

Monitoring & Surveillance of HCAI: an update



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Timely....



Annual report on HCAI

- bloodstream infection surveillance
 - mandatory and routine
 - MRSA
 - GRE
- *C. difficile* infection
- surgical site infection surveillance (mandatory and voluntary)

Quarterly report: MRSA bacteraemia & *C. difficile*

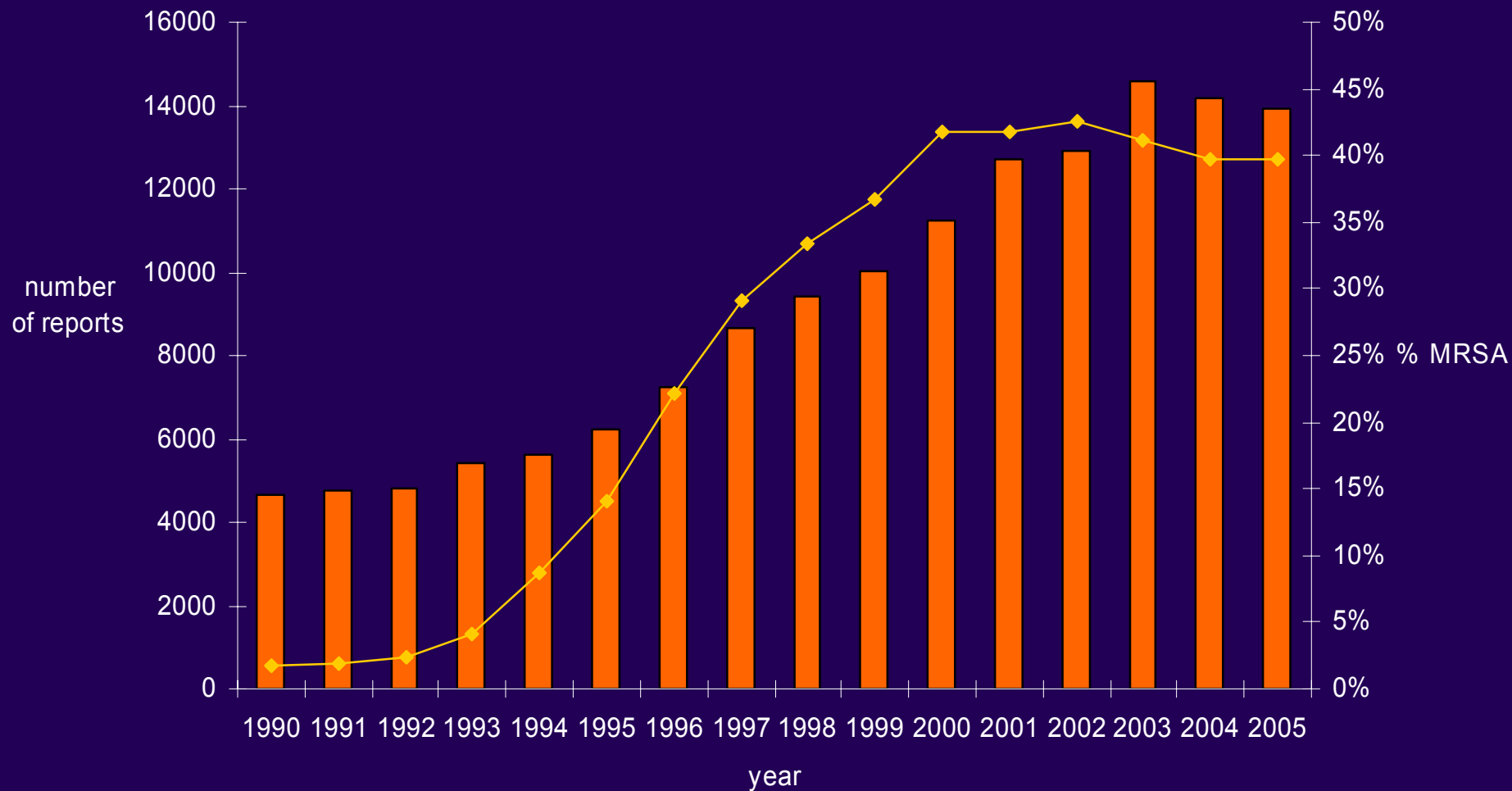
National Confidential Study of Deaths following MRSA Infection

