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### Zika virus – epidemiological update

As of 14 April, 48 countries and territories worldwide have reported confirmed cases of autochthonous (locally acquired) Zika virus infection in the last nine months (see the PHE [Zika webpage](#) [1] for latest information). Countries and territories in the Americas (South and Central America) and the Caribbean continue to account for the majority currently reporting active transmission (34 out of 48) (see Americas map below; and [PHE global map](#)). It is anticipated that in the coming weeks and months further countries and territories within the geographical range of competent mosquito vectors – especially *Aedes aegypti* – will report autochthonous transmission.



#### **Autochthonous transmission in the Americas in the last nine months (Bolivia and Paraguay not shown).**

Numbered countries are as follows: 1. Suriname; 2. Honduras; 3. French Guiana; 4. Costa Rica; 5. Dominican Republic; 6. El Salvador; 7. Guadeloupe; 8. Martinique; 9. Curacao; 10. Barbados; 11. US Virgin Islands; 12. Saint Vincent and the Grenadines; 13/14. Saint Martin/Sint Maarten; 15. Trinidad & Tobago; 16. Aruba; 17. Bonaire; 18. Jamaica; 19. Dominica; 20. Guatemala.

Data source: PHE Epidemic Intelligence Team.

*Aedes albopictus*, a potential vector of Zika virus, is established in most places around the Mediterranean coast [2]. While the vector competence of this species has not yet been confirmed for European mosquito populations, during the summer season (most likely from July by analogy with other mosquito-borne disease transmission in the EU), autochthonous transmission in the continental European Union – following the introduction of the virus by a viraemic traveller – may be possible in areas where *Ae. albopictus* is established [3].

To date, within continental Europe, no autochthonous cases of Zika virus infection due to vector-borne transmission have been reported. As of 14 April, ECDC has recorded 409 imported cases in 17 EU/EEA countries [4].

In the UK, the risk of autochthonous, vector-borne Zika virus transmission is deemed to be negligible for climatic reasons (that preclude the *Aedes* mosquito vector surviving). As of 13 April, 14 imported Zika virus cases associated with the current outbreak have been reported in the UK (from Barbados, Brazil, Colombia, Curacao/Venezuela, Guyana/Suriname, Jamaica, Mexico/Venezuela and Venezuela) [1].

While almost all cases of Zika virus infection are acquired via mosquito bites, a small number of possible cases of sexual transmission from males to their sexual partners (both male and female) have been reported in non-outbreak countries. Advice on how to prevent infection (including via sexual transmission) is available on the PHE [1] and NaTHNaC websites [5].

The majority of people infected with Zika virus have no symptoms. For those with symptoms, Zika virus tends to cause a mild, short-lived (2 to 7 days) illness [1]. Based on a growing body of research, there is scientific consensus that Zika virus is a cause of microcephaly and other congenital anomalies (also referred to as congenital Zika syndrome) and Guillain-Barré syndrome (GBS) [6,7,8]. To date, microcephaly and other foetal malformations potentially associated with Zika virus infection have been reported in six countries: Brazil (1,113 cases), Cape Verde (two), Colombia (seven), French Polynesia (eight), Martinique (three) and Panama (three). Two further cases, each associated with a stay in Brazil, were detected in Slovenia and the United States of America [6].

In addition, 13 countries worldwide have reported an increased incidence of GBS and/or laboratory confirmation of a Zika virus infection among GBS cases [6]. More studies are required to determine the spectrum of effects of Zika virus infection, the frequency at which complications occur, and the factors that determine or influence outcomes of infection.

Additional information on Zika virus infection as well as guidance for health professionals can be found on the PHE website [1]. Travel advice can be found on the NaTHNaC Travel Health Pro website [5].

Recent and past publications on Zika virus infection can be found in the following collections: [WHO](#); [WHO PAHO](#); [CIDRAP](#); [The Lancet](#); and [Transactions of the RSTMH](#).

## References

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  8. Rasmussen *et al* (2016). Zika virus and birth defects – Reviewing the evidence for causality, *NEJM* (13 April, online).
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## Yellow fever in Angola

Since December 2015, an outbreak of yellow fever (YF) has been ongoing in Angola. As of 10 April 2016, 1,751 suspected cases including 242 deaths (case fatality: 13.8%) have been reported in 17 of 18 provinces; 582 cases have been confirmed [1]. Luanda, the capital of Angola (see map [2]), is the most affected province where 406 confirmed cases and 165 deaths have been reported. While cases are increasing in other affected provinces, including Huambo (85 confirmed cases) and Benguela (22 confirmed cases), there are some early indications that overall incidence is decreasing. Angola is a YF-endemic country but this is the worst outbreak to occur there in 30 years [3].

