

Statistical bulletin

# Deaths involving MRSA: 2008 to 2012

Deaths where Meticillin-resistant Staphylococcus aureus (MRSA) was mentioned on the death certificate by sex, age group and whether the death occurred in hospital or elsewhere.



Contact:  
Olugbenga Olatunde  
mortality@ons.gsi.gov.uk

Release date:  
22 August 2013

Next release:  
To be announced

## Table of contents

1. [Key findings](#)
2. [Summary](#)
3. [Background](#)
4. [Use of MRSA data](#)
5. [Results](#)
6. [Place of death](#)
7. [Methods](#)
8. [Results on the Office for National Statistics website](#)
9. [References](#)
10. [Background notes](#)

# 1. Key findings

- The number of death certificates mentioning Meticillin-resistant Staphylococcus aureus (MRSA) fell by 20% from 364 in 2011 to 292 in 2012
- Of the 292 death certificates mentioning MSRA, 38 (13%) also identified this organism as the underlying cause of death
- MRSA death rates have consistently fallen in recent years. The latest figures show that rates decreased by 79% in males and 76% in females between 2008 and 2012
- In the period 2008–12, MRSA death rates increased with age and were higher for males than for females
- In the period 2008–12, MRSA was involved in 0.1% of all deaths and 0.2% of all hospital deaths

## 2. Summary

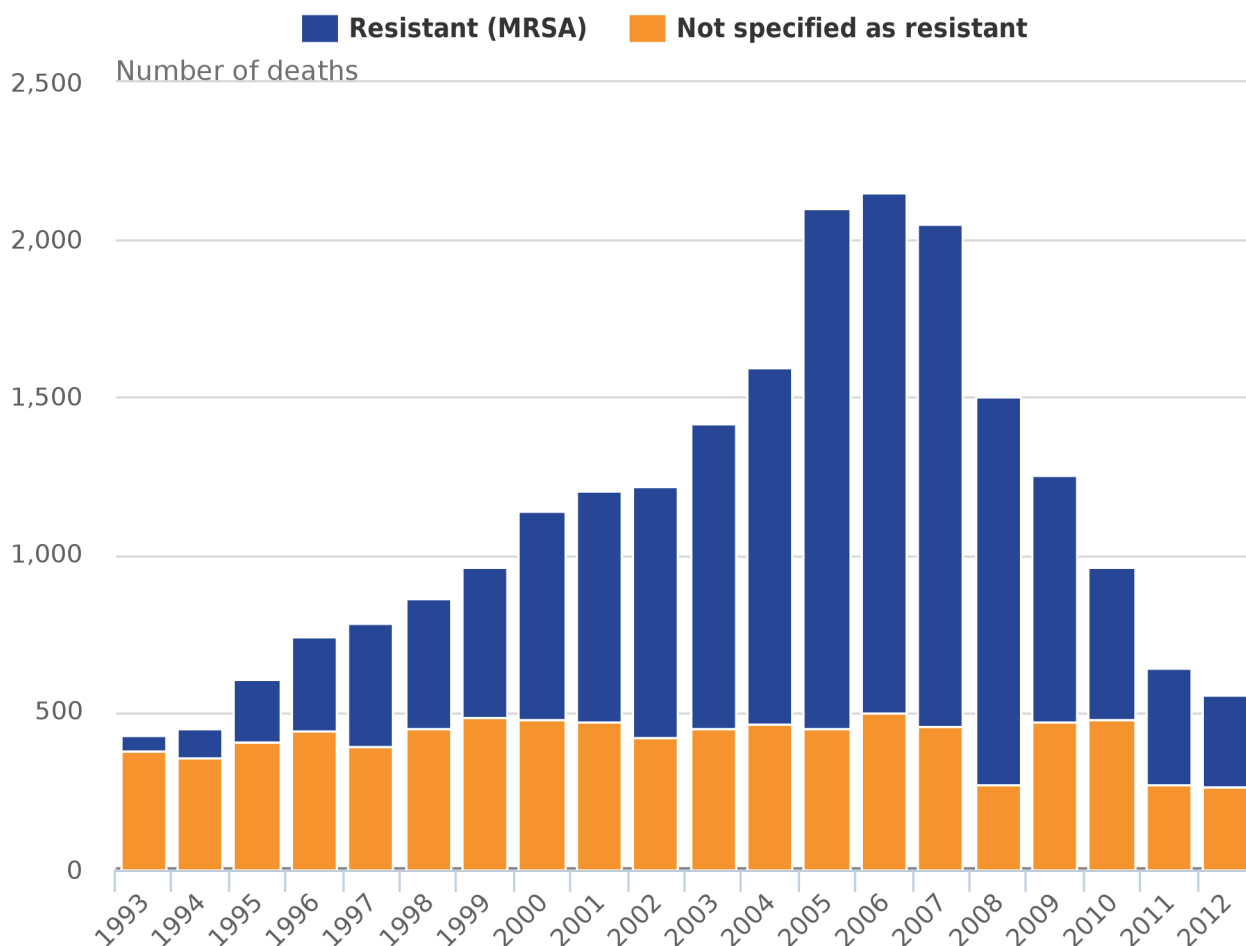
Meticillin-resistant Staphylococcus aureus (MRSA) is a type of Staphylococcus bacteria that is resistant to antibiotics known as beta-lactams. Staphylococcus aureus (*S. aureus*) bacteria can cause mild to life threatening disease if there is an opportunity for it to enter the body through broken skin or a procedure requiring the use of an invasive medical device.

