‘Top Down’ approaches to Infection Prevention and Control

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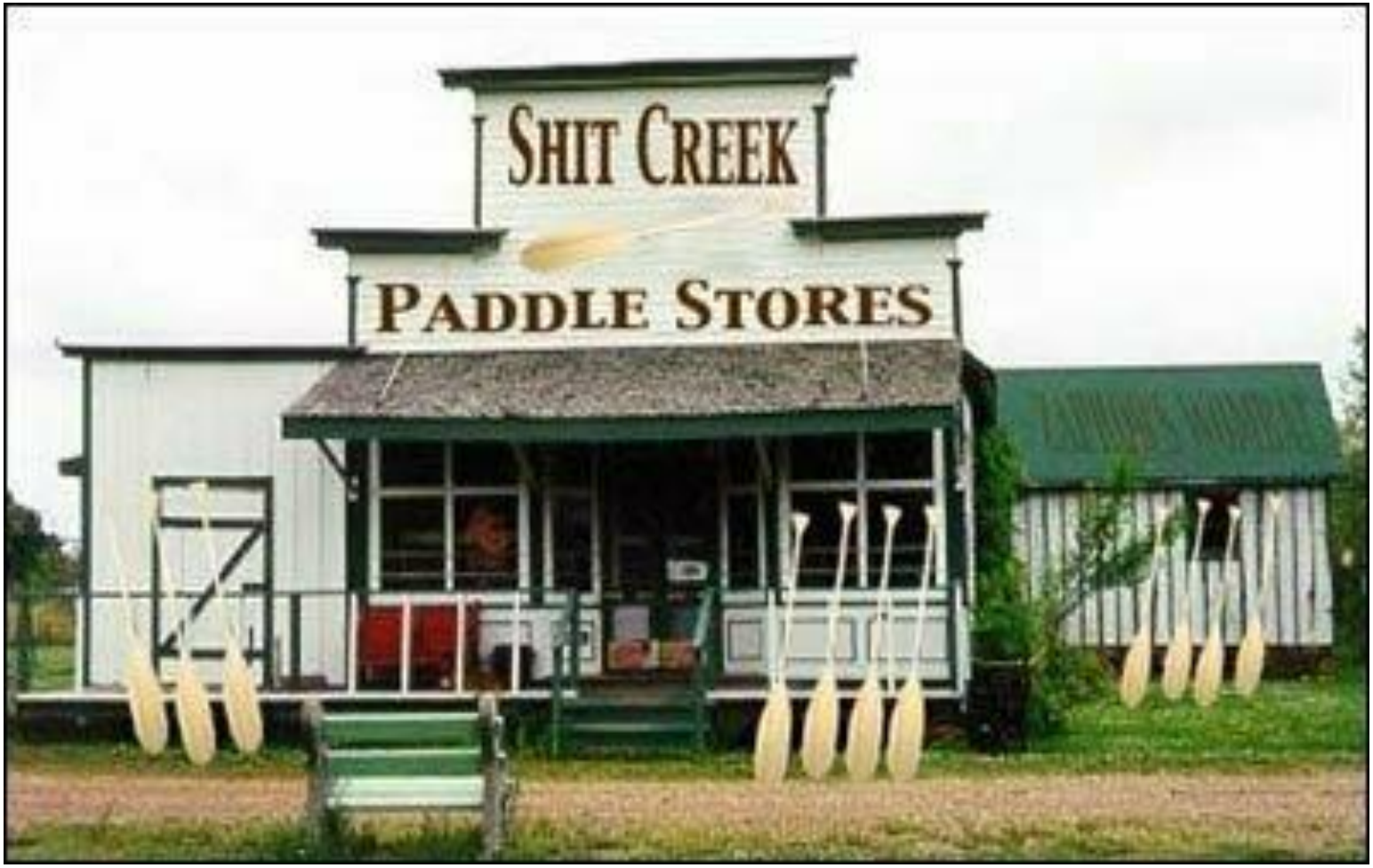
REFLECTIONS ON INFECTION PREVENTION AND CONTROL

Our reflections on IPC based on clinical microbiology, epidemiology, science & literature, and the practical issues that we run into day to day

My early professional life
1990-2000

- 1 ICN for
  - 1000 District General Hospital beds
  - 1000 Mental Health Hospital beds
  - 200 nursing and residential homes
  - 56 General Practice Surgeries
  - 100+ schools and nurseries
- Half a medical microbiologist with no defined IC time
  - No administrative support
- Also was the Tissue Viability Nurse

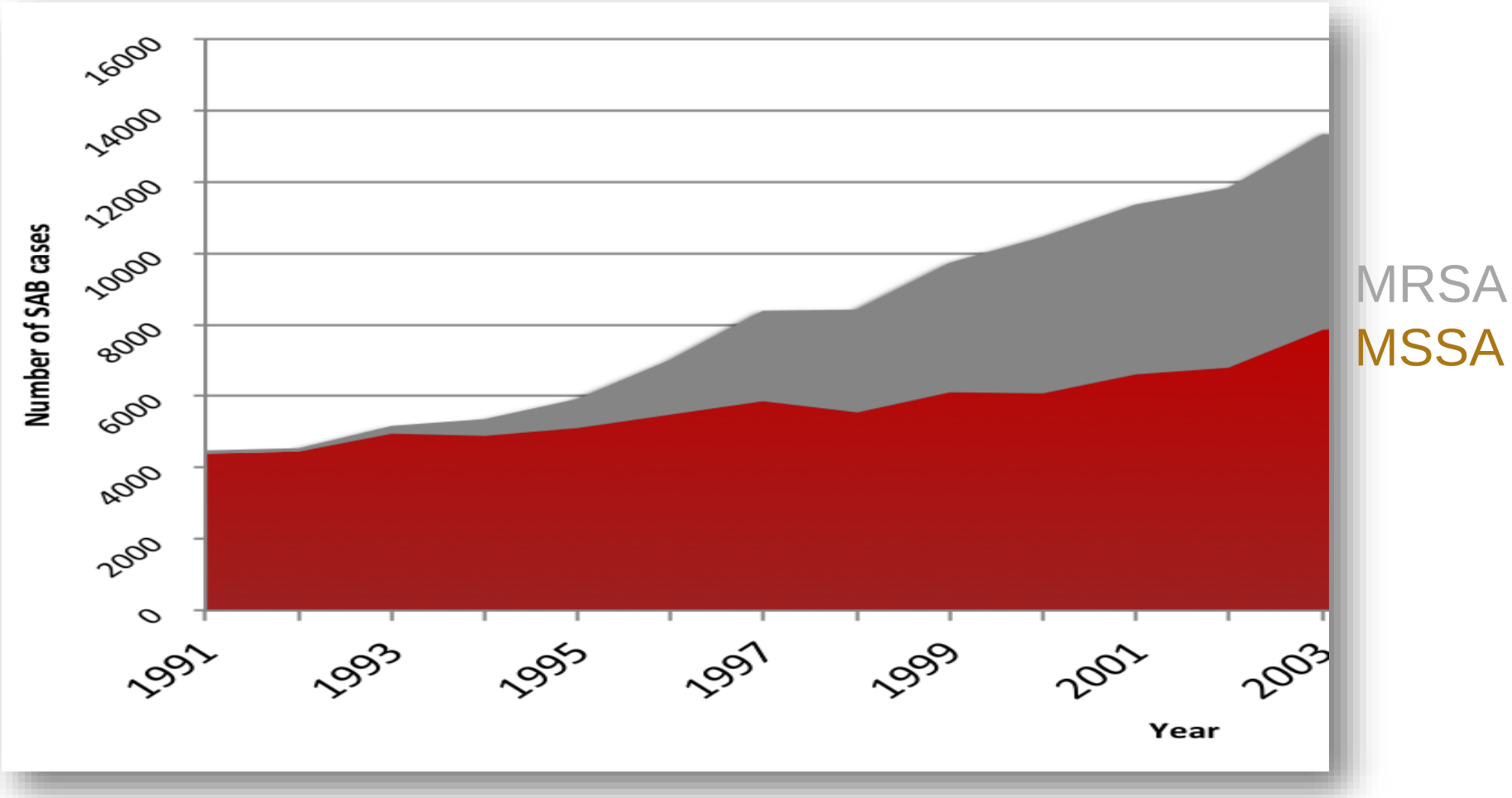

SHIT CREEK
PADDLE STORES

What did this mean?

- Lots of
  - ‘firefighting’
  - ‘teaching’
- No
  - cover when not in the building
  - surveillance
  - interest from clinical colleagues
- Horse bolts from stable

Rise of S. aureus bacteraemia

England 1991-2003



Slide adapted from Susan Hopkins, HPA/PHE

The dirty 5000 hospitals killing patients a year

Thousands of people every year are falling sick after a stay in hospital. We find out why – and how you can reduce the risk of becoming one of them...

The new hospital hygiene guidelines should improve matters

What hospitals should be do

1 **Stop prescribing** so many antibiotics. The use of the antibiotic vancomycin has increased 200-fold, and such overuse leads to bacteria becoming resistant to treatment
2 **Set up** their own infection control rules
3 **Make sure** their staff always wash their hands properly
4 **Improve training** for staff on how to reduce infections
5 **Involve consultants** more in controlling hospital infection - they should be setting an example to junior doctors
6 **Give patients** more guidance about how to reduce their own risks like the Radcliffe Infirmary in Oxford which gives out leaflets
7 **Do not reuse** equipment meant to be used only once – such as laparoscopy instruments

Michelle Cowcher narrowly escaped death when she was hit by a double-decker bus – only to fall seriously ill when she caught a super-bug in hospital.

The 27-year-old paediatric nurse was looking for a Christmas card for her fiancé Peter Stothard when a bus ploughed through a shop window near her home in Eltham, south London, and hit her.

In a critical condition, Michelle was taken by helicopter to the Royal London Hospital, where she had emergency surgery to put foot-long pins in her shattered pelvis and right leg and stop a life-threatening haemorrhage in her pelvic area. Doctors didn't expect Michelle to live through the night but she pulled through and went on to have a series of skin grafts on her crushed leg.