http://www.hpa.org.uk/infections/topics_az/hai/default.htm



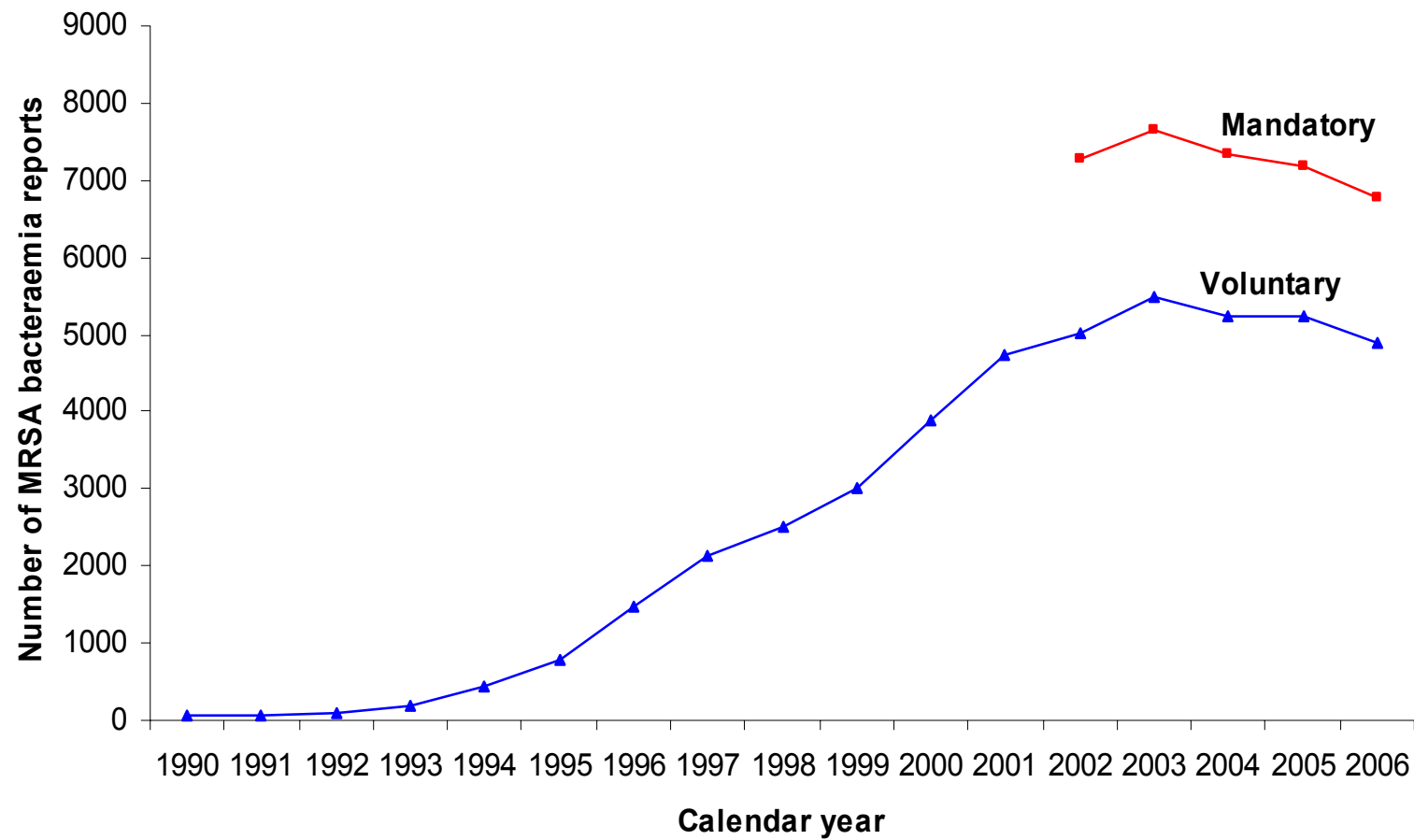
MRSA bacteraemia

S. aureus bacteraemia England 1990-2005

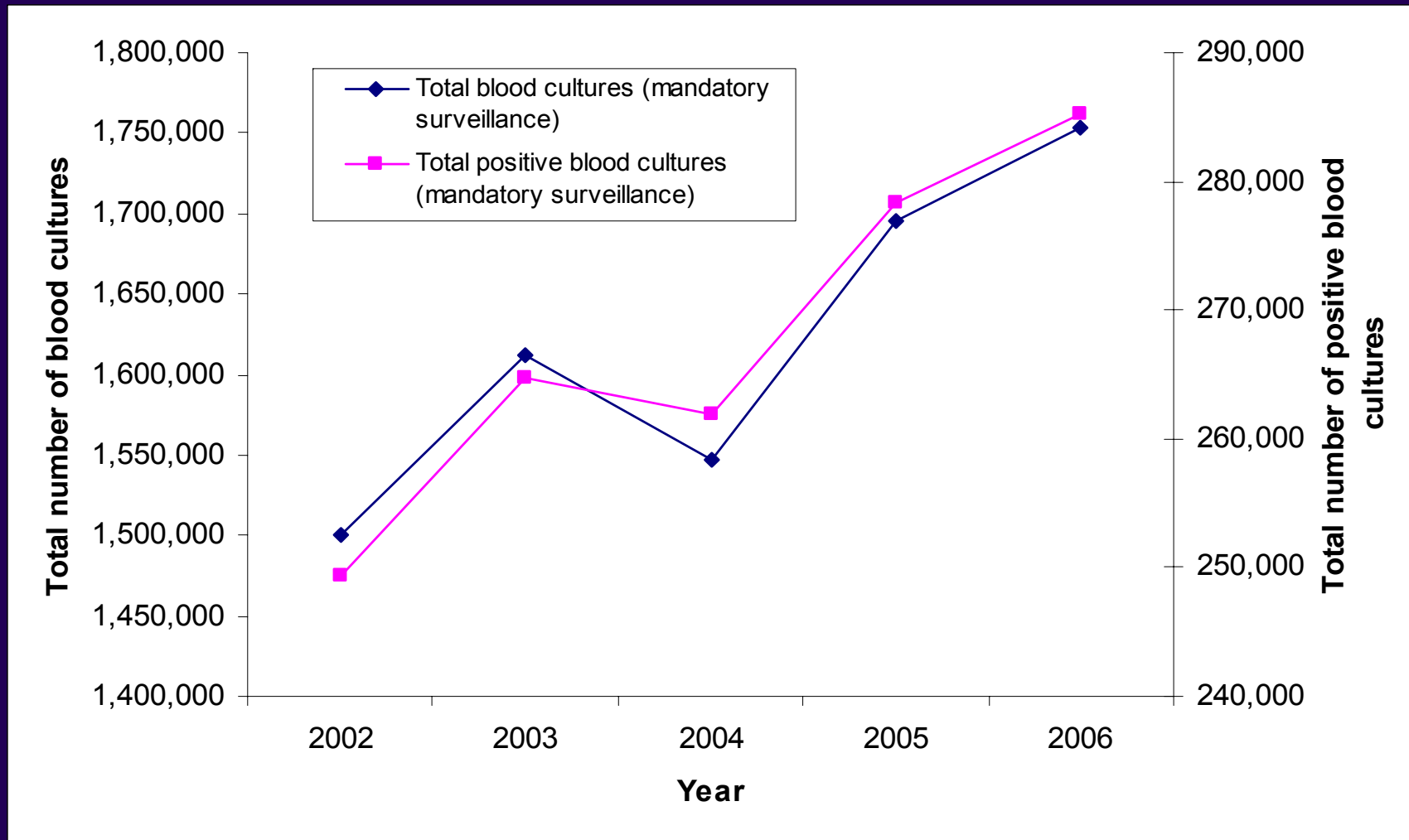


Reports of S. aureus bacteraemia — % MRSA (as a proportion of reports with methicillin susceptibility information)

MRSA: voluntary and mandatory surveillance

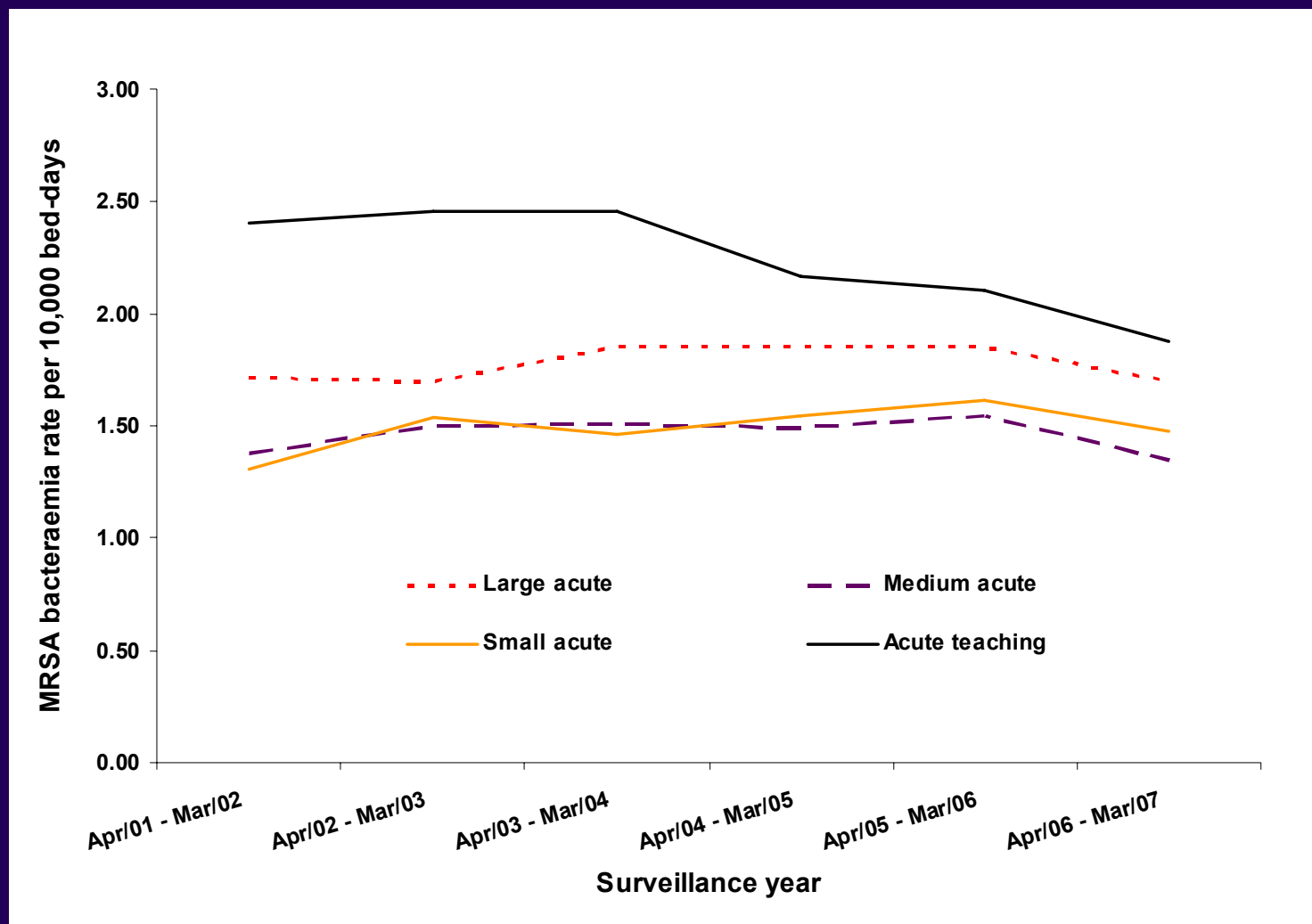


Total numbers of blood cultures taken and total positive blood cultures mandatory surveillance (2002 to 2006)

