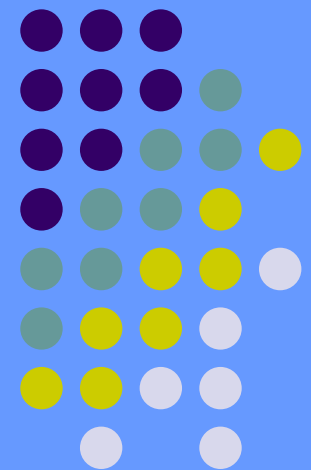


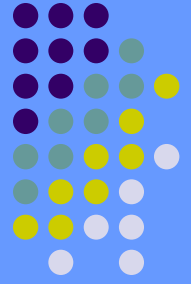
BASIC CONCEPTS OF INFECTION CONTROL

Surveillance

International Federation of
Infection Control



Abbreviations



- HAI
 - Hospital-acquired infection
 - Healthcare-associated infection
- IC
 - Infection prevention and control
- ICT
 - Infection control team



What is Surveillance?

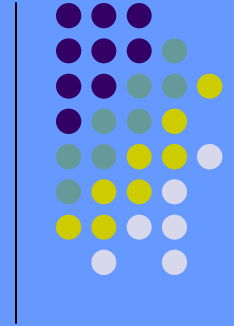
The systematic, active, on-going observation of the occurrence and distribution of disease within a population and of the events that increase or decrease the risk of the disease occurrence

If this information is known, resources can be targeted, predisposing factors reduced or eliminated, and the incidence of the disease reduced



Surveillance of HAIs

- IC programmes should include surveillance to:
 - Reduce HAI rates
 - Detect common source outbreaks
 - Identify problem areas
 - Help set priorities of IC
 - Meet national standards



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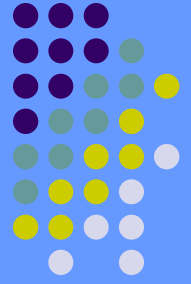


Surveillance of HAIs

- Provide data to help clinicians and managers improve IC practices
- Provide results to clinical and managerial staff to lead to actions



Impact on HAI Rates



- Haley 1985 SENIC study – Study on the Efficacy of Nosocomial Infection Control
 - Hospital programmes with surveillance data provided to clinical staff had lower HAI rates
- French 1989
 - Repeated prevalence surveys can measure improvements in rates



Impact on HAI Rates



- NNIS Report 2000 – US National Nosocomial Infection Surveillance System study
 - Showed significant reduction in national US HAI rates



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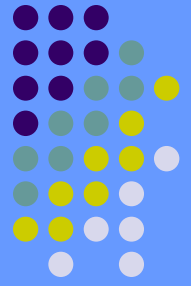
Before Beginning Surveillance



- Develop a clear plan that addresses:
 1. What questions to be asked
 2. How infections are to be defined
 3. How the data are to be collected, stored, retrieved, summarized and interpreted
 4. How to provide the results to frontline practitioners
 5. How to use the information to bring about change



Definition of HAIs



- Infections that were neither present nor incubating at the time of admission
- Detailed definitions of specific infections have been published by
 - World Health Organization
 - US NNIS
 - Hospital Infection Society
- Comparisons can be made between units or institutions only if the same definitions used



Methods of Surveillance for HAI



- Distinguish from community-acquired infection
- Can perform surveillance using various methods

Type	Advantages	Disadvantages
Comprehensive – all infections	Provides a global view Detects trends	Labour intensive Time consuming
Selective/ Targeted e.g., by ICU, by device	Flexible Resource efficient Can focus on high-risk areas	Provides limited information May miss outbreaks
Prevalence	Timely Can evaluate the surveillance system	Provides only an estimate of infections
Post-discharge	Increases case-finding	Not timely



Alert Condition Surveillance

- Surveillance of the incidence of specific clinical conditions, e.g., TB, infectious diarrhea
- Directed to the early identification and control of outbreaks
- Part of daily work by ICT

