

Perceptions and priorities for the development of multiplex rapid diagnostic tests for acute non-malarial fever in rural South and Southeast Asia: An international modified e-Delphi survey

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BACKGROUND

Acute non-malarial fever is a common presentation in rural South and Southeast Asia. The diverse causes indicate a need for multiplex lateral flow rapid diagnostic tests (mLF-RDTs). However, there is a high degree of uncertainty in analyte prioritization given the sparse epidemiological data available.

METHODS

- 36/84 (43%) and 44/84 (52%) experts from 12 countries divided into 3 regional panels (Mainland Southeast Asia, Maritime Southeast Asia, and South Asia) participated in 2 rounds of a modified e-Delphi survey from April to June 2022.
- Experts were asked to rank and justify their top 7 analytes in 4 categories (adults vs. children, primary vs. secondary care).
- An analyte ranked 1st was assigned a weighted score 7 times higher than an analyte ranked 7th. Rank lists were constructed based on total scores for each analyte.

RESULTS

- Across all regions, in all categories dengue NS1 and typhoidal Salmonella antigens occupied the top two rank positions (Fig. 1–3). The only host biomarker which featured prominently was CRP. Reasons for analyte selection are shown in Fig. 4.
- There was unanimous agreement that mLF-RDTs would be useful components of clinical decision support tools.

Figure 1. The top seven analytes, in descending order of priority for inclusion in multiplex lateral flow rapid diagnostic tests for acute non-malarial fever using fingerprick blood as the test substrate in Mainland Southeast Asia

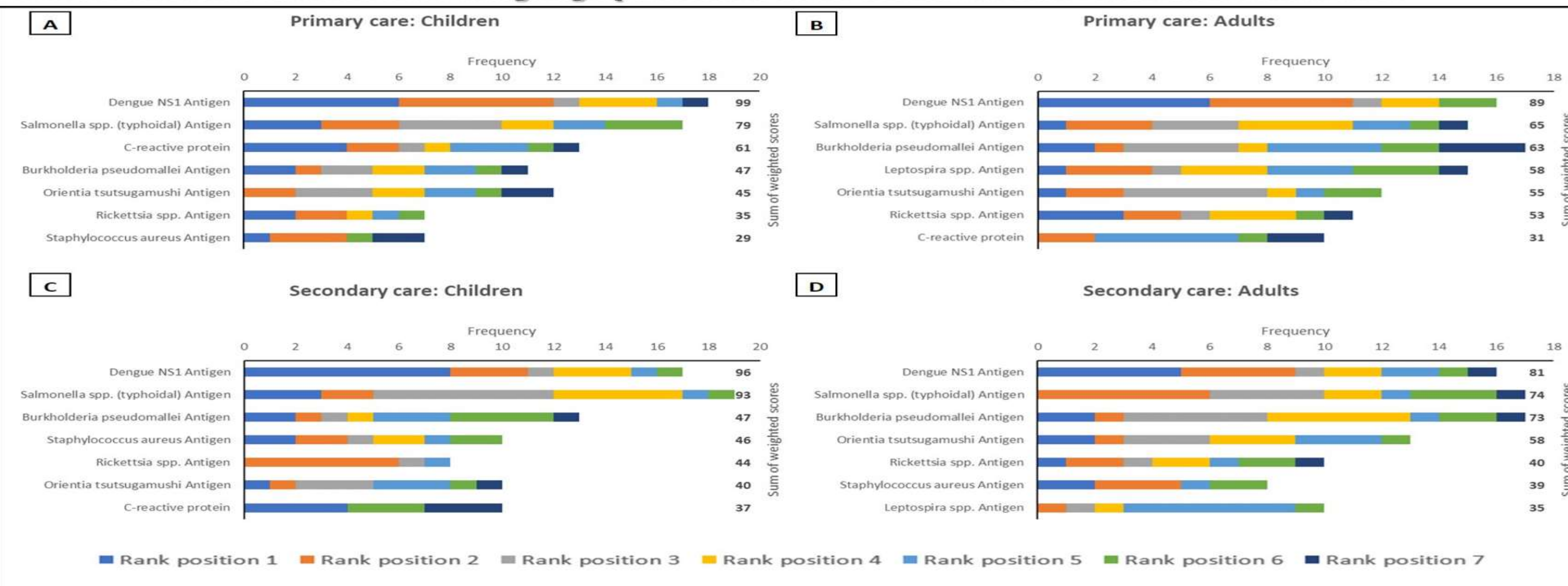


Figure 2. The top seven analytes, in descending order of priority for inclusion in multiplex lateral flow rapid diagnostic tests for acute non-malarial fever using fingerprick blood as the test substrate in Maritime Southeast Asia