Cases have been reported in both Angolan nationals and expatriates resident in Angola, including nationals of Cape Verde, Democratic Republic of the Congo (DRC), Eritrea, India and Lebanon [4]. At least six Chinese citizens have also died from YF while in Angola [5]. In addition imported cases – in travellers who had recently returned from Angola – have been reported in China (nine cases) [6], DRC (three cases) [7], Kenya (two cases) [8] and Mauritania (one case) [4]. In DRC, locally-acquired cases of YF are regularly reported; between early January and 22 March 2016, 151 suspected cases including 21 deaths had been reported, mostly in the northern part of the country not bordering Angola [7]. Only four of these cases have been confirmed in DRC so far, of which three were acquired in Angola.

A vaccination campaign began in Luanda in early February to control the outbreak and, as of 10 April 2016, 90% of the target population had been vaccinated and case numbers in Luanda have decreased. Huambo province launched their vaccination campaign on 12 April and a campaign in Benguela is in preparation. Support for the response activities is being provided by the World Health Organization (WHO) and other international partners [1].

## Background

The yellow fever virus (YFV) can cause an illness that results in jaundice (yellowing of the skin and eyes) and bleeding with severe damage to the major organs (eg liver, kidneys and heart). The mortality rate is high in those who develop severe disease [9]. YFV circulates between infected monkeys or humans and mosquitoes, and is a risk in tropical parts of Africa, South America, eastern Panama in Central America and Trinidad in the Caribbean. Areas with a “risk of YF transmission” (also known as endemic) are countries (or areas within countries) where mosquito species known to transmit the disease are present and where the infection is reported in monkeys and/or humans. Around 90% of reported YF cases occur in sub-Saharan Africa [10].

YF is a vaccine-preventable disease. In order to prevent the international spread of YF, under the International Health Regulations 2005 (IHR) [11], countries may require proof of vaccination, recorded in an International Certificate of Vaccination or Prophylaxis (ICVP). A Medical Letter of Exemption from vaccination may be taken into account by a receiving country, and can be considered in some circumstances if the vaccine is contraindicated.

## Advice for travellers

Yellow fever is a rare cause of illness in travellers. Between 1970 and 2013, only 10 cases have been documented in unvaccinated travellers from the United States and Europe who travelled to risk areas in Africa or South America [5,12]. The imported cases recently reported in China highlights the need to reinforce YF vaccine recommendations and certificate requirements for all travellers who visit countries with risk of yellow fever.

YF is transmitted by mosquitoes. All travellers visiting countries with a risk of any disease transmitted by mosquitoes should take insect bite avoidance measures, day and night.

As well as mosquito bite avoidance, vaccination is recommended for personal protection for anyone travelling to or through areas of Angola or any other countries with risk of yellow fever. Under the IHR, a yellow fever vaccination certificate is required from all travellers over 1 year of age travelling to Angola [13].

Further information about yellow fever, including vaccine recommendations and certificate requirements under the IHR for each country, is available from the [NaTHNaC Travel Health Pro website](#).

If a case of yellow fever is suspected, samples should be sent to the PHE [Rare and Imported Pathogens Laboratory \(RIPL\)](#); this should be done by liaising with the local diagnostic laboratory. Full clinical and travel history details (including relevant dates) should be provided on the request forms.

The **Imported Fever Service** is available to health professionals should specialist advice be needed.

## References

1. WHO Regional Office for Africa (11 April 2016). Situation Report: Yellow fever outbreak in Angola.
  2. United Nations Map of Angola.
  3. WHO (March 2016). Angola grapples with worst yellow fever outbreak in 30 years.
  4. ECDC (1 April 2016). Epidemiological update: outbreak of yellow fever in Angola.
  5. ECDC (24 March 2016). Rapid Risk Assessment: Outbreak of yellow fever in Angola.
  6. WHO (6 April 2016). Disease Outbreak News: Yellow fever – China.
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  8. WHO (6 April 2016). Yellow fever – Kenya.
  9. NaTHNaC Travel Health Pro website (13 April 2016). Yellow fever factsheet.
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  11. WHO (2005). International Health Regulations: 1-60.
  12. Chen J, Lu H (2016). Yellow fever in China is still an imported disease (commentary). *BioScience Trends* (5 April, online).
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## Outbreak of high level azithromycin resistant gonorrhoea in England

A National Resistance Alert was issued to microbiologists in England in October 2015 calling for all gonococcal samples to be tested for azithromycin resistance and for resistant isolates to be referred to PHE's Sexually Transmitted Bacteria Reference Unit (STBRU). This followed evidence of a potential outbreak of high-level azithromycin resistant (HL-AziR) infections in the north of England.

