

Statistical bulletin

Deaths involving Clostridium difficile, Wales: 2014

Deaths where Clostridium difficile infection was mentioned on the death certificate by sex, age group and whether the death occurred in hospital or elsewhere.



Contact: Nina Goodwin mortality@ons.gsi.gov.uk Release date: 3 September 2015 Next release: To be announced

Table of contents

- 1. Main points
- 2. Summary
- 3. Number of deaths involving C. difficile
- 4. Age-standardised rates for deaths involving C. difficile
- 5. Age-specific mortality rates for deaths involving C. difficile
- 6. Place of death
- 7. Deaths involving C. difficile accounted for 0.5% of all deaths registered in Wales in the period 2012 to 2014.
- 8. Results on the Office for National Statistics website
- 9. Methods
- 10. Clostridium difficile statistics for other UK countries
- 11. <u>References</u>
- 12. Background notes

1. Main points

- In 2014 there were 111 death certificates mentioning Clostridium difficile (C. difficile) in Wales, 66 fewer than in 2013 (177 deaths)
- C. difficile was recorded as the underlying cause of death on 42 of the 111 (38%) death certificates mentioning it
- The age-standardised rate for deaths involving C. difficile increased, from 22.6 to 164.8 deaths per million population, between 1999 and 2008. The rate has since fallen significantly by 78% to 35.8 per million in 2014
- Deaths involving C. difficile increased with age. In the period 2012 to 2014, the age-specific death rate for those aged 85 years and over was 995.3 per million population, compared with 1.0 per million population for those aged under 55 years
- In 2014, over 95% of deaths involving C. difficile deaths occurred in hospitals

2. Summary

This bulletin presents the latest figures for deaths in Wales where C. difficile was mentioned, or identified as the underlying cause of death on death certificates. Figures are broken down by sex, age group and place of death. Comparisons are made between the 2014 data and previously published data from 1999 onwards. Information is given about the context and uses of these statistics, as well as the methods used to produce them.

Figures are based on deaths registered in each year, rather than occurring in each year, but since the majority of C. difficile deaths registered in 2014 also occurred that year, registration delays are unlikely to affect our findings. Please see the section on registration delays for more information.

Background

C. difficile is a type of bacteria which is naturally present in the intestine of 2 in 3 children and 3 in 100 adults, but causes no harm to healthy people. This is because its growth is controlled by other bacteria in the body. However, certain antibiotics can interfere with the natural balance of the intestine by destroying the bacteria that usually prevent C.difficile from multiplying (<u>Bupa, 2015</u>). If this happens, C.difficile bacteria can grow to unusually high levels and produce toxins which attack the intestines. Some people affected by C. difficile show no symptoms; while others go on to have diarrhoea, high temperature and abdominal cramping. In extreme cases, it may cause potentially life-threatening inflammation of the bowel (<u>NHS, 2014</u>).

C. difficile bacteria produce spores which leave the body through the stools of the infected individual. These spores are resistant to conditions outside the body, and can contaminate toilets, bedding, skin and clothes. They are easily spread through the air or by the hands of people coming into contact with infected patients or contaminated surfaces, and can only be removed through very thorough cleaning. This means that the bacteria can easily spread (<u>NHS, 2014</u>).

Since January 2005, all Health Boards in Wales have been required to undertake surveillance of the number of cases of C. difficile infections in their hospitals. This surveillance is managed by the <u>Welsh Healthcare Associated</u> <u>Infection Programme</u> (WHAIP), which is part of public health Wales. The latest figures for April 2014 to May 2015 showed that there were 847 cases of C. difficile infections reported in hospital inpatients. This represents a 22% decrease on the 1,089 cases recorded April 2013 to May 2014.

3. Number of deaths involving C. difficile

In 2014, there were 111 deaths involving C. difficile recorded in Wales, a decrease of 37% on the number recorded in 2013 (177) and the lowest since 2005. It also represents a 76% decrease on the highest number of deaths (461) which was registered in 2008.

The number of male deaths fell from 69 in 2013 to 52 in 2014, while female deaths fell from 108 to 59 deaths over the same period.

While C. difficile may contribute to a death, sometimes it is also directly responsible for causing it. In 2014, of the 111 death certificates mentioning C. difficile, 42 (38%) also identified it as the underlying cause of death. Deaths where C. difficile was the underlying cause fell by 54% from 91 to 42 between 2013 and 2014.