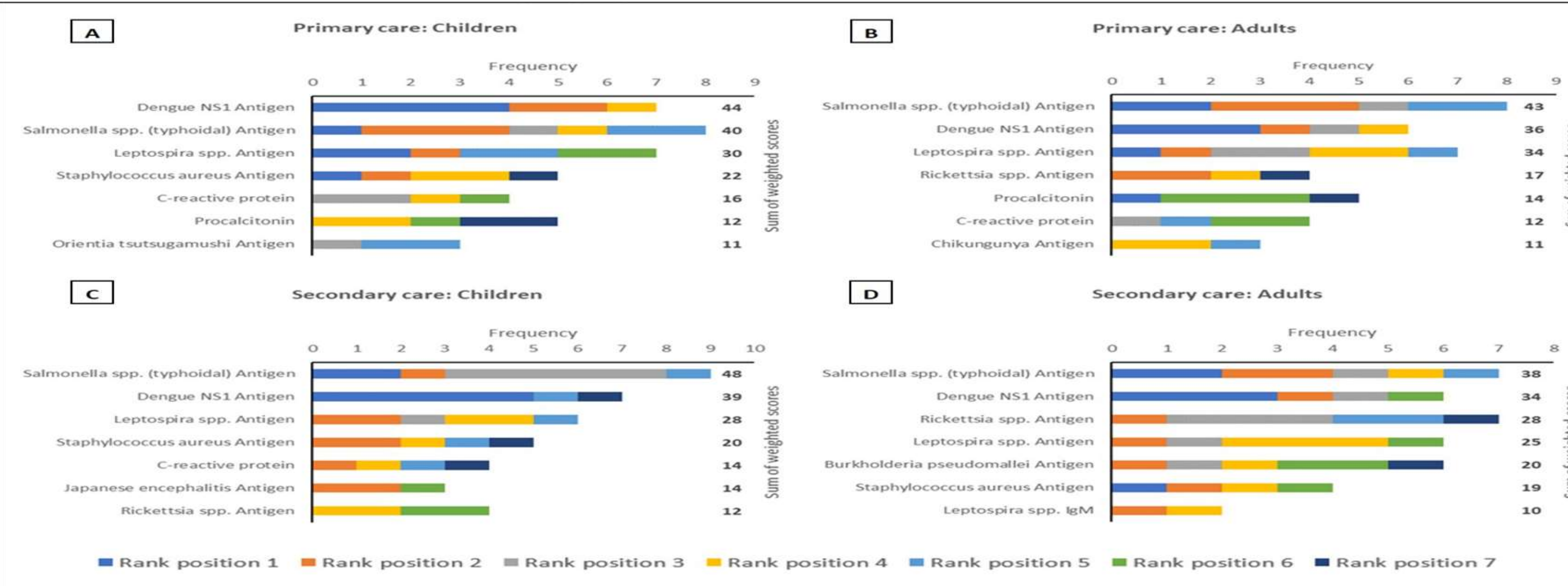


Figure 3. The top seven analytes, in descending order of priority for inclusion in multiplex lateral flow rapid diagnostic tests for acute non-malarial fever using fingerprick blood as the test substrate in South Asia

