

# Nuancing the need for speed: temporal health system strengthening in low-income countries

Tom Bashford,<sup>1</sup> Alexis Joannides,<sup>1</sup> Kamal Phuyal,<sup>2</sup> Santosh Bhatta,<sup>3</sup> Julie Mytton,<sup>3</sup> Robert Harrison,<sup>4</sup> Peter Hutchinson<sup>1</sup>

**To cite:** Bashford T, Joannides A, Phuyal K, *et al*. Nuancing the need for speed: temporal health system strengthening in low-income countries. *BMJ Global Health* 2019;**4**:e001816. doi:10.1136/bmjgh-2019-001816

**Handling editor** Seye Abimbola

Received 2 July 2019

Revised 5 August 2019

Accepted 10 August 2019

Patients with delayed access to medical care often experience worse outcomes. The ‘three delays’ model developed in the context of emergency obstetric care is an important conceptual device for researchers and policy-makers, particularly in resource-poor health systems.<sup>1</sup> This model characterises delay in terms of (1) the decision to seek care; (2) arrival at a health facility and (3) the provision of adequate care.

However, ‘access’ is a nuanced term, one that is not simply an issue of geographical resource distribution or population density. A patient may seek care, but be constrained by competing demands or health beliefs. Once sought, the care delivered may be inappropriate. Even after arrival at a healthcare facility that is able to deliver the necessary care, there may still be a clinically significant delay in obtaining it.<sup>2</sup>

Furthermore, there may be variable prevailing sociocultural attitudes to different conditions, with a biomedical model of time-critical pathology interacting with multiple other narratives.<sup>3</sup> Access to care by victims of snakebite may be hampered by a cultural belief that the bite is ‘a manifestation of witchcraft or deity displeasure’.<sup>4</sup> Alternatively, in the context of neurotrauma, the religious significance of the date for a planned operation may mandate that the procedure be delayed, even after patients and their families are made aware that this could be detrimental to the outcome (unpublished data).

Clearly, quantifying the presence and effect of a delay, while an important step, is only descriptive; improvement mandates a deeper understanding. Delays in accessing care, either in the community or once in an appropriate centre, can arise from a myriad of reasons—financial, logistical, political, procedural and cultural.<sup>5</sup> For time-critical pathologies, such as neurotrauma, burns, polytrauma

## Summary box

- ▶ Delays in receiving care are of particular relevance to time-critical pathologies, for which quality of care and timely access are fundamentally interlinked.
- ▶ Characterising and improving delays in a health system are complex, and require both quantitative and qualitative understanding.
- ▶ There is mutual benefit to collaboration across clinical, academic and geographical areas of interest in order to understand and reduce delays in accessing care.

and snakebite, systems strengthening requires these issues to be accounted for alongside the clinical services required to deliver definitive treatment. In 2018, a systematic review in *The Lancet* by Kruk *et al*<sup>6</sup> suggested that ‘access is no longer the only binding constraint for improving survival in low-income and middle-income countries—health system quality must be improved simultaneously’. We would go further to suggest that, at least for certain pathologies, considering access as a different entity to quality is a false dichotomy: good quality care is meaningless if access to it is not timely.

However, understanding the temporal functioning of a health system is challenging, with both quantitative and qualitative approaches required to explore a health system’s problems, create potential solutions and evaluate their effects (figure 1).<sup>7</sup> Quantitatively, it requires good quality data at multiple time points, coupled with appropriate modelling techniques, to identify gaps and measure improvements in response to interventions. Qualitatively, it requires expertise in methodologies which allow the lived experience of multiple stakeholders to be elicited, understood and integrated into a shared understanding of how decisions are made and their impact on the time taken to receive



© Author(s) (or their employer(s)) 2019. Re-use permitted under CC BY. Published by BMJ.

