Controlling MRSA in England: what we have done and what we think worked

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Hospitals affected each month by EMRSA-3, EMRSA-15, or EMRSA-16
Mandatory & Voluntary Surveillance
MRSAB: 1999-2008

TARGETS SET
European Surveillance Data (EARSNet)

2002

2011
Voluntary* *S. aureus/MRSA* bacteraemia reports (England & Wales, 1991-2003)

The deadly superbug that puts Britain's hospitals to shame

Mandatory MRSAB Reporting 2001

Setting of Targets: 2004
Minister Dr Read

"TRIGGERS"

Late 1990s
Media MRSA Scandal

Patient Safety
Patient Advocates

NAO 2000

*Source: voluntary laboratory reporting to CDSC

number of reports

number of reports

Staphylococcus aureus

methicillin resistance as a proportion of reports with methicillin susceptibility information

Hospitals ignoring new killer superbug
NAO 2008 Report: MRSAB Trends

2003-04
7700

2007-08
12% of Trusts Increased
25% >80% Reductions

2008-09
### Possible TRIGGERS?

<table>
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<tr>
<th>Date</th>
<th>Event Description</th>
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<tr>
<td>April 2001</td>
<td>Mandatory Acute Hospital MRSA bacteraemia surveillance</td>
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<td>July 2003</td>
<td>Director IPC reports to Chief Executive</td>
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<td>July 2004</td>
<td>Matrons Charter</td>
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<td>July 2004</td>
<td>Target for reduction of MRSA bacteraemia: 2003-04 halved by 07-08</td>
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<td>Sept 2004</td>
<td>clean <em>your</em> hands campaign</td>
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<td>June 2005</td>
<td>Saving Lives published: Seven Bundles followed</td>
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<td>Oct 2005</td>
<td>Enhanced MRSA bacteraemia surveillance: CE Responsible</td>
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<td>Oct 2006</td>
<td>Code of Practice to prevent HCAI published as part of the Health Act: <strong>The STICK</strong></td>
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<td>2006</td>
<td>Improvement Teams: varied why went in and what done: <strong>The CARROT</strong></td>
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<td>May 2007</td>
<td>Healthcare Commission inspection programme: against Code</td>
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NO Prospective studies to unravel individual effects: “Sold” as a Multi-Faceted Intervention Approach

A joined up approach

- Legislation
- Code of Practice

- Health Care Inspection

- Organisational & behavioural change

- Service Re-design

- Best Practice e.g. Winning Ways

- Performance Management

Saving Lives
Even More Apparent in Detail of Saving Lives

High Impact Interventions

Protocols / Guidance

Bed Management

Admission & discharge

Cleaning

Risk Management

Local Procurement

Processes

Ward Management

Staff

Performance

Governance

Management Information

An integrated approach

Roles & Responsibilities

Staffing

Clinical Governance

Leadership

People

SAVING LIVES

SAVING LIVES
Other Factors?
Pathogenesis of Infections

Seed (Microbes)

Climate (Environment)

Soil (Patients)
Pathogenesis of MRSA Infections

Different MRSA

Environment
Invasive procedures, Devices (catheters, tubing, lines), Antimicrobials, Healthcare delivery (Bed occupancy, staff shortages, length of stay, Inter ward transfers…)

Patients
Young, Aged, Severely ill, Immunosuppressed & Carers
Hospitals affected each month by EMRSA-3, EMRSA-15, or EMRSA-16

95% of S. aureus BSIs due to E-15 and E-16

CPHL-Laboratory of HCAI
Decline of EMRSA-16 in 2000s

Baseline for MRSA 50% Reduction Target Set 2003-04

- UK MRSA very clonal with a >80% due to EMRSA-15 or -16
- EMRSA-16 in decline, EMRSA-15 dominates

What do the data tell us?
MRSA Bacteraemia Rates in England

April 2001                             Mar 2005

[Graph showing the number of MRSA bacteraemias per 1000 bed-days over different regions in England, with a decrease from April 2001 to Mar 2005.]
• Most General Medicine, Surgery, Elderly Care Wards
• ICU/High Dependency Wards
• 8% Dialysis Treatment
Are the MRSA Bacteraemia data to be believed?

- CE made responsible for locking the data down
- External independent inspection checks
- No significant reductions in blood cultures taken
- Death reporting (ONS) data also decreased
Studies of MRSAB Reductions
MRSA bacteraemia (MRSAB) rate in specialist Trusts (April 2002 - March 2003)

Large variation within a country: opportunities from learning within the same healthcare system
Healthcare Commission Analysis of Healthcare Associated Infection 2006

Rates of MRSA bacteraemia (MRSAB)

- Lower if better hand hygiene parameters
- Higher if single rooms to isolate patients were less available

Healthcare Commission Analysis

Lower MRSAB and C difficile infection (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”
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
AHR & Soap Procurement: Other Interventions: July 2004-June 2008 in 148 acute NHS Hospitals

- Saving Lives Registration
- DoH Team Visits
- MRSA Target
- Health Act
- Roll Out CYHC
- Re-fresh CYHC
- Re-launch CYHC

- AHR
- Soap
- Total HH consumables
Conclusions NOSEC Study
Stone et al, BMJ on line 5th May 2012

- Trebling of usage of soap and alcoholic hand rub
- Strong independent associations with ~halving of MRSA bacteraemia and C difficile infections
  - Higher procurement of soap and AHR
  - Health Act
  - DOH improvement visits
- Relative contributions unclear
- Other national interventions or hospital variations were not significant
- National infection control interventions, including a hand hygiene campaign, in context of a high profile political drive, can successfully reduce these infections.
Responses to Dr Harbarth ~2009

• Three key for me?

• Chief Executives are held accountable and Director Infection Prevention and Control (DIPC) created reporting to them

• Prevention and Control is EVERYONE’s business (e.g. personal development plans): a patient safety issue

• Legislation and Inspection against the code of practice

“It is vital that policy makers and governments realise that they must continue to spend money to save money.”

“MRSA and other hospital infection pathogens will continue to pose threats to patient safety in the foreseeable future.

One thing is certain: the response to these challenges will determine the next decade of research and reaction to MRSA.”
• “Prediction is very difficult, especially about the future”
Niels Bohr *Danish physicist (1885 - 1962)*

• “The future will be exactly like the past only far more expensive”
Jim Bishop, *Author*, 1959