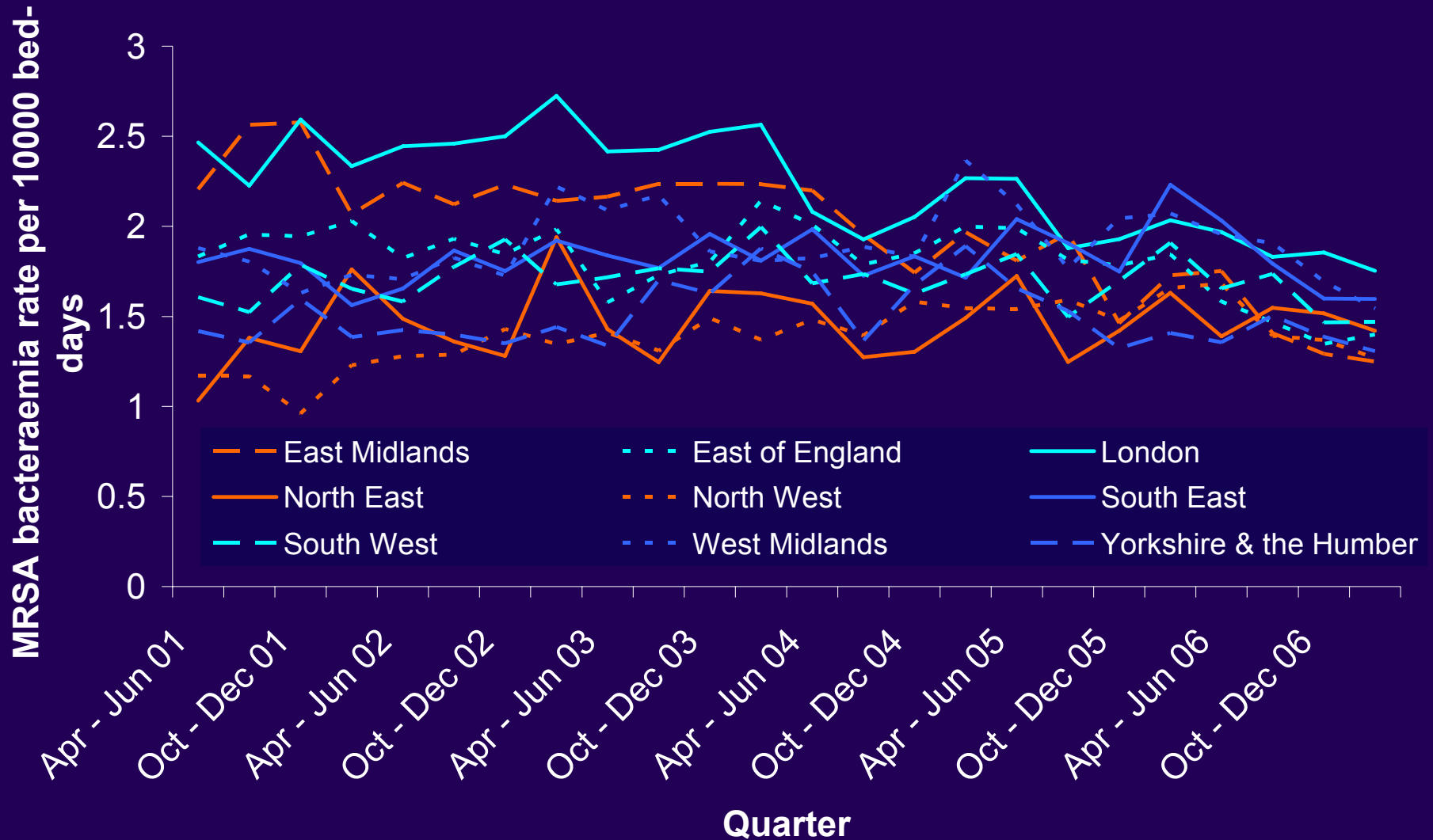


MRSA bacteraemia rate by Trust type

April 2001 to March 2007

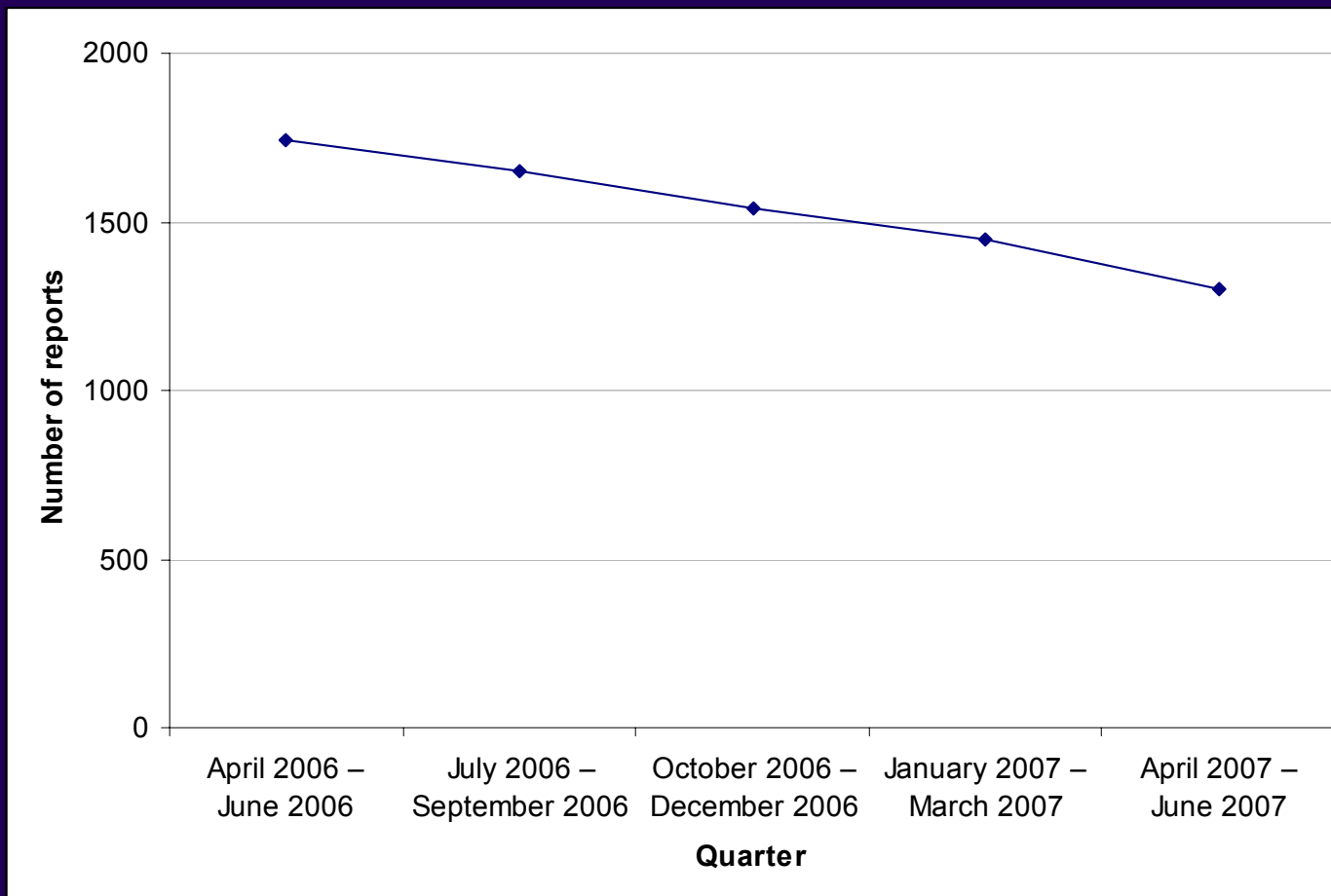


MRSA bacteraemia rate by region (mandatory surveillance)

