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Development and use of the Lives Saved Tool (LiST): a model to estimate the impact of scaling up proven interventions on maternal, neonatal and child mortality

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The Journal's April supplement included many informative articles about the Lives Saved Tool (LiST), such as how modelling and calculations are built into the tool, actual calculations of effect sizes in the software and recent applications of various LiST scenarios. We understand that LiST was developed to be used as part of a package of tools for programme managers or ministry of health personnel for planning, helping prioritize investments and evaluating existing programmes.

Because of the potential power of this tool, how it gets used becomes a critical issue. Presently, we understand that LiST is primarily being used to advocate for new interventions or those with relatively low coverage. Its focus is on future marginal mortality gains. But the tool also has the capability to convey important information, not highlighted in the supplement, relating to more historically established interventions that typically show higher

coverage—such as immunization and vitamin A. Past mortality reduction gains must not be taken for granted and indeed cannot be maintained without continued investments. The tool's versatility, if fully exercised, could help users look at the bigger public health picture, assessing both future marginal mortality gains (lives saved) and past mortality reduction gains (by showing lives lost if gains are not maintained).

Chopra *et al.*¹ note that 'certain interventions for which coverage is already high will not result in many lives saved and this discrepancy may be misunderstood: for example, immunization coverage is high in South Africa so very few lives would be saved by increasing from over 90% to our target of 95% coverage. However, if investment stopped and coverage fell, mortality would rise. This effect can also be modelled in LiST to ensure that misunderstandings do not arise.'

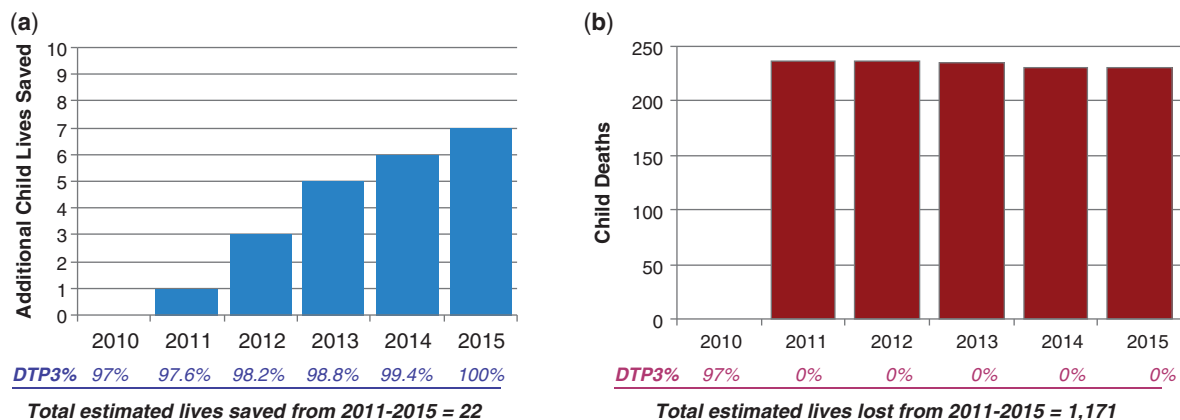


Figure 1 (a) Estimated additional child 'Lives saved' each year by increasing DTP3 coverage from 97% to 100%; (b) Estimated child 'Lives lost' each year attributable to stopping all DTP3 vaccination (97% to 0%)

In order to use the full power of the tool—and to avoid the misunderstanding highlighted by Chopra *et al.*¹—LiST should not only be used to capture ‘gains’ (lives saved) but also possible ‘losses’ (lives lost) as well. Capturing losses illustrates the importance of maintaining a system (e.g. immunization) or continuing life-saving household/family behaviours (e.g. exclusive breastfeeding, as countries may experience widespread behaviour changes with urbanization). Expressing ‘lives lost’ will allow users to also better understand the importance of continuing to invest in mature, population-based preventive interventions with high coverage.

To illustrate the ‘lives lost’ potential of the tool, we have run LiST first as is normally done (left) and then in the opposite direction (right), using South Africa as an example with coverage (based on South Africa’s reported coverage to illustrate the point in Chopra *et al.*) for the third dose of diphtheria–tetanus–pertussis (DTP3) coverage (Figure 1a and b).

Running LiST in the opposite direction gives users an idea of the lives already being saved by ‘successful’ interventions—and highlights the importance of continuing to invest in these interventions, to maintain as well as further increase their coverage. When running LiST in the opposite direction, users should understand that the tool uses a proportional cause-specific (not intervention-focused) mortality calculation. The calculation first takes into account preventive measures (and assigns a protective factor in the formula), and then considers curative measures. When coverage of preventive interventions is reduced (e.g. running LiST in the opposite direction for DTP3), greater weight is placed on the potential impact of curative interventions—which will then diminish the effect on estimates attributable to ‘lives lost’.

Without thorough guidance about how to modify or use the tool, so that a typical user can model the number of lives being saved with continued successful use of an intervention at baseline (by showing ‘lives lost’) plus additional lives saved if coverage increases, we fear that LiST will be viewed by decision makers as ‘turn-key’. It could also run the risk of being used as a stand-alone tool rather than as part of a series of planning tools as apparently intended.

It is important for users to look at the comprehensive effects of prioritization with the tool—for new and low-coverage interventions that need to be strengthened and high-coverage interventions that need to be maintained and further strengthened. Furthermore, LiST does not assess health system constraints, thus giving no idea of the cost implications of increased coverage, that is, how credible a target is given the weaknesses of the current health system. Similarly, LiST does not distinguish between achieving mortality reductions with relatively cost-effective preventive interventions such as immunization or vitamin A supplementation vs reliance on more costly curative interventions.

We encourage the LiST authors to incorporate clearer instructions into the tool so that the typical user can operate LiST at its full power—to express lives saved as well as lives lost if gains in higher coverage interventions are not maintained.

Reference

- Chopra M, Daviaud E, Pattinson R, Fonn S, Lawn JE. Health in South Africa 2: saving the lives of South Africa’s mothers, babies, and children: can the health system deliver? *Lancet* 2009;**374**:835–46.

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Robert Steinglass *et al.*¹ highlight that ‘how’ the Lives Saved Tool (*LiST*) gets used is a critical issue and we fully agree. *LiST* is to be used to assess the potential mortality impact of improving the coverage of interventions whether they are long-standing or new ones. They are not correct in saying that it is primarily being used to advocate for new or low-coverage interventions. It

estimates the additional effects of this increased coverage giving first priority to preventive interventions, such as immunizations. What Steinglass *et al.* are calling ‘advocacy’ we understand as promoting evidence-based decision making for planning the appropriate expansion of interventions. Of course, interventions that are already at high coverage will have