



Public Health
England

Protecting and improving the nation's health

Sexually transmitted *Shigella* spp. in England 2016 to 2020

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Background

Shigella spp. is a bacterial pathogen which causes dysentery and is transmitted through faecal-oral contact. Diagnoses of shigellosis are often associated with travel to endemic countries [1] but also increasingly through sexual acquisition among men who have sex with men (MSM), with outbreaks of *Shigella flexneri* and *Shigella sonnei* in MSM reported globally [2], including in England [3]. This report presents data from laboratory surveillance and examines the epidemiology of shigellosis in England with a focus on sexually transmitted *Shigella* spp. among MSM, updating the previous surveillance report [4]. In this report, we refer to adult men without a recent history of foreign travel as presumptive MSM and use this as a proxy for sexual transmission among MSM [5].

Main messages

The main messages from this report are that:

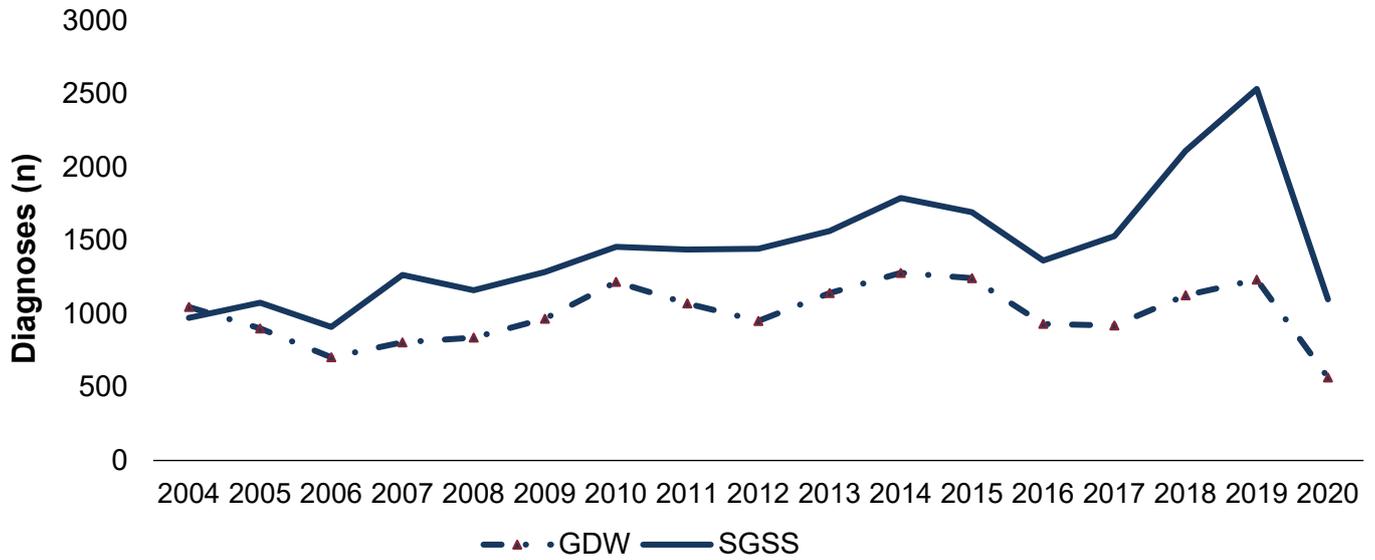
- prior to the coronavirus (COVID-19) pandemic, the number of *Shigella* spp. diagnoses reported in England was increasing, particularly among presumptive MSM^b
- COVID-19 and its associated control measures have had a notable effect on *Shigella* spp. transmission, with 54.1% fewer diagnoses reported in 2020 compared to 2019. This reduction was more pronounced for *S. sonnei* compared to *S. flexneri*
- transmission among presumptive MSM^b continued, albeit at reduced levels, in 2020, with 379 reports of *Shigella* spp. diagnoses among this group
- in the later part of 2020, presumptive sexually transmitted *Shigella* spp. among MSM accounted for the large majority of reports, as travel restrictions reduced the number of imported cases
- *Shigella* spp. isolates show high levels of antimicrobial resistance, highlighting the importance of testing samples for susceptibility to guide treatment where use of antibiotics is indicated

Overview of *Shigella* spp. trends

Between 2004 and 2019, there was an increase in the number of *Shigella* spp. diagnoses among adults reported in laboratory surveillance systems, Second Generation Surveillance System (SGSS^a) and Gastro Data Warehouse (GDW^a). There was a steep decline in the number of diagnoses reported to both systems in 2020, likely due to COVID-19 related control measures (Figure 1).