Michelle lost 14 pints of blood, broke a finger and three ribs and was on a life-support machine for two days. She almost died four times and was in hospital for nearly five months.

To make matters worse, after three weeks in hospital she caught the super-bug MRSA (methicillin-resistant staphylococcus). Fortunately, it wasn't a deadly strain of the bacteria which lives in the noses of one-third of the population without causing harm.

"The hospital did some swabs when my wounds started getting infected," says Michelle. "They were sore and were not healing very well. I felt sick constantly and at one stage vomited for 20 hours non-stop. When the test results a week later confirmed I had MRSA I was really upset.

"Everyone who came to visit me had to wear aprons and gloves to avoid catching the infection and no one was allowed to touch me.

"I was put into an isolation room straightaway and had to put the antibacterial cream Bactroban up my nose three or four times a day.

"I had to use the antiseptic wash Aquawarp four times a day but I still had the infection for five months. It disappeared for three weeks but came back last week."

Having the bug has meant doctors have had to delay operations to give Michelle a vital bone graft to strengthen her pelvis as she could be more prone to a bone infection which could lead to an amputation. Michelle left hospital at the end of March but can still barely walk 20 metres and had to postpone her wedding from June to September.

"As a nurse I know how easy it can be for a patient with wounds to pick up an infection and I wouldn't blame the standard of cleanliness at the Royal London for what has happened to me," she says. "But since I qualified six years ago hospital hygiene has got worse.

"We need national standards so nurses know the rules and patients can help by asking visitors with colds to stay away and not visit patients on other wards beforehand."

It took Michelle months to

MRSA is an antibiotic resistant bug

Hospital infections cost the NHS £1 billion to treat each year. One in every 10 hospital patients in the UK will pick up a bug – 100,000 patients will fall ill and 5000 will die from their infection.

Former agony aunt Claire Rayner blamed a dirty ward for an ear infection while in hospital having a pacemaker fitted. And a young man admitted to a UK hospital with pneumonia died from malaria when equipment used on a malaria patient wasn't properly sterilised.

Some of these infections are inevitable as the immune systems of sick people are more vulnerable and we are having more invasive operations like open heart surgery but experts believe that nearly a third could be prevented by better hygiene.

Killer bugs like MRSA are carried in dust and can live in it for up to eight weeks.

The Government recently introduced standards for cleanliness in hospitals. It also plans to monitor the levels of infection and publish the results, so patients can find out how their local hospitals are performing.

Dee May, of the Infection Control Nurses Association, who helped draw up the new standards says, "Levels of cleanliness [in hospitals] have deteriorated in recent years because of domestic services being contracted out and because responsibility for hygiene no longer lies with the nurse in charge of the ward.

"I've seen dust under beds, equipment dropped and left and dirty needles dumped in mail bags. We hope these new standards will give patients a cleaner ward and will cut down the number of infections people pick up in hospitals."

What you should do

1 **Be assertive** with medical staff. If they're not wearing gloves ask why not
2 **Ask to be discharged** from hospital as soon as possible
3 **Discourage visitors** who have been in contact with infections like chicken pox and flu in the past two to three weeks
4 **Make sure all** visitors have washed their hands
5 **Ask to see the** hospital's infection-control nurse if you have any concerns about hygiene
6 **Build up your** immune system before being admitted to hospital by eating properly

For more help

- Call the Patients Association (tel: 020-8423 9999) for advice if you think you've caught an infection in hospital.
- Write to the Infection Control Nurses Association, c/o Fitwise, Drumcross Hall, Bathgate EH48 4JT, for information on the hygiene standards hospitals should be following.

Nationally

- No real interest from (Tory) government apart from soothing words
- Reports and Guidance
  - The Path of Least Resistance
    - House of Lords Report, 1998
  - Socio-economic Burden of HAI, 1999
  - Risk Management
    - Controls Assurance Standards, 1999
- Guidance never followed up to see if any were implemented

Then a change in Government

Government Circular HSC2000/002

- Appeared on the DOH website on the 11th February 2000 – a Friday afternoon
  - Picked up on the Controls Assurance standards, placed dates on them and stated who is responsible
    - surveillance to be in operation by July and data used to shape service activity by Sept
- Why bring this document out?
  - Published four before a National Audit Office Report
    - amazing coincidence
  - Ministers able to proclaim that all was well…
  - CEOs were asked what they had done about it

National Audit Office Report 2000

- Highly critical of IPC in hospitals
  - Lack of engagement from anyone outside the 'team'
  - ICCs non-functional
    - Made up of ICT and A. Pologies
- ICTs asked what percentage of infections we thought preventable
  - We replied between 5% and 20%
    - Therefore we thought that 80-95% were unpreventable

2000

- Media Pressure forces formal mandatory surveillance for healthcare-associated infection
  - MRSA Bacteraemia, C. difficile Infection follows
- Assumptions
  - Significant
  - Easy to detect
  - Preventable
- All cases reportable, regardless of provenance
- Media frenzy, when numbers went up

MRSA..THE FORGOTTEN MASSACRE

The deadly superbug that puts Britain's hospitals to shame

OUR SQUALID HOSPITALS

Daily Record

News

KILLER RAPIST HAS MRSA IN PERVS' JAIL

Oct 16 2004

Superbug scare

By Amy Devine

A NOTORIOUS murderer and serial rapist is carrying the deadly superbug MRSA in jail.

Thomas Young has been moved to the hospital wing at Peterhead prison where bosses have reminded cons to wash their hands and have placed extra soap and paper towels in its halls.

But a source at the jail, where some of Scotland's worst sex offenders are held, said: 'Inmates and staff are scared to go near the health centre in case they catch this horrible bug.

More Guidance

- “Winning Ways”
  - Department of Health, Dec 2003
  - Appointment of ‘Directors of Infection Control’
  - Seven ‘Action Areas’
  - More surveillance
    - League tables
      - Considerable variation

2004 – Politicians ‘Enough is enough!’

- Health Minister sets ambitious target: 50% reduction by 2008
  - Set from a baseline in 2003-4 that really meant that a reduction of 60% was required
- Many (myself included) thought this was impossible
  - Lack of evidence
  - Lack of engagement

“Going further faster” 2006

- (yet) another initiative

DH Department of Health

Hospital Management

“Going further faster”

- Panic at the DH
  - Virtually no-one hit their target
  - Figures weren’t going down
- New actions
  - Root Cause Analysis toolkit
  - ‘Saving Lives’ care bundles
  - Targeted support teams going in

So how did ICTs feel about scrutiny

- Not good
  - They felt that their professionalism was being challenged
  - They felt that they were being made to feel that they were responsible
  - Infection Control was NOT everyone's business
  - Unsurprisingly they didn't like it
    - And no wonder..

Bad Publicity

Daily Mail
24 HOURS A DAY

KELLY GETS HER KICKS
Kelly Brook is set to shoes ready for Stri Dancing ...more

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Cut your bills
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News

Hospitals receive sharp warning for 'wide-ranging and serious' breaches of the hygiene code

By JENNY HOPE - More by this author »
Last updated at 01:08am on 9th July 2007

Comments (8)

The first hospitals to receive an official hygiene warning after a snap visit by health inspectors have been given 11 weeks to clean up.

Managers at Barnet and Chase Farm hospitals in North London could be fired unless they dramatically improve hygiene by the end of September.

Inspectors from the independent Healthcare Commission found 'wide-ranging and serious' breaches of the hygiene code and some of the worst rates for infection with the stomach bug C.diff. Spot checks also found that no alcohol gels were provided at patients' bedsides or attached to staff uniforms to aid handwashing.

Read more...
- NHS pays out £592m a year for blunders - and a third goes to lawyers

Additionally, only one microbiologist was employed for four hours a week in infection control and there was no budget for training staff in the subject. The trust had no system for tracking MRSA infections and there was confusion among staff about when to put infected patients into isolation. The trust has been told things must improve no later than September 30 or the commission can

Managers at Barnet and Chase Farm hospitals in North London could be fired unless hygiene is improved

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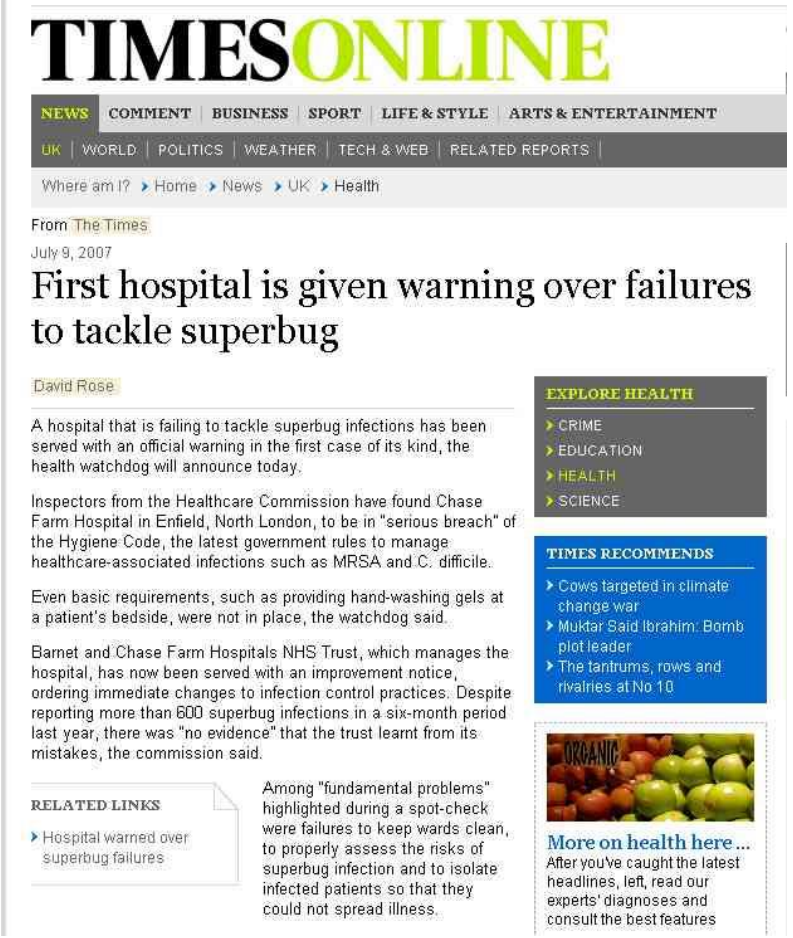

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From The Times
July 9, 2007

First hospital is given warning over failures to tackle superbug

David Rose

A hospital that is failing to tackle superbug infections has been served with an official warning in the first case of its kind, the health watchdog will announce today.