<sup>1</sup>NIHR Global Health Research Group for Neurotrauma, University of Cambridge, Cambridge, UK

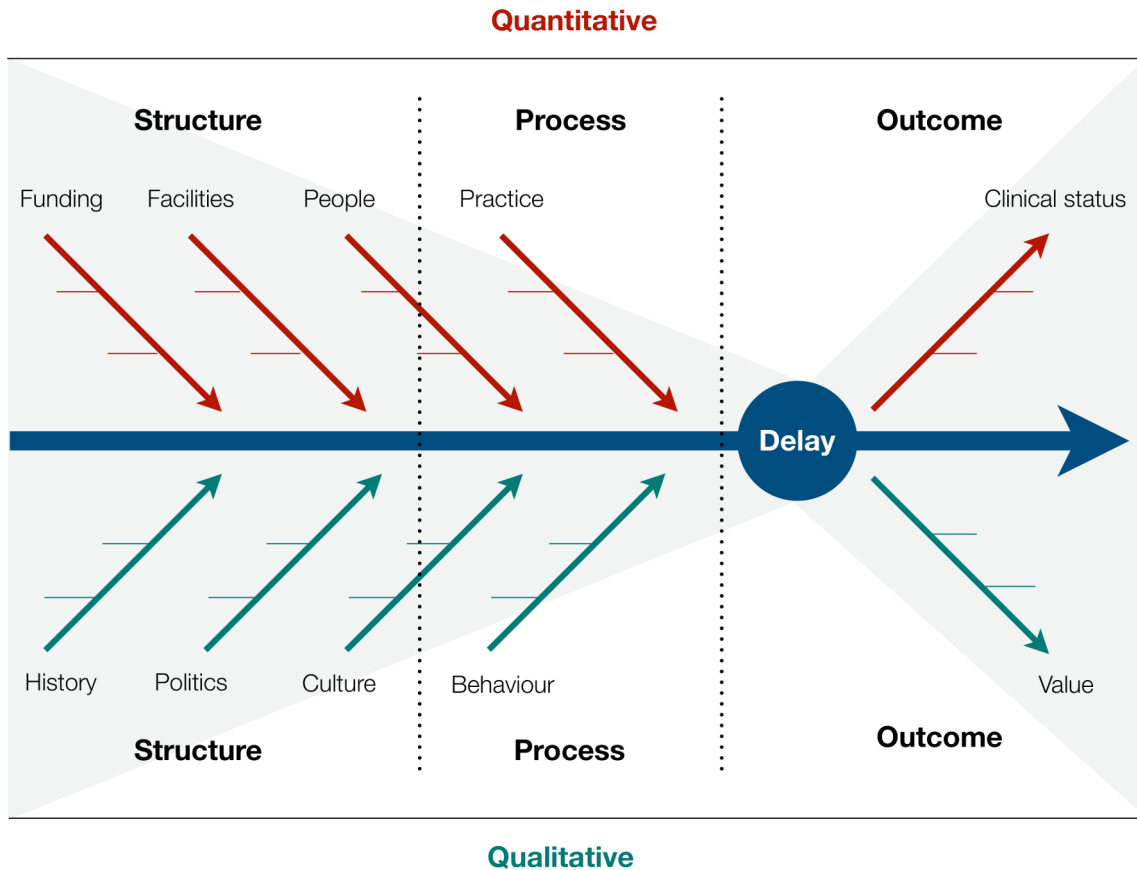
<sup>2</sup>NIHR Global Health Research Group on Burn Trauma, Kathmandu, Nepal

<sup>3</sup>NIHR Global Health Research Group on Nepal Injury Research, University of the West of England Bristol, Bristol, UK

<sup>4</sup>NIHR Global Health Research Group on African Snakebite Research, Liverpool School of Tropical Medicine, Liverpool, UK

## Correspondence to

Dr Tom Bashford;  
tb508@cam.ac.uk



**Figure 1** Figure 1 Modified Ishikawa diagram showing how multiple factors may contribute to the causes and effects of delay, structured using a Donabedian model of health system function. The horizontal division demonstrates how quantitative and qualitative approaches may explore different factors, while the grey shading indicates that although these factors can be delineated, they are components of a complex web of interdependent elements.

care. Health systems are complex, with delays in care an emergent phenomenon of reciprocally interacting people, equipment, institutions, processes and cultures (figure 1). Given this, it is unsurprising that designing and evaluating pragmatic interventions to improve speed have proved difficult even in high-resource healthcare environments.<sup>8</sup>

How can this be remedied in the context of resource-poor settings? Time series data may be lacking from existing datasets but can be readily incorporated into prospective surveys or registries, which are gaining ground in global health research.<sup>9</sup> These data then need to be incorporated into appropriate models, which in turn need to be informed by local context, and accessible to local researchers.<sup>7</sup> Qualitative understanding may present a greater challenge to those steeped in medical science and is likely to require collaboration with others versed in fields such as ethnography, design, phenomenology or actor-network theory. Combining qualitative and quantitative understanding into practical interventions is a further challenge, and may benefit from engagement with fields such as implementation science or systems engineering.