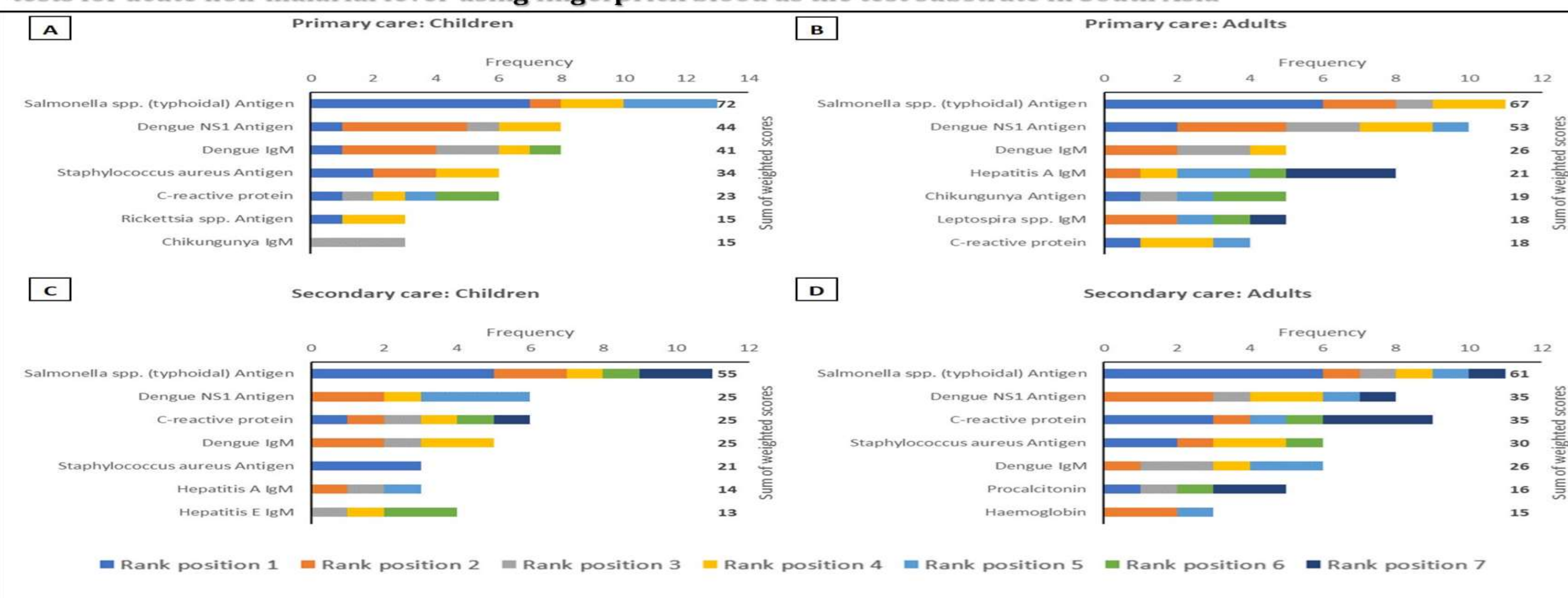
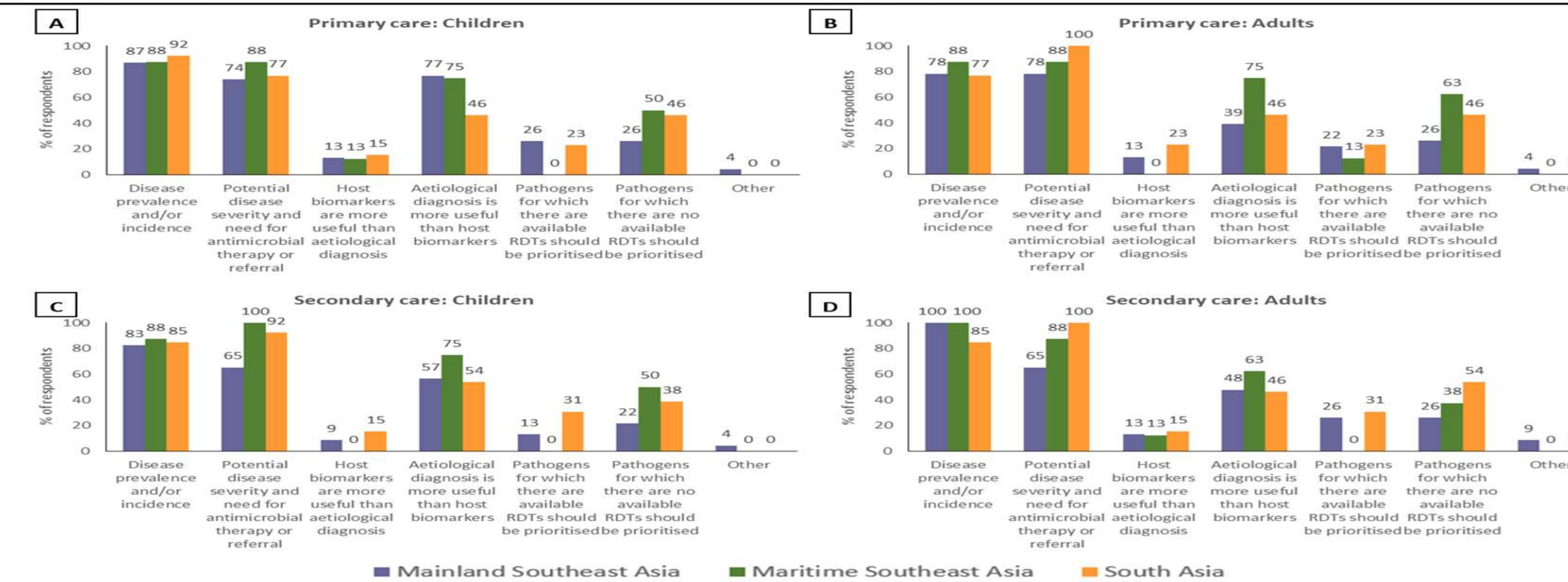


Figure 4. Reasons underlying the rankings of analytes which should be prioritized for inclusion in multiplex lateral flow rapid diagnostic tests for acute non-malarial fever using fingerprick blood as the test substrate



CONCLUSIONS

- The value of this study is in informing analyte selection for mLF-RDT development, in line with the WHO target product profile for diagnostic platforms for acute febrile illness.
- mLF-RDTs for acute non-malarial fever for use in South and Southeast Asia should be able to diagnose dengue and enteric fever in all ages and care settings. There was also a clear desire for inclusion of pathogen-related analytes not readily detected by existing technologies, and for the LF-RDTs to diagnose diseases directly through antigen detection.
- The majority of the other pathogen-related analytes selected reflect the almost equal consideration given to clinical and epidemiological burdens of disease.

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