Of the 52 male death certificates where C. difficile was mentioned, 18 recorded it as the underlying cause of death. For females, 24 of the 59 deaths where C.difficile was mentioned also recorded it as the underlying cause.

Table 1: Number of death certificates with Clostridium difficile mentioned and as the underlying cause of death

Wales, deaths registered between 1999 and 2014

| | 199920 | 0002 | 001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|--------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Certificates mentioning C. difficile | 56 | - | 64 | 89 | 83 | 88 | 104 | 170 | 399 | 461 | 381 | 368 | 236 | 155 | 177 | 111 |
| Certificates where C. difficile was the underlying cause of death | 31 | - | 29 | 47 | 46 | 54 | 61 | 93 | 177 | 203 | 201 | 184 | 118 | 82 | 91 | 42 |
| Percentage of mentions selected as underlying cause | 55.4 | - 4 | 15.3 | 52.8 | 55.4 | 61.4 | 58.7 | 54.7 | 44.4 | 44.0 | 52.8 | 50.0 | 50.0 | 52.9 | 51.4 | 37.8 |

Source: Office for National Statistics

Notes:

1. Deaths involving C. difficile are defined using a combination of any mention of the International Classification of Diseases, Tenth revision (ICD10) codes A04.7, A05.8, A41.4, A48.0, A49.8 and P36.5 anywhere on the death certificate and mention of C. difficile or related conditions in the text of the death certificate. Further details are in the Methods section in the bulletin.

2. Age-standardised mortality rate per million population were calculated using the 2013 European Standard Population. Age-standardised rates allow comparisons between populations with different age structures.

3. Figures are based on geographical boundaries as of May 2015 and exclude deaths of non-residents.

4. In 2014 the average number of dates between date of death and death registration was 3 days for C. difficile.

5. Data are only available where cause of death has been coded using the Tenth Revision of the International Classification of Diseases. This was used by ONS in 1999 as part of a special study to compare the two ICD revisions and from 2001 onwards. Data for 2000 are therefore not available.

4. Age-standardised rates for deaths involving C. difficile

The age-standardised rates for deaths involving C. difficile tend to fluctuate annually. For all persons, rates increased from 22.6 deaths per million population in 1999 to 164.8 deaths per million in 2008. Rates steadily decreased to 35.8 deaths per million population in 2014, the lowest since 2005.

Both male and female death rates followed this pattern. For males, rates increased from 18.8 per million males in 1999 to a peak of 177.2 deaths in 2008. After this, rates decreased to 41.7 deaths per million population in 2014. The increase in rates between 2006 and 2008 was much sharper than between 1999 and 2005.

A similar trend was observed for females, with rates increasing from 24.4 per million females in 1999 to 157.9 per million in 2008, before falling to 31.2 per million in 2014. As with males, the increase in rates between 2006 and 2008 was much sharper than in previous years. In 2014 the difference between the male and female death rate was not statistically significant (see Figure 1).

Figure 1: Mortality rates for deaths involving Clostridium difficile by sex

Wales, deaths registered between 1999 and 2014



Source: Office for National Statistics

Notes:

- Deaths involving C. difficile are defined using a combination of any mention of the International Classification of Diseases, Tenth revision (ICD10) codes A04.7, A05.8, A41.4, A48.0, A49.8 and P36.5 anywhere on the death certificate and mention of C. difficile or related conditions in the text of the death certificate. Further details are in the Methods section.
- 2. The age-standardised mortality rates were calculated using the 2013 European Standard Population. Agestandardised rates allow comparisons between populations with different age structures.
- 3. Figures are based on geographical boundaries as of May 2015 and exclude deaths of non-residents.
- 4. In 2014 the average number of days between date of death and death registration was 3 days for C. difficile.
- 5. Data are only available where cause of death has been coded using the Tenth Revision of the International Classification of Diseases. This was used by ONS in 1999 as part of a special study to compare the two ICD revisions and from 2001 onwards. Data for 2000 are therefore not available.
- 6. Mortality rates for deaths involving C. difficile peaked in 2008 before falling afterwards. Rates fell significantly between 2013 and 2014.

5. Age-specific mortality rates for deaths involving C. difficile

The majority of deaths where C. difficile is mentioned on the death certificate occur in elderly people. As people get older, they are more likely to be exposed to factors which increase their risk of contracting a C. difficile infection, such as suffering underlying health problems including cancers or chronic renal disease, exposure to longer periods of hospitalisation, and antibiotic use (<u>NICE, 2013</u>).

