



Public Health
England

Protecting and improving the nation's health

Dengue reported in England, Wales and Northern Ireland: 2014

Withdrawn September 2023

About Public Health England

Public Health England exists to protect and improve the nation's health and wellbeing, and reduce health inequalities. It does this through world-class science, knowledge and intelligence, advocacy, partnerships and the delivery of specialist public health services. PHE is an operationally autonomous executive agency of the Department of Health.

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Introduction

Dengue is a mosquito-borne infection transmitted by the bite of an infected female *Aedes* mosquito. It is caused by a virus from the Flaviviridae family and has four main serotypes: DEN-1, 2, 3 and 4. Illness is characterised by an abrupt onset of fever often accompanied by severe headache and pain behind the eyes, muscle pain, joint pains, nausea, vomiting, abdominal pain and loss of appetite; however, symptoms can range from mild or non-existent to severe. Severe dengue (also known as dengue haemorrhagic fever) involves haemorrhagic symptoms (bleeding) and failure of major organs, sometimes leading to shock and death. A second subsequent infection with a different serotype of the dengue virus may increase the risk of developing severe dengue [1], which tends to occur in countries where dengue is endemic. Severe dengue is extremely rare in travellers.

Dengue is found in tropical and sub-tropical countries, mostly in urban and semi-urban areas where the *Aedes* mosquito breeds. The global burden of dengue is difficult to estimate due to under-reporting in many countries, but the latest estimate indicates that around 390 million (95% credible interval (CI) 284–529 million) infections occur each year, of which 96 million (95% CI 67–136 million) manifest clinically (any severity of disease) [2].

General trend

Dengue does not occur naturally in the UK; it is a travel-associated infection. The majority of cases that are reported in the UK are acquired in Asia, the Americas and the Caribbean.

In England, Wales and Northern Ireland (EWNI), 347 individual cases of dengue were reported by the HSE Rare and Imported Pathogens Laboratory (RIPL) in 2014, 37% lower than 2013.¹ Of these, 205 (59%) were confirmed cases (RT-PCR +ve and/or +ve virus isolation) and 142 (41%) were probable cases (IgM and IgG +ve and seroconversion between acute and convalescent samples). No haemorrhagic forms of the disease (severe dengue) were known to be reported in EWNI in 2014. Between 2009 and 2014, there has been an overall average annual increase of 36% [Figure 1].

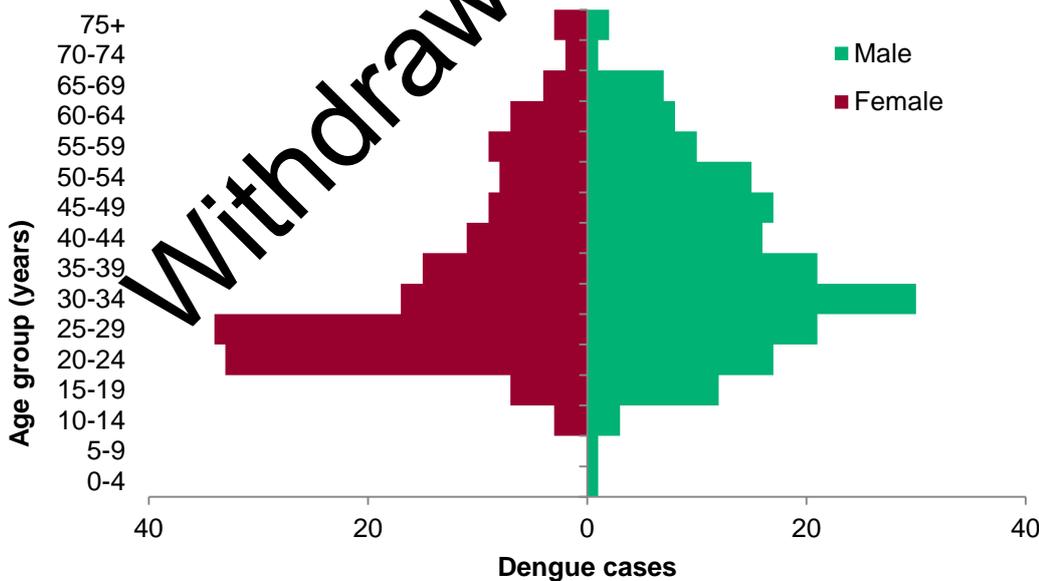
¹ The method used to assign country of residence to cases has changed; patient postcode is now being used instead of the referring diagnostic laboratory location. To allow comparisons with 2013, the new method has been applied to 2013 cases as well, which has meant the total numbers for England, Wales and Northern Ireland have changed slightly compared to those published in the 2013 report (now 549 instead of 541 as originally published). These changes have not been applied to data published before 2013, which should be borne in mind when interpreting trends over time.