According to a new report on the situation published in this issue of *HPR* [1], the outbreak has since spread to the West Midlands and south of England, including London. Initial cases were among heterosexuals but more recent evidence suggests HL-AziR infections are now spreading among men who have sex with men.

PHE continues to monitor and investigate gonorrhoea HL-AziR gonococcal infections and further reminders to raise awareness among clinicians and microbiologists have been issued.

## Reference

1. Outbreak of high level azithromycin resistant gonorrhoea in England. *HPR* **10**(15): infection report.
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## Training for participation in fifth HCAI point prevalence survey

PHE is coordinating English participation in the European Centre for Disease Control (ECDC) Point Prevalence Survey (PPS) on HCAI. This will be England's fifth PPS on HCAI and second national survey on antimicrobial consumption and prescribing quality indicators. PHE has invited all acute hospitals in England to participate in the PPS which should occur over any two week period in each hospital between September and November 2016. Letters were sent to the Directors of Infection Prevention and Control (DIPCs) and Chief Pharmacists in February 2016 requesting each Trust to nominate two surveillance leads (eg lead IPC nurse and antimicrobial pharmacist) and email names to [PPSEngland@phe.gov.uk](mailto:PPSEngland@phe.gov.uk) by 30 April 2016. To date almost 50% of NHS acute Trusts have signed up.

Training courses to aid participation will be provided in June 2016. Currently confirmed training dates are as follows (a further date and venue for the north east of England has yet to be agreed):

- Manchester: Tuesday 7 June 2016
  - London: Monday 13 June 2016
  - Bristol: Monday 20 June 2016.
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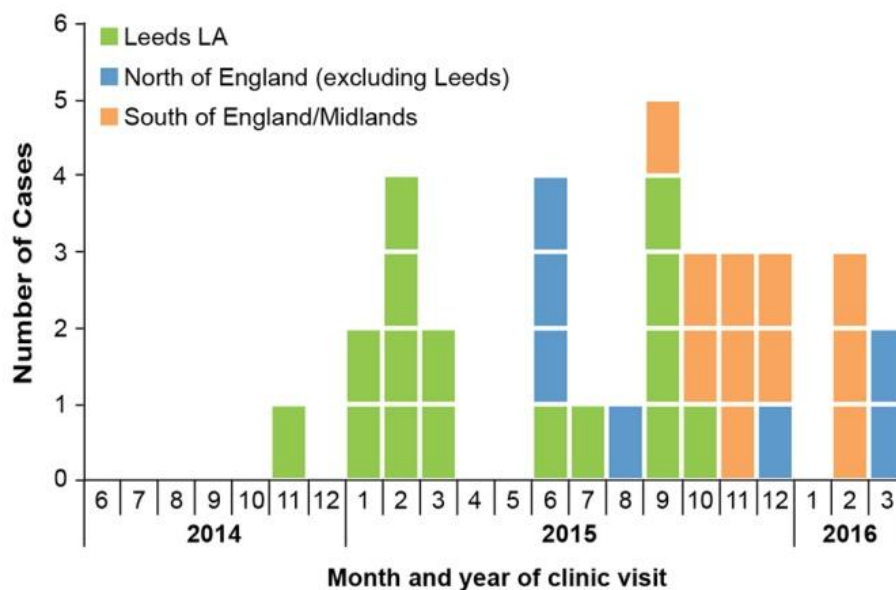
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### Outbreak of high level azithromycin resistant gonorrhoea in England

There have been 34 cases of high level azithromycin resistant gonorrhoea (HL-AziR) (MIC >256 mg/L) diagnosed amongst residents of England between November 2014 and April 2016 (see figure). HL-AziR has previously been observed only sporadically in the UK and elsewhere.