This bulletin presents the latest figures for deaths where MRSA was mentioned or was identified as the underlying cause of death on death certificates. Figures are presented for England and Wales by sex, age group and place of death. Comparisons are made between data for 2012, the latest year, and previously published data from 1993 onwards. Information is given about the context and use of the statistics, and the methods used to produce them.

Figures are based on deaths registered in each calendar year rather than those occurring in each year. Since the majority of deaths involving MRSA registered in 2012 also occurred in the same year, registration delays are likely to have no impact on the findings in this bulletin. Please see the section on registration delays for further information.

ONS recently revised mid-2002 to 2010 population estimates in light of the 2011 Census. MRSA death rates relating to this period have therefore been revised and may differ from previously published figures.

**Figure 1: Number of death certificates mentioning Staphylococcus aureus: by meticillin resistance, England and Wales, 1993 to 2012**



Source: Office for National Statistics

**Notes:**

1. Figures for England and Wales combined include deaths of non-residents. When presented separately, data for each country exclude non-residents.
2. Figures are for deaths registered in each calendar year.

### 3. Background

*S. aureus* is a common type of bacteria (germ) found on the skin and in the nostrils of about a third of healthy people without it causing any harm to them ([HPA, 2010](#)).

It can cause disease if there is an opportunity for it to enter the body through broken skin or a procedure requiring the use of an invasive medical device ([HPA, 2013](#)). If the bacteria enter the body, mild to life-threatening illnesses may then develop. These include skin and wound infections, infected eczema, abscesses or joint infections and pneumonia. It also has the potential to induce infection of the bone (osteomyelitis), infections of the heart valves (endocarditis) and bacteraemia (blood stream infection), leading to infections in any of the major organs of the body ([HPA, 2013](#); [WHO, 2013](#)). *S. aureus* is also responsible for many serious community- and hospital-acquired infections, being the most frequently isolated bacterial pathogen from patients with hospital-acquired infections, especially those with implants or prosthetic devices ([WHO, 2013](#)).

Most strains of *S. aureus* are sensitive to the more commonly used antibiotics, and infections caused by them can be effectively treated. However, some have developed resistance to these antibiotics and often require different types of antibiotics to treat them. MRSA is a type of *S. aureus* bacteria that is resistant to antibiotics known as beta-lactams. This group of antibiotics include meticillin and other more common antibiotics such as oxacillin, penicillin and amoxicillin ([CDC, 2010](#)).

The concern about MRSA is in part due to the fact that it shows a higher degree of drug resistance than other types of *S. aureus* and also because it has become particularly associated with hospital acquired infections ([Public Health Wales, 2011](#)). There is also growing concern about community-acquired MRSA in some parts of the world, with studies ([Herold et al. 1998](#); [Salmenlinna S, Lyytikäinen O and Vuopio-Varkila J, 2002](#)) suggesting that this type of MRSA can be found in otherwise healthy people with no previous contact with healthcare facilities or hospitalised persons.

## 4. Use of MRSA data

Incidence and mortality data for *S. aureus* and MRSA infections in England and Wales are used by various organisations, including the Department of Health (DH), Health Protection Agency (HPA), and Public Health Wales to highlight the burden of MRSA and to monitor and evaluate intervention programs aimed at reducing this burden. They are also used by local health boards (LHBs) and individual healthcare establishments.

In England, the Operating Framework for the NHS is the document which sets out the planning, performance and financial requirements for NHS organisations and the basis on which they will be held to account.

To reflect the NHS's increased focus on controlling healthcare associated infections, the [NHS Outcomes Framework 2013/14 \(DH, 2012\)](#) highlights, 'Treating and caring for people in a safe environment and protecting them from avoidable deaths,' as one of the domains against which performance is assessed. One of the improvement areas identified as being important in achieving this goal is the reduction in the incidence of MRSA.

