Public Health England

Briefing Note – 2021/005 **Date: 22nd February 2021**

Event	Increased incidence of detections of *Staphylococcus capitis* in neonatal clinical samples
Notified by	Healthcare-associated Infections and Antimicrobial Resistance (HCAI & AMR) Division, PHE National Infection Service
Authorised by	Colin Brown (Deputy Director, NIS), Debbie Stark (Centre Director), Obaghe Edeghere (Field Service)
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PHE NIRP Level	Not applicable
Incident Lead	Not applicable

Background and Interpretation:

An increase in *Staphylococcus capitis* detections from clinical isolates has been observed across neonatal units in London over the past 18 months. The aims of this briefing note are:

- to alert colleagues to the increase in reported clinical detections of *S. capitis* associated with the NRCS-A clone
- to outline criteria for further investigation and notification.

S. capitis is a coagulase-negative *Staphylococcus* which rarely causes invasive disease outside of the neonatal period. There have been sporadic outbreaks since the late 1990s associated with neonatal late-onset sepsis. In 2012, it was recognised that a clone of *S. capitis* known as the NRCS-A strain was widespread in neonatal intensive care units (NICUs), and has caused significant outbreaks. This strain was shown to have methicillin resistance, vancomycin hetero-resistance and specific aminoglycoside resistance. It also may harbour the *qac* gene associated with reduced efficacy of chlorhexidine which is a common compound used in skin antisepsis prior to procedures. The NRCS-A strains are associated with invasive disease independent of indwelling prosthetic material such as central line catheters and often associated with an environmental source such as incubators.

A meeting was held with London centres that had identified local increases in September 2020 and the following case definition was agreed.

Case definition:

Any *S. capitis* isolate from a neonate from a normally sterile site (blood, CSF) or from other sites in the context of late-onset neonatal sepsis diagnosed clinically.

Isolates were largely noted to have an antibiogram that included resistance to any beta-lactam, fusidic acid, and gentamicin, and phenotypic susceptibility to rifampicin and ciprofloxacin.

80 bacteraemias meeting the phenotypic susceptibility pattern of the NRCS-A strain from London centres were typed by PFGE, which showed similarity in fingerprint patterns.

Whole genome sequencing was performed to further characterise these isolates; preliminary results show that almost all isolates from neonates belonged to a single NRCS-A lineage that has circulated worldwide. There was some evidence of intra-hospital and inter-hospital spread, including multiple introductions of *S. capitis* strains.

PHE will further investigate the epidemiology of invasive *S. capitis* infections in neonates in England, to determine whether the increase in clinical isolates in London is indicative of a geographically wider issue, and to better understand the reasons behind the apparent increase.

Implications and recommendations for PHE Centres and Field Services
PHE centres and Field Services should alert the PHE surveillance contact above with information on clusters or suspected outbreaks.

Implications and recommendations for NHS Trusts, PHE sites and services (including regional public health laboratories and consultants in public health infection)
Recommendations:

1. To identify any coagulase-negative *Staphylococcus* isolate from a normally sterile site to species level in a neonate
2. Over the next year to send any *S. capitis* isolates meeting the case definition above to the *Staphylococcus* reference laboratory under code “NRCS-A”
3. To contact local their PHE Centre if an increase in incidence of invasive *S. capitis* isolates is suspected among neonates. The PHE team can then liaise with the national team for input and to confirm further sample processing
4. To review infection prevention practices in units where an increase in incidence is identified or suspected. This includes consideration of decontamination of incubators, enhanced cleaning of the environment, hand hygiene and correct use of personal protective equipment.

Implications and recommendations for local authorities
N/A

References/ Sources of information
Relevant links are embedded above.

Wirth T et al. Niche specialization and spread of Staphylococcus capitis involved in neonatal sepsis. *Nat Microbiol* 2020 May;5(5):735-745.