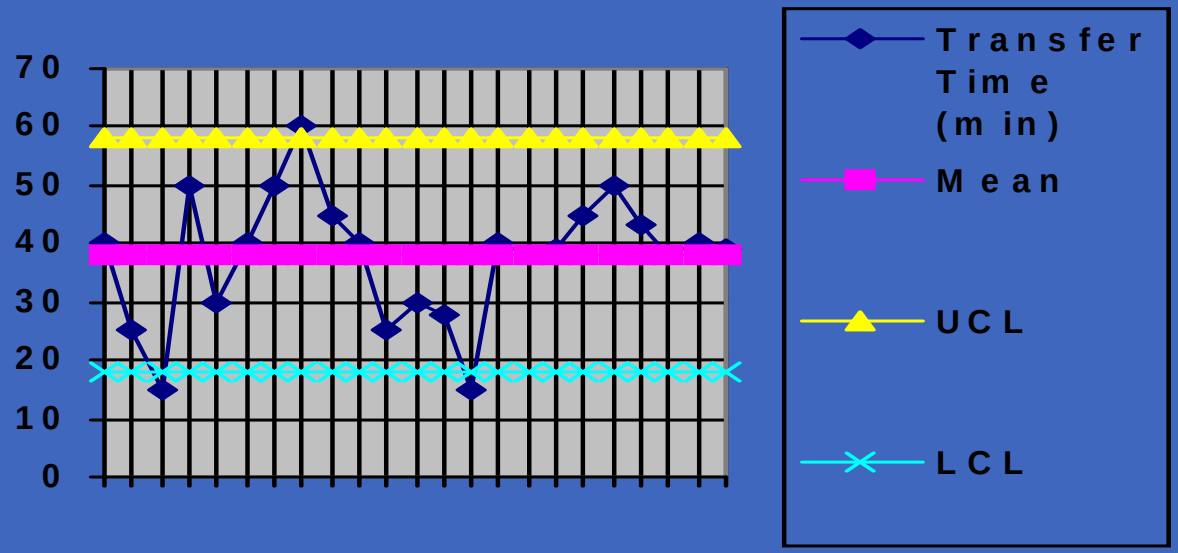
Run Charts

- Purpose: graphs of data taken over time to display variation and to detect the presence or absence of special causes. Displayed by data elements plotted around the mean.


70
60
50
40
30
20
10
0
Transfer Time (min)
Mean
UCL
LCL

Recommended Practice V Report Preparation and Dissemination

- 1. Analyze and compare statistics by increase or decrease in expected rates
- 2.Tracking and following trends done on a monthly basis for both residents and staff; information presented to the appropriate committee on at least a quarterly basis
- 3.Tables listing infection rates and comparisons with previous rates, graphs or pie charts
- 4. Presentations - simple, concise and action-oriented Define persons and groups to receive reports

Conclusions

Good surveillance does not necessarily ensure the making of the right of the right decisions, but it reduces the chances of the wrong ones.

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