

Serial number 2022/098

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Event	Increase in invasive group A streptococcus (iGAS) infections, including empyema, in children
Notified by	Colin Brown; HCAI, Fungal, AMR, AMU, & Sepsis Division
Authorised by	Colin Brown (Director of Clinical and Emerging Infection), Katie Spence (Winter ID)
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NIERP Level	National - standard
Incident Lead	Ashley Sharp and Theresa Lamagni

Instructions for Cascade

- **Devolved Administrations** to cascade to Medical Directors and other DA teams as appropriate to their local arrangements
- **Regional Deputy Directors** to cascade to Directors of Public Health
- **UKHSA microbiologists** to cascade to non-UKHSA labs (NHS labs and private)
- **UKHSA microbiologists** to cascade to NHS microbiologists
- **NHS microbiologists** to cascade to infectious disease, emergency medicine, acute medicine, and paediatric clinicians

Background and Interpretation:

Further to the reported unusual seasonal persistence of group A streptococcal (GAS) activity into the summer, reports are being received by UKHSA of an unusually high number of children presenting with lower respiratory tract GAS infection, including pulmonary empyema. To date 60 reports in children under 15 have been received by the national team from across the UK, a large proportion of which indicate co-infection with respiratory viruses, including RSV, influenza, human metapneumovirus (hMPV), and enterovirus. Cases range from 0 to 11 years in age. Several cases have been diagnosed via molecular methods (e.g., PCR of sample from normally sterile site) having originally yielded no growth on routine culture. Of cultured isolates, *emm* typing to date shows a similar distribution to sterile site isolates from children in general, with *emm1* and *emm12* the most common; there is no evidence at this time that cases are related to a specific or new *emm* type or an increase in antibiotic resistance.

An urgent public health message regarding this increase is being disseminated today through the Central Alerting System (CAS) to GPs, urgent care centres, emergency departments, microbiology/infectious disease and paediatric services.

Of note, deaths in children presenting with GAS pleural empyema (with or without respiratory virus co-infection) have been reported.



UK Health Security Agency

Investigations are underway to quantify the rise, understand clinical presentations and the range of associated sequelae, including factors related to increased severity and poorer outcomes. The role of a high burden of co-circulating viral infections is incompletely understood but may be contributing to the increased severity and complications reported through co-infection.

Current invasive GAS (iGAS) infection levels remain unusually high for this time of year with 395 reports in October and November to date (weeks 40 to 46, cf. 110 in 2021 for same period). Scarlet fever cases are also higher than usual for the time of year. As expected, several scarlet fever outbreaks in nurseries and schools are being reported, of which a number involve co-circulation of respiratory viruses.

Recommendations for Primary Care

- Given the unusually high level of GAS and viral co-circulation in the community, health care professionals are asked to have a low threshold to consider and empirically prescribe antibiotics (penicillin is first line therapy) to children presenting with features of GAS infection, including where secondary to viral respiratory illness.
- When indicated, a throat swab should be sent for culture and antimicrobial susceptibility testing.
- For children unable to take penicillin-based regimes, susceptibility testing results should be reviewed given rates of resistance to [clindamycin and macrolides](#).
- Parents of children with presumed respiratory viral infection should be made aware of features suggestive of secondary bacterial infection, such as clinical deterioration, and when and how to seek further help. Safety netting advice for parents can be found [here](#).
- GPs should maintain a low threshold for prompt referral to secondary care of any children presenting with persistent or worsening symptoms.

Recommendations for Secondary Care

- Recommendations for primary care also apply to secondary care.
- Maintain a low threshold for considering pulmonary complications of GAS, especially if presenting with: an illness compatible with bacterial pneumonia, scarlet fever, GAS infection, or if GAS was recently isolated, or the patient was recently in contact with a case of scarlet fever/GAS infection. Prompt initiation of appropriate antibiotics remains key.
- Relevant clinical samples should be sent where aetiology is uncertain in paediatric presentations of lower respiratory tract infection or severe disease presentation, including viral and bacterial throat swabs; blood cultures; and, if applicable, tissue and fluid samples including pleural aspirates. When required, diagnostic imaging, with aspiration / drainage remain important in the diagnosis and management of suspected or confirmed empyema.
- In the case of culture-negative fluid specimens, please use molecular diagnostics such as GAS-specific PCR or 16S rDNA PCR, as guided by microbiology specialists.