Inspectors from the Healthcare Commission have found Chase Farm Hospital in Enfield, North London, to be in "serious breach" of the Hygiene Code, the latest government rules to manage healthcare-associated infections such as MRSA and C. difficile.

Even basic requirements, such as providing hand-washing gels at a patient's bedside, were not in place, the watchdog said.

Barnet and Chase Farm Hospitals NHS Trust, which manages the hospital, has now been served with an improvement notice, ordering immediate changes to infection control practices. Despite reporting more than 600 superbug infections in a six-month period last year, there was "no evidence" that the trust learnt from its mistakes, the commission said.

Among "fundamental problems" highlighted during a spot-check were failures to keep wards clean, to properly assess the risks of superbug infection and to isolate infected patients so that they could not spread illness.

RELATED LINKS
- Hospital warned over superbug failures

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MANAGEMENT
Infection Control

How did teams work?
Findings from DH Support Team visits

Traditional

- Low Profile Team
  - “They phone us or pop in occasionally”
  - Highly reactive
  - Keep control and do…
  - Write reports
  - The IPC Programme is theirs

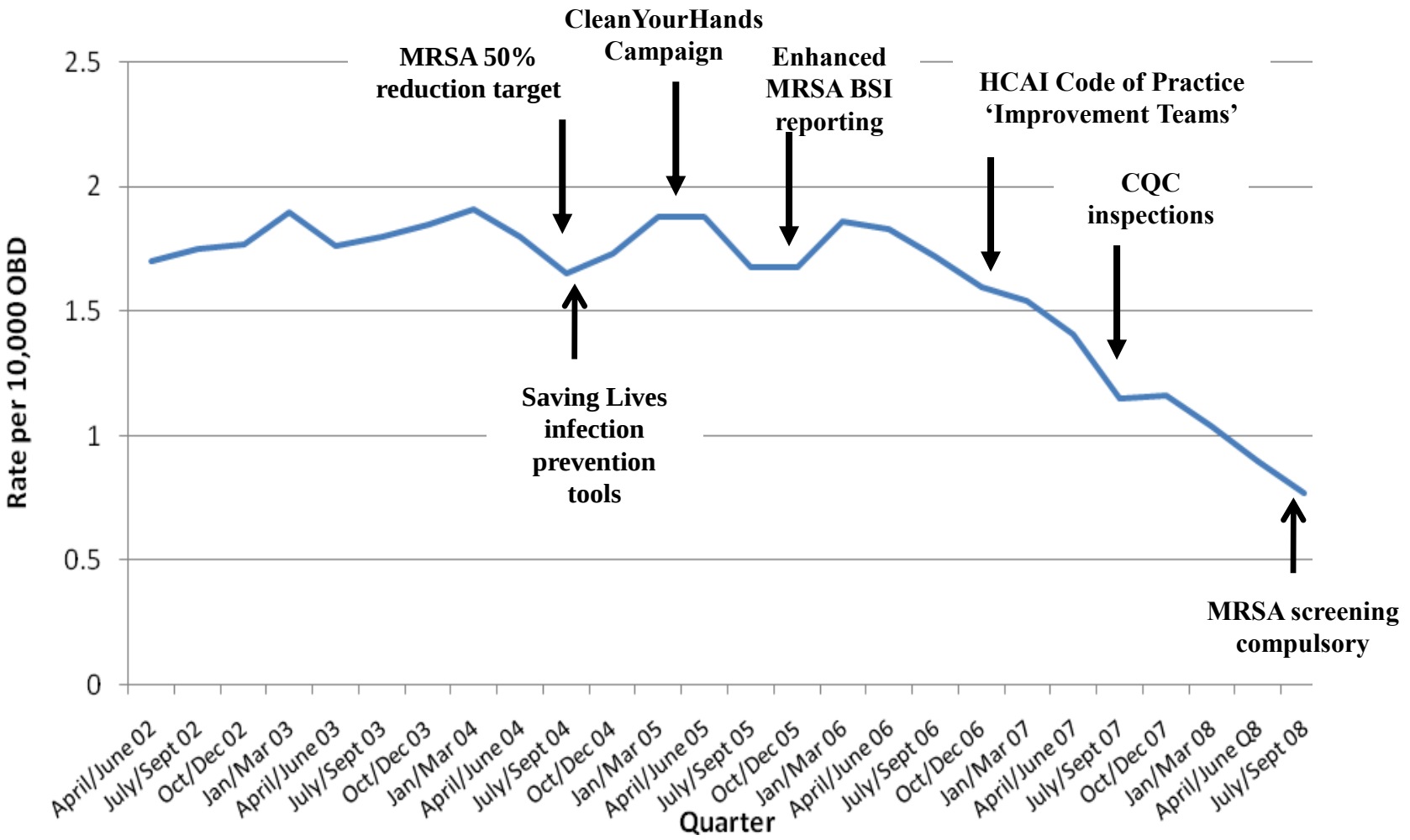
Modern

- Prominent team
  - Highly visible
  - Highly pro-active
  - Provide expert input for others to do
  - Use data to drive improvement
  - The IPC Programme is everyone’s

Barriers to effective Team function

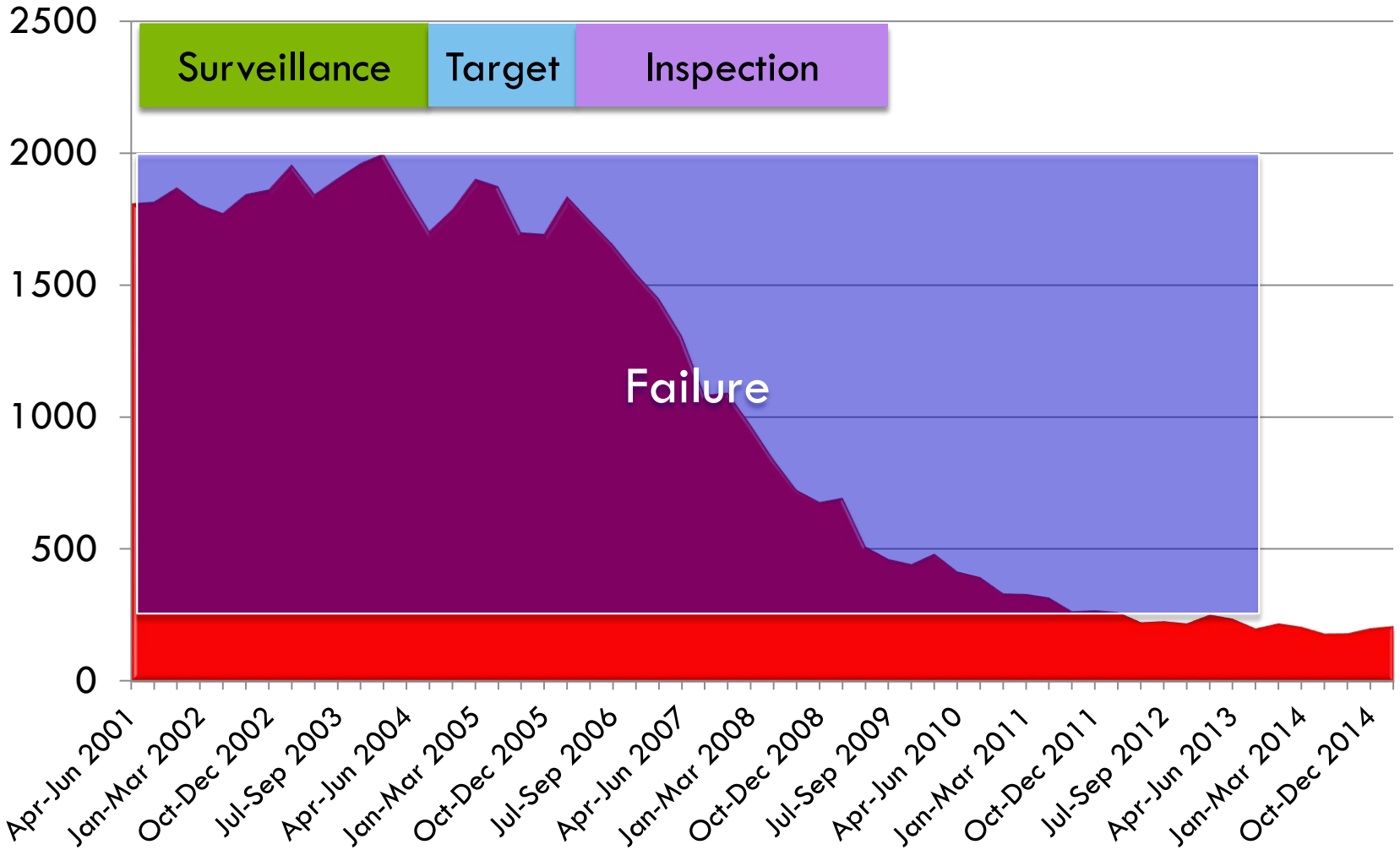
- Lack of practical application of tools and methods for epidemiology and quality improvement
  - Inadequate staffing to ensure effective data collection
  - Lack of automated data collection methods
  - Inadequate computer resources and training
  - Excessive data collection with minimal analysis
  - Data not used to drive change
  - Lack of formal training in hospital epidemiology for hospital managers

Trends in rate of MRSA bacteraemia per occupied bed-days (2002 – 2008)