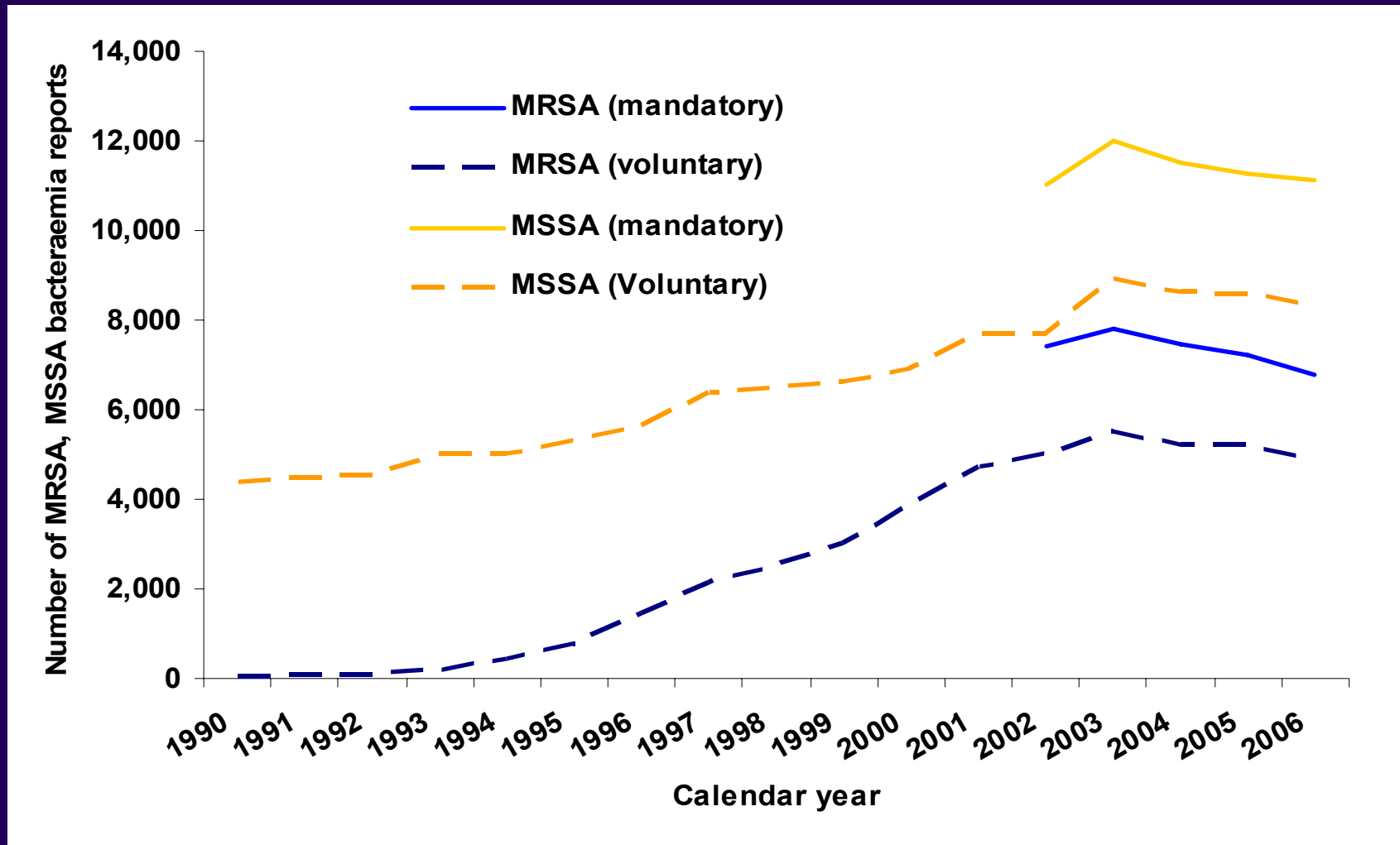


Provisional data

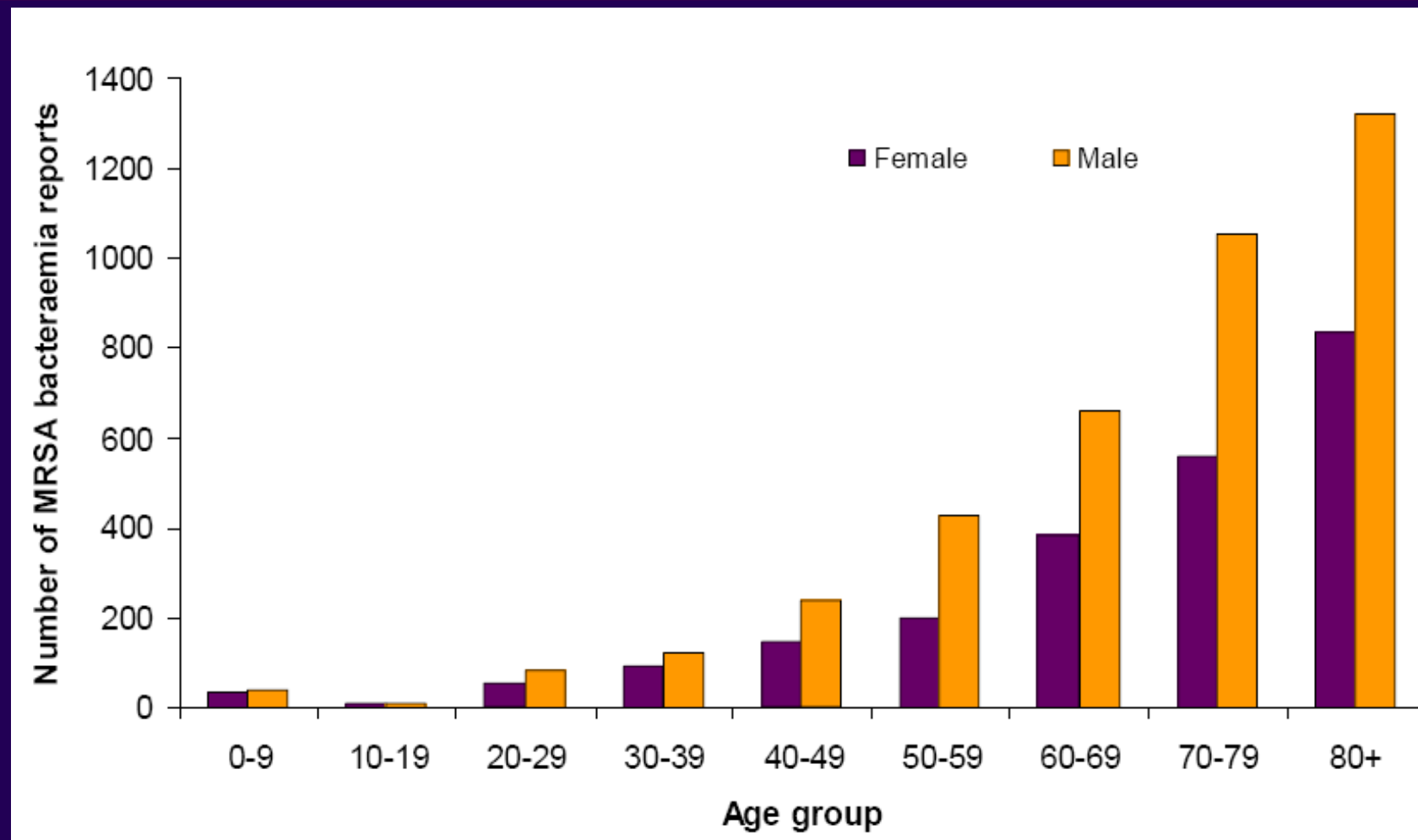
MRSA bacteraemia: quarterly picture



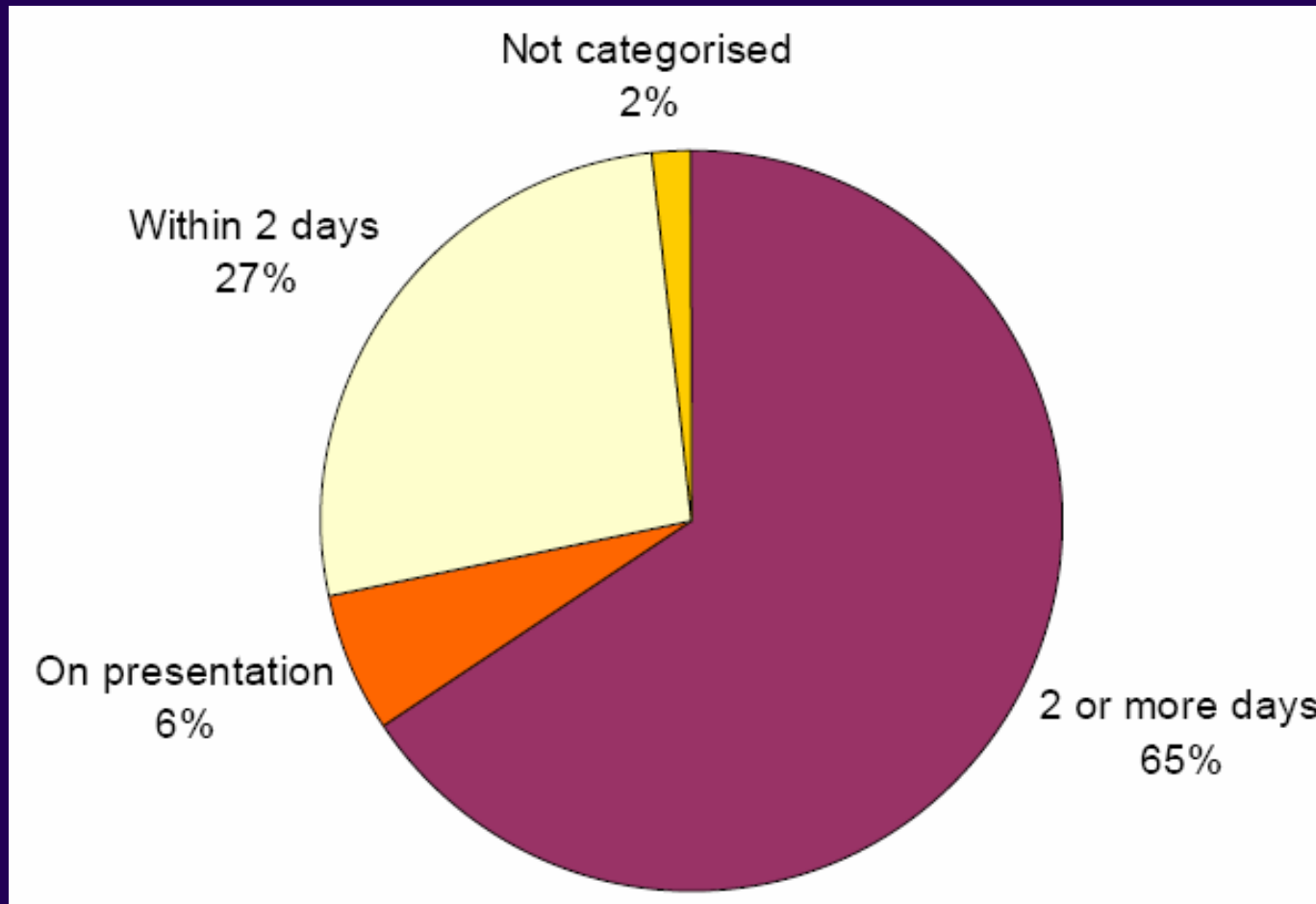
Staphylococcus aureus bacteraemia reports received under the voluntary and mandatory surveillance schemes in England, calendar year 1990 to 2006.