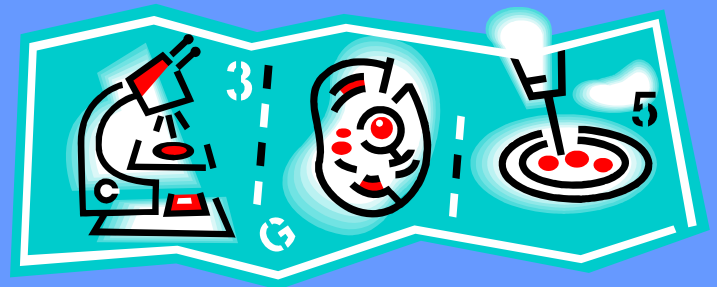


Alert Organism Surveillance

- Continuous monitoring of specific microorganisms through microbiology laboratory
- Example alert microorganisms: MRSA, other resistant microbes, *C. difficile*
- Inexpensive and easy to perform



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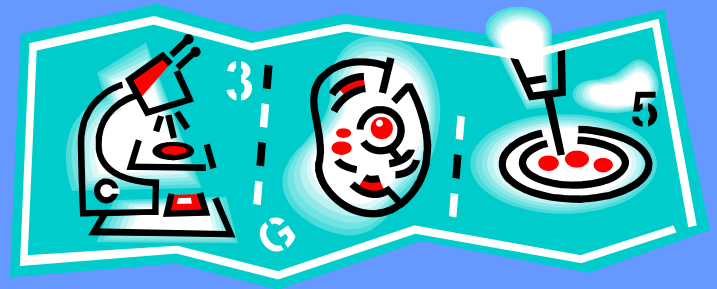


Alert Organism Surveillance

- Laboratory reports may not indicate true infection
- Negative lab reports do not mean an infection is absent
- This surveillance method can show trends of microorganisms in different wards over time



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Laboratory-Based Ward Surveillance



- When combined with alert organism surveillance, can increase detection of true infections from 25% to 85%



Perl TM. Surveillance, reporting and the use of computers. In Wenzel RP, ed. Prevention and Control of Nosocomial Infections. 3rd ed. Williams & Wilkins, Baltimore 1997 © IFIC:2008



Incidence Surveillance

- All patients monitored
- Best method for producing accurate HAI rates
- Requires assessment by trained staff using strict definitions and structured analysis



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Incidence Surveillance

- Time intensive
- Usually targeted at problem areas
- An incidence rate is determined using
 - the number of new cases of HAI
 - that occur in the population
 - during a specified time period



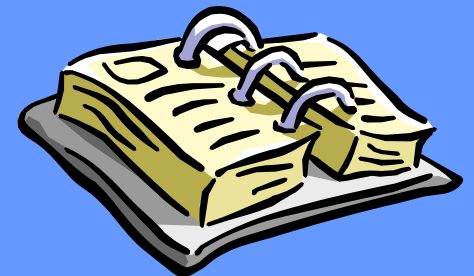
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Prevalence Surveillance

- Patients are surveyed over a short time period for active infection
- Can be performed a few times a year by a few people – useful where resources are limited
- Useful for:
 - Indicating the extent of HAI
 - Identifying specific problems requiring action
 - Defining changing patterns of HAIs

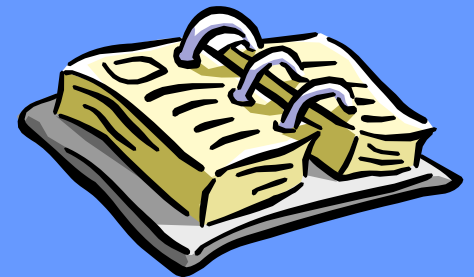


Prevalence Surveillance

- A prevalence rate is determined using the proportion of patients in the population who have an active infection at the time of the survey
- Not a complete substitute for incidence surveillance; however repeated surveys with results provided to medical/nursing staff can perform functions of incidence surveillance