#### Cases of highly azithromycin-resistant *Neisseria gonorrhoeae* 2014 to February 2016



The outbreak first emerged in residents of Leeds and the north of England [1]. The outbreak has since spread to the West Midlands and south of England, including London. Initial cases were among heterosexuals but more recent evidence suggests HL-AziR is now spreading among men who have sex with men. Partner notification has been of limited success: of 50 partners thus far reported, only 22 (44%) were successfully contacted, 18 (82%) of which were tested; 17 (94%) tested positive for gonorrhoea. Whole genome sequencing of a subset of the isolates indicates that many of the isolates were clonal, consistent with recent transmission, and the remainder are closely related and share a more distant common ancestor.

Few antimicrobials remain effective in the treatment of gonorrhoea. Current recommended therapy involves intramuscular ceftriaxone 500mg in combination with azithromycin 1g orally [2]. Gonorrhoea can develop resistance rapidly, therefore dual therapy is recommended because simultaneous development of resistance to both drug types is unlikely, and first-line treatment will remain effective [3,4]. If azithromycin becomes ineffective against gonorrhoea, there is no “second lock” to prevent or delay the emergence of ceftriaxone resistance, and gonorrhoea may become untreatable.

In September 2015 PHE alerted clinicians in order to raise awareness of HL-AziR gonorrhoea via the British Association for Sexual Health and HIV network [5]. A National Resistance Alert was issued to all microbiologists in October 2015 to ensure all gonococcal samples are tested for azithromycin resistance and resistant isolates referred to PHE’s Sexually Transmitted Bacteria Reference Unit (STBRU). As the outbreak has spread, further reminders to raise awareness among clinicians and microbiologists are being issued.

PHE is leading a national incident response. PHE Centres and health protection teams will be supporting local work to prevent further dissemination of HL-AziR gonorrhoea, including enhanced data collection and interventions and communications to raise awareness among the local communities affected. Centres will also support local sexual health commissioners and sexual health clinics to raise awareness of antimicrobial resistance in gonorrhoea, and ensure that all cases of HL-AziR gonorrhoea and their sexual partners are thoroughly investigated, treated according to national guidelines and reported to PHE [2].

## References

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### General outbreaks of foodborne illness in humans, E&W: weeks 9-13/2016

Preliminary information has been received about the following outbreaks.

PHEC/HPT	Organism	Location	Month of outbreak	No. ill	Cases positive	Suspect vehicle	Evidence
Midlands	Norovirus	Restaurant	March	21	1	Chicken (sticks, nibbles, burgers), garlic mushrooms, prawns, salad	N/k

### Common gastrointestinal infections, E&W, laboratory reports: wks 9-13/2016

Laboratory reports	Number of reports received					Total reports	Cumulative total	
	9/16	10/16	11/16	12/16	13/16	9-13/16	1-13/16	1-13/15
Campylobacter	636	651	624	537	505	2953	<b>8925</b>	11193
<i>E. coli</i> O157 *	3	3	–	–	–	6	<b>39</b>	158
Salmonella †	84	86	73	59	6	308	<b>1138</b>	1206
<i>Shigella sonnei</i>	14	6	8	6	8	42	<b>145</b>	213
Rotavirus	43	35	41	44	32	195	<b>419</b>	961
Norovirus	260	234	263	206	211	1174	<b>2356</b>	2881
Cryptosporidium	54	57	43	34	39	227	<b>615</b>	463
Giardia	62	63	82	39	53	299	<b>775</b>	828

\*Vero cytotoxin-producing isolates: data from PHE's Gastrointestinal Bacteria Reference Unit (GBRU). † Data from GBRU.

### Salmonella infections: Feb-March 2016

The below 447 serotypes were recorded in February; 308 salmonellas were recorded in March.

Organism	Cases: February 2016
S. Enteritidis	78
S. Typhimurium	84
S. Virchow	8
Others (typed)	188
<b>Total salmonella (provisional data)</b>	<b>358</b>

Notes: Phage typing ceased on 1 November 2015; Introduction of SGSS in December 2014, means direct comparisons with earlier data (LabBase2) may not be valid.

## Suspected and laboratory-confirmed reported norovirus outbreaks in hospitals, with regional breakdown: outbreaks occurring in 9-13/2016

The hospital norovirus outbreak reporting scheme (HNORS) recorded 101 outbreaks occurring between weeks 9 and 13, 2016, 99 of which led to ward/bay closures or restrictions to admissions. Eighty-four outbreaks (98%) were recorded as laboratory confirmed due to norovirus (see table). For the calendar year 2015 – between week 1 (January) and week 13 (week beginning 28 March) – 170 outbreaks were reported. Ninety-seven per cent (164) of reported outbreaks resulted in ward/bay closures or restrictions to admissions and 80% (136) were laboratory confirmed as due to norovirus (see table).