Notification

Clinicians are further reminded of the importance of rapid notification of all cases of severe GAS infection (including pneumonic complications/ empyema) to Health Protection Teams to facilitate rapid assessment of contacts and identification of epidemiological links with other cases, according to national public health [guidelines](#).



Severe GAS cases encompass cases of invasive disease (iGAS) defined through the isolation of GAS from a normally sterile site, plus additional cases where GAS is isolated from a non-sterile site in combination with clinical signs consistent with a severe infection (streptococcal toxic shock syndrome, pneumonia, necrotising fasciitis, puerperal sepsis, meningitis, septic arthritis). This includes cases diagnosed via culture or molecular methods.

In the event of a sudden death of a child potentially due to GAS infection, clinicians are asked to liaise with microbiology and histopathology colleagues to ensure appropriate post-mortem clinical specimens are taken to facilitate diagnosis.

Recommendations for non-UKHSA labs

Laboratories are asked to continue to forward all cultured iGAS isolates, and in-addition GAS clinical isolates (including from non-sterile sites) associated with pulmonary complications, including empyema to the UKHSA Staphylococcal and Streptococcal Reference Section (SSRS). **Please ensure clinical information and site of isolation is included on the referral form** [Staphylococcus and streptococcus reference service: single isolate](#). Laboratories are also asked to ensure that the GAS from sterile sites are notified to UKHSA through the laboratory information management system data flow into SGSS; this includes cases diagnosed via culture or molecular methods such as 16S rDNA PCR.

All suspected outbreaks/clusters of iGAS should be notified to the HPT and corresponding isolate referrals to the UKHSA Staphylococcal and Streptococcal Reference Section (SSRS) and flagged as being part of an outbreak to prioritise testing.

Implications for UKHSA Regions

UKHSA Health Protection Teams and CPHIs should be aware of the reported increase in pulmonary complications including empyema due to GAS and the potential for severe outcomes in children. Outbreaks of scarlet fever in schools and nurseries should be managed as per existing [guidance](#). Where respiratory viral co-circulation is suspected, local GPs should be encouraged to obtain bacterial swabs to facilitate clinical management of patients and public health management of outbreaks.

Recommendations to UKHSA Regions

UKHSA Health Protection Teams and CPHIs are requested to notify the HCAI & AMR Gram Positive team via UKHSA.NICC83@UKHSA.gov.uk of any cases of lower respiratory tract iGAS, or any unusual presentations reported by clinicians of iGAS in children <15y. Please label any cases or relevant situations on HPZone with the context "iGAS 2022/23".

HPTs should contact their regional CPHI and/or HCAI & AMR Gram Positive team via hcaiamr.ios@ukhsa.gov.uk for advice on management GAS outbreaks with severe presentations.

Implications and recommendations for local authorities

Local Authorities are asked to note the current concern and an increase in pulmonary complications including empyema due to GAS and potential for severe outcomes. Schools and nurseries experiencing outbreaks of scarlet fever or respiratory viral infection should be encouraged to report cases according to existing guidelines, particularly where severe clinical presentations are identified.



References/ Sources of information

[Group A streptococcal infections: guidance and data](#)

[Notifications of infectious diseases \(NOIDs\)](#)

[Reporting to UKHSA: a guide for diagnostic laboratories](#)

[Health protection in children and young people settings, including education](#)

[5 ways to protect your under 5s this winter](#)

[Safety netting documents for parents](#)

[Overview | Fever in under 5s: assessment and initial management | Guidance | NICE](#)

[English surveillance programme for antimicrobial utilisation and resistance \(ESPAUR\) report](#)

[Group A streptococcal infections: seasonal activity in England, 2022 to 2023](#) (to be published shortly)