Figure 1: Total cases of dengue reported in England, Wales and Northern Ireland: 2009 – 2014



Age and sex

Figure 2: Cases of dengue by age and sex, England, Wales and Northern Ireland: 2014 (N=344)



In 2014, age and sex was known for 344 (99%) dengue cases in EWNI [Figure 2], of which 53% were male. The median age for all cases was 34 years [range 0–80 years],

although this differed by gender (36 years for males and 30.5 years for females). The majority of cases were in adults; those aged 16 years and under accounted for 2.9% of all cases in 2014, which is slightly increased compared to the rolling average between 2009 and 2013 (2%).

Geographical distribution

Table 1 shows the cases by the new PHE centres (PHECs) in 2014 compared to 2013. For 2013 and 2014 cases, the geographical regions have been defined by the residential postcode where this was available, otherwise referring diagnostic laboratory locations were used. In 2014, 294/347 (85%) of cases were assigned to a PHE centre based on the patient postcode, compared to 489/549 (89%) in 2013. London usually reports the highest proportion of cases in England (42% in 2014 and 36% in 2013). All regions except the West Midlands reported a decrease in cases reported in 2014 compared to 2013 in line with the national trend.

Table 1. Cases of dengue by geographical distribution, England, Wales and Northern Ireland: 2014 and 2013

Geographical area	2014	2013	% change between 2013 and 2014
London PHEC	142	191	-25.1%
South East PHEC	41	93	-34.4%
South West PHEC	30	55	-45.5%
West Midlands PHEC	26	26	0.0%
East of England PHEC	23	36	-36.1%
Yorkshire and Humber PHEC	18	45	-60.0%
North West PHEC	16	48	-66.7%
East Midlands PHEC	12	25	-52.0%
North East PHEC	9	10	-10.0%
England subtotal	338	529	-36.1%
Wales	8	16	-50.0%
Northern Ireland	1	4	-75.0%
Total EWNI	347	549	-36.8%

Travel history

Active surveillance of dengue is not conducted in the UK. Clinical and travel history details for cases are dependent upon what the diagnosing clinician provides with the

laboratory request form when the sample is sent to RIPL. Often clinical details such as date of onset and symptoms, relevant past vaccination status and travel history (such as country and dates of travel) that would aid laboratory staff to confirm the diagnosis of dengue (as well as other infections), are missing. The data below should therefore be interpreted with caution, especially for travel history where more than one country has been given. It is recommended that those sending samples to RIPL adhere to the guidance about what information to include on the request form, as set out in the RIPL User Manual available on the PHE website.

Of 347 cases reported in EWNl in 2014, 288 (83%) had country or region of travel stated; travel history completeness was similar to 2013 (84%). Of these travel-associated cases, 247 (86%) had travelled to a single country (six of these stated world region only), 27 travelled to two different countries, 11 travelled to three different countries and three travelled to four different countries. One confirmed case acquired infection via a needlestick injury in the UK and had not recently travelled to a dengue endemic area [3] and 58 cases had no travel history stated. Figure 3 shows the regions of travel and Table 2 shows the top ten countries of travel for dengue reported in EWNl in 2014.

NB. All possible countries/regions of infection are included for analysis if no dates of travel or onset have been stated; in reality a case is likely to have acquired infection in only one country.

Figure 3: Cases of dengue by region of travel, England, Wales and Northern Ireland: 2014 (N=288 cases, 345 countries)