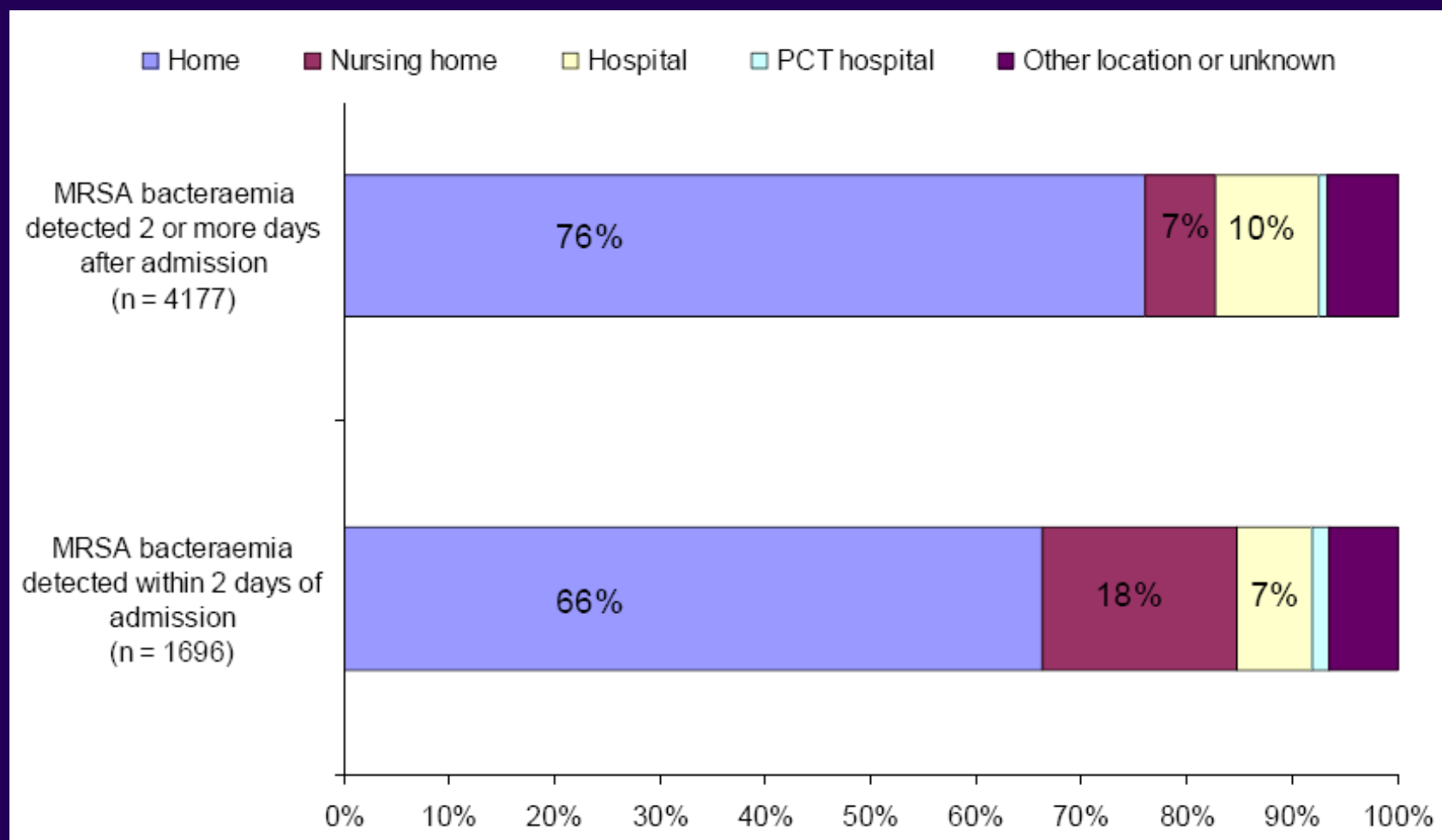
Age and sex distribution of MRSA bacteraemia, April 2006 – March 2007



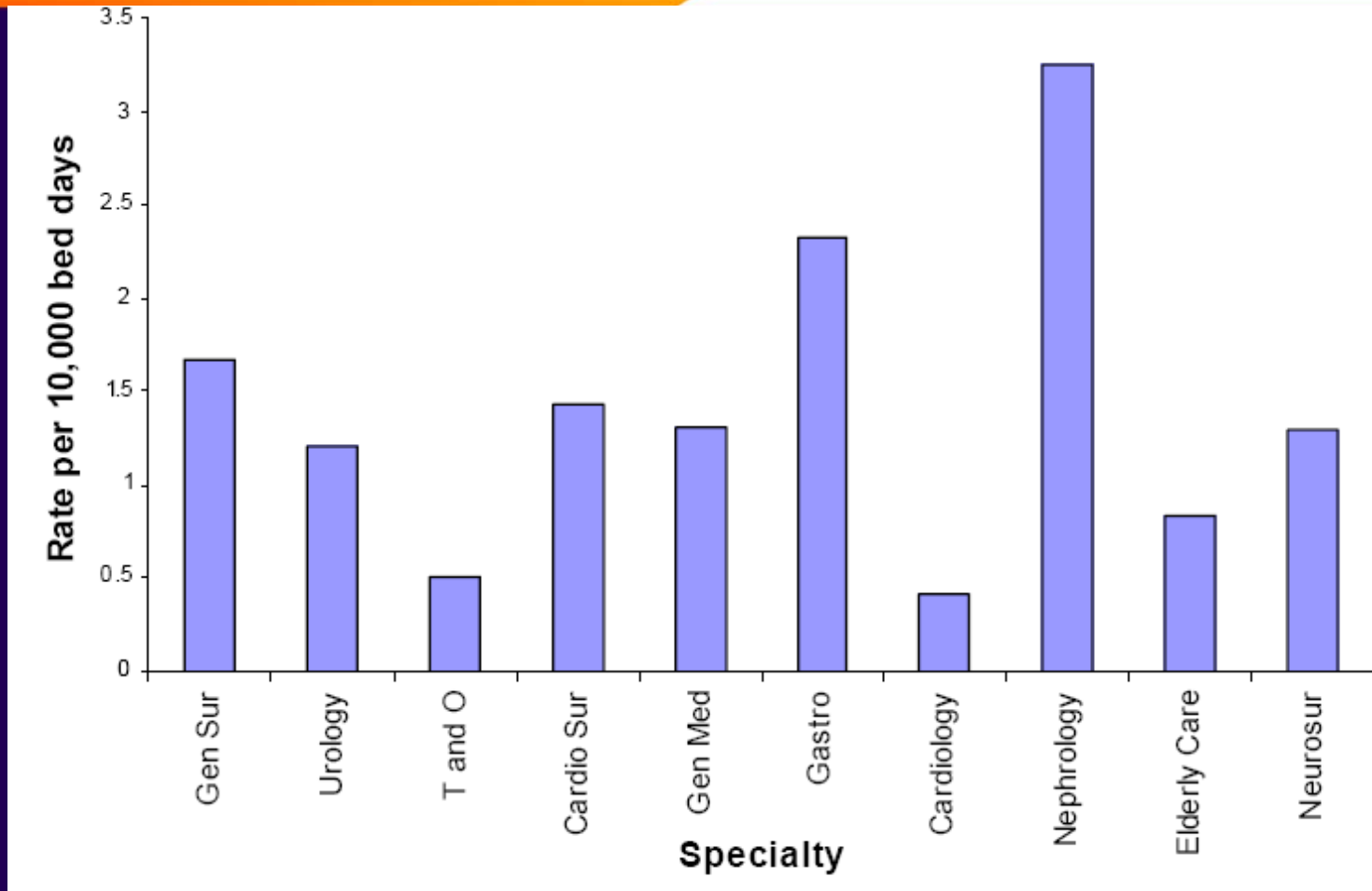
Timing of detection of MRSA bacteraemia in relation to presentation of patient to the reporting Trust, April 2006 – March 2007



Patient location prior to admission, April 2006 – March 2007



MRSA bacteraemia rate (per 10,000 bed-days) by specialty*



*Ten most commonly recorded specialties for MRSA bacteraemia detected two or more days after admission.

Source of denominator data: HES



How has this been achieved?



Mrsa Data Capture System



cases



duplicates



reports



logoff

ID

Date entered

NHS No.

Hospital No.

- Initial
- DOB
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Soundex

Sex

Region

SHA

Trust

Specimen date

Specimen was taken or received in lab

Lab where specimen processed

Patient location when specimen taken

Hospital name

Other location

Patient category

Date of admission (In-patient/emergency assessment ONLY)

Other category

Specialty

Show all Is patient on dialysis?

Augmented Care

Provenance of patient

If hospital, details

Other

If non-UK, country

Coupled with...



performance management against the target

HCAI Data Capture System



Data Sign-Off

The Department of Health requires Chief Executives to sign-off that the data for their trust on this website accords with the trust's local records.

