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Group A streptococcal infections: first report on seasonal activity in England, 2019/20

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Current scarlet fever activity during this early phase of the 2019/20 season suggests a continuation of elevated incidence seen since 2014, with slightly higher incidence than last season [1]. This makes the 2019/20 season the seventh consecutive season of elevated scarlet fever activity.

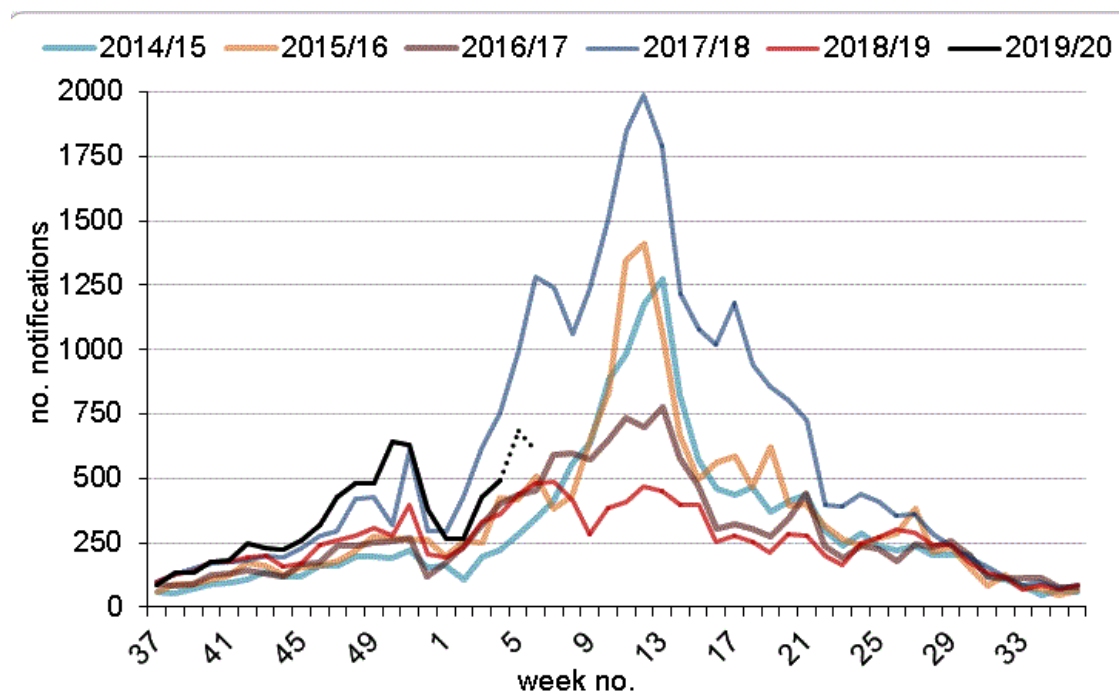
GPs, microbiologists and paediatricians are reminded of the importance of prompt notification of cases and outbreaks to local Public Health England (PHE) Health Protection Teams (HPTs), obtaining throat swabs (prior to commencing antibiotics) when there is uncertainty about the diagnosis, and exclusion of cases from school/work until 24 hours of antibiotic treatment has been received [2].

The number of laboratory notifications of invasive group A streptococcal (iGAS) disease are also above average compared to that reported at this point in the past five seasons. Due to rare but potentially severe complications associated with GAS infections, clinicians and HPTs should continue to be mindful of potential increases in invasive disease and maintain a high degree of clinical suspicion when assessing patients.

Scarlet Fever

Routine monitoring of statutory notifications indicates an increase in scarlet fever cases in January 2020, in line with the usual pattern of seasonal increase at this time of year (figure 1). A total of 7,789 notifications of scarlet fever have been received to date this season in England (weeks 37 to 06, 2019/20) compared to an average of 5,859 (range: 3,449 to 8,570) for this same period in the previous five years. Prior to the upsurge observed in 2013/14, the average for this period was 1,204 notifications (range 943 to 1,893; seasons 2009/10 to 2012/13). Weekly notification totals of 491 and 687 were recorded in recent weeks (weeks 4 and 5), higher than those observed for the corresponding weeks last year (360 and 438).

Figure 1. Weekly scarlet fever notifications in England, 2014/15 onwards*



*Dashed line (weeks 5 and 6) indicates numbers may increase as further notifications expected.

Scarlet fever notifications to date this season showed some variation across England, ranging between 9.9 (East of England) and 23.9 (North West) per 100,000 population (table 1); after the North West the highest observed rates were in Yorkshire and the Humber (18.3), East Midlands (17.9) and the North East (13.6) regions.