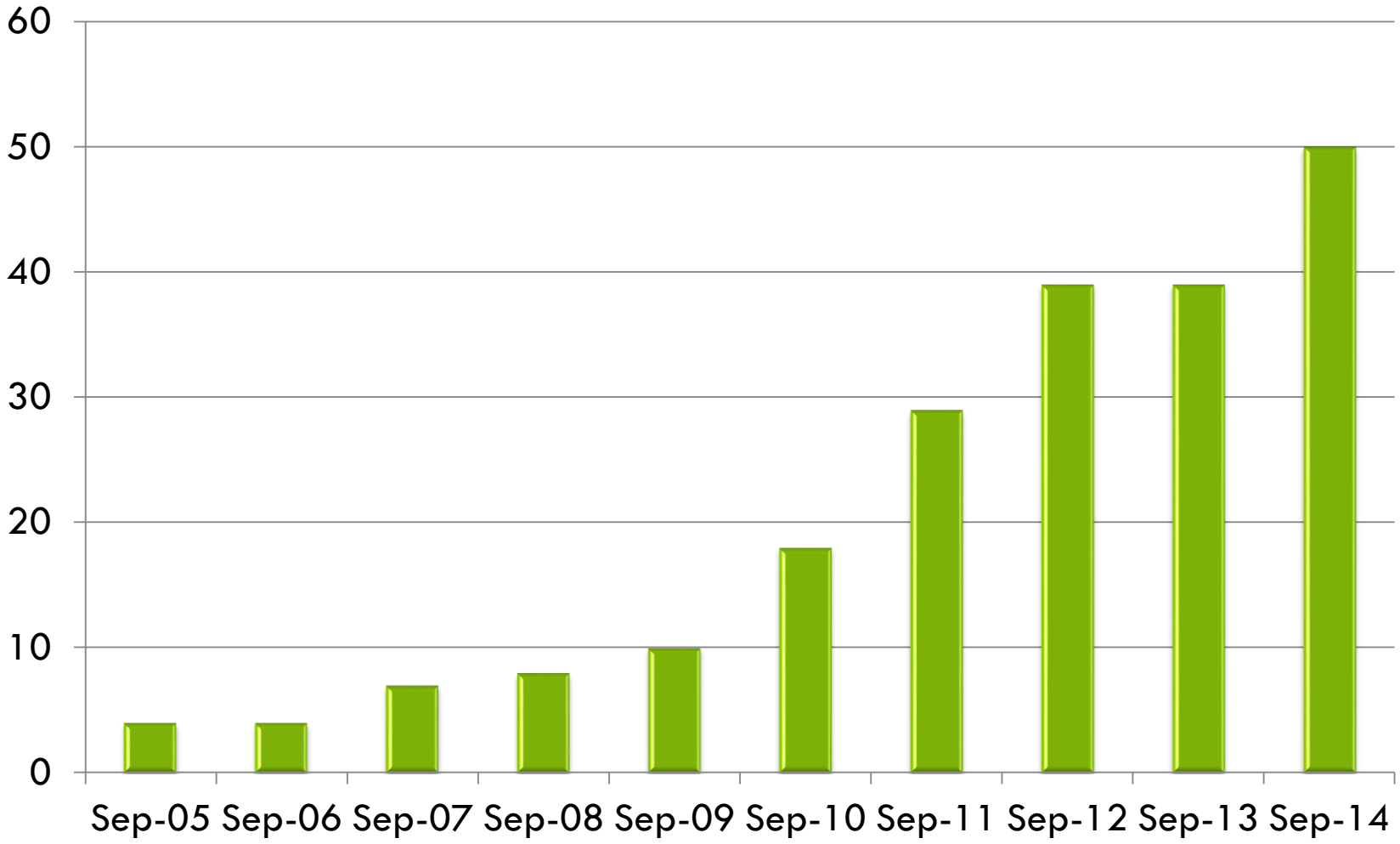
Quarterly MRSA Bacteraemia

England: 2001-15

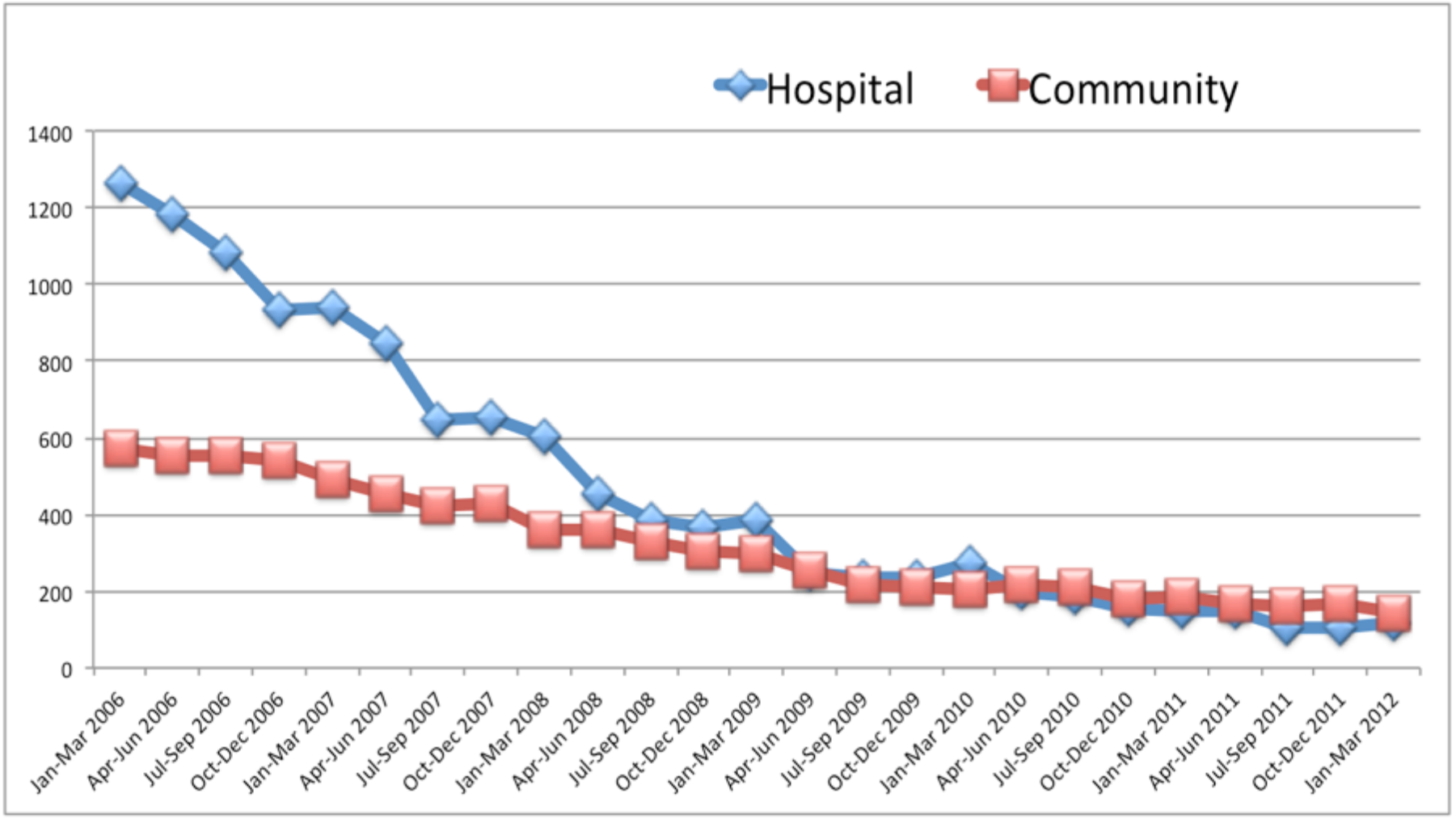


ZERO MRSA organisations

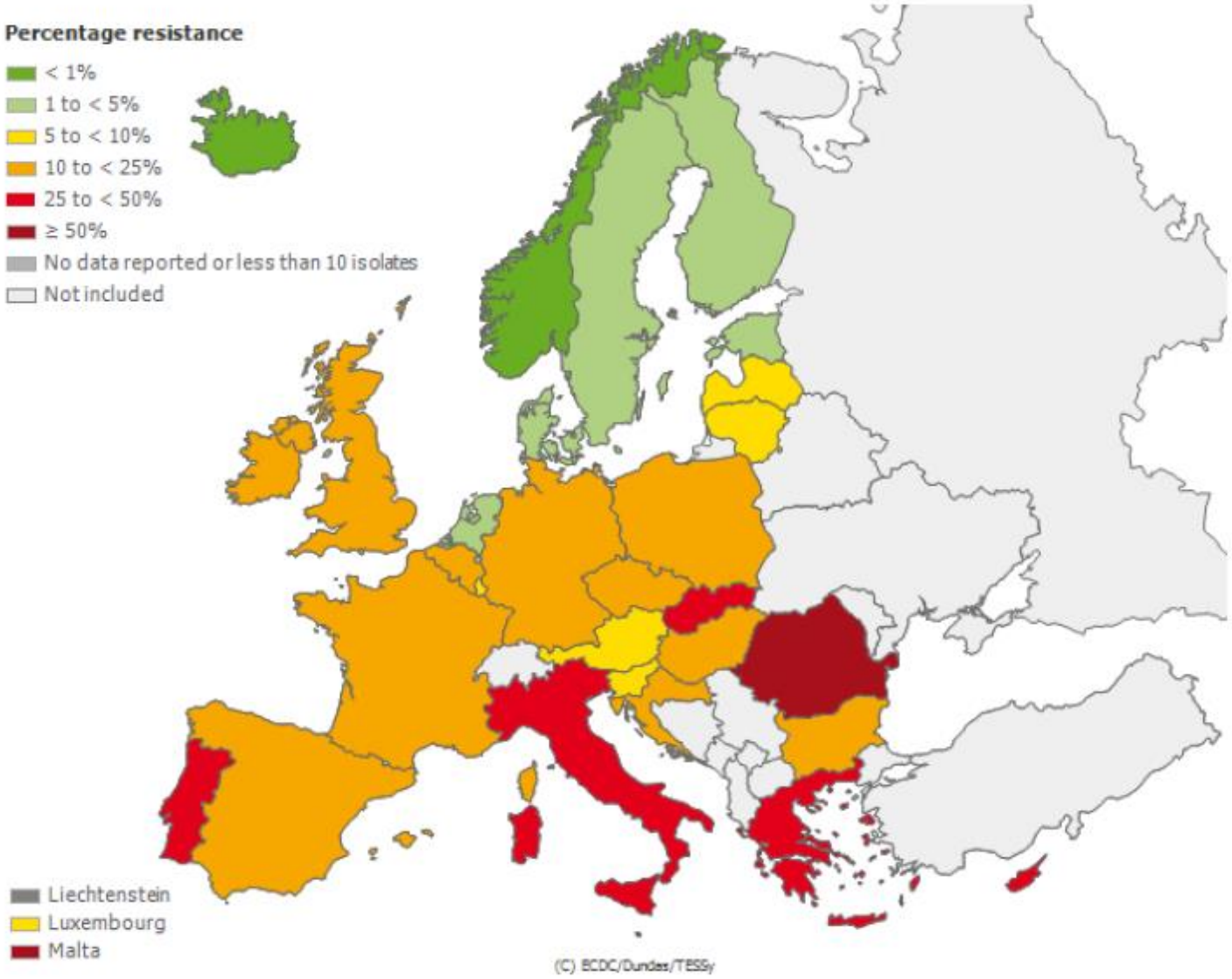
12 months with no MRSA BSI



Change in Attribution
2006-12



Proportion of Methicillin Resistant *Staphylococcus aureus (MRSA)* Isolates in Participating Countries in 2013



