




## VIEWPOINT

# Functions and Forms Framework: a Methodology for Mechanistic Deconstruction and Adaptation?

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**Abbreviations**

MTUTH

Mizan-Tepi University Teaching Hospital

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**PERSPECTIVE**

The authors of the core functions and forms framework conducted a scoping review of the literature to describe the patient and system needs addressed by a specific complex health intervention, the intervention's core change process that the health intervention seeks to facilitate (function), and the strategies or activities that are needed to execute those functions, or forms.<sup>1</sup> Our viewpoint is that this framework, which facilitates an understanding of the mechanism by which specific steps and activities are taken to achieve an intended structural and procedural goal in response to a system or patient need, is not only appropriate as a roadmap for adaptation, implementation, and evaluation efforts, but could be used as an actual methodology for determining mechanism and facilitating adaptation, itself.<sup>1</sup> The authors suggest that disentangling an intervention's core functions and forms by developing an intervention's matrix can help practitioners access evidence during implementation and build a repository of adaptations.<sup>1</sup> We extend that suggestion by asserting that the framework could be used prospectively as a methodology to intentionally disentangle the mechanism of how a given practice is successful.<sup>1</sup> The framework could then be used to prospectively build an intervention, based on the evidence gleaned from “disentanglement”, for another setting.

An example of our perspective, which is that the framework could function in itself as a methodology, would be in the case of where a practitioner wants to understand a case of positive deviance. For example, in our own research, we have found that in a very low resource facility in rural Ethiopia, there are very high rates of women giving birth vaginally who have a history of prior cesarean birth. For background, global use of cesarean birth, the

most commonly performed surgery in the world, has exceeded what would be expected based on medical indications.<sup>2</sup> High rates of cesarean have not shown benefits, are associated with harm, and can constrain resources.<sup>3,4</sup> Once a woman has a scarred uterus from a cesarean, she can deliver by elective repeat cesarean or attempt a trial of labor (vaginal birth) after cesarean.<sup>5</sup> For properly selected women, trial of labor after cesarean is a safe, evidence-based choice; it is estimated that 60–80% of women would achieve vaginal birth if they tried to do so.<sup>5</sup> However, outcomes of trial of labor can be catastrophic if mismanaged.<sup>5,6</sup> Our preliminary data from Mizan-Tepi University Teaching Hospital (MTUTH) in Mizan-Aman, Ethiopia, was notable for high rates of successful vaginal birth after cesarean (32.7%) that were not associated with adverse maternal or neonatal outcomes compared to elective repeat cesarean birth. We want to understand how MTUTH achieves this high level of safe vaginal birth after cesarean so that we can potentially adapt this success to other settings where rates are low.

Using our example of MTUTH and its success with vaginal birth after cesarean, we propose using the functions and forms framework as follows: first, our team would use mixed methods to assess the physical and organizational context of MTUTH in order to provide a physical description of the facility as well as a picture of the contextual determinants of labor and delivery care at the hospital. These results would inform qualitative interviews on how the physical and organizational context is associated with excellent vaginal birth after cesarean outcomes. Then, these data would be integrated to describe MTUTH's approach to and management of women with a history of prior cesarean birth and presented to stakeholders. We would then engage stakeholders in a focus group setting where the aim would be to deconstruct or “disentangle” the results by fitting them into the functions and forms framework. The framework would be a matrix of how, or by what mechanism, MTUTH achieves a high prevalence of safe vaginal birth after cesarean with good pregnancy outcomes. Next, if the success is meant to be adapted to another setting, the same initial physical and contextual assessment of the second facility would be conducted, integrated, and presented to stakeholders, along with the functions and forms framework from MTUTH. Stakeholders would determine, based on how

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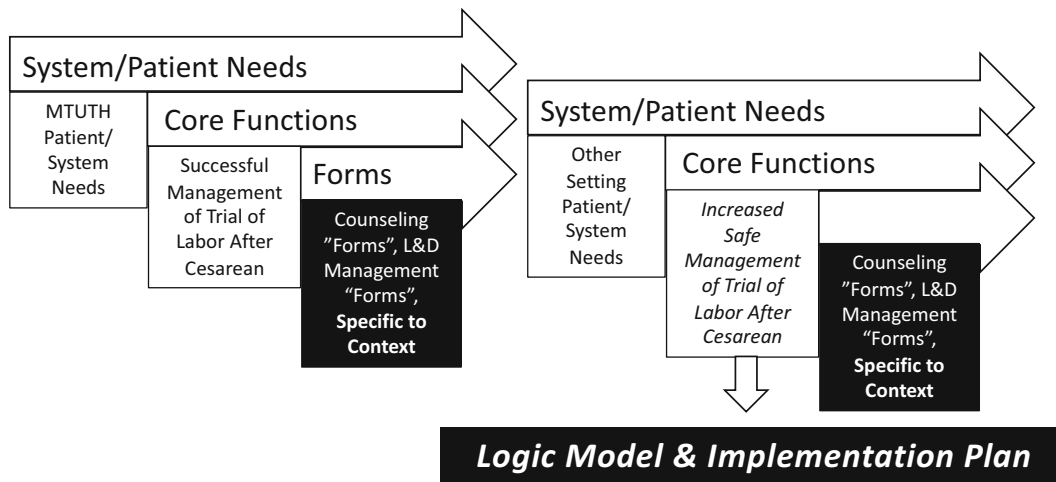


Figure 1 Functions and forms framework as methodology.

their context differs from that of MTUTH, how MTUTH’s forms might perform in the new setting, and how those steps or activities might be adapted to meet the system and patient needs of the new context, and developed into a logic model and implementation plan. We have presented a visual of our example scenario in Figure 1. Outcomes are highlighted in black.