### Suspected and laboratory-confirmed reported norovirus outbreaks in hospitals, with regional breakdown: outbreaks occurring in weeks 9-13/2016

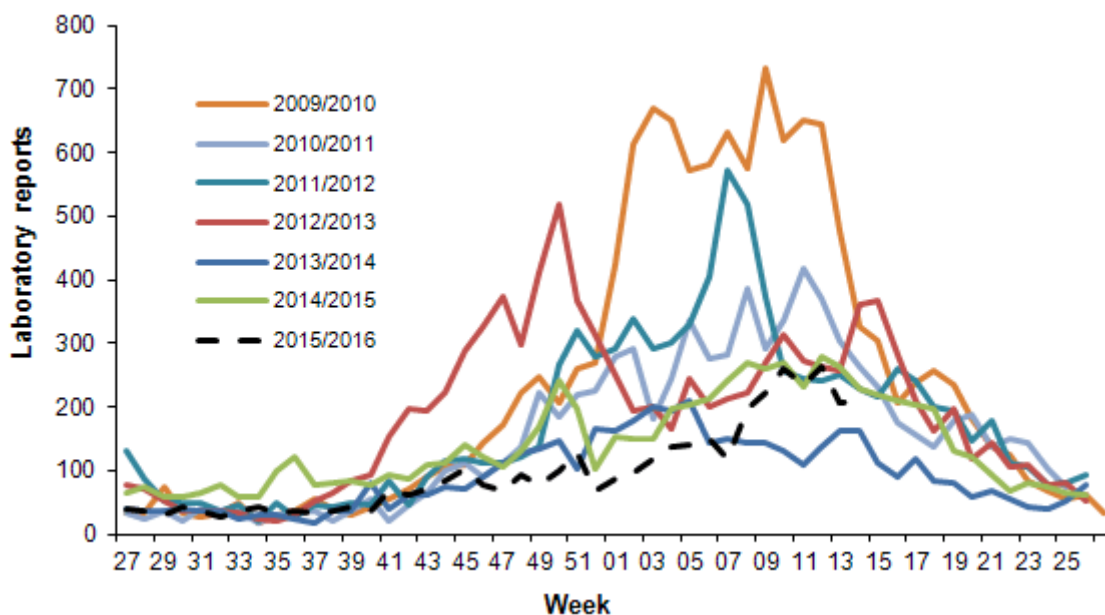
Region/ PHE Centre	Outbreaks between weeks 9-13/2016			Total outbreaks 1-13/2016		
	Outbreaks	Ward/bay closure*	Lab-confirmed	Outbreaks	Ward/bay closure*	Lab-confirmed
Avon, Gloucestershire and Wiltshire	8	8	4	13	13	8
Bedfordshire, Herts. and Northants.	1	1	1	1	1	1
Cheshire and Merseyside	–	–	–	–	–	–
Cumbria and Lancashire	6	6	4	9	9	5
Devon, Cornwall and Somerset	4	4	3	7	7	5
Greater Manchester	4	4	3	7	7	5
Hampshire, IoW and Dorset	8	8	6	17	17	14
Lincolnshire, Leicestershire, Nottinghamshire and Derbyshire	4	4	3	5	5	4
London	–	–	–	1	1	0
Norfolk, Suffolk, Cambs. and Essex	–	–	–	–	–	0
North East	26	25	23	41	38	33
Sussex, Surrey and Kent	2	1	2	5	4	5
Thames Valley	2	2	2	10	10	8
West Midlands	12	12	12	17	16	14
Yorkshire and the Humber	28	28	24	37	36	33
<b>Total</b>	<b>101</b>	<b>99</b>	<b>84</b>	<b>170</b>	<b>164</b>	<b>136</b>

\* Note: not all outbreaks result in whole wards closures, some closures are restricted to bays only.

### Seasonal comparison of laboratory reports of norovirus (England and Wales)

In the current season to date (from week 27, 2015, to week 13, 2016), there were 2356 laboratory reports of norovirus. This is 45% lower than the average number of laboratory reports for the same period in the seasons between 2009/10 and 2013/2014 (4255). The number of laboratory reports in the most recent weeks will increase as further reports are received.

### Current season's laboratory reports (to week 13, 2016) compared to previous seasons' weekly average (England and Wales)



### Calendar year 2015 (to week 53) norovirus laboratory reports compared to previous years' weekly mean (2010-2014)