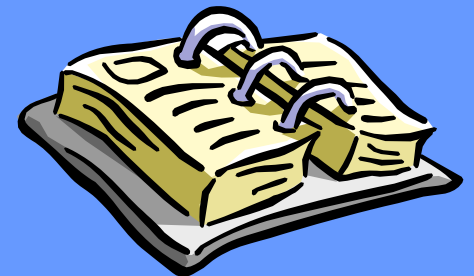
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Prevalence Surveillance

- Depending on the patient population, prevalence of HAI averages 7-10%
- Most prevalence studies have been applied to an entire hospital
- May be more effective to target certain areas/services where infection rates are suspected or known to be high



Post-Discharge Surveillance

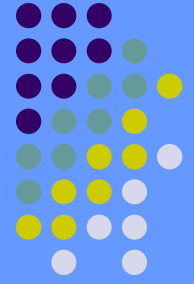


- Up to 70% of surgical site infections may present after discharge
- Surveillance of only those infections identified in hospital will underestimate the true HAI rate
- Post-discharge surveillance increases case-finding but often poses logistic problems and may be expensive



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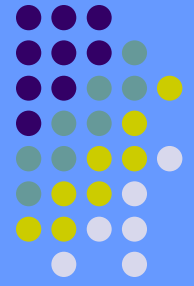




Numerator Data

- The number of HAIs in the population
- Will vary with the number of patients admitted





Denominator Data

- Number of persons at risk for the infection
- When evaluating risks associated with procedures that are long term, such as urinary catheterisation, it is important to use the number of catheter days as the denominator instead of the number of patients



Responsibility for Surveillance



- The ICT is not responsible for all surveillance
- They should support and advise clinical teams
- Surgical teams may perform their own surveillance which helps them take ownership of the problem

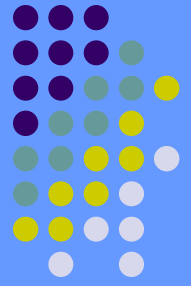


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Standard Rates of HAI

- There are no published standard HAI rates
- The rate will vary with patient risk and, therefore, there will be different rates in different units
- In general, rates should be compared with peer institutions





Minimum HAI Rates

- Ayliffe pointed out that there is an ‘irreducible minimum’ rate due to the inherent risks of underlying disease and medical interventions
- Therefore HAIs cannot be eliminated
- They can be reduced to a minimum level



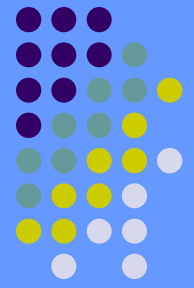
Minimum HAI Rates

- About 30% of HAIs may be preventable, depending on the patient population
- Surgical site infection rates in clean surgery should probably be less than 5%, and even less than 1% may be achievable.



Feedback

- Results must be fed back to the front-line clinical staff to help them choose actions to reduce infection rates
- It has been shown that feedback – with educational and practical help from the ICT – is one of the most effective ways of effecting change in hygienic practice

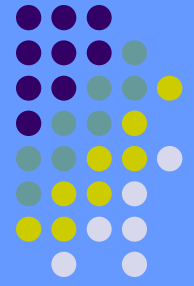




Surveillance Plan

- There should be a written surveillance plan for the health care facility
- The Plan should include
 - Definitions used
 - Which infections are followed
 - How data are collected
 - Frequency of data collection
- The Plan should also outline who is responsible for surveillance activities

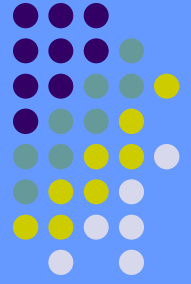




Key Points

- Monitor infection patterns (sites, pathogens, risk factors, location within the facility)
- Only collect data that will be useful in decision-making
- Detect changes in patterns that may indicate an infection problem



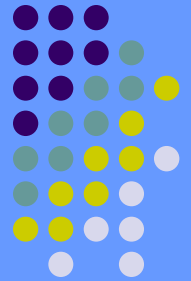


Key Points

- Direct the implementation of control measures
- Monitor antibiotic use and resistance
- Provide staff with exact information needed to improve infection prevention practices



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