Of particular interest is the reduction of MRSA bloodstream infections as these are more common in healthcare settings and are more likely to be associated with undesirable outcomes. In 2001, the HPA developed a mandatory MRSA surveillance scheme on behalf of the DH to monitor trends and enable epidemiological analyses of MRSA bloodstream infections data.

Data gathered from the surveillance scheme has shown that there have been large reductions in the reports of MRSA bloodstream infections in recent years. For example, in 2012 there were 934 MRSA bloodstream infection reports made; a 21% reduction on the previous year at 1,187 ([PHE, 2013](#)).

In Wales, surveillance of MRSA bloodstream infections is managed by the Welsh Healthcare Associated Infection Programme (WHAIP), part of Public Health Wales. In recent years there has been a decrease in the number of cases in Wales. For example, the number of MRSA bloodstream infections fell by 11% from 229 in 2010 to 203 in 2011. Similarly the number of *S. aureus* bloodstream infection cases fell by 3% from 893 to 864 over the same periods ([Public Health Wales, 2013](#)).

Deaths involving *S. aureus* and MRSA statistics have been produced by the Office for National Statistics (ONS) for each year since 1993. Figures for recent years show a large decrease in the number and age-standardised rate of deaths where *S. aureus* and MRSA were the underlying cause of death or were mentioned anywhere on the death certificate. This trend is consistent with the decreases in incidence as reported by the HPA and Public Health Wales. The decreases may in part be due to interventions which are targeted at improving hospital-based infection control practices. It is however noteworthy that the English and Welsh surveillance reports only focus on bloodstream infections and not other types of infections associated with MRSA. Conversely, the figures presented in this report are for deaths from all MRSA related infections.

## 5. Results

Results in this bulletin are presented for England and Wales combined while the downloadable reference tables also show results for both countries separately. Tables within the bulletin contain data for the latest five-year period for ease of presentation. However, time trends are examined from 1993 onwards.

### **Number of deaths where *S. aureus* or MRSA were mentioned on the death certificate**

In 2012, the number of death certificates mentioning *S. aureus* (including those resistant to meticillin) was 557, a 13% decrease on the previous year at 638. Although the number of deaths has fallen in recent years (see table 1), longer time trends show that there was an initial increase until 2006 when the numbers were five times those in 1993 when records began.

A similar trend was observed with MRSA, with the number of deaths decreasing in each year since peaking in 2006. The latest figures show that there were 292 mentions of MRSA on death certificates, a 20% decrease on the previous year at 364 deaths.

In 1993, MRSA accounted for 12% of all *S. aureus* mentions. Over time this proportion has fluctuated substantially, peaking at 82% in 2008. In 2012, MRSA accounted for 52% of the 557 deaths involving *S. aureus*.

While *S. aureus* and MRSA infections might contribute to a death, there are instances where they are also directly responsible for causing it. In 1993, of the 430 death certificates mentioning *S. aureus*, 36% also attributed the underlying cause of death to this germ. For MRSA, the figure was lower at 29%. By 2012, the percentage of *S. aureus* and MRSA mentions where these germs were also recorded as the underlying cause of death had fallen to 21% and 13% respectively.



**Table 1: Number of deaths where Staphylococcus aureus or MRSA was mentioned on the death certificate, 2008–2012**

## England and Wales

	Numbers, %				
	2008	2009	2010	2011	2012
England and Wales					
Mentions					
Staphylococcus aureus	1,500	1,253	961	638	557
MRSA	1,230	781	485	364	292
Percentage of S. aureus mentions that were MRSA	82	62	50	57	52
Underlying cause					
Staphylococcus aureus	305	294	229	153	117
MRSA	228	147	82	65	38
Percentage of mentions selected as underlying cause					
Staphylococcus aureus	20	23	24	24	21
MRSA	19	19	17	18	13
England					
Mentions					
Staphylococcus aureus	1,395	1,165	887	592	510
MRSA	1,137	718	437	332	262
Percentage of S. aureus mentions that were MRSA	82	62	49	56	51
Underlying cause					
Staphylococcus aureus	273	275	208	139	111
MRSA	200	133	68	57	33
Percentage of mentions selected as underlying cause					
Staphylococcus aureus	20	24	23	23	22
MRSA	18	19	16	17	13
Wales					
Mentions					
Staphylococcus aureus	101	87	72	43	44
MRSA	90	63	47	31	29
Percentage of S. aureus mentions that were MRSA	89	72	65	72	66
Underlying cause					
Staphylococcus aureus	31	19	20	13	6
MRSA	27	14	14	8	5
Percentage of mentions selected as underlying cause					
Staphylococcus aureus	31	22	28	30	14
MRSA	30	22	30	26	17

Source: Office for National Statistics

## Notes:

1. Figures for England and Wales include deaths of non-residents. Data for England and Wales separately exclude deaths of non-residents.
2. Figures are for deaths registered in each calendar year.