SGSS provides the total number of *Shigella* spp. diagnoses reported in England from diagnostic laboratories. Although data in GDW is a subset of diagnoses reported in SGSS, data from GDW is primarily used in this report to allow more detailed analyses.

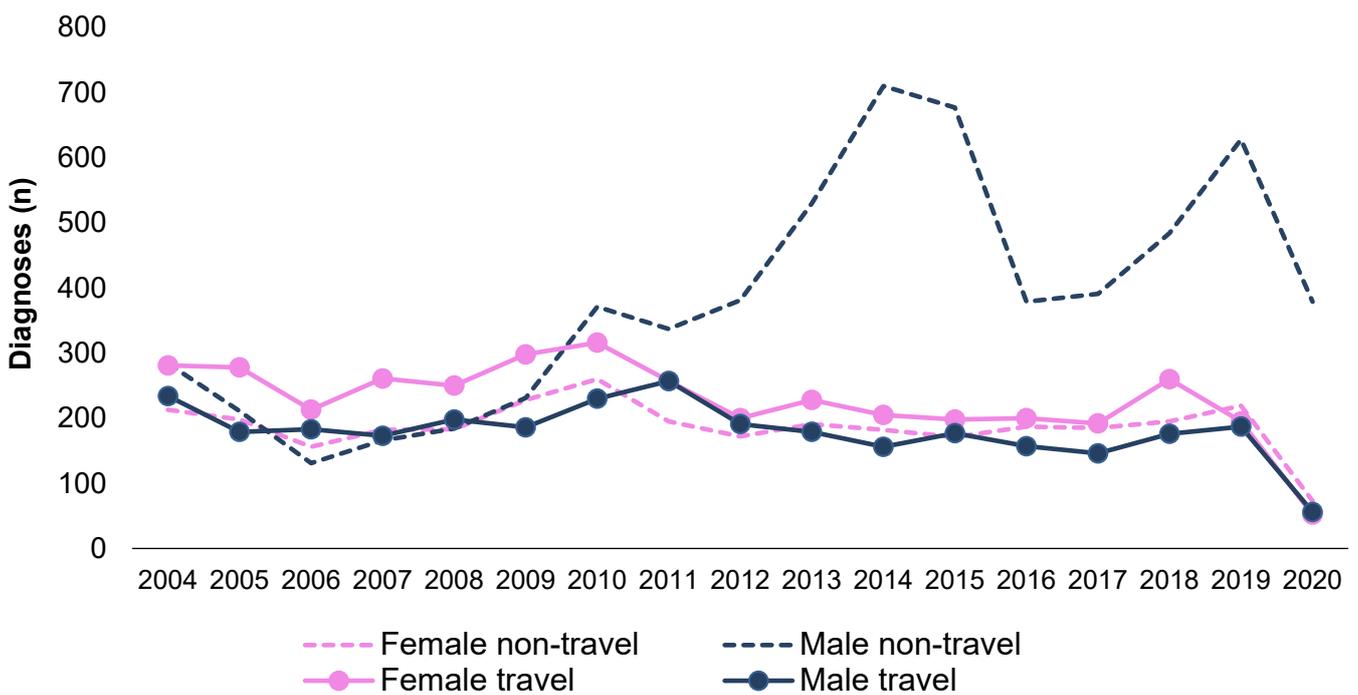
Figure 1. Number of *Shigella* spp. diagnoses among adults (≥16 years), England, 2004 to 2020*, by laboratory surveillance system



