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## Enculturating science: Community-centric design of behavior change interactions for accelerating health impact

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### ABSTRACT

Despite significant advancements in the scientific evidence base of interventions to improve newborn survival, we have not yet been able to “bend the curve” to markedly accelerate global rates of reduction in newborn mortality. The ever-widening gap between discovery of scientific best practices and their mass adoption by families (the evidence-practice gap) is not just a matter of improving the coverage of health worker-community interactions. The design of the interactions themselves must be guided by sound behavioral science approaches such that they lead to mass adoption and impact at a large scale. The main barrier to the application of scientific approaches to behavior change is our inability to “unbox” the “black box” of family health behaviors in community settings. The authors argue that these are not black boxes, but in fact thoughtfully designed community systems that have been designed and upheld, and have evolved over many years keeping in mind a certain worldview and a common social purpose. An empathetic understanding of these community systems allows us to deconstruct the causal pathways of existing behaviors, and re-engineer them to achieve desired outcomes. One of the key reasons for the failure of interactions to translate into behavior change is our failure to recognize that the content, context, and process of interactions need to be designed keeping in mind an organized community system with a very different worldview and beliefs. In order to improve the adoption of scientific best practices by communities, we need to adapt them to their culture by leveraging existing beliefs, practices, people, context, and skills. The authors present a systems approach for community-centric design of interactions, highlighting key principles for achieving intrinsically motivated, sustained change in social norms and family health behaviors, elucidated with progressive theories from systems thinking, management sciences, cross-cultural psychology, learning and social cognition, and the behavioral sciences. These are illustrated through a case study of designing effective

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interactions in Shivgarh, India, that led to rapid and substantial changes in newborn health behaviors and reduction in NMR by half over a span of 16 months.

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## Introduction

Major scientific advances have been made in our understanding of neonatal mortality in low resource settings over the last two decades. A host of proven interventions have been identified, many of which have substantial efficacy for reducing neonatal mortality rate (NMR). When delivered together at high coverage, these interventions can potentially avert up to an estimated 71% of newborn deaths.<sup>1</sup> Yet, observed reductions in NMR globally have only averaged about 2–3% annually.<sup>2</sup> A decade since the 2005 Lancet Neonatal Survival series, 2.9 million newborn deaths—most of them preventable—still continue to occur each year. It is obvious that there are gaps in our current approach to reducing neonatal mortality that are leading to a significantly lower impact than that is possible. Until we recognize and address these gaps, we will continue to miss global targets, and more importantly, millions of babies will continue to die needlessly. It is therefore a moral and ethical imperative that we pause to critically analyze reasons for our suboptimal impact and take corrective actions.

There has been an ever-widening gulf between the discovery of best scientific practices for improving newborn health and survival, and their translation into what families actually practice at home. Even the most basic technology-agnostic life-saving behaviors such as immediate and exclusive breastfeeding have met with limited success. A focus on discovery of life-saving interventions alone is therefore insufficient. Fundamental breakthroughs are needed in methodological approaches to ensure mass adoption of these discoveries.

In recent years there has been an increasing emphasis and growing body of work on applying implementation science methods within the ambit of health systems research to address the evidence-implementation gap—the gap between availability of evidence-based interventions and their effective delivery to large populations to achieve health impact.<sup>3,4</sup> However, it is not the interventions *per se* that are delivered to communities. Rather, it is a set of interactions between health workers, and families and communities that must translate into the intervention being provided to mothers and their newborn babies. For example, while “immediate and exclusive breastfeeding” is an evidence-based intervention from an epidemiological perspective, it is in effect the desired behavioral outcome of a set of interactions between health workers and mothers. While implementation research can guide the process of ensuring more equitable and reliable reach of such health worker-community interactions, the content and process of the interactions themselves must be designed based on sound behavioral science approaches in order to achieve effective coverage and impact.

When compared to the rigorous methods of epidemiology, behavior change comes across as a soft science with vague methods and lacking in systematic application to achieve desired outcomes, particularly at scale. Not surprisingly, while there is consensus among epidemiologists around the interventions and coverage rates needed to achieve desired reductions in mortality,<sup>1</sup> there is a gap in understanding how these interventions should be delivered to communities to achieve desired behavioral outcomes. The set of evidence-based interventions *per se* is accessible to country-level policy makers through published systematic reviews and global technical recommendations, and many of these interventions make their way into national guidelines. However, the translation of these interventions ultimately into the design of interactions between health workers and families is left to program implementers. Without the knowledge of scientific methods and guiding principles for designing effective interactions, program implementers tend to adopt the same traditional methods that have failed time and again in achieving desired behavioral outcomes. The net results of low annual rates of mortality reduction, therefore, are hardly surprising.

There has been an extensive body of research on behavior change over the last several decades, resulting in theories and models that help explain behavior as well as suggest ways to influence and change behavior.<sup>5</sup> However, most existing theories, such as the social cognitive theory<sup>6</sup> and the trans-theoretical model,<sup>7</sup> are aimed at modifying predominantly habit-forming behaviors in a largely western cultural context. Consequently, these theories are biased toward western perspectives of communication that involve rationality-driven explicit messages, as compared to traditional cultural preferences in communities towards intuition, experience, and trust.<sup>8</sup> The resulting programmatic approaches stemming from these theories are therefore not fully compatible with the cultural context of the communities for which they are developed, thus limiting their effectiveness.

Fundamentally, newborn care practices in traditional societies are deeply entrenched within a culture transmitted over generations, and are manifestations of a worldview predominantly shaped by intuitive assumptions of cause and effect based on observations and experiences in the absence of access to modern sources of knowledge (Tables 1 and 2). To the educated mind, many of these practices appear bizarre, irrational, and incomprehensible at the surface. They are labeled as a “black box” that can neither be understood, nor is there a perceived need to further understand it. This leads to behavior change approaches that are essentially “blind” to existing traditional practices and their underlying beliefs. These include information-centric approaches that provide unidirectional communication regarding desired behaviors

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