

# Outbreak investigation of Staphylococcal Scalded Skin Syndrome in the Neonatal Intensive Care Unit Using Whole Genome Sequencing

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## Abstract

- Staphylococcal scalded skin syndrome (SSSS) is a blistering skin condition caused by exfoliative toxin-producing strains of *Staphylococcus aureus*.
- SSSS is a dermatological emergency requiring hospitalization and prompt treatment.

## Objectives

- Describe a methicillin-susceptible *S. aureus* (MSSA) staphylococcal scalded skin syndrome outbreak in the neonatal intensive care unit (NICU) and the measures taken to stop the outbreak.

## Study Design

- A point prevalence screening was performed between 03-13-2023 to 05-08-2023 after identification of a case of SSSS (n=261).
- The screening was performed weekly and on admission.
- Swabs were collected from the anterior nares in most cases.
- Isolates with the same antibiogram were sent out for whole genome sequencing (WGS).
- Infection Prevention collaboration calls were held weekly to evaluate effectiveness of infection control measures.

## Results

Figure 1: Strains (according to MLST) recovered over time.

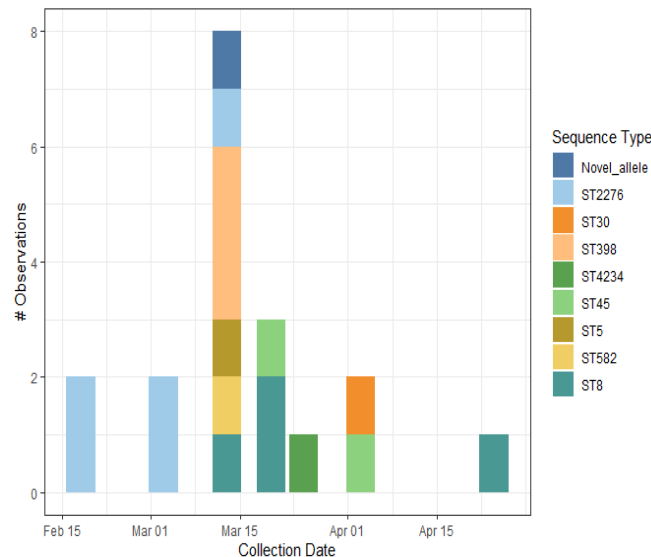
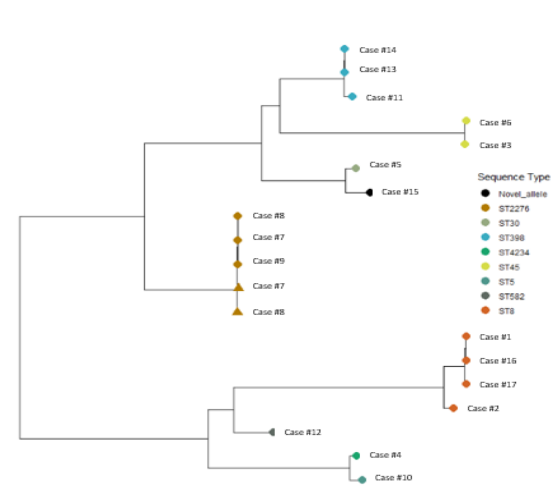


Figure 2. Overall phylogeny (Neighbor-Joining Mash Tree)



- Figure 1: Multi-locus sequence typing. 21 isolates classified as 11 sequence types (ST) and one novel ST. No linkage analysis was performed on the novel ST because it was the only isolate of its kind.
- Figure 2: Neighbor-Joining Mash Tree. Genomic analysis indicates isolates belonging to four different ST showed strong genomic linkages: 2 ST45 isolates, 2 ST8 isolates, 3 ST398 isolates and 3 ST2276 isolates.

## Discussion

- In the outbreak setting, active surveillance is most useful when combined with other infection prevention and control measures such as contact precautions and targeted decolonization.<sup>1</sup>
- WGS is a powerful tool for outbreak investigation on isolate relatedness than other conventional typing.<sup>2</sup>

## Conclusion

- Infection control measures to prevent transmission include environmental cleaning, hand hygiene, avoiding overcrowding, and isolation of positive patients in addition to decolonization with nasal mupirocin and chlorhexidine baths per gestation age.
- When applying WGS to surveillance and investigation in the clinical setting, this approach may provide measures for appropriate and effective interventions.

## References

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