* The disparity between the number of diagnoses reported in SGSS and GDW is due to incomplete referral of specimens from local laboratories to the Public Health England (PHE) Gastrointestinal Bacteria Reference Unit (GBRU). *S. flexneri* isolates are more likely to be referred to the GBRU and since fewer *S. sonnei* diagnoses have been reported in 2020, this has resulted in a reduction in this disparity. Data source: GDW^a and SGSS^a

Since 2004, there has been an overall increase in the number of *Shigella* spp. diagnoses in England reported among presumptive MSM^b, such that since 2010 diagnoses in this group have exceeded travel-associated cases (Figure 2)

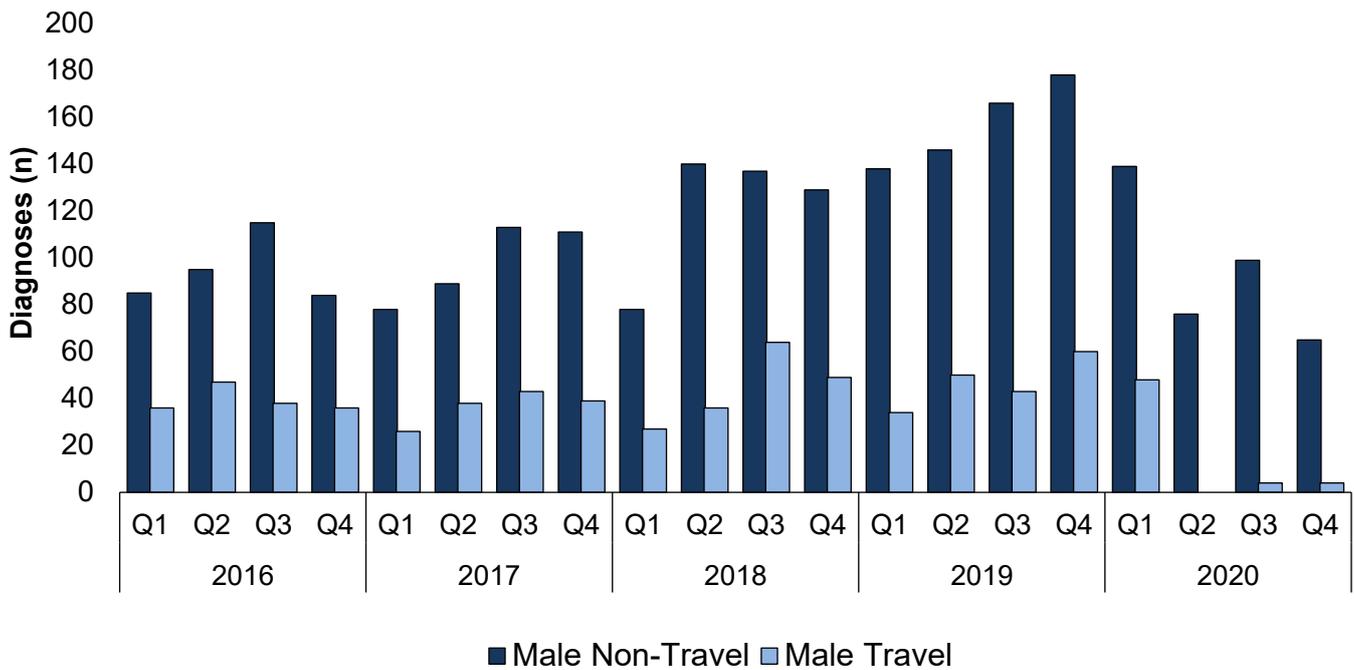
Figure 2. Number of *Shigella* spp. diagnoses among adults (≥16 years) by travel association and gender, England, 2004 to 2020*



* Excludes those where gender is not known. Data source: GDW^a

Since March 2020, 96.8% (240 out of 248) of male *Shigella* spp. diagnoses were among presumptive MSM^b, likely due to travel restrictions associated with the COVID-19 pandemic reducing imported infections (Figure 3), and highlights that transmission among presumptive MSM^b continued, albeit at reduced levels, throughout 2020.