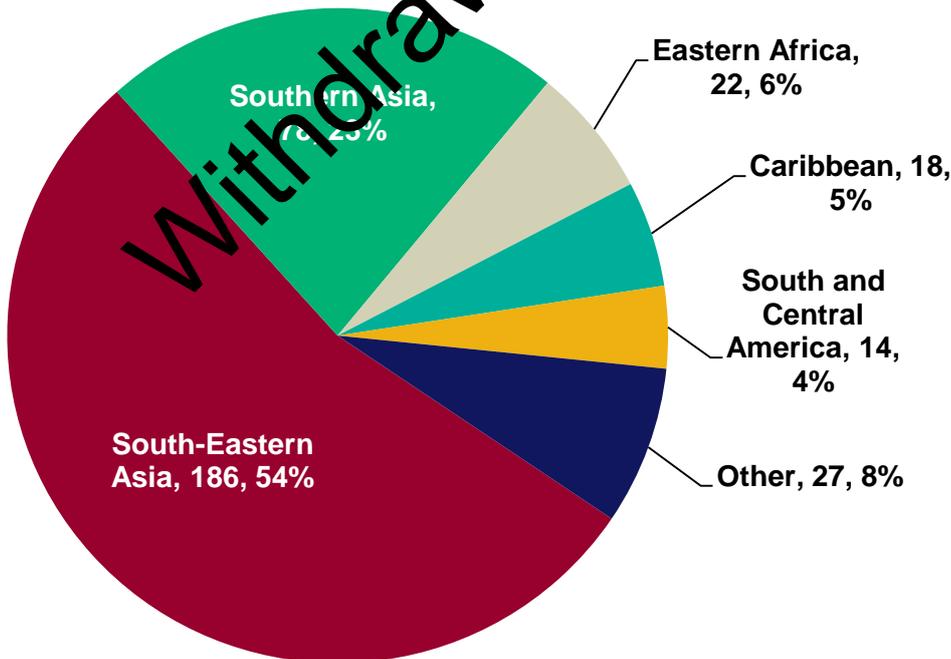


Table 2: Top ten countries of travel for cases of dengue, England, Wales and Northern Ireland: 2014

Country of travel	2014	2013	% change between 2013 and 2014
Thailand	76	101	-25%
India	52	82	-37%
Malaysia	28	16	75%
Indonesia	25	19	32%
Sri Lanka	17	35	-51%
Cambodia	13	15	-13%
Philippines	11	20	-45%
Singapore	10	6	67%
Tanzania	9	2	350%
Viet Nam	9	12	-25%
Other	95	194	-51%
Total countries	345	502	-31%
No travel	1	-	-
Not stated	58	86	-33%

In 2014, as in previous years, the majority of dengue cases reported in EWNI were associated with travel to Southern and South Eastern Asia, with Thailand and India being the most frequently reported countries of travel. Cases acquired in most regions decreased in line with the national trend. Of note in 2014 was the increase in cases associated with travel to Malaysia (28 compared with 16 in 2013) and Tanzania (nine compared with two in 2013). The numbers are small but are the highest reported in EWNI associated with travel to these countries since 2009. An outbreak was reported in Tanzania in February 2014 [4] and most EWNI cases associated with travel to Tanzania occurred during this outbreak in April and May. In Malaysia, 108,698 cases of dengue were reported in 2014 [5], more than twice the number of cases reported in 2013 and the highest number of cases reported since 1995.

All travellers need to be aware of the risk of dengue (as well other mosquito-borne diseases) when travelling to a dengue endemic area, especially in Asia, Africa and the Americas, and should take precautions to avoid mosquito bites, particularly during the day around dawn and dusk.

Information for health professionals and travellers about dengue risk is available on the country information pages of the National Travel Health Network and Centre (NaTHNaC) website at <http://travelhealthpro.org.uk/country-information/>. The outbreak surveillance pages at <http://travelhealthpro.org.uk/outbreak-surveillance/> should also be checked regularly for changes in dengue epidemiology or outbreaks reported in new areas.

Data sources

Dengue infections in England, Wales and Northern Ireland comprise laboratory reports from the PHE Rare and Imported Pathogens Laboratory, Porton Down (using date received by the laboratory). Data cleaning and analysis were undertaken by the PHE Travel and Migrant Health Section, National Infections Service, Colindale.

Information resources

- NaTHNaC dengue factsheet: <http://travelhealthpro.org.uk/dengue/>
- NaTHNaC insect bite avoidance advice: <http://travelhealthpro.org.uk/insect-tick-bite-avoidance/>
- PHE dengue page: <https://www.gov.uk/government/collections/dengue-fever-guidance-data-and-analysis>
- PHE Rare and Imported Pathogens Laboratory: Specimen referral guidelines and service user manual:
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/419656/RIPL_user_manual.pdf
- PHE Rare and Imported Pathogens request form (P1):
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/419656/RIPL_user_manual.pdf

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2. Bhatt S, Gething PW, Brady OJ, Messina JP, Farlow AW, Moyes CL et al. The global distribution and burden of dengue. *Nature* 2013; **496** (7446): 504-7.
3. Morgan C, Paraskevopoulou SM, Ashley EA, Probst F, Muir D. Nosocomial transmission of dengue fever via a needlestick. An occupational risk. *Travel Medicine and Infectious Diseases* 2015; **13**: 271-3.
4. World Health Organization Regional Office for Africa (AFRO). Dengue outbreak in the United Republic of Tanzania (Situation as of 30 May 2014) [online] [accessed 28 October 2015]. Available at: <http://www.afro.who.int/en/clusters-a-programmes/dpc/epidemic-a-pandemic-alert-and-response/4155-dengue-outbreak-in-the-united-republic-of-tanzania-30-may-2014.html>
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