Table 1. Number and rate per 100,000 population of scarlet fever (weeks 37 to 06) and iGAS (weeks 37 to 05) infection notification rate by English region in season 2018/19

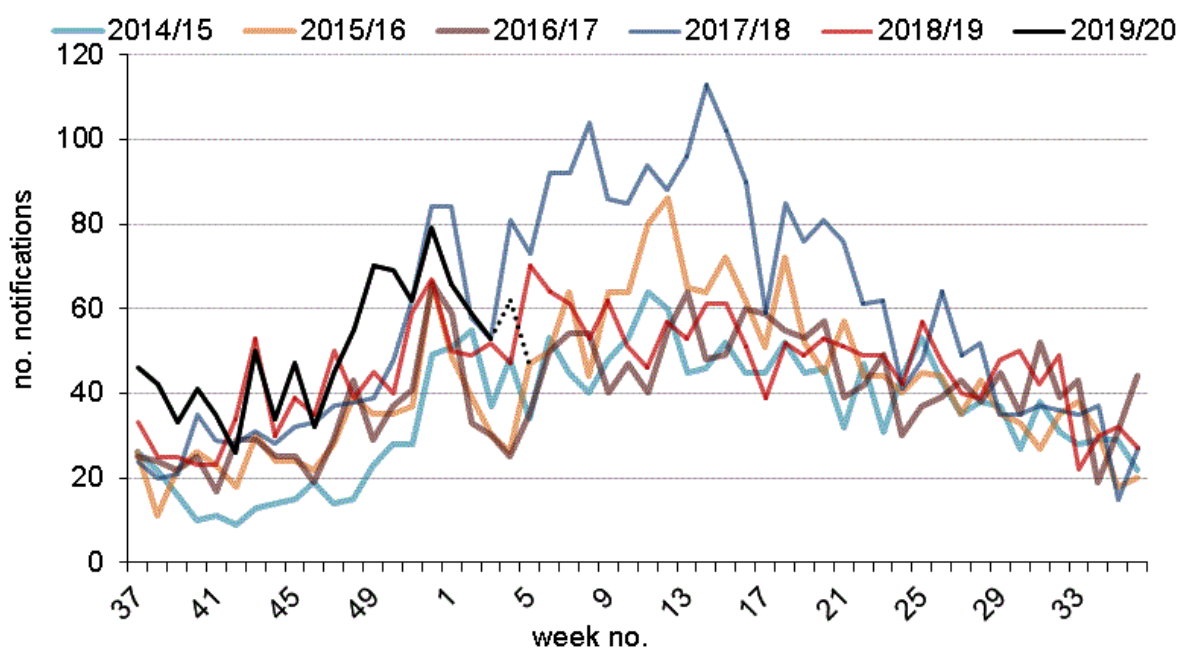
PHE Centre Name	Scarlet Fever		iGAS	
	No. cases	Rate	No. cases	Rate
East of England	654	9.9	84	1.3
East Midlands	860	17.9	87	1.8
London	944	10.6	104	1.2
North East	361	13.6	49	1.9
North West	1743	23.9	159	2.2
South East	959	10.8	197	2.2
South West	622	11.4	106	1.9
West Midlands	644	10.9	117	2.0
Yorkshire and the Humber	1002	18.3	149	2.7
England	7789	13.7	1052	1.9

The age distribution of scarlet fever cases notified so far for this season remains similar to previous years, with 89% being children under 10 years (median 4y; range <1y to 78y) and an equal split between males (50%) and females overall. Rates of infection were highest in 1 to 4 year olds at 650 per 100,000 population, followed by 405/100,000 in the 5 to 9 year olds. Rates were much lower in the adult population with 68/100,000 population in the 15 to 44 year olds, and 7/100,000 in those aged 45 to 64 years.

Invasive Group A streptococcal infection

So far this season (week 37 to 05 2018/19), there have been 1,052 notifications of iGAS disease reported through laboratory surveillance in England, higher than the average (737) for the previous five years (range 537 to 938; figure 2). Highest rates were reported in the Yorkshire and Humber region (2.7 per 100,000 population; table 1), followed by the South East and North West (2.2/100,000), West Midlands (2.0/100,000) and North East and South West regions (1.9/100,000). All regions except for Yorkshire and Humber, and London, had higher rates compared to the same point last season.

Figure 2. Weekly laboratory notifications of invasive GAS infection, England, 2014/15 onwards*



*Dashed line (weeks 4 and 5) indicates numbers may increase as further notifications expected.