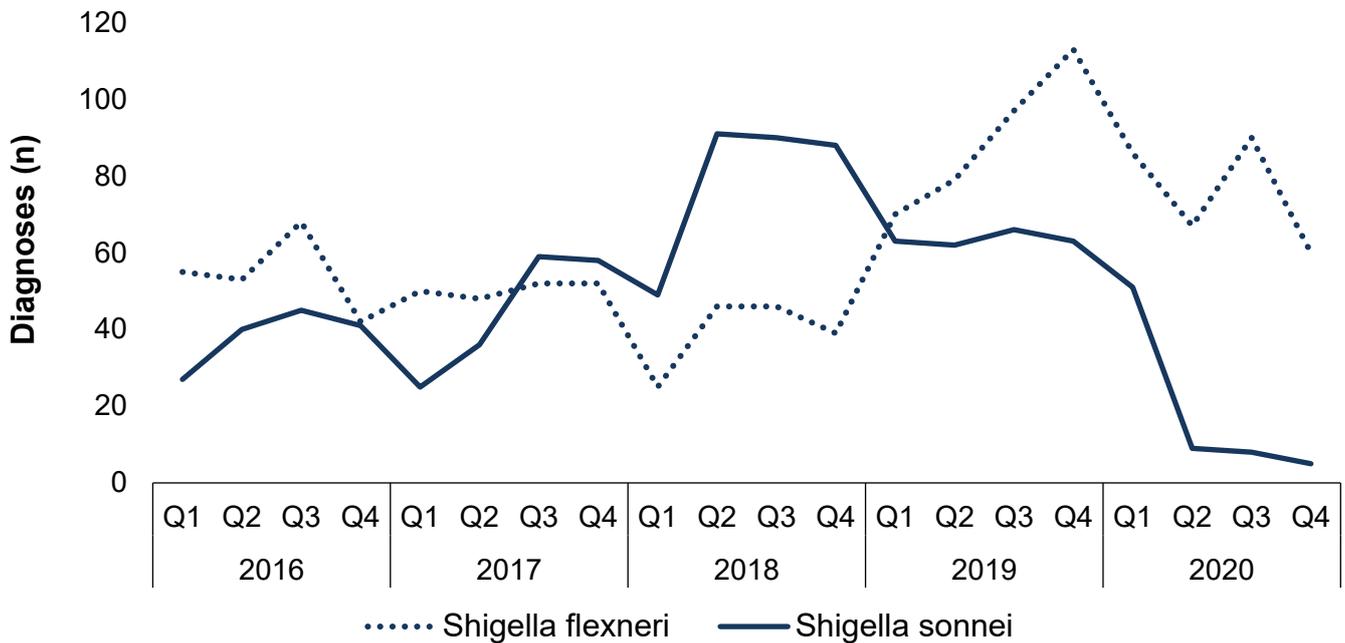
Figure 3. Number of *Shigella* spp. diagnoses among adult men (≥16 years) by travel association, England, 2016 to 2020*



* Excludes those where gender is not known. Data source: GDW^a

S. flexneri has been the most reported species among presumptive MSM^b since 2019, replacing *S. sonnei*. Although a decline in the number of diagnoses was observed in 2020 for both species (likely driven by COVID-19 related control measures), the decline was more pronounced for *S. sonnei* (90.2% decrease from 51 to 5 between Q1 2020 and Q4 2020) (see Figure 4).

Figure 4. Number of *Shigella* spp. diagnoses among presumptive MSM^b by species, England, 2016 to 2020*



