Current trends in Healthcare Associated Infections (HCAIs)

Barry Cookson
Outline

• Causation of HCAIs
• The prevalence of different HCAIs
• Regional differences (HPA mandatory)
• Why are things improving?
  – Assessment of ‘cleanyourhands’ campaign
  – Healthcare Commission survey analysis
• European Data & Standards and Performance Indicators: How is England doing?
• HCAIs beyond an acute care setting: the HALT Project (if time)
Infections in Hospitals

• Traditional Teaching <1980s:
  – 6-8% of patients will have an HCAI (incidence)
  – 10% at any one time will have an HCAI (prevalence)
  – 6-8% will be admitted or incubating community acquired infections*

• Now know that there will be infected/colonised * patients
  – Transferred from other hospitals* and nursing homes *
  – Re-admitted patients *

* All are potential sources of HCAIs
Pragmatic Approach to Healthcare Associated Infections: Sources and Prevention

• **AUTO-INFECTION**
  (USUALLY COMPRISE the MAJORITY of HCAIs)
  – Protect the portal of entry:
    • Aseptic surgical technique
    • Correct use of prophylactic antimicrobials where proven role
    • Review device usage e.g. urinary and venous catheters
Pragmatic Approach to Healthcare Associated Infections: Sources and Prevention

• **Cross –Infection from other patients or staff**
  – Stop the route of transmission:
    • Hand Hygiene and Appropriate Isolation measures
    • Review device usage as before
Pragmatic Approach to Healthcare Associated Infections: Sources and Prevention

• **Environmental Infection**
  – Effective decontamination:
    • Effective policies and procedures for decontamination e.g. HSDUs, environmental cleaning
      *Clostridium difficile, Enterococci,*
    • Also waste, water, food, sharps usage and disposal…….
<table>
<thead>
<tr>
<th>Country</th>
<th>Hospital Numbers</th>
<th>Patient Numbers</th>
<th>Infection Rates</th>
</tr>
</thead>
<tbody>
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<td>UK and Ireland (exc. Scotland)</td>
<td>273</td>
<td>75,763</td>
<td>7.6%</td>
</tr>
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<td>England</td>
<td>190</td>
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<td>Wales</td>
<td>23</td>
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<tr>
<td>Republic of Ireland</td>
<td>45</td>
<td>7,518</td>
<td>4.9%</td>
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### Differences in:

- Ages of patients
- Voluntary/All (Wales)
- Type of hospitals
- Definitions e.g. X rays
- Patient selection bias

Even more differences from 1993 survey (9%) e.g. length of stay, all four seasons

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DoH Funded UK 2006 Prevalence Survey
Gastro-Enteric: 21%
Urinary: 20%
Surgical: 15%
Pneumonia: 14%
Skin/Soft Tissue: 10%
Blood: 7%
Other Respiratory: 6%
Bone/Joint: 1%
Eye/ENT: 3%
Other: 3%

70% C. difficile
UK 2006 Prevalence Survey

- Higher in older age groups
  - >65y: 8.7% (64% of population) (1993: 50%)
  - <65y: 5.6%
- 1.2% Infections caused by MRSA
- 1.7% had *C. difficile*
  - <65y: 0.7%
  - >65y: 2.3%

- 14-fold increase
- x2 last 6 years
- An ADDITIONAL BURDEN to SENSITIVE STRAINS
- MSSA are increasing

* 2003 is provisional data
MRSA bacteraemia rate in specialist Trusts
(April 2002 - March 2003)

Large variation within a country: opportunities from learning within the same healthcare system
Figure 3  MRSA bacteraemia rates* in England from April 2001 to March 2005 by region

* Rates calculated using appropriate year KH03 data.
† Preliminary data using 03/04 KH03 data.
• Most Gen.Med, Surgery, Elderly Care
• 15% ICU/High Dependency Wards
• 8% Dialysis Treatment
MRSA bacteraemia annual reports in England by region, January 2002 to December 2007
Mandatory surveillance of *C. difficile* infection

- 41 per cent reduction against 2007-08 baseline
- Issues e.g. *C difficile* diagnostic kits
Mandatory surveillance of \textit{C. difficile} infection
Mandatory Surveillance: Orthopaedic Surgical Infections

Wilson J et al, HPA analysis of mandatory data

Overall Infection rates: 1.44% (2004) to 0.6% (2008)
Trend in proportion of *S. aureus* that are MRSA causing Surgical Site Infections