National Confidential Study 2007
Deaths following MRSA Infection

- In-depth review of randomly selected deaths
  - 80% >70 years of age with significant co-morbidities
  - Deficiencies in documentation of insertion, review and management of invasive devices
    - Only 50% of Trusts were auditing compliance with policies regarding invasive procedures
  - For almost half of the cases reviewed, The source of the MRSA infection was an invasive device, particularly PVC and CVC

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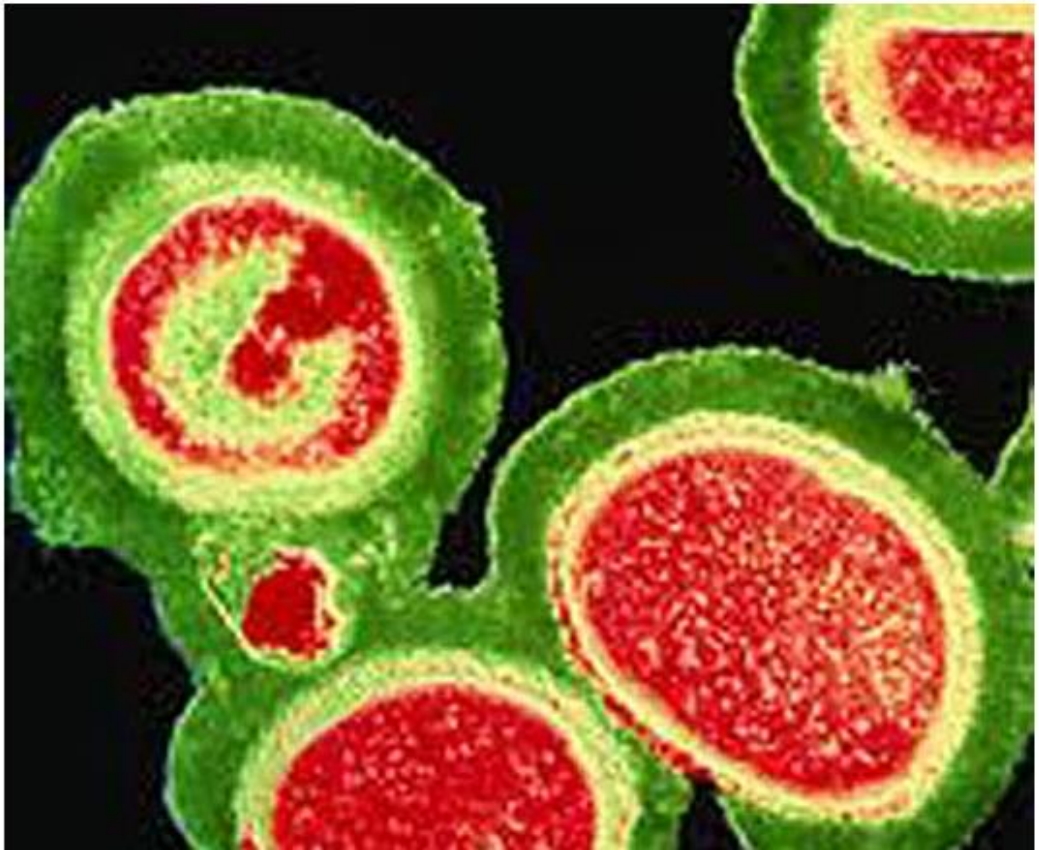
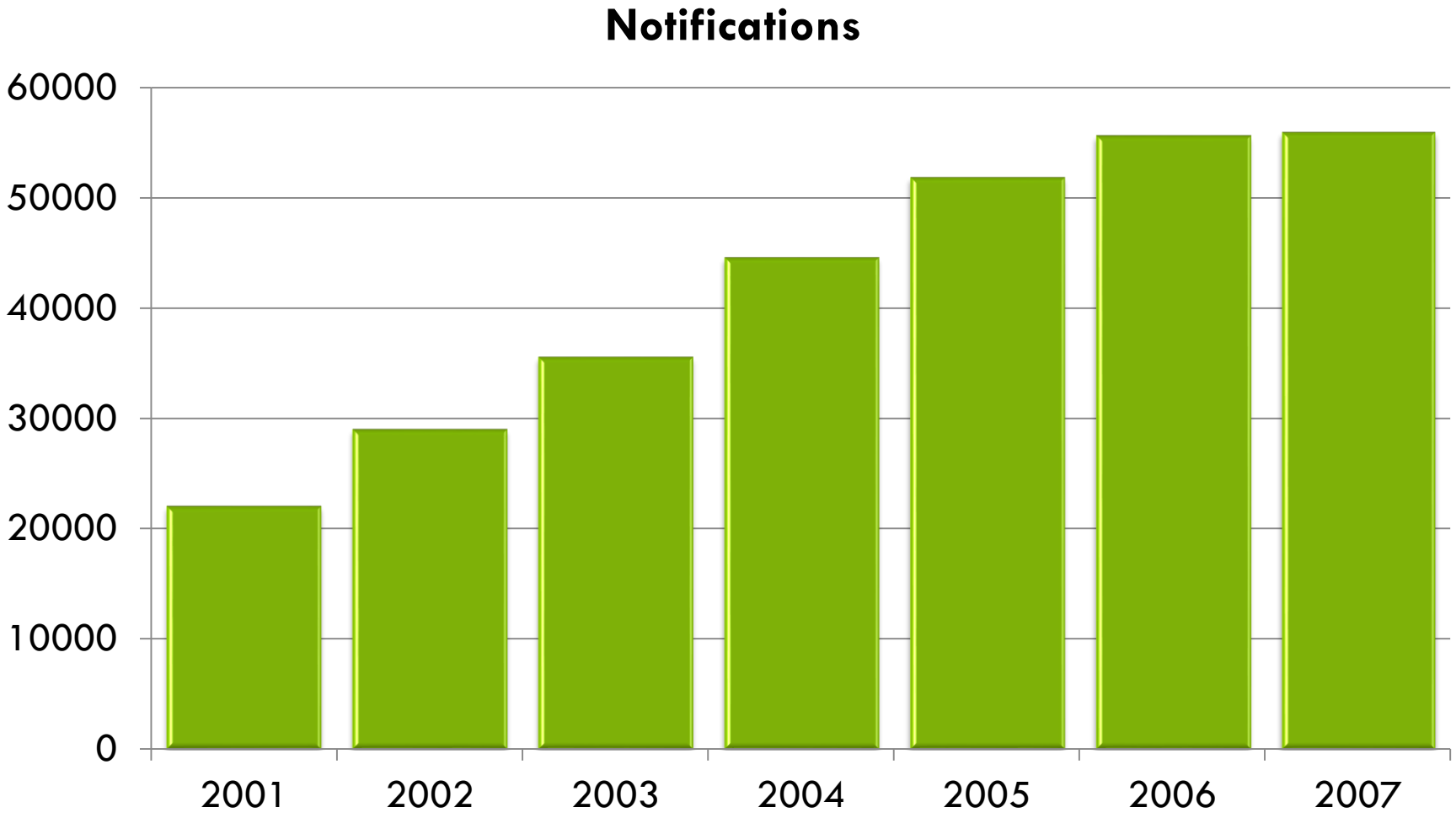
4,000 are saved by Sun plea to medics



Annual C. difficile Notifications
England 2004-2007



Guardian Unlimited

10.15am

Health secretary brands hospital superbug deaths a scandal

David Batty
Thursday October 11, 2007
Guardian Unlimited

The health secretary, Alan Johnson, today called Britain's deadliest outbreak of a hospital superbug "a scandal".


Alan Johnson. Photograph: Gareth Fuller/PA

Mr Johnson denied claims that government targets had led staff at Maidstone and Tunbridge Wells NHS trust, where 90 patients died from the bacterial infection Clostridium difficile, to neglect hygiene standards.

Speaking on BBC Radio 4's Today programme, he said: "It's a scandal. It's awful."

BBC News Sport Weather Earth Future Shop

NEWS KENT

9 March 2013 Last updated at 15:38 GMT

Maidstone NHS trust to face £1.5m C.difficile bug fine

An NHS trust in Kent is to be fined at least £1.5m after missing its target for controlling the gut infection Clostridium difficile.

Maidstone and Tunbridge Wells NHS Trust was set a yearly limit of 49 cases of the diarrhoea-inducing infection up to the end of March.

With three weeks to go, 52 cases of the superbug have already been recorded.

At least 90 patients died at Maidstone Hospital between 2004 and 2006 in a C.difficile outbreak

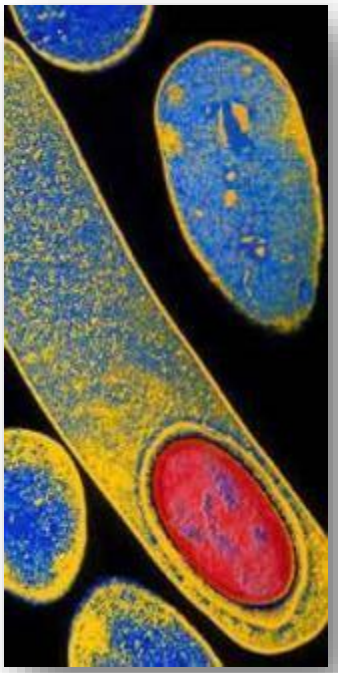
How C. difficile get so bad?