The median age of patients with iGAS infection so far this season is 54 years (range <1y to 100y), which is within the range seen at this point in the preceding five seasons (52y to 61y). Thirteen per cent of infections reported this season are in children (<10y), which is lower than the average for the previous 5 seasons (12%) but within the normal range seen (9% to 16%). Rates of infection were highest in the 75 years and over age group at 6 per 100,000 population, followed by 3/100,000 in the less than 1 year, 1 to 4 year and 65 to 74 year age groups.

Analysis of reference laboratory iGAS isolate submissions indicate a diverse range of *emm* gene sequence types identified between September and December 2019. The results indicate the *emm* 89 and *emm* 108 are the most common (11% of referrals each), followed by *emm* 1 (10%), *emm* 12 and *emm* 4 (both 6%). This point last season, *emm* 1 was the most frequently identified (16%), followed by *emm* 89 (13%) then *emm* 4 (7%). This indicates that there has been a change in the dominant *emm* type and increase in the diversity in isolates being referred.

Antimicrobial susceptibility results from routine laboratory surveillance indicate erythromycin resistance in 8% of GAS sterile site isolates, lower than at the same point last season (10%) but above the levels reported prior to 2019 [1,3]. An increase in tetracycline resistance has been noted this season (23%) compared to last season (18%), this continues an increasing trend in resistance over the last five seasons (14% at this point in the 2015/16 season). Susceptibility testing of iGAS isolates against clindamycin demonstrated 7% resistance at this point in the season (compared with 8% last season), and isolates remained universally susceptible to penicillin [1].

Discussion

There has been a steep increase in scarlet fever notification in early 2020, in keeping with the usual seasonal rise at this time of year. Notifications and GP consultations for scarlet fever both suggest elevated levels in early 2020 compared to 2019 [4]. Early indications strongly suggest that we will see a seventh season of elevated scarlet fever activity this year, continuing the increases seen since the 2013/14 season. Continued escalation over the coming weeks is likely with peak activity typically occurring between weeks 11 and 15 (mid-March to mid-April).

Close monitoring, rapid and decisive response to potential outbreaks and early treatment of scarlet fever is vital, especially given the potential for complications associated with GAS infections [5,6]. The number of iGAS disease cases notified through laboratory surveillance in England remains elevated at this point of the 2019/2020 season.

There has been dominance of the *emm1* type identified in referred isolates, increasing during 2016 with the emergence of a new dominant strain reported in England, M1UK [7]. However, over the course of 2019, increasing diversity of *emm* types was identified, partly as a result of outbreaks in persons who inject drugs and homeless populations [8,9]. While GAS isolates remain universally susceptible to the primary antibiotic treatment (penicillin), increases in resistance to alternative antibiotics used as second line treatments are concerning. A number of the *emm* types being seen in the early part of the season align with increased resistance to either erythromycin or tetracycline [10].

Clinicians, microbiologists and HPTs should continue to be mindful of potential increases in invasive disease and maintain a high index of suspicion in relevant patients as early recognition and prompt initiation of specific and supportive therapy for patients with iGAS infection can be life-saving. Invasive disease isolates and superficial isolates from suspected clusters/outbreaks should be submitted to the Respiratory and Vaccine Preventable Bacteria Reference Unit at PHE, 61 Colindale Avenue, London NW9 5HT. Relevant guidelines/FAQs are available on the PHE website, as follows:

- Guidelines on infection control in schools and other childcare settings, including recommended exclusion periods for scarlet fever and guidelines on outbreak management of scarlet fever outbreaks:
<https://www.gov.uk/government/publications/scarlet-fever-managing-outbreaks-in-schools-and-nurseries>
- Scarlet fever: symptoms, diagnosis and treatment factsheet:
<https://www.gov.uk/government/collections/scarlet-fever-guidance-and-data>
- Guidelines for the management of close community contacts of invasive GAS cases and the prevention and control of GAS transmission in acute healthcare and maternity settings: <https://www.gov.uk/government/collections/group-a-streptococcal-infections-guidance-and-data>

Weekly notifiable disease reports are published each week for a timelier update, these can be found at: <https://www.gov.uk/government/collections/notifications-of-infectious-diseases-noids>

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Health Protection Report is a national public health bulletin for England and Wales, published by Public Health England. It is PHE's principal channel for the dissemination of laboratory data relating to pathogens and infections/communicable diseases of public health significance and of reports on outbreaks, incidents and ongoing investigations.

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