Once signed off the relevant part of the dataset is locked and cannot be changed.

Sign-off history

Organism

Sign-off Year	Sign-off Month		Earliest sign-off date	Date signed off
2007	August	<input type="button" value="Click to sign-off"/>	01/09/2007	
2007	July	<input type="button" value="SIGNED OFF"/>	01/08/2007	17/08/2007 12:27
2007	June	<input type="button" value="SIGNED OFF"/>	01/07/2007	17/08/2007 12:27
2007	May	<input type="button" value="SIGNED OFF"/>	01/06/2007	17/08/2007 12:27
2007	April	<input type="button" value="SIGNED OFF"/>	01/05/2007	17/08/2007 12:27

< prev [next](#) >

Lock History

Lock Date	Lock By	User Locked	Date Lock Set
31/07/2007 23:59	HPANW\NBF5AJ	Mid Staffordshire General Hospitals NHS Trust [hpanw\RJD2XY]	17/08/2007 12:27
30/06/2007 23:59	HPANW\NBF5AJ	Mid Staffordshire General Hospitals NHS Trust [hpanw\RJD2XY]	17/08/2007 12:27
31/05/2007 23:59	HPANW\NBF5AJ	Mid Staffordshire General Hospitals NHS Trust [hpanw\RJD2XY]	17/08/2007 12:27
30/04/2007 23:59	HPANW\NBF5AJ	Mid Staffordshire General Hospitals NHS Trust [hpanw\RJD2XY]	17/08/2007 12:27
31/03/2007 23:59	HPANW\NBF5AJ	Mid Staffordshire General Hospitals NHS Trust [hpanw\RJD2XY]	17/08/2007 12:26

< prev [next](#) >

Achieving MRSA target



- RSU → SHAs → Trust CEs
- Improvement Teams
- increased frequency of reporting
- closely overseen by PMDU

Be clear about the aims of the surveillance programme!



If going to end up with this

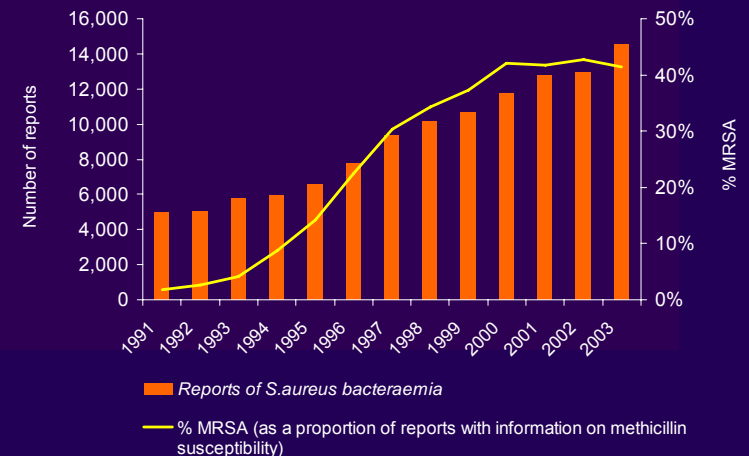


Department of Health Mandatory Bacteraemia Surveillance Scheme - MRSA bacteraemia by NHS Trust

Table 2. Data for each 6 months, 2001-2005
 * 04/05 rates per 1000 bed days are provisional as final 04/05 activity data is not yet available

2a. General Acute - alphabetical order	Apr 01 - Sep 01		Oct 01 - Mar 02		Apr 02 - Sep 02		Oct 02 - Mar 03		Apr 03 - Sep 03		Oct 03 - Mar 04		Apr 04 - Sep 04		Oct 04 - Mar 05	
Trust Name	number of MRSA bacteraemia reports	MRSA rate (per 1000 bed-days)	number of MRSA bacteraemia reports	MRSA rate (per 1000 bed-days)	number of MRSA bacteraemia reports	MRSA rate (per 1000 bed-days)	number of MRSA bacteraemia reports	MRSA rate (per 1000 bed-days)	number of MRSA bacteraemia reports	MRSA rate (per 1000 bed-days)	number of MRSA bacteraemia reports	MRSA rate (per 1000 bed-days)	number of MRSA bacteraemia reports	MRSA rate (per 1000 bed-days)	number of MRSA bacteraemia reports	MRSA rate (per 1000 bed-days)
Antee Hospitals NHS Trust	16	0.09	10	0.12	27	0.18	30	0.26	19	0.12	29	0.18	33	0.21	37	0.23
Ardsley NHS Trust	7	0.08	4	0.05	4	0.05	6	0.08	10	0.14	10	0.14	9	0.13	9	0.13
Barking, Havering & Redbridge Hospitals NHS Trust	37	0.15	55	0.23	31	0.13	46	0.19	59	0.24	57	0.23	47	0.19	51	0.21
Barnet & Chase Farm Hospitals NHS Trust	30	0.18	32	0.19	33	0.19	61	0.36	48	0.28	46	0.27	60	0.36	42	0.25
Barnsley District General Hospital NHS Trust	7	0.10	15	0.21	9	0.12	9	0.13	11	0.15	11	0.15	8	0.11	5	0.07
Baskin & Throok General Hospital NHS Trust	36	0.34	24	0.23	17	0.16	21	0.20	13	0.11	17	0.15	12	0.11	30	0.26
Bedford Hospitals NHS Trust	7	0.10	14	0.19	10	0.13	9	0.12	14	0.19	12	0.16	2	0.03	7	0.09
Blackpool, Fylde And Wyre Hospitals NHS Trust	11	0.11	33	0.34	16	0.09	24	0.13	23	0.12	41	0.22	30	0.16	32	0.17
Boston Hospitals NHS Trust	19	0.12	19	0.12	18	0.15	17	0.14	18	0.16	20	0.18	14	0.12	14	0.13
Bradford Hospitals NHS Trust	17	0.12	28	0.20	15	0.11	33	0.24	15	0.11	29	0.21	35	0.25	40	0.29
Bromley Hospitals NHS Trust	18	0.19	10	0.20	14	0.15	18	0.19	9	0.10	9	0.10	8	0.09	8	0.09
Burton Hospitals NHS Trust	18	0.27	12	0.18	12	0.17	12	0.17	4	0.06	11	0.15	8	0.11	14	0.20
Calderdale & Huddersfield NHS Trust	14	0.07	24	0.12	26	0.17	13	0.08	15	0.09	22	0.14	15	0.09	25	0.16
Chesterfield & North Derbyshire Royal Hospital NHS Trust	9	0.11	12	0.14	10	0.11	4	0.05	9	0.10	5	0.08	13	0.15	18	0.18
City Hospitals Sunderland NHS Trust	22	0.16	10	0.14	22	0.18	25	0.20	26	0.16	30	0.19	22	0.14	25	0.16
Countess of Chester Hospital NHS Trust	18	0.24	13	0.17	19	0.24	20	0.26	13	0.15	19	0.25	12	0.14	12	0.14
County Durham and Darlington Acute Hospitals NHS Trust	15	0.08	15	0.08	15	0.08	25	0.13	18	0.08	22	0.11	24	0.12	29	0.11
Dartford & Gravesham NHS Trust	16	0.22	14	0.19	20	0.26	16	0.21	12	0.16	12	0.16	21	0.28	10	0.13
Doncaster & Bassettlaw Hospitals NHS Trust	10	0.07	17	0.11	17	0.09	16	0.09	21	0.11	25	0.14	14	0.08	13	0.07
Dudley Group of Hospitals NHS Trust	14	0.10	13	0.10	11	0.08	6	0.05	18	0.14	13	0.10	17	0.13	12	0.09
Ealing Hospital NHS Trust	22	0.33	18	0.27	18	0.26	20	0.29	19	0.27	17	0.24	13	0.18	13	0.18
Essex & North Herts Acute NHS Trust	42	0.26	30	0.18	47	0.31	39	0.26	24	0.16	32	0.22	25	0.17	25	0.17

you don't want to measure it like this



Refinements



9th June 2005

**MANDATORY SURVEILLANCE OF
METHICILLIN RESISTANT
STAPHYLOCOCCUS AUREUS (MRSA)
BACTERAEMIAS**

Dear Colleague

We are writing to inform you of changes to the mandatory surveillance system for *Staphylococcus aureus* since our previous communication on 9 June 2003¹. These changes will provide a better evidence base for national policy and will help you better interpret your local situation so that you can take appropriate targeted action to control these infections.