- OK, there were some changes
  - Healthcare practice
  - Patient risk profile, Age
  - Increase in Community CDI
  - Effect of new strains; notably 027

- The authors of a 2009 report “Clostridium difficile – How to deal with the problem” noted
  - ‘it is the failure to implement the guidelines described in 1994 that has contributed to the recent rise’

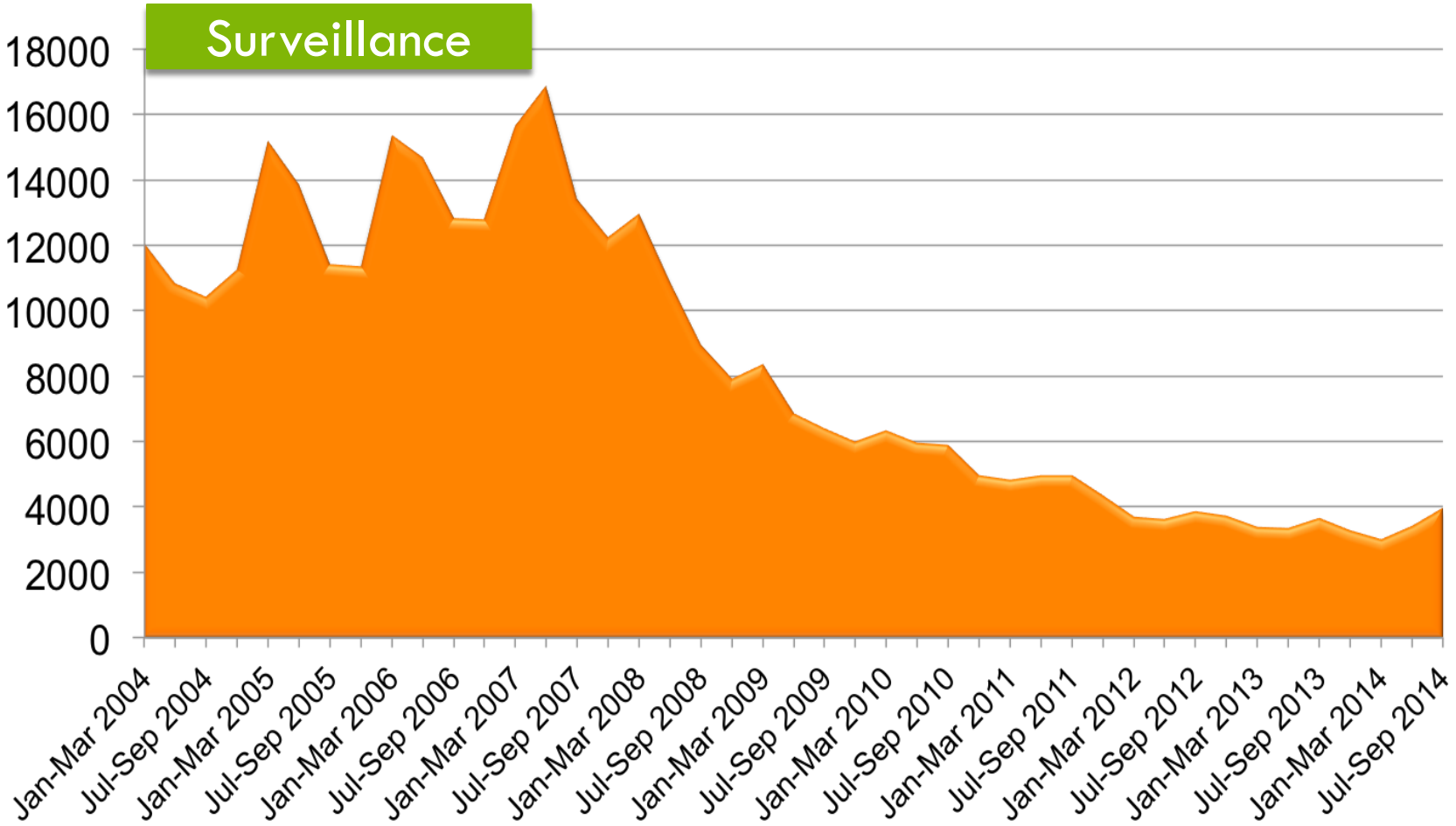
Maidstone Healthcare Commission Report

- >1000 patients infected; 90 deaths
  - Board unaware of high rates; focused on A&E target
  - Bed occupancy 90-100% and ++ moves
  - Beds close together; poorly cleaned
  - Shortage of staff; poor hand hygiene & patient care
  - Low levels of attendance at training



