**A human-centred design approach towards development of a digital clinical decision-support system for management of hospitalised patients with dengue**

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**Introduction**

Dengue epidemics can rapidly increase demand in healthcare services across many endemic settings. However, there remains a lack of tools which can rapidly inform patient management and can be used at the point of care. Digital clinical decision-support systems (CDSS) allow for efficient organisation of care as well as improve the quality of patient management. It is important that these tools are designed for the end-user and with the healthcare setting in mind to increase adoption and usability.

**Methods**

We adopted a ground-up human-centred design approach to design a digital CDSS system for dengue management in Vietnam (D-CAT). A multidisciplinary team of data scientists, clinicians and social scientists were involved in a series of activities designed to map clinical processes, essential tasks and decision-making priorities which were crucial in the management of dengue at our hospital setting [1]. Frontend development was undertaken by a specialist UX designer with regular feedback from the research team and clinical end-users.

**Results**

Based on our previous work, the desired features for the CDSS identified were: i) patient organisation, ii) availability of guidelines and calculators with easy access, iii) display of results and iv) inference models for dengue diagnosis on admission [2] and further risk-stratification for hospitalised patients based on possible complications [3]. A web-based reactive framework suitable for display on computers and tablets was produced. Priority was placed on usability and modularity so that the system can be repurposed.

**Conclusion**

Dengue Clinical Application Tool (D-CAT) is a bespoke and rapidly scalable CDSS produced following clinical pathways, clinician’s needs, and usability in mind. Further work will focus on prospective evaluation and iterative improvement of the CDSS including (i) end-user testing and (ii) prospective model performance. If successful, the CDSS will be implemented and deployed to evaluate its clinical utility.

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[2] Ming DK, Tuan NM, Hernandez B, Sangkaew S, Vuong NL, Chanh HQ, Chau NV, Simmons CP, Wills B, Georgiou P, Holmes AH. The Diagnosis of Dengue in Patients Presenting With Acute Febrile Illness Using Supervised Machine Learning and Impact of Seasonality. Frontiers in digital health. 2022 Mar 14;4.

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