**From the Chief
Medical Officer and
the Chief Nursing
Officer**

Sir Liam Donaldson
MSc,MD,FRCS(Ed),FRCP,FFPHM

Professor Christine Beasley CBE
RN

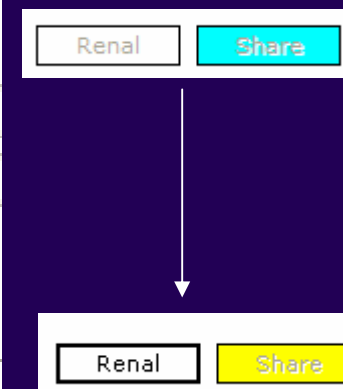
Mandatory Enhanced MRSA Bacteraemia Surveillance Scheme – Electronic Reporting

We have asked the Health Protection Agency to develop a new enhanced reporting system for MRSA bacteraemia surveillance, which will allow the capture of more comprehensive data on MRSA. We believe this enhanced system will be helpful in giving Trusts a more accurate picture of their performance and in building up a better evidence base for prevention of infections. 21 Trusts are already using this system on a pilot basis in preparation for rolling out to all acute Trusts by October. A more detailed description of the aims and content of this enhanced reporting scheme for MRSA is given in the Annex.

Renal cases with established RF



The screenshot shows a web browser window with a dialog box titled "Share Record -- Webpage Dialog". The dialog box has a blue title bar and a white background. It contains the following text: "The patient is on established dialysis - please share the record after saving." Below the text are two buttons: "OK" and "Help". The "Help" button is highlighted with a dotted border. The address bar of the browser shows the URL "http://193.63.93.177/mrsa/App/ShareWarnDialog.htm". At the bottom of the browser window, there is a dropdown menu labeled "Is patient on dialysis?" with the selected option "Yes: Established RF".





HCAI Data Capture System

  cases  duplicates  reports logoff  

ID

Date entered

Dialysis Units

Filter by Region

-
- Addenbrookes Hospital (Cambridge)
- Arrowe Park Hospital
- Barts and the London Hospital
- Basildon Hospital
- Birmingham Childrens Hospital
- Bristol Royal Hospital for Children
- Broomfield Hospital
- Colchester General Hospital
- Countess of Chester Hospital

Current share

Dialysis Units	Current share
<p>Filter by Region <input type="text" value="Yorkshire & Humber"/></p> <ul style="list-style-type: none">Hull Royal InfirmaryLeeds General InfirmaryNorthern General Hospital (Sheffield)St James's University Hospital (Leeds)St James's University Hospital (Paediatric)St Lukes Hospital (Bradford)York District General Hospital	<p><input type="button" value="Share ->"/> <input type="text" value="York District General Hospital"/></p> <p><input type="button" value="<- Un-share"/></p>

Renal unit gets email alert

Further enhancements



MRSA:

- renal developments
- source of the bacteraemia
- ***risk factors: bigger focus***

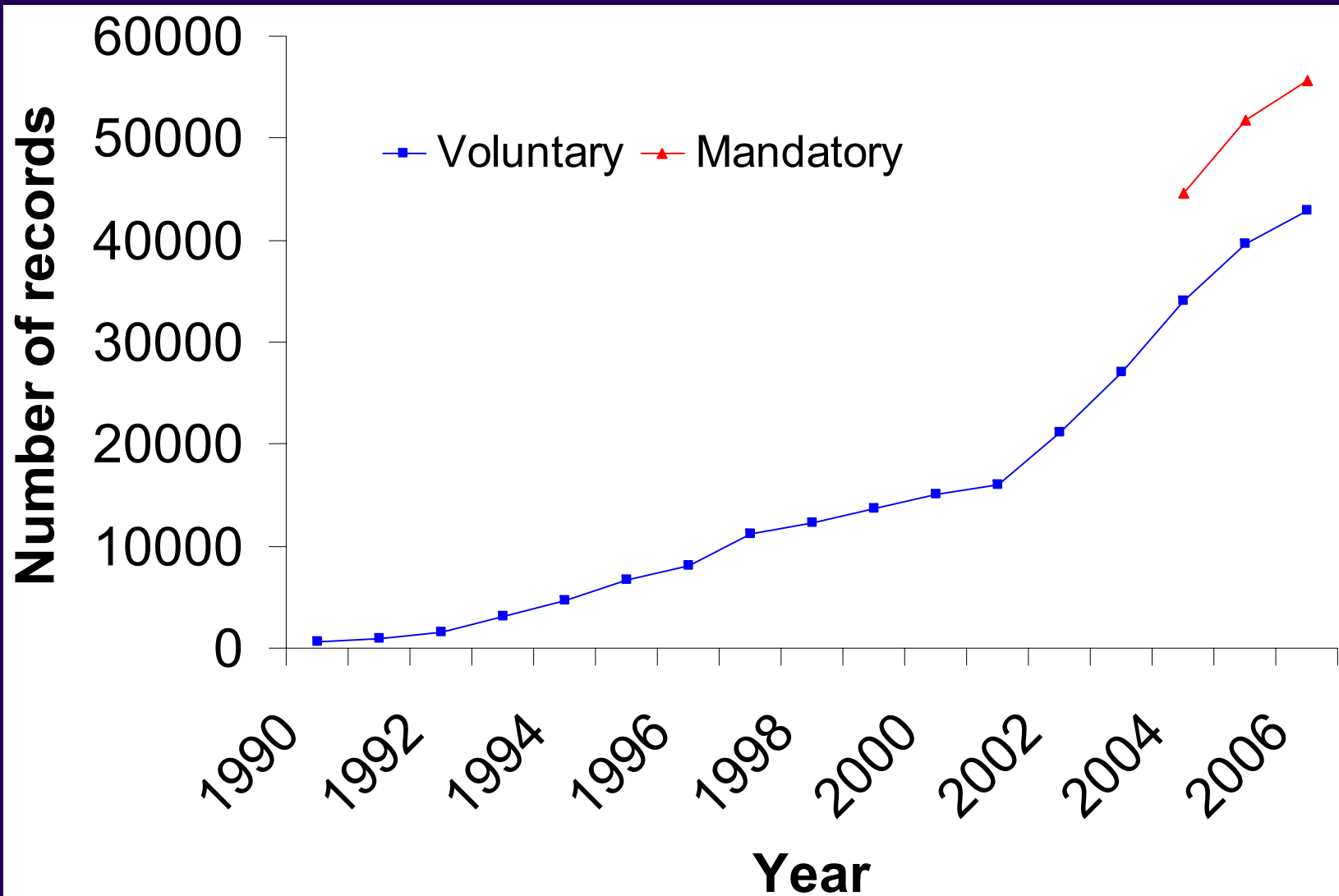


***C. difficile* associated disease**

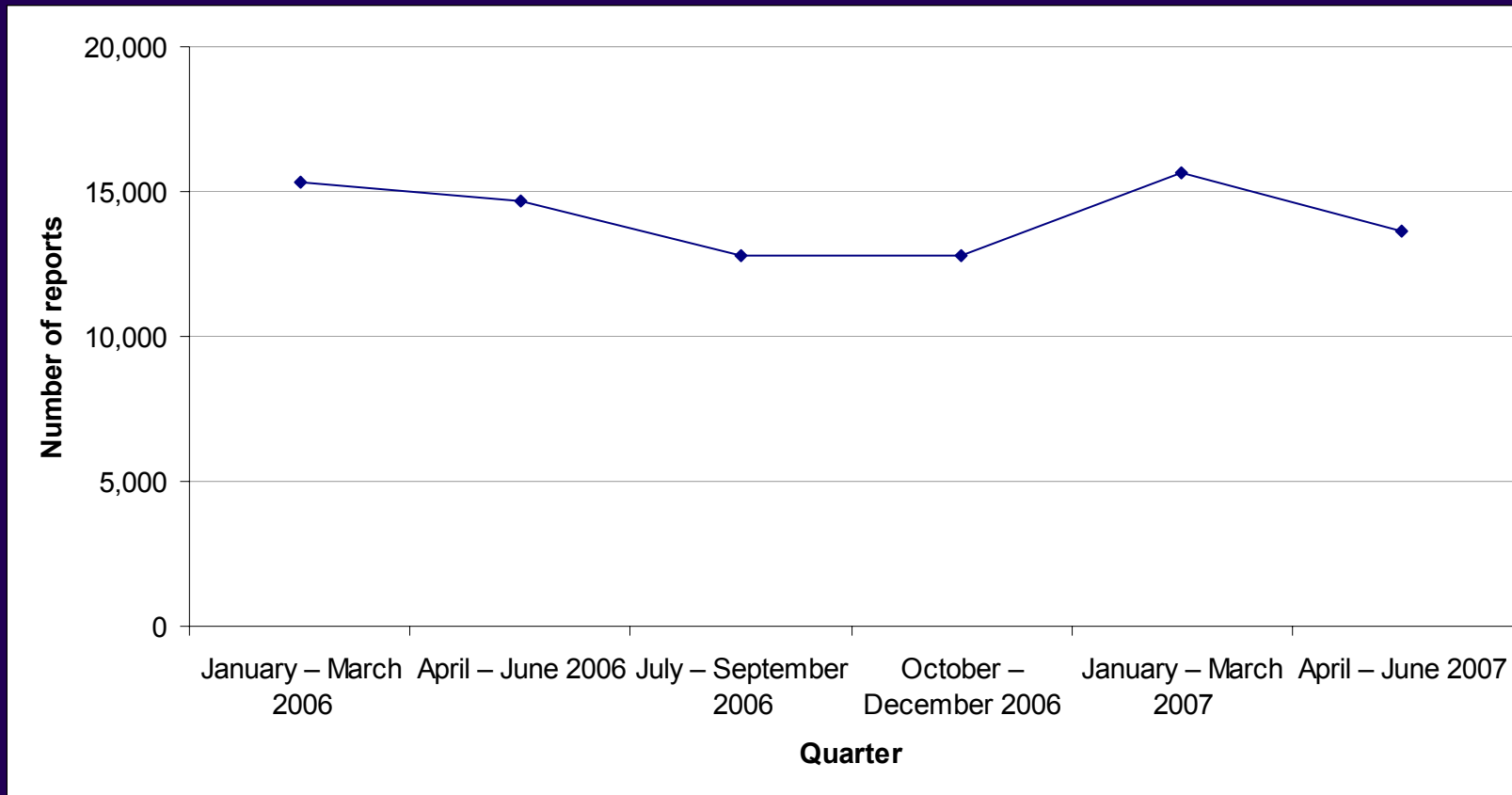
C. difficile reports in patients aged ≥ 65 years