In the period 2012 to 2014, the age-specific death rate for all persons aged 85 years and over was 995.3 per million population, compared with 1.0 per million population for those aged under 55 years. There was no statistically significant change in rates for people in age groups under the age of 65 years over time. For those in age groups over 64 years, there were statistically significant changes, with rates initially increasing before peaking in the late 2000s and then decreasing. The same is true for both male and females separately.

For males, the highest rate was in the period 2007 to 2009 for those aged 85 years and over (2,634.3 per million males). This was 3 times higher than the rate for those aged 75 to 84 years over the same period. The highest female rate was in the period 2008 to 2010 (2,777.1 per million population) this was almost 4 times higher than the rate of those aged 75 to 84 years over the same time period (see Figures 2 and 3).

Figure 2: Mortality rates for male deaths where Clostridium difficile was mentioned on the death certificate, by age



Wales, deaths registered between 2001 to 2003 and 2012 to 2014

Source: Office for National Statistics

Notes:

- 1. Deaths involving C. difficile are defined using a combination of any mention of the International Classification of Diseases, Tenth revision (ICD10) codes A04.7, A05.8, A41.4, A48.0, A49.8 and P36.5 anywhere on the death certificate and mention of C. difficile or related conditions in the text of the death certificate. Further details are in the Methods section.
- 2. Age-specific mortality rates are expressed per million population.
- 3. Figures are based on geographical boundaries as of May 2015 and exclude deaths of non-residents.
- 4. In 2014 the average number of days between date of death and death registration was 3 days for C. difficile.
- 5. Older people are more vulnerable to C. difficile infections and are more likely to die from them. Among men aged 65 and over, C. difficile death rates peaked in the late 2000s before falling between 2010 and 2014 to levels similar to those observed in the early 2000s.
- There were fewer than 3 deaths involving C. difficile per million males aged 0 to 54 in each period. There
 was no significant change in C. difficile death rates in this age group and among men aged 55 to 64 over
 time.

Figure 3: Mortality rates for female deaths where Clostridium difficile was mentioned on the death certificate, by age

Wales, deaths registered between 2001 to 2003 and 2012 to 2014



Source: Office for National Statistics

Notes:

- 1. Deaths involving C. difficile are defined using a combination of any mention of the International Classification of Diseases, Tenth revision (ICD10) codes A04.7, A05.8, A41.4, A48.0, A49.8 and P36.5 anywhere on the death certificate and mention of C. difficile or related conditions in the text of the death certificate. Further details are in the Methods section.
- 2. Age-specific mortality rates are expressed per million population.
- 3. Figures are based on geographical boundaries as of May 2015 and exclude deaths of non-residents.
- 4. In 2014 the average number of days between date of death and death registration was 3 days for C. difficile.
- 5. Older people are more vulnerable to C. difficile infections and are more likely to die from them. Among women aged 65 and over, C. difficile death rates peaked in the late 2000s before falling between 2010 and 2014 to levels similar to those observed in the early 2000s.
- 6. There were fewer than 3 deaths involving C. difficile per million females aged 0 to 54 in each time period. There was no significant change in C. difficle death rates in this age group and among women aged 55 to 64 over time.

6. Place of death

Deaths involving C. difficile accounted for 0.5% of all deaths registered in Wales in the period 2012 to 2014.

A breakdown by place of death shows that 96% of deaths involving C. difficile in Wales occurred in NHS hospitals. These deaths represent 0.8% of deaths in NHS hospitals over the period. A similar pattern was observed in each period between 2001 to 2003 and 2012 to 2014. Most deaths occur in NHS hospitals, so it is expected that the proportions of C. difficile deaths would be higher in NHS hospitals than in other establishment types.

Although relatively small in comparison to NHS Hospitals, care homes consistently had the second highest proportion of deaths involving C. difficile over time (see Table 2).

