Molecular Subtypes of *Blastocystis* spp. Among Hospitalized Children with Acute Gastroenteritis in Kuala Lumpur, Malaysia

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Introduction

- *Blastocystis* spp. (*Blastocystis*) is an anaerobic intestinal protozoan of global prevalence, yet its pathogenicity remains uncertain[1].
- Over one billion people are estimated to be infected, with prevalence ranging from 1.5–10% in developed nations to 30–50% in developing regions[2].
- More than 44 subtypes (STs) have been identified, with ST1–ST4 accounting for >90% of human infections; ST3 is the most common[3–7].
- In Malaysia, data on urban pediatric populations remain limited, as most studies focus on rural cohorts and rely on microscopy, which lacks sensitivity.

Objectives

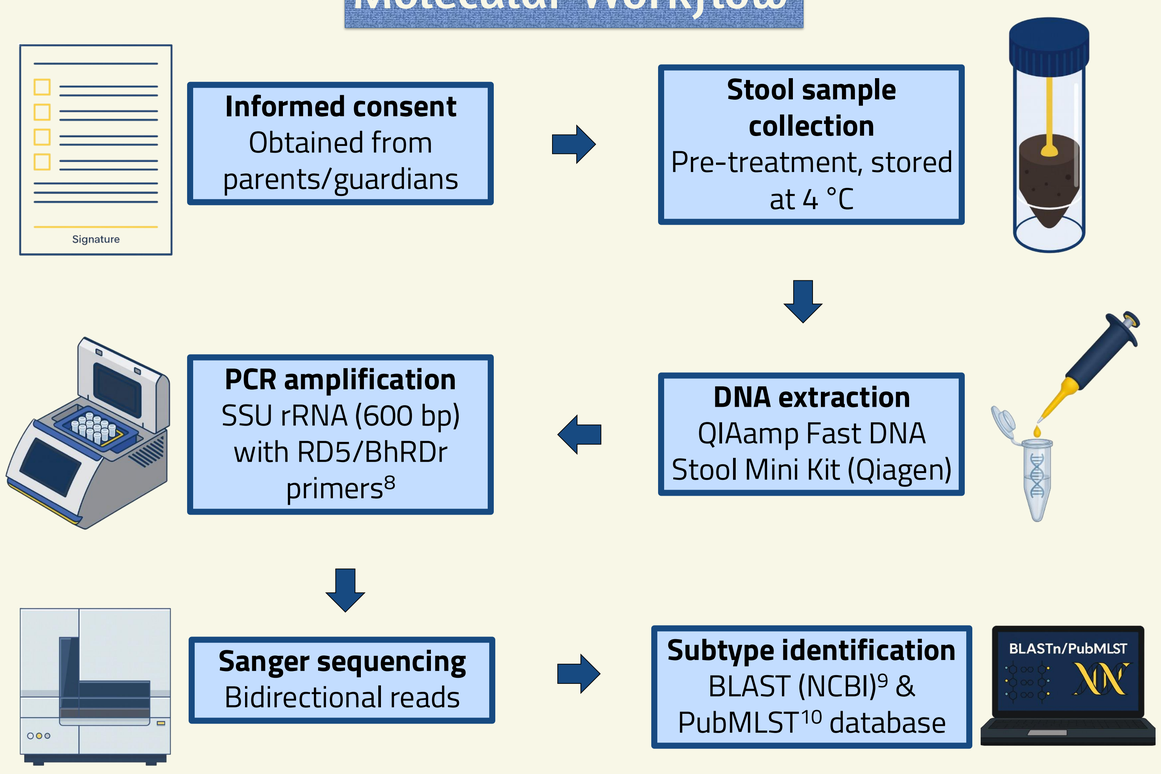
1. To determine the prevalence of *Blastocystis* infection among hospitalized children with acute gastroenteritis (AGE).
2. To identify the molecular subtypes of *Blastocystis* using SSU rRNA gene sequencing.

