

# Healthcare associated Infections

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## Voluntary surveillance of candidaemia in England, Wales, and Northern Ireland: 2007

### Introduction

These analyses are based on data extracted from our voluntary surveillance database, LabBase 2\*, on the 28<sup>th</sup> August 2008 for the period 2004-2007. The data presented here differ in some instances from data in earlier publications due to the addition of late reports to the database and the recent introduction of a new patient postcode algorithm\*\*, rather than laboratory-based geographies, to the database.

Rates were calculated using 2006 mid-year resident population estimates based on the 2001 census for England, Wales, and Northern Ireland. Regional analyses were made with reference to the Government Office Regions introduced in April 2002.

### Overall trend in reports

There were 1967 reports of *Candida* spp isolated from blood specimens in England, Wales, and Northern Ireland in 2007 (see [table 1](#)). This is a 4% increase in the number of candidaemia reports made to the HPA in 2006 (1892 reports), consistent with the increasing trend observed since 1990 [1].

**Table 1 Laboratory reports of candidaemia by region: England, Wales and Northern Ireland 2007**

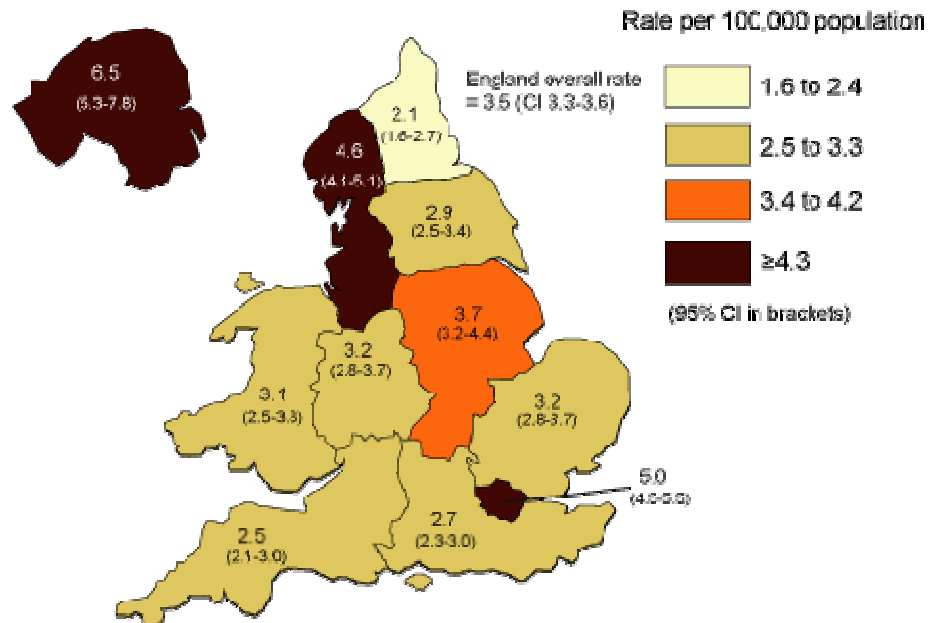
Region	Number of reports (%)	
North West	314	(16.0%)
North East	53	(2.7%)
Yorkshire & the Humber	149	(7.6%)
West Midlands	173	(8.8%)
East Midlands	163	(8.3%)
East of England	181	(9.2%)
South East	220	(11.2%)
London	376	(19.1%)
South West	129	(6.6%)
<b>England</b>	<b>1,763</b>	<b>(89.6%)</b>
<b>Wales</b>	<b>91</b>	<b>(4.6%)</b>
<b>Northern Ireland</b>	<b>113</b>	<b>(5.7%)</b>
<b>England, Wales &amp; NI</b>	<b>1,967</b>	<b>(100%)</b>

A more pronounced increase (14%) had been noted between 2004 and 2005. As reporting is voluntary, these increases may be due in part to improved ascertainment. The overall reported rate of candidaemia reached 3.55 per 100,000 population (95% CI: 3.39-3.71) in 2007 (see [table 2](#)).