3. 2011 figures for England and Wales separately have been revised using the latest postcode boundaries (May 2013) and may therefore differ from previously published figures.

## **Age-specific mortality rate for deaths mentioning *S. aureus* and MRSA**

In each year, the number of death certificates mentioning *S. aureus* and MRSA, broken down by age and sex is small and therefore subject to random variation. To minimise the effect of this variation on the sex and age-specific rates, data from a five year period (2008 to 2012) were pooled to ensure robust conclusions could be drawn.

In the period 2008–12, the rate for deaths mentioning *S. aureus* and MRSA increased with age and was higher for males than for females.

For males, the rate for *S. aureus* was lowest among those under 45 years of age (1.8 deaths per million population) and highest among those aged 85 years and over (415.8 per million population). For females, the comparable figures for the two age groups stood at 1.4 per million population and 200.4 per million population respectively.

The rates for MRSA mentions were lower than those for *S. aureus* across all age groups. This is expected as MRSA is a subset of *S. aureus* and as such there are fewer deaths from it. Conversely, the relative difference between rates for those less than 45 years of age and those aged 85 years and over was notably greater for MRSA. This disparity suggests that compared with *S. aureus*, MRSA deaths were relatively more concentrated among those in the oldest age group.

In the period 2008–12, the MRSA rate for males aged 85 years and over was 574 times greater than the rate for males under 45 years of age (301.4 compared with 0.5 per million population). A similar pattern was observed for females; however, the relative difference between these two age groups was smaller than for males (see table 2).

Sick people in healthcare facilities are at increased risk of contracting MRSA. Older people are particularly vulnerable because they are likely to have relatively weaker immune systems compared with younger people and to have other underlying problems. The trends observed in age-specific MRSA death rates are therefore expected.

**Table 2: Age-specific mortality rates for deaths mentioning Staphylococcus aureus and MRSA by age, 2008–2012**

England and Wales

Age group	Rate per million population			
	Males		Females	
	S. aureus	MRSA	S.aureus	MRSA
England and Wales <sup>1</sup>				
Under 45	1.8	0.5	1.4	0.4
45–54	6.2	2.8	4.3	2.4
55–64	15.8	8.5	8.5	4.6
65–74	42.7	27.7	22.1	12.5
75–84	132.6	90.2	82.5	53.1
85 and over	415.8	301.4	200.4	147.1
England				
Under 45	1.8	0.5	1.4	0.4
45–54	6.0	2.5	4.3	2.4
55–64	15.7	8.2	8.1	4.2
65–74	41.2	26.1	21.9	12.5
75–84	128.6	86.8	81.1	51.6
85 and over	416.6	299.9	200.3	146.4
Wales				
Under 45	2.1	1.4	1.0	0.5
45–54	9.8	6.9	2.8	2.8
55–64	13.6	11.5	15.2	10.1
65–74	65.1	51.3	23.4	13.0
75–84	190.0	140.7	102.1	75.6
85 and over	402.9	325.8	198.3	154.7

Source: Office for National Statistics

Notes:

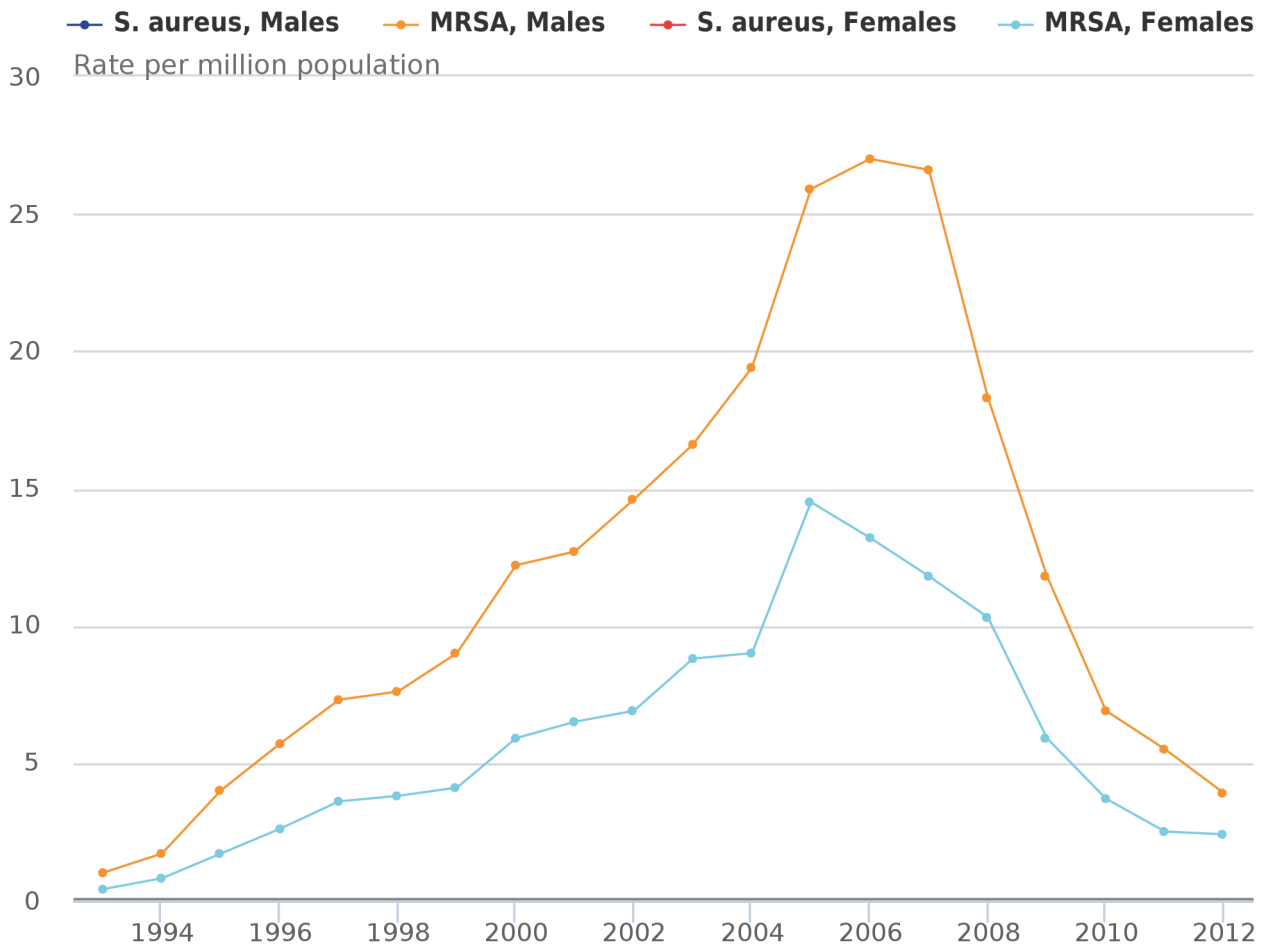
1. Data for 2008–10 are based on revised population totals following Census 2011.
2. Figures for England and Wales combined include deaths of non-residents. When presented separately, data for each country exclude non-residents.
3. Figures are for deaths registered in each calendar year.
4. Rates calculated from fewer than 20 deaths are shown in italics.

## Age-standardised rates for deaths mentioning S. aureus and MRSA

For both sexes, there was a steady decline in the age-standardised rate for deaths mentioning S. aureus and MRSA between 2008 and 2012. This decline tends to mask the substantial variation in rates between 1993 and 2012. This period was characterised by an initial increase in rates in each year up to 2006, when they peaked, before falling to date. Nevertheless, it is noteworthy that for the second year running, the latest death rate for S. aureus was not significantly different from the rate in 1993 when records began.

In 2012, the rates for deaths mentioning *S. aureus* were 8.3 and 4.4 deaths per million population for males and females respectively. For MRSA, the comparable figures were 3.9 per million population for males and 2.4 per million population for females. As with *S. aureus* there has been a steady decline in death rates in recent years; however, the most recent rates are still significantly higher than those observed in 1993.

**Figure 2: Age-standardised mortality rates for deaths mentioning *Staphylococcus aureus* and MRSA, England and Wales, 1993 to 2012**



Source: Office for National Statistics

Notes:

1. Figures for England and Wales combined include deaths of non-residents. When presented separately, data for each country exclude non-residents.
2. Figures are for deaths registered in each calendar year.
3. Rates per million population standardised to the European Standard Population.
4. Rates for 2008-2010 are based on revised population estimates following Census 2011.