Table 2: Proportion of deaths involving Clostridium difficile occurring in selected communal establishments

Wales

| | | | | | | | | | | | | % |
|-------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | 2001- 03 | 2002- 04 | 2003- 05 | 2004- 06 | 2005- 07 | 2006- 08 | 2007- 09 | 2008- 10 | 2009- 11 | 2010- 12 | 2011- 13 | 2012- 14 |
| All C. Difficile deaths | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Hospital (NHS) | 94.9 | 95 | 94.5 | 94.5 | 95.2 | 95.5 | 96.1 | 95.3 | 94.6 | 93.7 | 94.4 | 95.7 |
| Care home | 3.8 | 3.8 | 3.6 | 4.1 | 3 | 2.5 | 1.7 | 2.2 | 2.8 | 3.6 | 3.5 | 2.7 |
| Home | 0 | 0 | 0.4 | 0.3 | 0.9 | 1.3 | 1.6 | 1.9 | 1.9 | 1.8 | 1.2 | 0.9 |
| Hospice | 0.4 | 0.4 | 0.4 | 0 | 0.1 | 0.1 | 0.2 | 0.2 | 0.5 | 0.8 | 0.7 | 0.5 |
| Other | 0.8 | 0.8 | 1.1 | 1.1 | 0.7 | 0.6 | 0.4 | 0.3 | 0.1 | 0.1 | 0.2 | 0.2 |

Source: Office for National Statistics

Notes:

1. Deaths involving C. difficile are defined using a combination of any mention of the International Classification of Diseases, Tenth revision (ICD10) codes A04.7, A05.8, A41.4, A48.0, A49.8 and P36.5 anywhere on the death certificate and mention of C. difficile or related conditions in the text of the death certificate. Further details are in the Methods section in the bulletin.

2. Figures exclude deaths of non-residents.

3. In 2014 the average number of days between date of death and death registration was 3 days for C. difficile.

4. Deaths at home are those at the usual residence of the deceased (according to the informant), where this is not a communal establishment.

5. Care homes includes homes for the chronic sick; nursing homes; homes for people with mental health problems and non-NHS multi function sites.

6. NHS hospitals include multifunction sites and military hospitals and exclude psychiatric hospitals.

7. Hospice includes all NHS and non-NHS hospices.

8. Other include schools for people with learning disabilities, non-NHS hospitals, holiday homes and hotels, common lodging houses, aged persons' accommodation, assessment centres, schools, convents and monasteries, nurses' homes, university and college halls of residence, young offender institutions, secure training centres, detention centres, prisons and remand homes.

9. Other also includes all places not covered above such as deaths on a motorway, at the beach, climbing a mountain, walking down the street, at the cinema, at a football match, while out shopping, or in someone else's home. This category also includes people who are pronounced dead on arrival at hospital.

7. Deaths involving C. difficile accounted for 0.5% of all deaths registered in Wales in the period 2012 to 2014

The information used to produce mortality statistics is based on the details collected when deaths are certified and registered. In Wales, deaths should be registered within five days of the death occurring, but there are some situations where this isn't possible. 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 C. difficile are presented based on the number of deaths registered in each calendar year, rather than deaths that occurred in each calendar year. This method is used because there is a requirement for consistent and timely data, despite a potential limitation in the data quality if registrations are delayed.

In 2014, the average (median) number of days between date of death and death registration for deaths mentioning C. difficile and where it was identified as the underlying cause of death was 3 days. The majority of deaths mentioning C. difficile and those identifying it as the underlying cause were registered in 5 days (84% and 76% respectively) while 94% and 90% were registered within 30 days.

Table 3: Registration period for C. difficile deaths and all-cause mortality

| Cause Deaths registered in 2014 | Deaths | Proportion of deaths registered (%) | | | | | | | | | |
|--|------------------|--|--|---|---|-----------------------------------|------|--|--|--|--|
| | Within 5 days | Six days to one month (6- 30 days) | One to three months (31 - 91 days) | Three to six months (92 - 183 days) | Six months to one year (184 - 365 days) | Over 1 year (over 365 days) | | | | | |
| C. difficile as underlying cause | 42 | 76.2% | 14.3% | 2.4% | 2.4% | 2.4% | 2.4% | | | | |
| C. difficile mentions | 111 | 83.8% | 9.9% | 0.9% | 3.6% | 0.9% | 0.9% | | | | |
| All-cause | 31,438 | 80.0% | 13.9% | 1.4% | 3.0% | 1.2% | 0.4% | | | | |

Wales, deaths registered in 2014

Source: Office for National Statistics

Notes:

1. Deaths involving C. difficile are defined using a combination of any mention of the International Classification of Diseases, Tenth revision (ICD10) codes A04.7, A05.8, A41.4, A48.0, A49.8 and P36.5 anywhere on the death certificate and mention of C. difficile or related conditions in the text of the death certificate. Further details are in the Methods section in the bulletin.