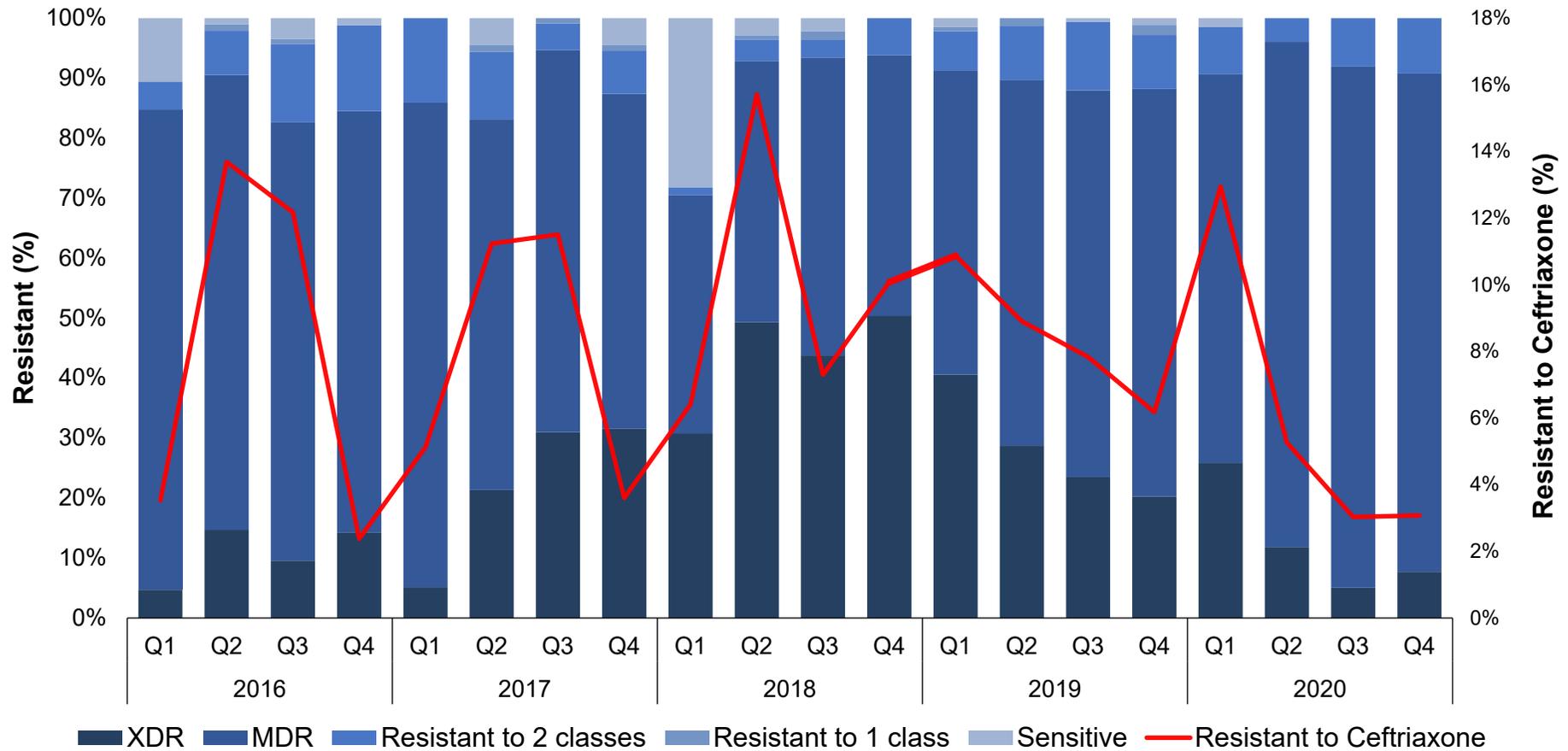
* Data source: GDW^a

Antimicrobial resistance among sexually transmitted *Shigella* spp.

Antimicrobial susceptibility and presence of resistance markers is derived from whole genome sequencing (WGS) of isolates referred to the Gastrointestinal Bacterial Reference Unit (GBRU) at Public Health England, and thus is a subset of diagnoses reported in SGSS. Among presumptive MSM^b, the percentage of *Shigella* spp. isolates that are multi-drug resistant^c (MDR) or extensively-drug resistant^d (XDR) is very high, often exceeding 90% (Figure 5).

Resistance to ciprofloxacin and azithromycin (common first line treatments for shigellosis [6]) is high (in 2020, approximately 60% of *Shigella* spp. isolates were resistant to ciprofloxacin and 40% resistant to azithromycin; data not shown). Resistance to ceftriaxone (a marker for ESBL activity) is lower, but still of concern. Between 2016 and 2020, the percentage of *Shigella* spp. isolates that were resistant to ceftriaxone ranged from 2% to 16% (Figure 5).