**Table 3: Age-standardised mortality rates for deaths mentioning Staphylococcus aureus and MRSA by sex, 2008–2012**

England and Wales

	Rate per million population				
	2008	2009	2010	2011	2012
England and Wales					
Staphylococcus aureus, males	22.6	19.4	14.0	10.0	8.3
Staphylococcus aureus, females	13.3	10.9	8.3	4.9	4.4
MRSA, males	18.3	11.8	6.9	5.5	3.9
MRSA, females	10.3	5.9	3.7	2.5	2.4
England					
Staphylococcus aureus, males	22.2	19.2	13.6	9.7	8.0
Staphylococcus aureus, females	13.3	10.7	8.1	4.9	4.3
MRSA, males	17.9	11.6	6.5	5.2	3.7
MRSA, females	10.2	5.8	3.6	2.4	2.3
Wales					
Staphylococcus aureus, males	26.3	20.7	19.5	13.5	12.1
Staphylococcus aureus, females	13.3	13.3	10.5	4.0	5.1
MRSA, males	23.9	15.9	12.9	10.0	7.6
MRSA, females	11.5	8.6	5.5	3.0	3.8

Source: Office for National Statistics

Notes:

1. Rates for 2008-2010 are based on revised population estimates following Census 2011.
2. Figures for England and Wales combined include deaths of non-residents. When presented separately, data for each country exclude non-residents.
3. Figures are for deaths registered in each calendar year.
4. Rates per million population, standardised to the European Standard Population.

## 6. Place of death

In the period 2008–12, deaths involving *S. aureus* accounted for 0.3% and MRSA 0.1% of all deaths registered in England and Wales.

A breakdown by place of death shows that 90% of deaths involving *S. aureus* and 87% of MRSA deaths occurred in NHS hospitals across England and Wales. These figures represent 0.3% and 0.2% of all deaths in NHS hospitals respectively.

As the majority of deaths in England and Wales occur in NHS hospitals, it is expected that the proportions of deaths involving *S. aureus* and MRSA in these establishments would be higher than those in other establishment types. In general, care homes had the second highest number and percentage of all deaths involving *S. aureus* and MRSA, with the majority of these deaths occurring in care homes not administered by local authorities.

An estimated 6% of *S. aureus* and 9% of MRSA deaths occurred in non-local authority care homes. In this establishment type, *S. aureus* and MRSA each accounted for 0.1% of deaths from all causes. Compared with these figures, the number and percentage of deaths involving *S. aureus* and MRSA in local authority care homes were substantially lower (see reference table 1 in the reference tables section).

## 7. Methods

### Data source

The information used in this bulletin is based on the details collected when deaths are certified and registered. All deaths are coded by ONS according to the International Classification of Diseases (ICD) produced by the World Health Organisation (WHO).

Since 1993, ONS has stored the text of death certificates on a database, along with all the ICD coding related to causes identified on the death certificate. The Tenth Revision of ICD (ICD-10) has been used to code deaths in England and Wales since 2001.

### Approach used in selecting deaths

The text on death certificates were used in combination with ICD-10 codes to identify those mentioning *S. aureus* and MRSA in a two step process.

A number of infections are specifically related to *S. aureus* or other staphylococcal species. First, all deaths were extracted where any of these infections was mentioned on the death certificates. These deaths were extracted using the ICD-10 codes given in Box 1 in reference table 2. The text of these death certificates was then searched, both electronically and manually, to identify *S. aureus* and MRSA.

Conversely, some infections have different causative organisms and may be caused by *Staphylococcus* species or other pathogens. The second step therefore involved extracting all deaths which had these non-specific infections mentioned on the death certificate. The codes used to identify these infections are given in Box 2 (see reference table 2). The text of these death certificates was then searched manually to identify *S. aureus* and MRSA.

Deaths with an underlying cause of *S. aureus* were identified by selecting those deaths with a mention of *S. aureus* that also had as the underlying cause one of the infections listed in Box 1 or Box 2. The same procedure was followed in order to identify deaths with MRSA as the underlying cause.

Since 1986, ONS has used the internationally recommended death certificate for neonatal deaths (infants under 28 days old). This certificate was only designed to record all conditions found at death. This means that neonates cannot be assigned an underlying cause of death. However, as the data were based on deaths where *S. aureus* and MRSA were mentioned on the death certificate, neonates have been included. Neonatal deaths were extracted in the same way as described above for post-neonatal deaths.

### Registration delays

The information used to produce mortality statistics is based on the details collected when deaths are certified and registered. In England and Wales, deaths should be registered within five days of the death occurring, but there are some situations which result in the registration of the death being delayed. Deaths considered unexpected, accidental or suspicious will be referred to a coroner who may order a post mortem or carry out a full inquest to ascertain the reasons for the death.

Statistics on deaths involving MRSA and *S. aureus* are presented based on the number of deaths registered in each calendar year, rather than the number of deaths that actually occurred in that year. This method is used because there is a requirement for consistent and timely data, despite a potential limitation in data quality caused by registration delays.