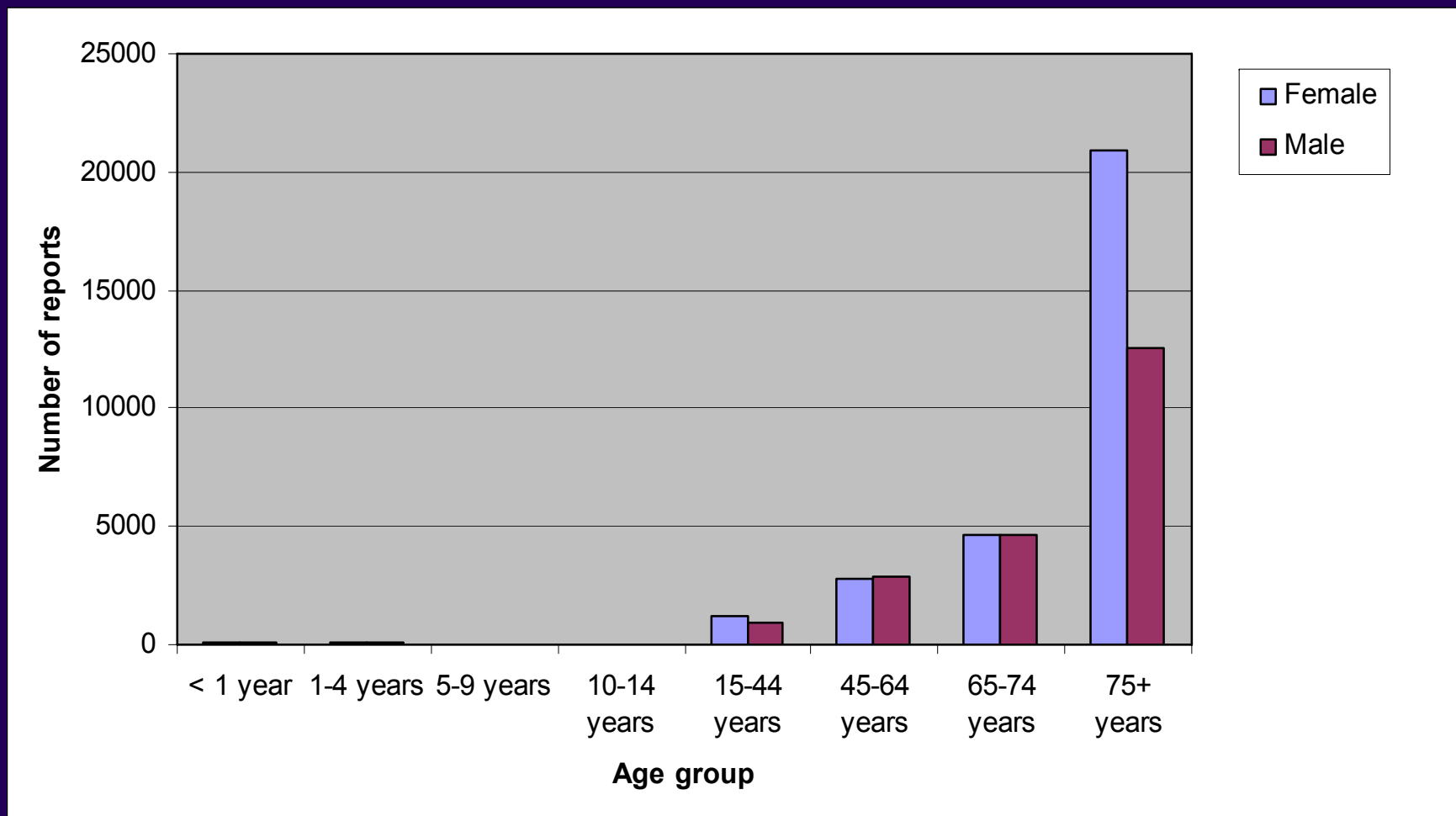
1990-2006



C. difficile: quarterly picture (≥ 65 years)



Age and sex distribution of *C. difficile* reports, January to December 2006 (voluntary surveillance)



***C. difficile*: no. of cases per 1,000 bed-days
patients aged 65 years and over: 2004-6**



Trust category	2004	2005	2006
Large acute	1.90	2.18	2.24
Medium acute	1.88	2.25	2.38
Small acute	2.07	2.50	2.85
Acute teaching	1.97	2.21	2.47
Acute specialist	0.90	0.76	0.87

***C. difficile* surveillance**



Lots of changes underway.....

- **increasing focus**
- **national target**
- **changes to the surveillance**
 - **Jan 2004 to Mar 2007: quarterly aggregate returns**
 - **April 2007: Enhanced surveillance - real-time web-enabled data capture system**
 - **wider age range**
 - **refinements to dataset and definitions**
- **caveats**

GRE bacteraemia

GRE bacteraemia reports mandatory surveillance 2003-2006



Reporting year	No. of GRE bacteraemia reports
Oct 2003 – Sept 2004	628
Oct 2004 – Sept 2005	758
Oct 2005 – Sept 2006	903

No. of GRE bacteraemia by Trust



Reporting year	Trusts reporting bacteraemia		
	0	1 to 10	> 10
Oct 2003 – Sept 2004	75	83	14
Oct 2004 – Sept 2005	54	96	22
Oct 2005 – Sept 2006	41	111	20

Surgical Site Infection Surveillance

All categories of surgery: 2002-2007

(voluntary and mandatory surveillance)



Hospital participation in broader SSI surveillance increasing

- 261 hospitals
- 260,671 operations
- 5,113 SSIs

Rates of SSI: 0.7 to 8.1 infections per 1000 post-op days

- highest in categories of surgery where the likelihood of microbial contamination at the surgical site is high e.g. small and large bowel surgery
- risk increases as no. of risk factors increases
- for most categories of surgery, there has been a downward trend in the rate of SSI

Mostly superficial infections

S. aureus accounted for 39% of SSI (64% were MRSA)

Focus on orthopaedics



- 3rd year of mandatory surveillance
- rates decreased between 2nd and 3rd year in 3 out of the 4 orthopaedic categories - a continued decrease since the mandatory surveillance began.
- rates very low for planned surgery eg hip and knee prostheses – 0.9 and 0.5%
- comparable with other European countries
- rates highest in hip hemiarthroplasty (3.6%) ~ patients at greater risk of infection + longer post-operative stay
- other points similar

Confidential Study of Deaths following MRSA Infection



- joint study with Office for National Statistics
- funded by DH
- *‘Winning Ways’*
- qualitative
- patient and institutional factors in deaths after MRSA infection
- small, stratified random sample
- identify potentially avoidable or amenable factors

What it does not do



- did not compare patients with and without MRSA infection
- small – cannot be extrapolated to Trusts across England as a whole

➔ Preliminary work to establish a robust methodology
+
Indicate areas requiring further work

Findings



56 cases in 23 hospitals reviewed by expert panel (pilot and main phases)

- 80% over 70 yrs (only 1 under 50 yrs)
- significant co-morbidities (2 or more in $\frac{3}{4}$)
- life expectancy < 1 yr in $\frac{3}{4}$ (< 1 month in $>1/3$ in main phase)
- several previous admissions
- mention on death certificates: both directions
- source of infection: often invasive devices
- shortcomings identified, but did not affect outcome
- good aspects: microbiologist involvement

Conclusions



- pioneering developments
 - enhanced web-based surveillance
 - performance management
 - different style of public health intervention
- pace relentless
- can be painful
- success with MRSA bacteraemia
- international interest
- *C. difficile?*