RES-303

Mapping Maternal Group B Streptococcus Colonization in Nepal: First Steps Toward Surveillance to Inform Vaccine Policy

Raj Kumar Shrestha[1]

[1]Department of Research, Siddhi Memorial Hospital (For Women and Children), Nepal

shrestha.raz.np@gmail.com

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BACKGROUND: SIGNIFICANCE OF GROUP B STREPTOCOCUS (GBS)

ANNUAL BURDEN OF GBS[1]

- **231,800** Early-Onset (EOD) cases
- **162,200** Late-Onset (LOD) cases
- **91,900** Neonatal Deaths
- **37,100** Cases of Neurodevelopment Impairment
- **518, 100** Pre-term Births
- **46,200** Stillbirths

CURRENT PREVENTION STRATEGY[2]

Intrapartum Antimicrobial Prophylaxis (IAP)

Administration of intravenous antimicrobials to pregnant women before delivery based on either universal GBS screening or risk-based approach

Limitations of IAP

- ⚠ No protection against LOD, stillbirths, pre-term births, and maternal invasive GBS disease (iGBS)
- ⚠ Risk of disruption of neonatal microbiome
- ⚠ High antimicrobial use » acceleration of AMR
- ⚠ Difficult to implement in LMICs

MATERNAL GBS VACCINATION[3]

A maternal GBS vaccination (with 80% efficacy & 50-90% coverage) can prevent **127,000 - 231,000** cases in infants and pregnant women & **60,000 – 108,000** stillbirths/neonatal deaths annually

EVIDENCE GAPS

Important data including **prevalence** of GBS colonization in mothers, **serotype distribution**, **incidence of iGBS** are lacking in LMICs and none available for Nepal

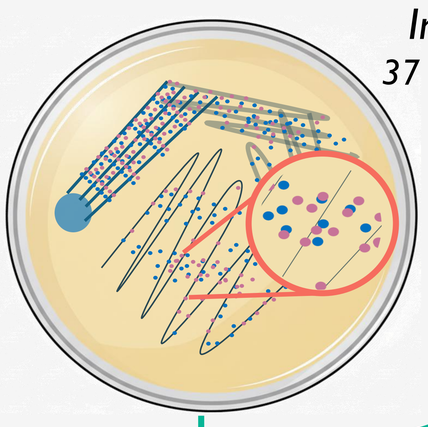
METHODS

Study Design: Prospective Cohort
Study Sites: Siddhi Memorial Hospital & Bhaktapur Hospital
Study Population: 387 pregnant women & 390 neonates
Data Collection: Detail Socio-demographic & Clinical Data
Follow-up duration: One month from the day of discharge

Maternal recto-vaginal swab collected before delivery; Swab transferred to one mL STGG & stored at – 80 °C

Direct Plating onto Chromatic GBS plate → *Incubation 37 °C, till 48 hrs*

500 µL aliquot transferred to 5 mL LIM enrichment broth → *Incubation 37 °C, till 12 hrs* → 100 uL of broth platted onto Chromatic GBS plate → *Incubation 37 °C, till 48 hrs*