2. Figures exclude deaths of non-residents.

3. Deaths where the day and/or month of death are missing have been excluded.

8. Results on the Office for National Statistics website

Figures for deaths involving C. difficile from 1999 to 2014 can be found in the reference table on the ONS website. This Excel workbook contains the following results for Wales:

- number of death certificates with Clostridium difficile mentioned and as the underlying cause of death, Wales, deaths registered between 1999 and 2014
- age-standardised mortality rates (with 95% confidence intervals) for deaths where Clostridium difficile was mentioned on the death certificate, by sex, Wales, deaths registered between 1999 and 2014
- number of deaths where Clostridium difficile was mentioned on the death certificate by place of death, Wales, deaths registered between 2001 to 2003 and 2012 to 2014
- age-specific mortality rates (with 95% confidence limits) for deaths where Clostridium difficile was mentioned on the death certificate, by age and sex, Wales, deaths registered in 2001–03 and 2012–14

9. Methods

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). In the Tenth Revision (ICD-10), there is a specific code (A04.7) for 'Enterocolitis due to Clostridium difficile'. While this code identifies the vast majority of deaths involving C. difficile, a small number of C. difficile-related deaths are not captured by this code alone.

Since 1993, ONS has stored the text of death certificates on a database, along with all the ICD coding relating to causes identified on the death certificate. This means that it is possible to identify records where C. difficile is mentioned, but is not coded under the specific ICD-10 code. ICD-10 has been used to code deaths in Wales since 2001.

In addition to extracting all deaths related to the specific A04.7 ICD-10 code, deaths mentioning other codes to which diseases including C. difficile could be coded were also extracted. The text of these death certificates was searched manually for mentions of Clostridium difficile, C. difficile or pseudomembranous colitis. The ICD-10 codes used to select deaths in order to search manually are shown in Box 1.

Deaths registered in 1999 were coded to both ICD–9 and ICD–10 as part of a special study to compare the two ICD revisions.

Box 1 Specific and non-specific ICD-10 codes related to C. difficile

| Specific codes ¹ | Non-specific codes ¹ | | | | |
|--|---|--|--|--|--|
| A04.7 (Enterocolitis due to Clostridium difficile) | A05.8 (Other specified bacterial food borne intoxications) | | | | |
| | A41.4 (Septicaemia due to anaerobes, excludes gas grangene) | | | | |
| | A48.0 (Gas gangrene: Clostridial; cellulitis, myonecrosis) | | | | |
| | A49.8 (Other bacterial infections of unspecified site) | | | | |
| | P36.5 (Sepsis of newborn due to anaerobes) | | | | |

Notes:

1. Codes used to identify deaths where C. difficile was the underlying cause of death (on deaths where C. difficile mentioned): A04.7, A09, A41.4 AND A49.8.

Deaths with an underlying cause of C. difficile were identified by selecting those deaths with a mention of C. difficile that also had an underlying cause of one of the following ICD-10 codes: A04.7, A41.4 and A49.8. Death certificates that mention C. difficile and record the code A09 (diarrhoea and gastroenteritis of presumed infectious origin) as the underlying cause of death are also taken to indicate that C. difficile was the underlying cause of death.

Since 1986, ONS has used the internationally recommended death certificate for neonatal deaths (infants under 28 days). 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 C. difficile or pseudomembranous colitis was mentioned on the death certificate, neonates have been included. Neonatal deaths were extracted in the same way as described for post-neonatal deaths.

10. Clostridium difficile statistics for other UK countries

C. difficile deaths in Scotland are published by <u>National Records of Scotland</u> and figures for Northern Ireland are published by the <u>Northern Ireland Statistics and Research Agency</u>.

11. References

BUPA (2015), Clostridium difficile infection [accessed 18/07/2015].

National Clostridium difficile Standards group (2003) Report to the department of Health [accessed 20/07/2015].

National Records of Scotland (2014) Clostridium Difficile (C. diff) Deaths [accessed 24/07/2015].

National Health Service (2014) Causes of Clostridium difficile infection [accessed 22/07/22015].

National Institute for Health and Care Excellence (2013) <u>Diarrhoea- antibiotic associated, what are the risk</u> <u>factors?</u> [accessed 23/07/2015].

National Health Service (2014) Symptoms of Clostridium difficile infection [accessed 22/07/2015].

Northern Ireland Statistics and Research Agency (2014) Healthcare- Associated Infections [accessed 15/07/2015].

