



Monitoring and Preventing Hospital Acquired Infections

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AIM

- Discuss the measures adopted at Saint Bernard’s Hospital, Gibraltar to monitor and prevent the spread of multidrug resistant organisms or antibiotic induced infections.

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Organisms Monitored

- MRSA Meticilin Resistant Staphylococcus aureus
- Clostridium difficile
- ESBL Extended Spectrum Beta Lactamase (Enterobacteriaceae producing)
- Multi-resistant Acinetobacter spp and Vancomycin Resistant Enterococcus (VRE)

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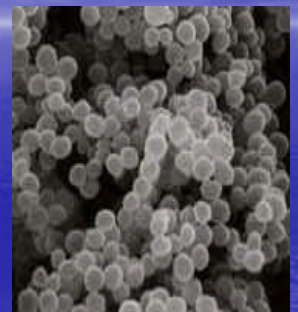
WHY SCREEN

- Recognize asymptomatic carriers
- Detect these organisms in areas of endemic cross-infection and high risk of infection
- Stop cross-transmission by applying isolation and/or antibiotic therapy
- Monitor prevalence of selected organisms

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MRSA

- **Protocols developed to establish carriage of MRSA**
- Patients admitted to ICU.
- At surgical pre-assessment before admittance to surgical ward – orthopaedic and clean surgery.
- At admission into hospital following transfer from another hospital or care home.
- For patients hospitalized for a long time.



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Admission to ICU and Clean Surgical Ward

- Since March 2006 all patients admitted to the Intensive Care Unit have had a nasal specimen taken.
- As at May 2008, 2241 patients were admitted to ICU and 37 presented with carriage (1.7%)
- As from February 2007 all patients admitted to Dudley Toomey Ward for Elective Clean Surgical intervention have had a nasal specimen taken.
- To date 1028 patients have been admitted and 9 have presented with carriage (0.9%).

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Microbiological Pre - Assessment of the Orthopaedic Patient

- December 2005 SOP issued at the introduction of the "Knee Initiative" as a microbiological pre-assessment prior to elective orthopaedic intervention.
- Swabs taken from the following sites
*Nose *Throat *Axillae *Groin *Hairline
- Chromogenic media used to isolate MRSA from nasal specimen.
- For MRSA, the most common reservoir is the nose; axillae 15-20% and perinium 30-40% of patients (Institute for Healthcare Improvement, USA. 2006)

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Presence of at least one green colony indicates a positive result: Presence of MRSA



MRSA Polymerase Chain Reaction (PCR)

- Use of a "double swab"
- PCR – a method of creating copies of a specific fragment of DNA to produce sufficient copies to be detectable.
- Real-time PCR – ability to monitor accumulation of PCR products using fluorescence.
- GeneXpert identifies presence of MRSA in 1 Hr 15 min.



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Screening of Patient Transferred from another Hospital or Care Home

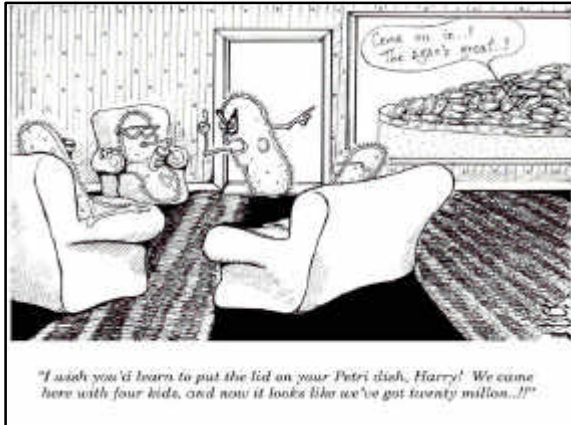
- Patient reports to A & E Department.
- Swabs taken from the following sites
*Nose *Throat *Axillae *Groin *Hairline
- Chromogenic media used to isolate MRSA from all the above specimens.
- Nasal swab also undergoes PCR molecular technique.
- If PCR positive patient is placed in the isolation room. If negative admitted to the main ward.
- 2.1% patients proved positive in other sites other than nasal.

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Long Term Hospitalized Patients

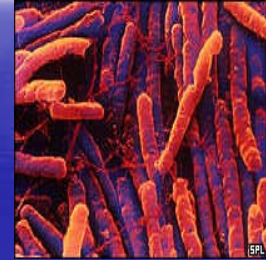
- Patients hospitalized for more than 3 months have a nasal specimen taken.
- Swab cultured on MRSA Chromogenic agar
- Positive results require subsequent body swabs.
- Negative results – reswab in 3 months time
- All MRSA isolates entered in Microbiology Laboratory data base and Infection control Team informed.

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Clostridium difficile

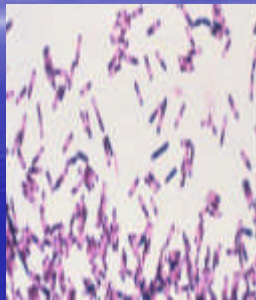
- It is the most common cause hospital acquired diarrhoea
- The formation of spores renders the bacteria resistant to heat, dryness and a number of chemicals including disinfectants.



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An Important HAI

- 20% of hospitalised patients colonised with *C. difficile*
- Isolated from the hospital environment
- Floors
- Toilets
- Bedding
- Faecal-oral transmission through contaminated environment and hands of healthcare workers



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Investigation of Clostridium difficile A/B toxin detection

- Patient has been treated with (long term) antibiotics
- Mild to severe diarrhoea (AAD) – at least 3 bowel movements per day for 2 or more days
- Patient over 65 years of age (accounts for 80% of cases)
- Method of detection – Enzyme Immunoassay EIA to detect presence of Toxin A and/or B

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Measures to monitor and prevent Clostridium difficile infections

- Stool screening protocol
- Computerized patient data base
- Infection Control Team informed
- Antibiotic Stewardship – including written guide lines with treatment recommendations; antibiotic review



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Extended Spectrum Beta Lactamases Organisms

- ESBLs term used to mean acquired class A B-lactamases that hydrolyse and confer resistance to oxyimino-2nd and 3rd generation cephalosporins.
- Occurs mostly in Enterobacteriaceae
- No actual patient screening protocol in place



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ESBLs Laboratory Detection

- ESBL confirmatory test done on all Enterobacteriaceae resistant to cefuroxime and cephalexin.
- Double Disc confirmatory test using cefotaxime and ceftazidime 30ug on either side of co – amoxiclav 20+10ug disc.
- Data entered in Microbiology database and Infection Control Team informed.



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Multi-resistant Acinetobacter and Vancomycin Resistant Enterococcus Infections

- No screening protocol in place for inpatients.
- Patients transferred from other hospitals or care homes have samples taken from wounds, venflons and catheters.
- Infection Control Team informed of isolates

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Importance of Surveillance

- Establish a baseline incidence – distinguish colonization from infection
- Detect Outbreaks
- Alert on Virulence
- Assess the effectiveness of prevention and corrective measures

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Thank You

Any Questions?

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