## Region-specific rates

Considerable variations in the rates of candidaemia reports were noted between England, Wales and Northern Ireland (EWNI) in 2007 ([figure 1](#)), with reported rates in Northern Ireland being markedly higher at 6.49/100,000 than for England (3.47) or Wales (3.07). There were increases in rates of candidaemia reports throughout EWNI between 2004 and 2007, with these increases being most pronounced in Northern Ireland: 4.97/100,000 in 2004 to 6.49/100,000 in 2007.

Figure 1 Region-specific rates of candidaemia reports, England, Wales, and Northern Ireland: 2007



Within the English regions, the rates of reports showed some variation, ranging from 2.07 in the North East to 5.01 in London. Rates of reports have increased in the majority of the geographical areas since 2004 (see [table 2](#)), with the most pronounced increases seen in London, from 2.10 in 2004 to 5.01 in 2007. The North East is the only geographical area to see a marked decrease in rates of reports: from 4.28 in 2004 to 2.07 in 2007.

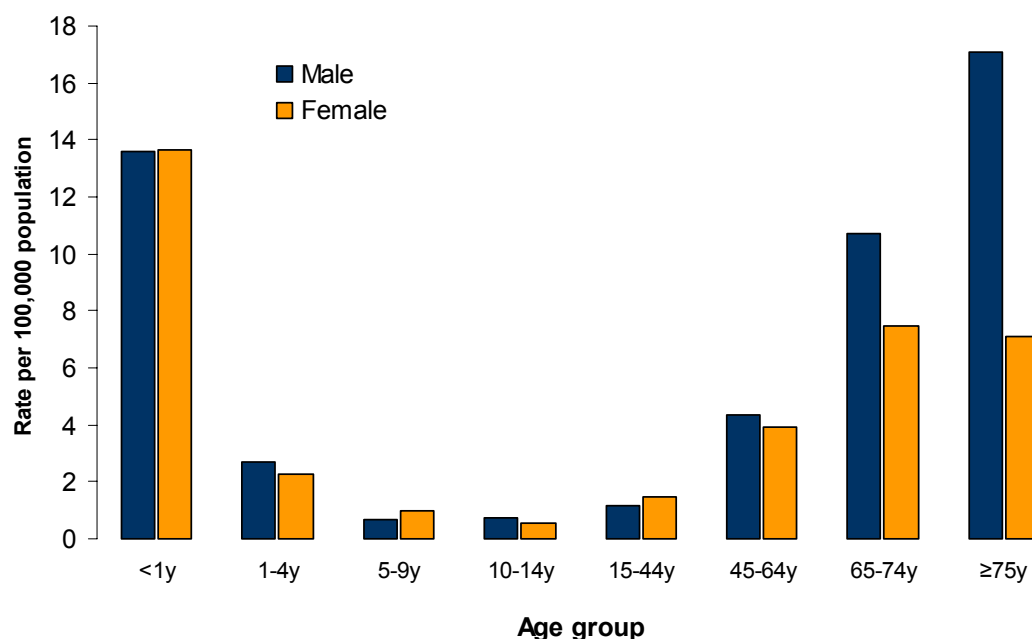
**Table 2 Region-specific rates of candidaemia reports; England, Wales and Northern Ireland, 2004-2007**

Region name	Rate (per 100,000)			
	2004	2005	2006	2007
North West	3.65	4.09	4.41	4.58
North East	4.28	3.56	3.56	2.07
Yorkshire & the Humber	2.84	3.30	4.08	2.90
West Midlands	3.60	3.52	3.52	3.22
East Midlands	2.78	3.09	2.96	3.73
East of England	2.59	3.03	3.14	3.23
South East	1.74	1.67	2.16	2.67
London	2.10	3.46	4.02	5.01
South West	2.44	2.88	2.58	2.52
<b>England</b>	<b>2.74</b>	<b>3.11</b>	<b>3.37</b>	<b>3.47</b>
<b>Wales</b>	<b>2.71</b>	<b>3.08</b>	<b>2.73</b>	<b>3.07</b>
<b>Northern Ireland</b>	<b>4.97</b>	<b>4.99</b>	<b>5.86</b>	<b>6.49</b>
<b>England, Wales &amp; N.I.</b>	<b>2.81</b>	<b>3.17</b>	<b>3.41</b>	<b>3.55</b>

### Age-specific rates

Candidaemia rates were higher in males than females in most age groups (figure 2), particularly pronounced in the elderly (aged 75 and older) where the rate of reports in males (17.07/100,000) was over double of that seen in females (7.09). Rates in male and female infants (under one year) were similar to each other at 13.58 and 13.62/100,000 respectively. The rate for female infants has increased markedly from 8.68/100,000 in 2005 to 13.62/100,000 in 2007, whilst the rate for male infants decreased from 15.35/100,000 in 2005 to 13.58/100,000 in 2007.