On average, the median registration period for deaths mentioning MRSA and where this organism was identified as the underlying cause of death was three and four days respectively in 2012. The majority of deaths mentioning MRSA and those identifying it as the underlying cause were registered within one month (88% and 97% respectively). Conversely, 8% and 3%, respectively, were delayed by six months or more. In 2012, approximately 89% (259 out of 292) of registered deaths mentioning MRSA also occurred in the same year. Of the 38 deaths registered in 2012 where MRSA was the underlying cause of death, 36 (95%) also occurred in the same year.

Since the majority of deaths involving MRSA registered in 2012 also occurred in the same year, registration delays are likely to have no impact on the findings in this bulletin.

## 8. Results on the Office for National Statistics website

Figures for deaths involving *S. aureus* and MRSA can be found in reference tables on the ONS website. The content of each table is further described below:

- Reference table 1 - Deaths involving *S. aureus* and MRSA by place of death, 2008–12
- Reference table 2 - Age-standardised rates for deaths involving *Staphylococcus aureus* and MRSA, and the number of deaths by annual registration quarter, England and Wales, 1993–2012
- Reference table 3 - Deaths involving *S. aureus* and MRSA by country, sex and five-year age group, 1993–2012

## 9. References

Centre for Disease Control and Prevention (2010). [MRSA Infections](#) [accessed 15 July 2013].

Department of Health (2012) [The NHS Outcomes Framework 2013/14](#) [accessed 13 July 2013].

Health Protection Agency (2010) [MRSA information for patients](#) [accessed 16 July 2013].

Health Protection Agency (2013) [Staphylococcus aureus](#) [accessed 16 July 2013].

Herold B, Immergluck L, Maranan M, Lauderdale D, Gaskin R, Boyle-Vavra S, Leitch C, Daum R (1998) [Community-acquired Methicillin-Resistant Staphylococcus aureus in children with no identified predisposing risk](#). *Journal of the American Medical Association*, 279(8).pp 593-598 [accessed 13 July 2013].

Public Health Wales (2011) [Staphylococcus aureus \(MRSA\)](#) [accessed 15 July 2013].

Public Health England (2013) [Quarterly Analyses: Mandatory MRSA, MSSA and E. coli Bacteraemia and CDI in England \(up to January-March 2013\)](#). London: Public Health England [accessed 30 July 2013].

Public Health Wales (2013) [All Wales infection surveillance reports. Staphylococcus aureus Blood Stream Infection \(Bacteraemia\) Surveillance - All Wales data per 100,000 bed days](#) [accessed 30 July 2013].

Salmenlinna S, Lyytikäinen O, and Vuopio-Varkila J (2002) [Community-acquired Methicillin-Resistant Staphylococcus aureus, Finland](#). *Emerging Infectious Disease Journal [e-journal]*, 8(6), June [accessed 13 July 2013].

World Health Organization (2013) [Initiative for Vaccine Research \(IVR\). Infectious diseases - Staphylococcus aureus associated diseases](#) [accessed 16 July 2013].