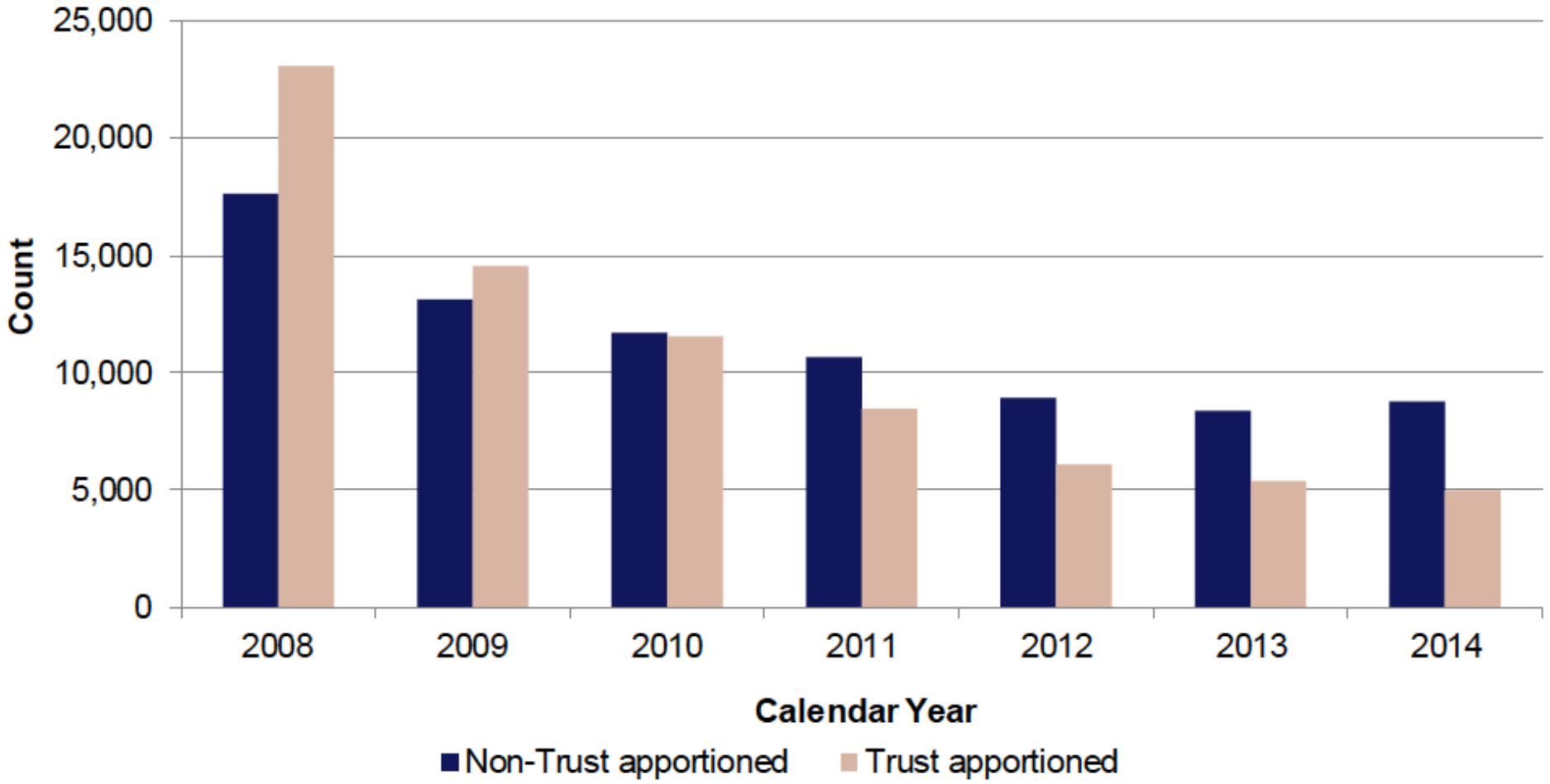
Quarterly *C. difficile*

England >2y: 2004-2014

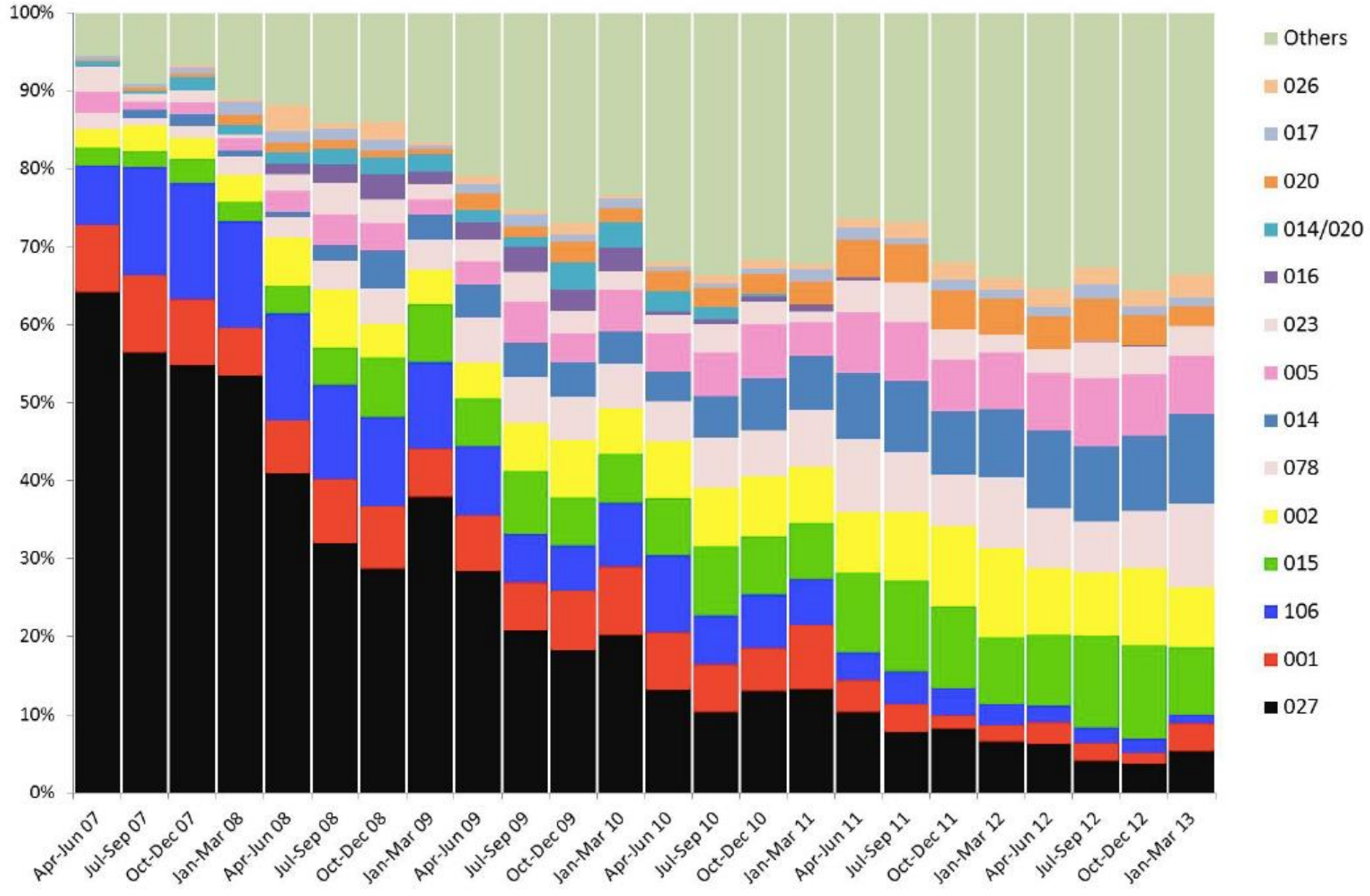


Change in Attribution 2008-14

Data source: Public Health England

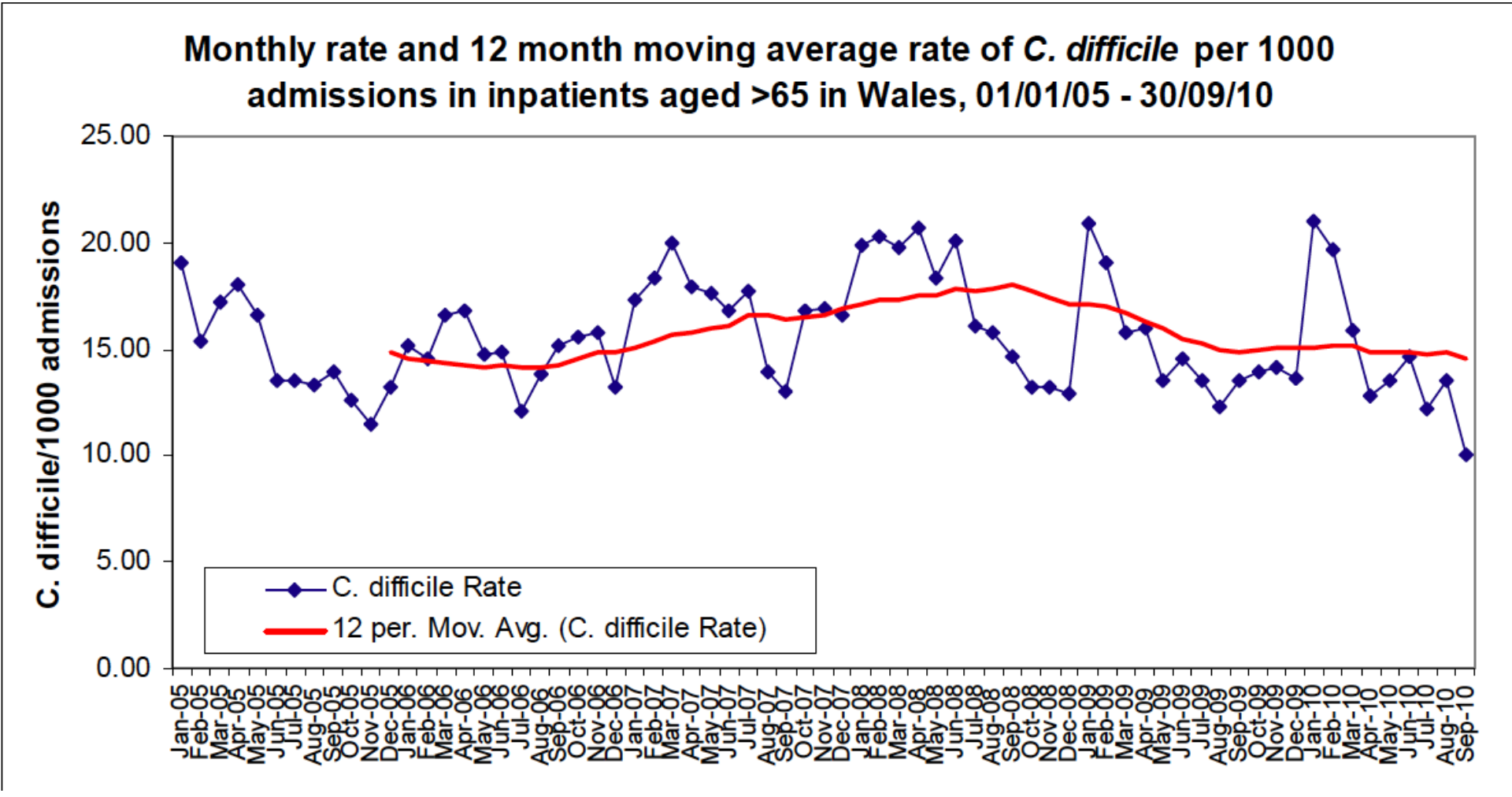


027/NAP1 in England

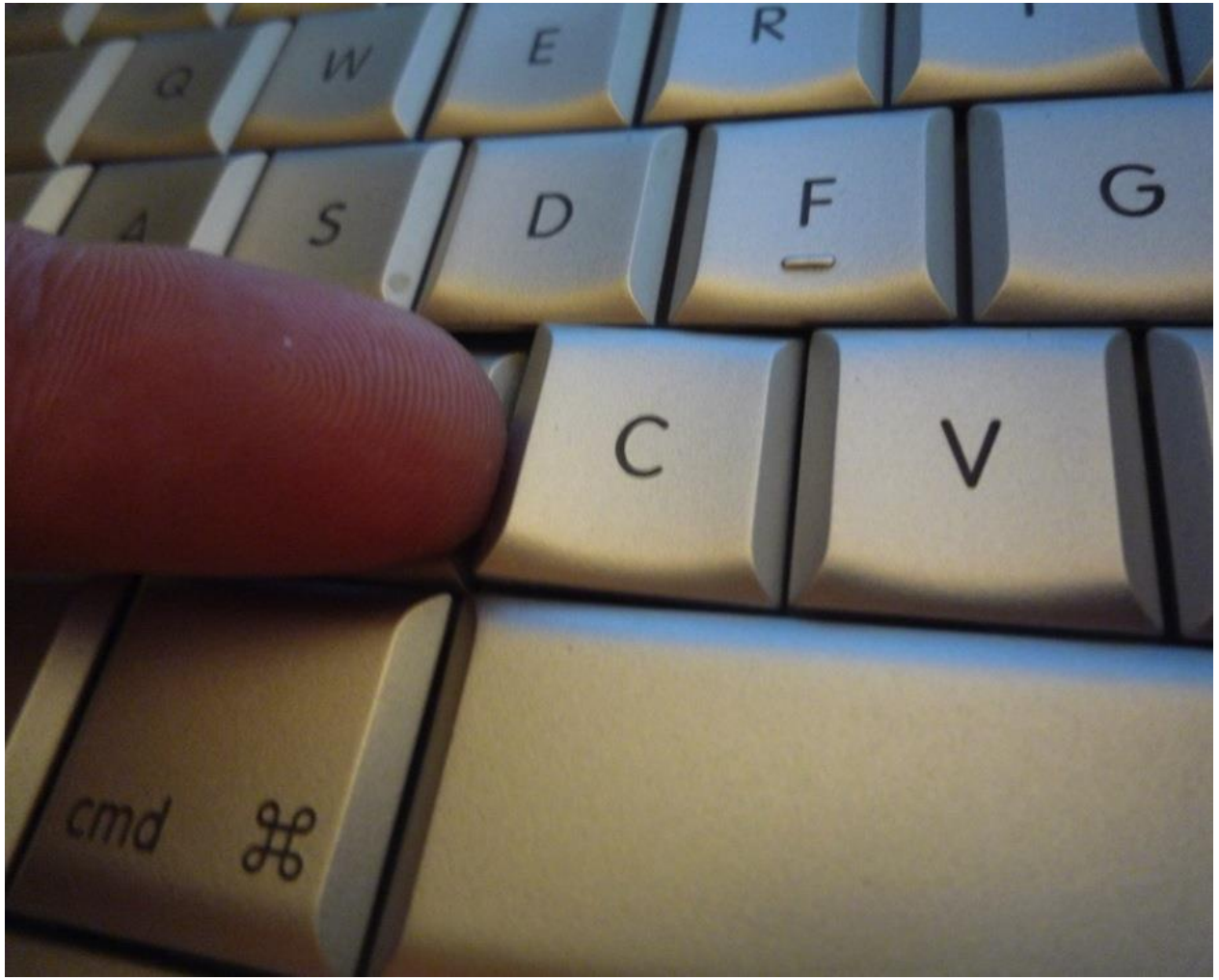


Surveillance with no Target

WHAIP Report Jan 2010

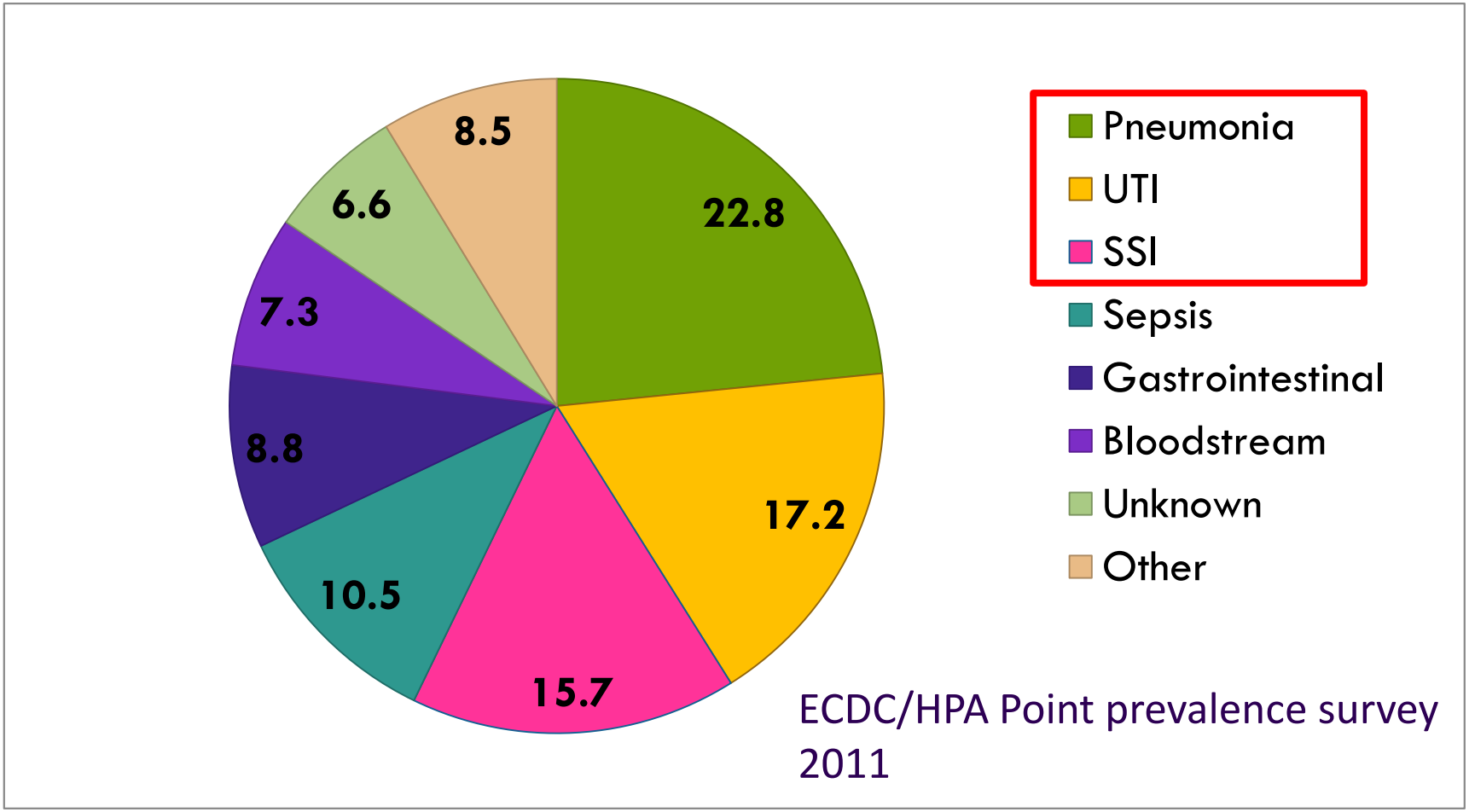


Antibicrobial Prescribing

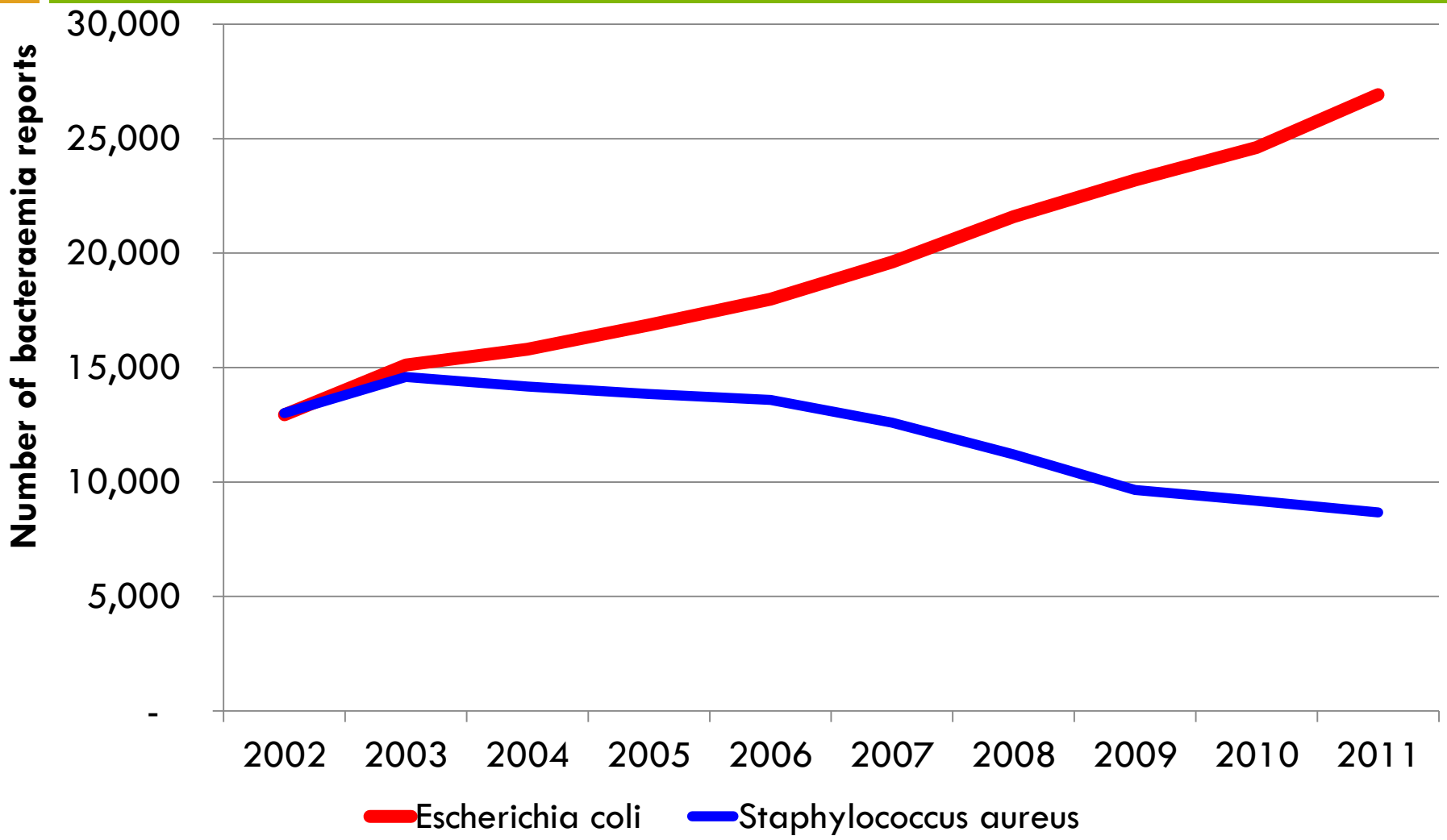


Perverse incentives

Targets not applied to the most common or serious HCAI



Problem with *E. coli* Bacteraemia



LabBase2 data, England only

Moving from Surveillance to Targets

- Once surveillance systems become a target measurement system the value of the surveillance from a scientific perspective is potentially contaminated
  - Observer bias
    - where there is subjectivity in assessing the outcome
  - Performance bias
    - where staff know that their performance is being measured

Public Reporting and a Target

- Enabled IPC Teams to get access to the parts of the organisation that previously would have been inaccessible
- We were able to influence the patient safety agenda
  - Once we stopped arguing about definitions, risk stratification etc., etc., etc.,….
  - No risk stratification for publically reported data

Potential Unintended Consequences of Public Reporting

Tunnel vision	Concentrating on clinical areas being measured to the detriment of other important areas
Suboptimization	Pursuing narrow organizational objectives at the expense of strategic coordination