Figure 2 **Age-specific rates of candidaemia per 100,000 population; England, Wales, and Northern Ireland: 2007**



### Species-specific data

The proportion of reports in which *Candida* bloodstream infection was recorded without full species information continued to decrease, from 11.2% in 2004 to 9.9% in 2007 (table 3). Of the remainder, *Candida albicans* was the most frequently reported species in 2007, accounting for 52% of candidaemia reports, with the other common species including *C. glabrata* (19%) and *C. parapsilosis* (10%).

Table 3 **Laboratory reports of candidaemia by species; England, Wales, and Northern Ireland: 2004-2007**

Species	2004		2005		2006		2007	
	no.	(%)	no.	(%)	no.	(%)	no.	(%)
<i>Candida albicans</i>	824	(54%)	959	(55%)	1,019	(54%)	1,015	(52%)
<i>Candida famata</i>	2	(0%)	3	(0%)	12	(1%)	2	(0%)
<i>Candida glabrata</i>	244	(16%)	306	(18%)	331	(17%)	381	(19%)
<i>Candida guilliermondii</i>	10	(1%)	12	(1%)	23	(1%)	27	(1%)
<i>Candida kefyr</i>	1	(0%)	4	(0%)	3	(0%)	1	(0%)
<i>Candida krusei</i>	28	(2%)	24	(1%)	24	(1%)	27	(1%)
<i>Candida lusitanae</i>	10	(1%)	13	(1%)	18	(1%)	22	(1%)
<i>Candida parapsilosis</i>	177	(12%)	182	(10%)	209	(11%)	196	(10%)
<i>Candida tropicalis</i>	52	(3%)	70	(4%)	58	(3%)	73	(4%)
<i>Candida pelliculosa</i>	0	(0%)	1	(0%)	0	(0%)	3	(0%)
<i>Candida</i> spp. - species not recorded	172	(11%)	155	(9%)	167	(9%)	194	(10%)
<i>Candida</i> spp - other named	19	(1%)	18	(1%)	28	(1%)	26	(1%)
<b>Total</b>	<b>1539</b>	<b>(100%)</b>	<b>1747</b>	<b>(100%)</b>	<b>1892</b>	<b>(100%)</b>	<b>1967</b>	<b>(100%)</b>

Reporting to species level is important for monitoring changes in the epidemiology of these infections, with different species being associated with infections in different patient groups and with differing levels of antifungal susceptibility [2]. For assistance with identification, laboratories can submit isolates to the Mycology Reference Laboratory in Bristol, <<http://www.hpa.org.uk/srmd/mycology/index.htm>>

### **Suggested citation**

Data found in the *Health Protection Report* summary publication and on the online full text version can be cited as: HPA. Candidaemia in England, Wales and Northern Ireland: 2007. *Health Protection Report* [serial online] 2008 [date cited]; **2**(38): HCAI

### **References**

1. Lamagni TL, Evans BG, Shigematsu M, Johnson EM. Emerging trends in the epidemiology of invasive mycoses in England and Wales (1990-1999). *Epidemiol Infect* 2001; **126**: 397-414.
2. Hobson RP. The global epidemiology of invasive Candida infections – is the tide turning? *J Hosp Infect* 2003; **55**: 159-68

### **Footnote**

\*LabBase2 is the database that collects laboratory reports of all microorganisms isolated at nearly 400 NHS and other laboratories throughout England and Wales. The database is managed and accessed at the Centre for Infections.

\*\*The algorithm allocates geographical locations based on the available postcode. It looks for a valid postcode of residence first. If this is missing it will then utilise the patient's registered GP postcode, and if this is missing it will then utilise the source laboratory postcode. Previously the laboratory that first received the specimen was used to assign the geographical area of the report.