## 10. Background notes

1. Figures are for deaths registered in each calendar year while rates are based on mid-year population estimates as the denominator. ONS recently revised mid-2002 to 2010 population estimates in light of the 2011 Census. Death rates relating to this period have therefore been revised in this bulletin and may differ from previously published figures.
2. Information about the underlying mortality data, including details on how the data are collected and coded, is available in the [mortality metadata \(2.7 Mb Pdf\)](#).
3. The Life Events and Population Sources (LEPS) Division's [plan for mortality statistics during 2013/14 \(116 Kb Pdf\)](#) including the publication timetable and planned changes to outputs is available on the ONS website.
4. The number of deaths due to MRSA is difficult to estimate. Trends in mortality are usually monitored using the underlying cause of death (the disease which initiated the train of events leading directly to death). However, MRSA (and other healthcare associated infections) are often not the underlying cause of death. Those who die with MRSA are usually patients who were already very ill, and it is their existing illness, rather than MRSA, which is often designated as the underlying cause of death. There is therefore an interest in the number of deaths where MRSA contributed to the death – only conditions which contribute directly to the death should be recorded on the death certificate. Results presented in this bulletin identify deaths where the underlying cause was MRSA and also where MRSA was mentioned as the underlying cause or as a contributory factor in the death.
5. Although MRSA is commonly referred to as a healthcare associated infection, it is not possible to state from the information on a death certificate where the infection was acquired, nor can assumptions be made about quality of care. People are often transferred between hospitals, care homes and other establishments, and may acquire infections in a different place from where they died.
6. Guidance on death certification, with specific reference to healthcare associated infections, was issued to doctors in May 2005 (revised in 2010) (ONS, 2010b). This was followed by a message from the Chief Medical Officer to all doctors reminding them of their responsibilities with respect to death certification and drawing their attention to the guidance (DH, 2005).
7. There are two types of rates reported in this bulletin; age-specific and age-standardised. Age-specific rates may be calculated for given age groups and are defined as the number of deaths in the age group per million (or thousand) population in the same age group. While these rates can be compared between times, places, and sub-populations, the tables containing them are usually large and may be difficult to assimilate. In addition, where there are very few deaths these rates will be imprecise and may be difficult to interpret. Age-standardised rates make allowances for differences in the age structure of the population, over time and between sexes. The rates presented here have been age-standardised using the direct method of standardisation. The age-standardised rate for a particular disease is that which would have occurred if the observed age-specific rates for the disease had applied in a given standard population. In this bulletin, the European standard population has been used. This is a hypothetical population standard, which is the same for both males and females, allowing standardised rates to be compared over time and between sexes.
8. The European standard population (ESP) used by ONS to calculate age-standardised rates was developed in 1976. Eurostat, the statistical institute of the European Union, has decided to bring this population structure up to date. ONS will publish details of the impact this change is likely to have on mortality statistics and a timetable for the implementation of the new standard population in relevant publications. ONS, on behalf of the Government Statistical Service (GSS) as a whole, is currently carrying out a [consultation on how to implement the change in ESP in the UK](#). This consultation runs between 9 August and 3 October 2013.
9. Rates were not calculated where there were fewer than three deaths in a cell, denoted by ‘.’. It is ONS practice not to calculate rates where there are fewer than three deaths in a cell, as rates based on such low numbers are susceptible to inaccurate interpretation. Rates which were calculated from fewer than 20 deaths are italicised in order to warn users that their reliability as a measure may be affected by the small number of events.
10. In this bulletin, a difference which is described as ‘statistically significant’ has been assessed using confidence intervals. Confidence intervals (CIs) are a measure of the statistical precision of an estimate and show the range of uncertainty around it. Calculations based on small numbers of events are often

subject to random fluctuations. Significance is assigned on the basis of non-overlapping CIs. While more formalised and accurate methods of significance testing are available, the non-overlapping CI method is used because it is both simple to calculate and easily understood. As a general rule, if the confidence interval around an estimate overlaps with the interval around another, there is no significant difference between the two estimates.

11. Special extracts and tabulations of deaths involving MRSA data for England and Wales are available to order for a charge (subject to legal frameworks, disclosure control, resources and agreement of costs, where appropriate). Such requests or enquiries should be made to:

Mortality Analysis Team, Life Events and Population Sources Division Office for National Statistics  
Government Buildings Cardiff Road Newport Gwent NP10 8XG

Tel: +44 (0)1633 456491 E-mail: [mortality@ons.gsi.gov.uk](mailto:mortality@ons.gsi.gov.uk)

12. The ONS charging policy is available on the ONS website.
13. We would welcome feedback on the content, format and relevance of this release. Please send feedback to the postal or email address above.
14. Details of the policy governing the release of new data are available from the Media Relations Office.
15. National Statistics are produced to high professional standards set out in the Code of Practice for Official Statistics. They undergo regular quality assurance reviews to ensure that they meet customer needs. They are produced free from any political interference.
16. Summary Quality Reports are overview notes which pull together key qualitative information on the various dimensions of quality as well as providing a summary of methods used to compile the output. Updated editions from April 2011 are published as Quality and Methodology Information notes (QMI).
17. ONS produces statistics for MRSA for England and Wales. The [National Records of Scotland \(NRS\)](#), formerly the General Register Office for Scotland (GROS) produces statistics for Scotland, and the [Northern Ireland Statistics and Research Agency \(NISRA\)](#) produces statistics for Northern Ireland.
18. A list of the names of those given pre-publication access to the statistics and written commentary is available in pre-release access list to deaths involving MRSA. The rules and principles which govern pre-release access are featured within the Pre-release Access to Official Statistics Order 2008.
19. Next publication: August 2014
20. Details of the policy governing the release of new data are available by visiting [www.statisticsauthority.gov.uk/assessment/code-of-practice/index.html](http://www.statisticsauthority.gov.uk/assessment/code-of-practice/index.html) or from the Media Relations Office email: [media.relations@ons.gsi.gov.uk](mailto:media.relations@ons.gsi.gov.uk)

These National Statistics are produced to high professional standards and released according to the arrangements approved by the UK Statistics Authority.