HPA data: Wilson and Co-Workers

Impact of Pre-Admission MRSA Screening and Decontamination?
Outline

• Why are things improving?
  – Assessment of ‘cleanyourhands’ campaign
  – Healthcare Commission survey analysis
The World’s First National Hand Hygiene Improvement Campaign

- Rolled out to all 187 acute NHS hospitals Dec 2004 to June 2005
- 4 year campaign
Trends in Procurement AHR & Soap
July 2004-June 2008 in 148 acute NHS Hospitals

- Initial rise AHR matches roll out and is not at expense of soap
- Plateau for a year then both rise from Jul 2006
- Three fold increase
Healthcare Commission Analysis of Healthcare Associated Infection 2006

Higher rates of MRSA bacteraemia (MRSA BSI)
• Better hand hygiene parameters
• Unavailability of single rooms to isolate patients

Healthcare Commission Analysis

Lower rates of *Clostridium difficile* Infections (CDI) seen if:

- Audit of antimicrobial prescribing practices
- Higher monitoring of HCAI events (other surveillance)
- Cleaner: PEAT (external) assessments:
  - General cleanliness
  - Specific cleanliness
  - Toilet and bathroom cleanliness and
  - Overall score
Better MRSA BSI and CDI rates:
• Better **bed management** parameters
• Inclusion of infection control in **appraisal** and **personal development plans**

Higher rates:
• Protected time for infection control training for all healthcare workers
• May be an example of **“reactive practice”**
Hand Hygiene Promotion

DG R&D ARPAC (2001) MRSA Study

ARPAC Geographical Regions

Lack Isolation Rooms
Indicators defined (n=21)

- yes, 17, 81%
- no, 4, 19%

Indicators (n=17)

- Analysis at hospital level: yes, 16, 94%; no, 1, 6%
- Analysis at nat/reg/prov level: yes, 12, 71%; no, 5, 30%
- Standard Precautions: yes, 4, 24%; no, 13, 76%
- Hand Hygiene: yes, 5, 30%; no, 12, 70%
- Human resources devoted to HAI & AMR: yes, 9, 53%; no, 8, 47%
- AMRs rates: yes, 12, 71%; no, 5, 30%
- HAIs rates: yes, 12, 71%; no, 5, 30%
### IPSE: Consensus Standards and Performance Indicators from 29 Countries

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<th>Topic</th>
<th>Agree</th>
<th>Modify</th>
<th>Neutral</th>
<th>Disagree</th>
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</thead>
<tbody>
<tr>
<td>Organisation</td>
<td>85%</td>
<td>9%</td>
<td>4%</td>
<td>1%</td>
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<tr>
<td>Control</td>
<td>79%</td>
<td>7%</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>Surveillance</td>
<td>79%</td>
<td>11%</td>
<td>1%</td>
<td>2%</td>
</tr>
<tr>
<td>Education</td>
<td>79%</td>
<td>14%</td>
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<td>3%</td>
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<tr>
<td>Resources</td>
<td>79%</td>
<td>15%</td>
<td>2%</td>
<td>5%</td>
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<tr>
<td>Overall Average</td>
<td>80%</td>
<td>11%</td>
<td>2%</td>
<td>3%</td>
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Abbreviation LTCF

Healthcare Associated Infections in European Long Term Care Facilities
Improving Patient Safety in Europe (IPSE) LTCF Working Party

• 4 countries: national or regional prevalence surveys
• Only 36% of the countries have a legally responsible person for Infection Control in LTCFs
• One country had dedicated IC Nurses in LTCFs
• Four had other IC Nurse arrangements
True identity of LTCF services often unknown in surveyed countries

- Half have a national plan/policy defining:
  - Provided services
  - Eligible population
  - Funding sources
- 1/3rd have national information systems, with available data
- 36% an Accreditation System

IPSE WP7
Significant variability among countries of residents and type of organisation

• No uniform system to classify residents according to their conditions and need

• Valuable glossary defining LTCF types
HALT Study Aims

- Collaboration with ESAC (antibiotic use)
- Establish an EU wide network of networks examining Long Term Care Facilities for HCAI and Antimicrobial resistance
  - Initiate repeated prevalence surveys
  - Assess current infection control and antimicrobial stewardship practices and resources
  - Explore a set of Performance Indicators at Local and National level
- Transfer to ECDC in about two years time