Of 7, one random colony subjected to ID & AST

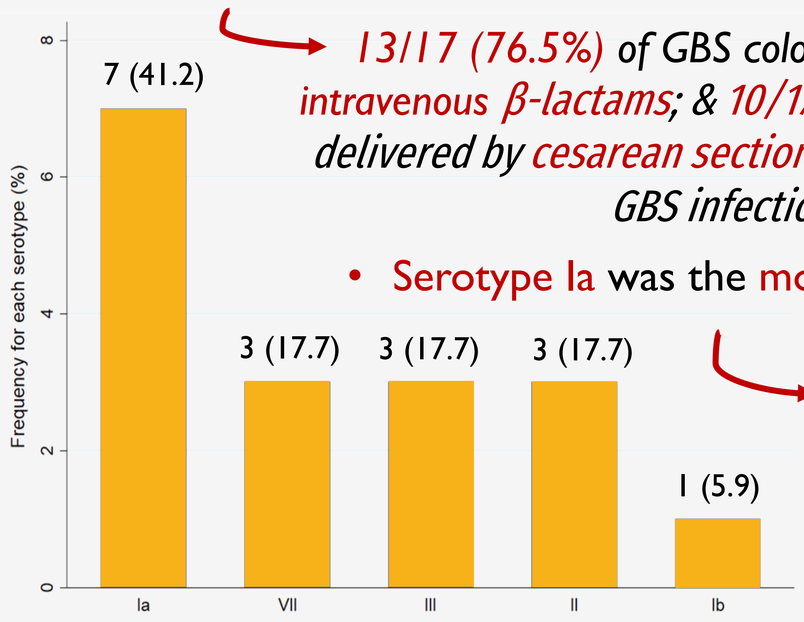
Up to **7** randomly selected **mauve colonies** sub-cultured separately → Multiplex PCR for serotyping; RAPD PCR for DNA fingerprinting

RESULTS

- Prevalence of maternal GBS recto-vaginal colonization **4.4% (95% Confidence Interval: 2.8% to 6.9%)**
- **No cases** of maternal or neonatal **GBS infection**

13/17 (76.5%) of GBS colonized mothers received intravenous β-lactams; & 10/17 (58.8%) of neonates were delivered by cesarean section; possibly explaining zero GBS infection cases

- Serotype Ia was the most common serotype



3 (17.7%) isolates belonged to serotype VII, which is considered rare

Figure 1: Distribution of serotypes of the 17 GBS isolates

- Of 17 isolates, proportion of non-susceptibility to tetracycline, ofloxacin, erythromycin, & clindamycin were 64.7%, 23.5%, 11.8% and 11.8%, respectively
- Full susceptibility to penicillin, ceftriaxone, chloramphenicol, linezolid
- Median MIC in µg/mL (IQR) of ampicillin, flomoxef, and vancomycin were 0.125 (0.125), 0.25 (0.25), & 0.38 (0.13), respectively

RAPD Profile	Y	Z	a	b	c	d	e
Serotype	III	III	III	III	III	VII	III

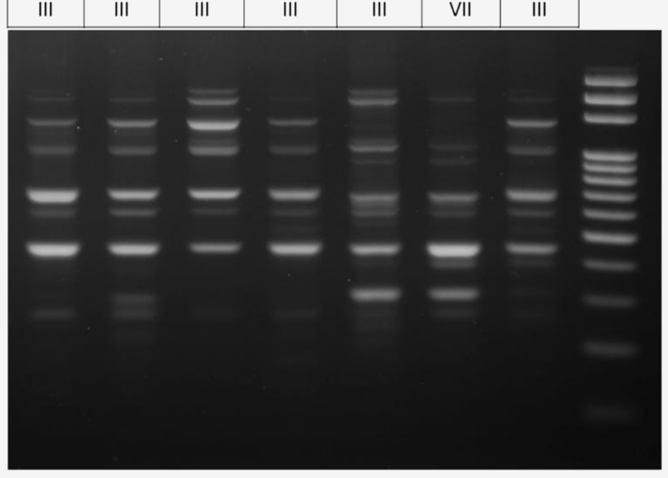


Figure 2: RAPD PCR results for one representative sample showing within-sample genetic & serotype diversity

- Genetic diversity within the sample = 7/17 (41.2%)

May have implications in outbreak investigations in ICU settings

- Serotype diversity & genetic diversity within the sample = 1/17 (5.9%)

CONCLUSION

- Low maternal GBS colonization & no iGBS in mothers or neonates; Universal GBS screening may not be feasible
- Within sample genotypic diversity could have IPC implications, warranting further investigations

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Author declare that there is no conflict of interest.

Reference:
[1]Gonçalves BP *et al.*, Lancet Glob Health., 2022
[2]Thorn N *et al.*, Vaccine., 2025
[3]Seale AC *et al.*, Clin Infect Dis., 2017