Figure 5. Antimicrobial resistance markers detected in *Shigella* spp. isolates from WGS from presumptive MSM^b, England, 2016 to 2020*

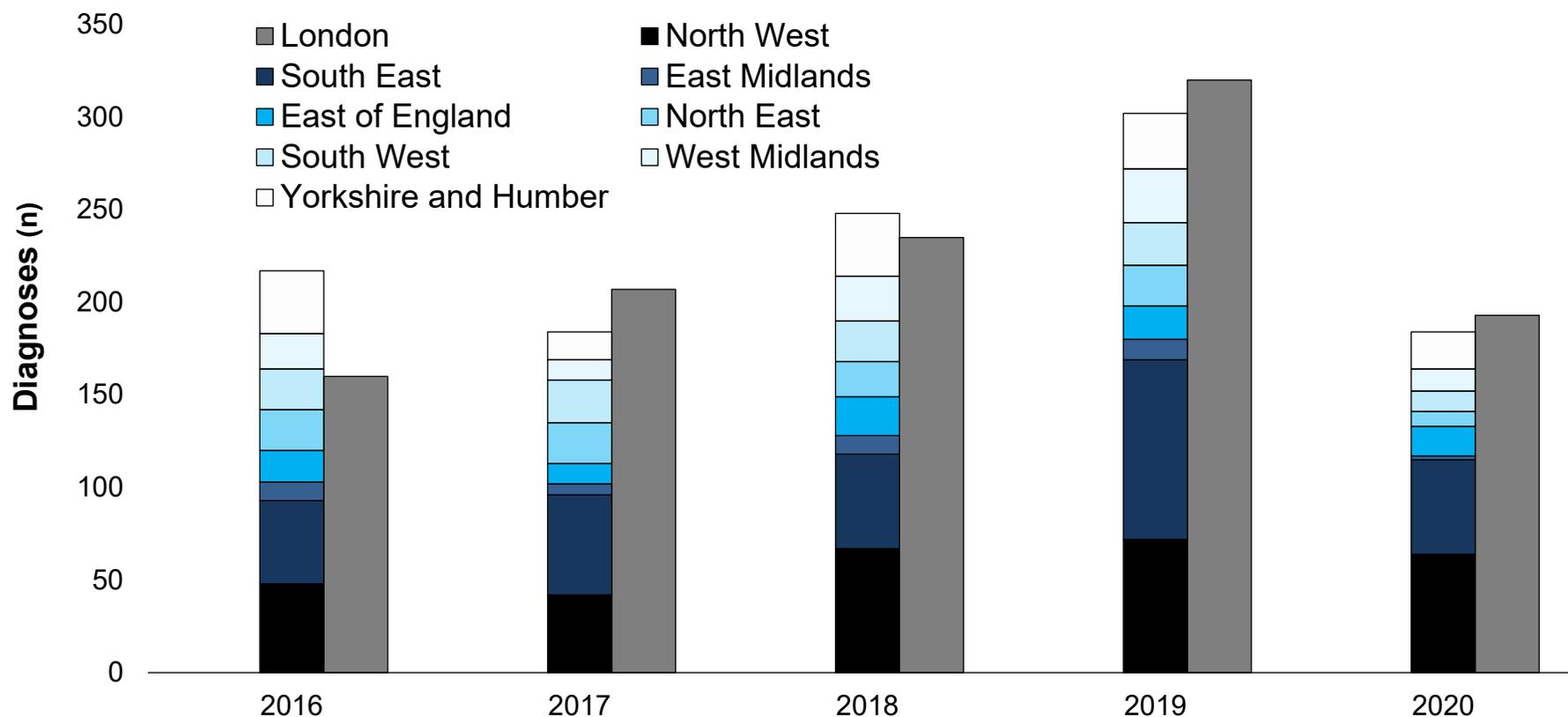


* Data source: GDW^{ca}

Spatiotemporal *Shigella* spp. trends

The proportion of *Shigella* spp. diagnoses among presumptive MSM^b that are within London has remained largely unchanged since 2016, at around 50%. Outside of London, the North West and South East had the greatest number of diagnoses in 2020 (Figure 6).