Office for National Statistics (2010) <u>Guidance for doctors completing Medical Certificates of Cause of Death in</u> <u>England and Wales</u>

12. Background notes

1. Mortality metadata

Statistics on mortality are derived from the information provided when deaths are certified and registered. Information about the underlying mortality data, including details on how the data is collected and coded are available in the <u>mortality metadata</u>. Further information about the methods and quality of these statistics can be found in the <u>Quality and Methodology Information reports for Mortality Statistics and</u> <u>Deaths involving Clostridium difficile in Wales</u> which are available on the ONS website.

2. Deaths involving C. difficile

The number of deaths due to C. difficile 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, C. difficile (and other healthcare associated infections) are often not the underlying cause of death. Those who die with C. difficile are usually patients who were already very ill, and it is their existing illness which is often given as the underlying cause of death. There is interest in the number of deaths where C. difficile 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 C. difficile and also where C. difficile was mentioned as the underlying cause of or as a contributory factor in the death.

3. Healthcare associated infections

Although C. difficile 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.

4. Death certification

<u>Guidance on death certification</u>, with specific reference to healthcare associated infections, was issued to doctors in May 2005 (revised in 2010). 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. More recently, <u>Public Health England (2013)</u> released a report detailing good practice and recommendations on completing death certificates for deaths involving C. difficile.

5. Age-specific rates

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.

6. Age-standardised rates

This bulletin presents age-standardised rates (also known as directly-standardised), standardised to the 2013 European Standard Population. These make allowances for differences in the age structure of the population, over time and between sexes. The age-standardised rate for a particular cause of death is that which would have occurred if the observed age-specific rates for that cause had applied in the given standard population. A <u>template showing how age-standardised rates are calculated</u> is available on ONS website.

7. Rates based on small numbers

Age-specific rates were not calculated where there were fewer than 3 deaths in an age group. Similarly, age-standardised rates were not calculated where there were fewer than 10 deaths in across all age groups, while those which were calculated from 10 to 19 deaths may have low reliability and are therefore marked by (u). Where a rate has not been calculated due to low counts as described, the cell has been left blank, and marked by (u) to show the rate was not calculated due to low reliability.

8. Confidence Intervals

In this bulletin, a difference which is described as 'statistically significant' has been assessed using 95% confidence intervals. Confidence intervals 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. 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.

9. Special extracts of data

Special extracts and tabulations of deaths involving C. difficile in Wales are available to order for a charge (subject to legal frameworks, disclosure control, resources and agreement of costs, where appropriate). 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 456736 E-mail: mortality@ons.gsi.gov.uk

The ONS charging policy is available on the ONS website

10. Plan for Mortality outputs

Future changes to mortality outputs are outlined in the plan for mortality outputs available on the <u>ONS</u> <u>website</u>.

11. Feedback

We welcome feedback on the content, format and relevance of this release. Please send feedback to the postal or email address above.

12. Pre-release access

A list of the names of those given pre-publication access to the statistics and written commentary is available in <u>Pre-release access list to Deaths involving Clostridium difficile</u>. The rules and principles which govern pre-release access are featured within the <u>Pre-release Access to Official Statistics Order 2008</u>

13. Revisions

The <u>ONS revisions policy</u> is available on our website.

14. National Statistics

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.

15. Terms and conditions

You may use or re-use this information (not including logos) free of charge in any format or medium, under the terms of the Open Government Licence. To view this licence, visit the National Archives website, write to: The Information Policy Team, The National Archives, Kew, London TW9 4DU, or email: psi@nationalarchives.gsi.gov.uk.

Details of the policy governing the release of new data are available by visiting www.statisticsauthority.gov. uk/assessment/code-of-practice/index.html or from the Media Relations Office email: <u>media.relations@ons.gsi.gov.uk</u>

Next publication: August 2016

Issued by: Office for National Statistics, Government Buildings, Cardiff Road, Newport NP10 8XG

Media contact: Tel: Media Relations Office +44 (0) 845 6041858 Emergency on-call +44 (0) 7867 906553 Email: <u>media.relations@ons.gsi.gov.uk</u>

16. Details of the policy governing the release of new data are available by visiting <u>www.statisticsauthority.gov.</u> <u>uk/assessment/code-of-practice/index.html</u> or from the Media Relations Office email: <u>media.relations@ons.</u> <u>gsi.gov.uk</u>