PREVALENCE OF *STAPHYLOCOCCUS AUREUS* AND *STREPTOCOCCUS PYOGENES* COLONISATION AMONG PEOPLE WHO INJECT DRUGS IN MELBOURNE, AUSTRALIA

Attwood LO[1], O'Keefe D[2], Wisniewski JA[1], Doan NQ[1], Vujovic O[1], Higgs P[2,3], Doyle JS[1,2], Peleg AY[1], Dietze P[2*], Stewardson AJ[1*]

[1]Department of Infectious Diseases, The Alfred Hospital and Central Clinical School, Monash University, Melbourne, Victoria, Australia [2]Burnet Institute, Melbourne, Victoria, Australia [3]Department of Public Health, La Trobe University, Melbourne, Victoria, Australia *Contributed equally to this work

Background

- Colonisation with *S. aureus* and *S. pyogenes* increases the **risk of invasive infections** with these organisms.
- Invasive bacterial infections are **increasing** amongst people who inject drugs worldwide. (1-3)
- Colonisation with *S. aureus* occurs in approximately **30%** of healthy adults. (4-6)
- *S. aureus* **carriage rates has been reported as higher** among people who inject drugs compared to the general population internationally, with increasing concern of **clonal expansion** amongst people who inject drugs. (7-10)
- There are **scant data about the epidemiology** of colonisation rates amongst people who inject drugs **in Australia.**

Objective

To determine the prevalence of, and risk factors for, *S. aureus* and *S. pyogenes* colonisation amongst people who inject drugs in Melbourne, Australia.

Methods

- Community-based cross-sectional survey of people who inject drugs in Melbourne, Australia
- Invited participants of the **Melbourne Injecting Drug User Cohort (SuperMIX) study** ≥18 years to participate between June 2022 – March 2023
  - Eligible if **not currently on antimicrobials**
- Self collection of two colonisation swabs:
  1. Combined throat-nasal swab
  2. Axilla (armpit) swab
- Swabs cultured on selective media for *S. aureus* and *S. pyogenes*
  - Methicillin-resistant *S. aureus* (MRSA) isolates presumptively identified by oxacillin screening agar
- Colonisation swabs linked with SuperMIX ID to analyse MRSA colonisation risk factors

Results

- 305 participants were recruited
- *S. aureus* colonisation was detected in 41% of participants.
- *S. pyogenes* colonisation was detected in 1% of participants. **(Table 1)**

Table 1. Demographics & colonisation	(n = 305)	
Demographics		
Age, years (median)	41	(IQR 31 – 48)
Male	235	77%
Unstable housing*	84	28%
Aboriginal and/or Torres Strait Islander	68	22%
Colonisation		
Staphylococcus aureus total	124	41%
Methicillin-susceptible *S. aureus* (MSSA)	115	38%
Methicillin-resistant *S. aureus* (MRSA)	9	3%
Streptococcus pyogenes	3	1%

*Unstable housing = homeless, boarding house, squat, couch, crisis

What we know:

- Invasive bacterial infections amongst people who inject drugs are increasing worldwide.
- Colonisation with *S. aureus* and *S. pyogenes* increase the risk of invasive infections.

What we've found:

- **41% of people who inject drugs** were **colonised with *S. aureus***. This is higher than the colonisation rate for the general population.
- **Hospital contact** increases the risk of colonisation with methicillin-resistant *S. aureus* (MRSA)

The implications:

- **Preventing hospitalisations** through early identification and treatment of infections is necessary to reduce the risk of developing resistant organisms

Detection of colonisation

- Throat-nasal swab detected the majority of *S. aureus* colonisation **(Figure 1)**
- **All** MRSA colonisation - detected on throat-nasal swab
- **All** *S. pyogenes* colonisation - detected on throat-nasal swab

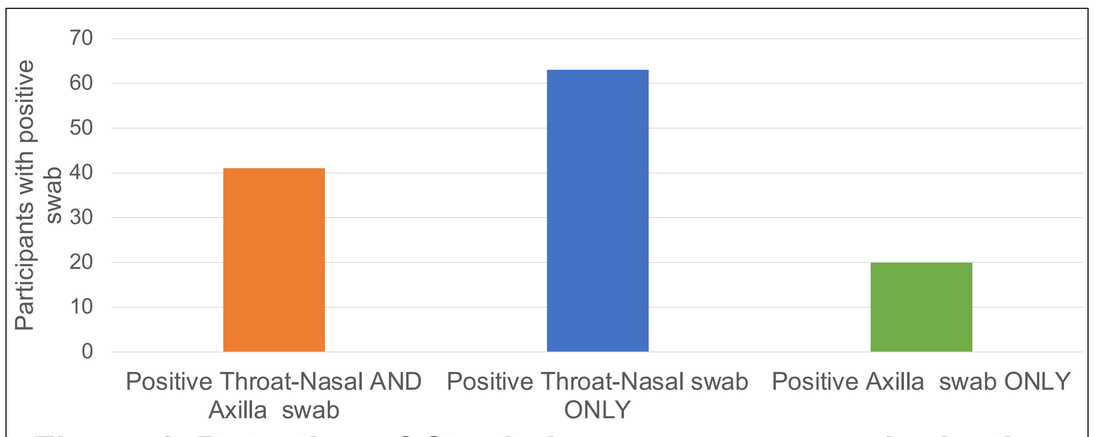

Figure 1. Detection of *Staphylococcus aureus* colonisation

Risk of MRSA colonisation

- MRSA colonisation was predicted by **hospital contact** since last SuperMIX review **(Table 2)**

Table 2. Risk factor for MRSA	OR	95% CI
Hospital contact since last seen	**4.2**	**1.1 – 16.4**
Aboriginal and/or Torres Strait Islander	3.0	0.8 – 11.6
Injected more than daily in past month	2.4	0.6 – 9.3
Unstable housing	1.5	0.4 – 6.2
History of incarceration	1.4	0.4 - 5.3

Conclusions

1. The prevalence of *S. aureus* colonisation amongst people who inject drugs in Melbourne, Australia, is **higher than expected compared to the general population**
2. Colonisation by *S. pyogenes* is **not common** in this population
3. Hospital contact increases the risk of colonisation with MRSA
   a. **Early identification and treatment is necessary to decrease the risk of resistant organisms**
4. Research exploring the role of **decolonisation** may reduce the risk of invasive infections in people who inject drugs

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Lucy Attwood MBBS, MPH, DTMH, BSc, FRACP
lucy.attwood1@monash.edu