These different approaches need to then be synthesised to address both context-specific and more generalisable questions. How can the trade-off of speed against

quality, acceptability and economic cost be estimated? How can convergent and divergent social, historical and political factors be managed? How can lessons learnt in one setting (either high or low income) be applied to another? The solution to these problems is likely to lie in collaboration. International research partnerships may help achieve this, by providing a platform for academics, spread across a range of countries and contexts, to explore approaches to these problems while developing mutual research capacity.<sup>10</sup> We represent partnerships of researchers from both high-income and low-income settings who are committed to addressing these challenges in specific diseases in particular countries. Our experience, however, is that these are mutual problems requiring mutual solutions.

**Acknowledgements** The authors are grateful to the NIHR Global Health Research Programme for convening and facilitating the Global Health Research Units and Groups Cohort Meeting which led to this commentary.

**Contributors** All of the authors were participants in a facilitated discussion group convened during the NIHR Global Health Research Units and Groups Cohort Meeting in May 2019 at The Council House, Birmingham. TB curated the outputs of this discussion, prepared the final manuscript and created the figure used. All other authors reviewed, commented on and revised the final manuscript and figure. All of the authors have seen the final submitted version and have approved it for publication.

**Funding** This research was funded by the National Institute for Health Research (NIHR) Global Health Research Group on Neurotrauma using UK aid from the UK Government to support global health research.

**Disclaimer** The views expressed in this publication are those of the author(s) and not necessarily those of the NIHR or the Department of Health and Social Care.

**Competing interests** All authors are recipients of grant funding through the NIHR Global Health Research Programme.

**Patient consent for publication** Not required.

**Provenance and peer review** Not commissioned; externally peer reviewed.

**Data availability statement** No additional data are available.

**Open access** This is an open access article distributed in accordance with the Creative Commons Attribution 4.0 Unported (CC BY 4.0) license, which permits others to copy, redistribute, remix, transform and build upon this work for any purpose, provided the original work is properly cited, a link to the licence is given, and indication of whether changes were made. See: <https://creativecommons.org/licenses/by/4.0/>.

## REFERENCES

1. Thaddeus S, Maine D. Too far to walk: maternal mortality in context. *Soc Sci Med* 1994;38:1091–10.
2. Gupta S, Khajanchi M, Kumar V, *et al*. Third delay in traumatic brain injury: time to management as a predictor of mortality. *J Neurosurg* 2019;85:1–7.
3. Bohren MA, Hunter EC, Munthe-Kaas HM, *et al*. Facilitators and barriers to facility-based delivery in low- and middle-income countries: a qualitative evidence synthesis. *Reprod Health* 2014;11:71.
4. Harrison RA, Casewell NR, Ainsworth SA, *et al*. The time is now: a call for action to translate recent momentum on tackling tropical snakebite into sustained benefit for victims. *Trans R Soc Trop Med Hyg* 2019. doi: 10.1093/trstmh/try134. [Epub ahead of print 21 Jan 2019].
5. Ugwu NU, de Kok B. Socio-cultural factors, gender roles and religious ideologies contributing to Caesarian-section refusal in Nigeria. *Reprod Health* 2015;12:70.
6. Kruk ME, Gage AD, Joseph NT, *et al*. Mortality due to low-quality health systems in the universal health coverage era: a systematic analysis of amenable deaths in 137 countries. *Lancet* 2018;392:2203–12.
7. Fisher R, Lassa J. Interactive, open source, travel time scenario modelling: tools to facilitate participation in health service access analysis. *Int J Health Geogr* 2017;16:13.
8. Kreindler SA. The three paradoxes of patient flow: an explanatory case study. *BMC Health Serv Res* 2017;17:481.
9. GlobalSurg Collaborative. Surgical site infection after gastrointestinal surgery in high-income, middle-income, and low-income countries: a prospective, international, multicentre cohort study. *Lancet Infect Dis* 2018;18:516–25.
10. Franzen SRP, Chandler C, Lang T. Health research capacity development in low and middle income countries: reality or rhetoric? A systematic meta-narrative review of the qualitative literature. *BMJ Open* 2017;7:e012332.