Figure 6. Number of *Shigella* spp. diagnoses among presumptive MSM by PHE centre, England, 2016 to 2020*. London is represented by the grey bar on the right.



* Excludes those where PHE centre is not known. PHE centre refers to geographical location of reporting laboratory, not patient residence. Data source: GDW^a

Conclusion

Prior to the COVID-19 pandemic, the number of *Shigella* spp. diagnoses reported in England was increasing, particularly among presumptive MSM^b. COVID-19 related control measures reduced *Shigella* transmission in 2020, particularly for *S. sonnei*, but it is anticipated that transmission will start to increase again once restrictions are lifted. Antimicrobial resistance among *Shigella* isolates continues to be a significant concern and continued monitoring is required to ensure continued effectiveness of antimicrobial treatments.

References

1. Public Health England (2017). 'Travel-associated *Shigella* spp. in England, Wales and Northern Ireland: 2014'
2. Mitchell H and Hughes G (2018). 'Recent epidemiology of sexually transmissible enteric infections in men who have sex with men'. *Current Opinion in Infectious Diseases*. 31(1): 50-56
3. Bardsley M, et al (2020). 'Persistent transmission of shigellosis in England is associated with a recently emerged multidrug-resistant strain of *Shigella sonnei*'. *Journal of Clinical Microbiology*. 58(4)
4. Public Health England (2017). 'Laboratory surveillance of non-travel associated *Shigella* spp. infection in adult males, England: 2004 to 2017'. *Health Protection Report* 11(42).
5. Mitchell HD, and others (2019). 'Use of whole-genome sequencing to identify clusters of *Shigella flexneri* associated with sexual transmission in men who have sex with men in England: a validation study using linked behavioural data'. *Microbial Genomics*. 5(11)
6. Public Health England (2017). 'Interim Public Health Operational Guidelines for Shigellosis'
7. Magiorakos AP, and others (2012). 'Multidrug-resistant, extensively drug-resistant and pandrug-resistant bacteria: an international expert proposal for interim standard definitions for acquired resistance'. *Clinical Microbiology and Infection* 18(3): 268-281

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Contributors

Hannah Charles, Helen Fifer, Gauri Godbole, Gwenda Hughes, Claire Jenkins, Holly Mitchell, Mateo Prochazka, Katy Sinka

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Technical notes

a. Data sources

Second Generation Surveillance System (SGSS): this data set includes primary laboratory-based diagnostic data and has the advantages of automated reporting and national coverage, so provides the total number of *Shigella* spp. diagnoses reported in England from diagnostic laboratories.

Gastro Data Warehouse (GDW): faecal specimens from cases with gastrointestinal symptoms are sent to local hospital, private and regional laboratories in England for culture. Local hospital laboratories are recommended to submit presumptive *Shigella* spp. samples to Gastrointestinal Bacterial Reference Unit (GBRU) at PHE for confirmation and typing. Approximately two-thirds of *Shigella* spp. samples are submitted to the GBRU.

Both GDW and SGSS data sets are restricted to contain only *Shigella* spp. diagnoses among adults (≥ 16 years).

b. Presumptive men who have sex with men (MSM)

Data obtained from GDW does not include information on cases' sexual behaviour. These analyses consider non-traveller adult males as a proxy for men who have sex with men (MSM), in alignment with research on the transmission of *Shigella* spp. in England.

c. Multi-drug resistant (MDR)

Multi-drug resistant (MDR) is defined as non-susceptibility to at least one agent in 3 or more antimicrobial categories [7].

d. Extensively-drug resistant (XDR)

Extensively-drug resistant (XDR) is defined as non-susceptibility to at least one agent in all but 2 or fewer antimicrobial categories [7].

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Public Health England
Wellington House
133-155 Waterloo Road
London SE1 8UG
Tel: 020 7654 8000

Website: www.gov.uk/phe

Twitter: [@PHE_uk](https://twitter.com/PHE_uk)

Facebook: www.facebook.com/PublicHealthEngland

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Prepared by: Hannah Charles, Katy Sinka

For queries relating to this document, please contact: EEDD@phe.gov.uk
gumcad@phe.gov.uk

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