Methods

Study Design

- **Design:** Prospective, cross-sectional, single-center
- **Period**: September 2024 – July 2025
- **Site**: UKM Specialist Children's Hospital, Kuala Lumpur
- **Participants**: 191 pediatric patients (2 months–12 years)
- **Inclusion**: Diagnosed with AGE
- **Exclusion**: Immunocompromised & recent antimicrobials

Molecular Workflow



Results

Overall Prevalence

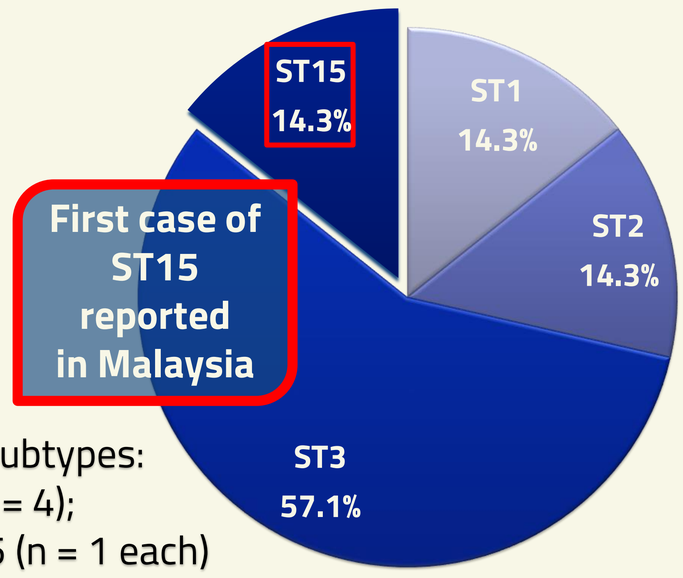
3.7%

(7/191)

Female = 5

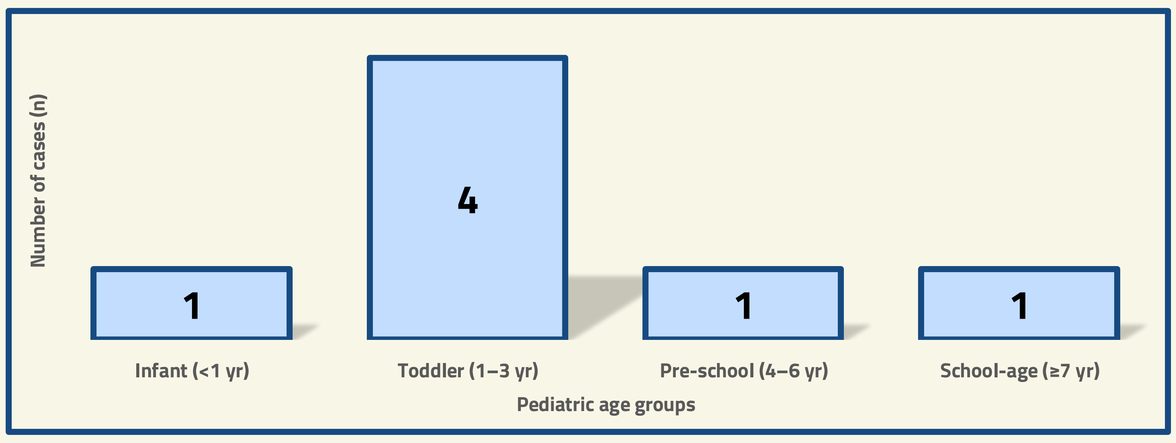
Male = 2

Subtype Distribution



Detected subtypes:
ST3 (n = 4);
ST1, ST2, ST15 (n = 1 each)

Age Distribution of Positives



Isolate Profiles

Sample ID	Subtype	Allele	Reference GenBank ID*
B001	ST3	34	AB107965
B042	ST2	9	AB070987
B092	ST3	34	AB107965
B102	ST3	36	AB091234
B144	ST3	34	AB107965
B187	ST15	63	MK801387
B192	ST1	4	U51151

*Reference GenBank IDs indicate closest matches from PubMLST; sequences not deposited

Discussion & Conclusion

- *Blastocystis* was detected in 7 of 191 AGE cases (3.7%), lower than prevalence reported in Malaysian urban schoolchildren (7.2%) and rural populations (13.7%)[11].
- Subtype analysis showed ST3 as the predominant subtype (57.1%), with ST1 and ST2 also detected, consistent with national distributions (54.7%)[12].
- One child carried ST15, a rare animal-associated subtype with zoonotic potential, representing, to our knowledge, the first pediatric case reported in Malaysia and possibly worldwide[13].
- *Blastocystis* was identified across sexes and age groups, suggesting infection is not restricted, though limited by numbers.
- While rotavirus remains the leading cause of severe diarrhoeal diseases in infants and young children globally, *Blastocystis* may contribute to illness through gut-immune interactions with possible therapeutic implications[14].
- Although less common than viral and bacterial pathogens in AGE, the genetic diversity and zoonotic potential of *Blastocystis* highlight the need for pediatric molecular surveillance and further study of subtype-specific pathogenicity.

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Acknowledgments

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