Myopia	Concentrating on short-term issues & neglecting long-term view
Convergence	Placing greater emphasis on being exposed as an outlier rather than on a desire to be outstanding
Ossification	Avoiding experimentation with new & innovative approaches for fear of appearing to perform poorly
Gaming	Altering behavior to gain strategic advantage
Misrepresentation	Partaking in creative accounting & fraud

Marshall MN et al. Int J Qual Health Care 2004;16 (suppl 1):i57-i63.

The Control of MRSA in England

Duerden et al, Open Forum Infectious Diseases 2015

- Multiple major changes in practice occurred in hospitals in England during the first decade of the present millennium, in response to an extensive national, ‘top down’ IPC program
  - ‘Success’ story of the control of MRSA BSI (and CDI) is tempered by emergent HCAI threats, notably caused by Gram-negative bacilli, including multiple antibiotic-resistant strains

Did the ‘Top Down’ approach help?

- Undoubtedly
  - Big reductions in morbidity, mortality, outbreaks
- Some things could have been done better
  - Co-operation with the professional Societies
  - Opportunities for research lost forever
- Teams are stronger and have more influence
  - We may have got there eventually on our own, however thousands more would have suffered while we did it

Cards on the Table

- Nothing made a greater difference to my ability to do my job better than the setting of a target for MRSA and CDI
- ‘Top Down’ approaches can be very effective however need review and refinement
- One man made a REAL difference and I suspect he will never realise what a difference he made

My Hero