We propose that in order for this concept to be successful, in addition to the functions and forms framework, practitioners would require a contextual determinants framework, an adaptation framework, and preliminary data that inform research hypotheses about functions and forms. For our example, we propose to use the Nilsen contextual determinants framework and the Movsisyan adaptation framework.<sup>7,8</sup> We have also completed our own hypothetical functions and forms frameworks for MTUTH and the setting where we wish to adapt the success of MTUTH based on preliminary data, in order to test these hypotheses with our prospective work. For illustrative purposes, Figure 2 shows how research ex-

cuted per the above protocol might result in adapted forms for a new setting that can then be prospectively tested in a hybrid effectiveness implementation trial. Our new setting is represented by the acronym “CH” in the figure.

We have not seen the functions and forms framework used in this way, and we think conceptualizing this framework as a method is a novel contribution to the literature. Limitations to this concept are that we have no evidence of being used yet to this effect and that it may be too simplistic of a matrix—other components of mechanism may not fit completely into system/patient needs, functions, and forms. We intend to test the use of the framework as a methodology but present the concept here for others to consider and critique. In conclusion, we feel the core functions and forms framework may represent a highly pragmatic tool and methodology for deconstructing health outcomes to their mechanistic components and then adapting and rebuilding those components for an alternative setting, if context is considered appropriately.

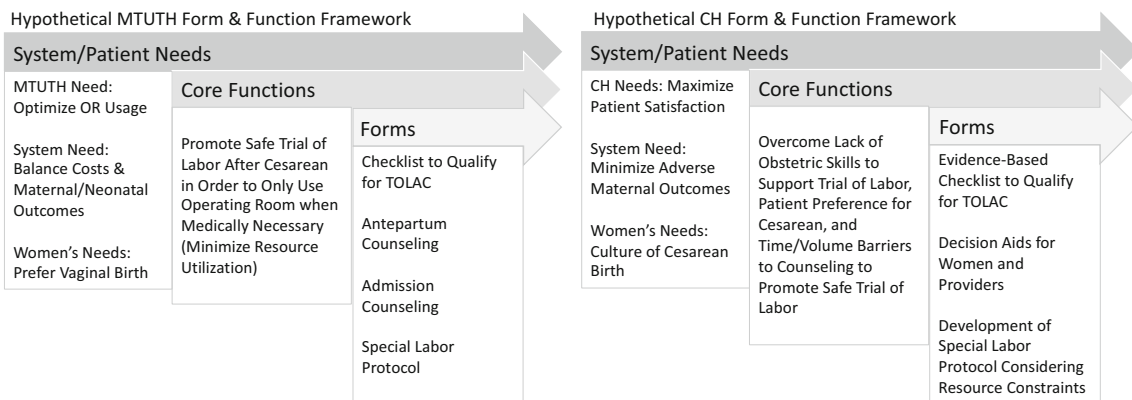


Figure 2 Hypothetical functions and forms frameworks produced at MTUTH and adapted to CH. TOLAC, trial of labor after cesarean; OR, operating room

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## REFERENCES

1. **Jolles MP, Lengnick-Hall R, Mittman BS.** Core functions and forms of complex health interventions: A patient-centered medical home illustration. *J Gen Intern Med.* 2019;34(6):1032-1038.
2. **Betran AP, Temmerman M, Kingdon C, et al.** Interventions to reduce unnecessary caesarean sections in healthy women and babies. *Lancet.* 2018;392(10155):1358-1368.
3. **Belizan JM, Althabe F, Barros FC, et al.** Rates and implications of caesarean sections in Latin America: ecological study Commentary: all women should have a choice Commentary: increase in caesarean sections may reflect medical control not women's choice Commentary: "health has become secon". *BMJ.* 1999;319(7222):1397-1402.
4. **Gibbons L, Belizán JM, Lauer JA, Betrán AP, Merialdi M, Althabe F.** The global numbers and costs of additionally needed and unnecessary caesarean sections performed per year: overuse as a barrier to universal coverage. *World Health Rep.* 2010;30(1):1-31.
5. **ACOG Practice Bulletin No. 154: Operative Vaginal Delivery.** *Obstet Gynecol.* 2015;126(5):e56-65.
6. **Horey D, Kealy M, Davey M-A, Small R, Crowther CA.** Interventions for supporting pregnant women's decision-making about mode of birth after a caesarean. *Cochrane Database Syst Rev.* 2013.
7. **Nilsen P, Bernhardsson S.** Context matters in implementation science: a scoping review of determinant frameworks that describe contextual determinants for implementation outcomes. *BMC Health Serv Res.* 2019;19(1):189.
8. **Movsisyan A, Arnold L, Evans R, et al.** Adapting evidence-informed complex population health interventions for new contexts: a systematic review of guidance. *Implement Sci.* 2019;14(1):105.

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