WEB APPENDIX

Web Appendix Table A: Metrics related to outcomes, quality and coverage included in Saving Brains project monitoring and evaluation

Description of Outcome/Output	**Indicators**
Child Health and Nutrition	Birth Outcomes, Child Nutrition and Diet, Child Health, Infant or Child Lives; Physical Growth
Child Growth and Developmental Status	Communication, Social and Emotional, Development, Identity and Self Efficacy: Spiritual, Cultural
Improved Context	Caregiver-Child, Interaction, Caregiver Physical, Health, Caregiver Mental Health, Maternal Lives Saved, Caregiver(s) Capabilities, Home Environment, Community, Environment or Improved Access to Community Services, Protection against, Abuse and Exploitation outside of the home
Quality and coverage	
Service providers are able to deliver intervention as intended	Number of service providers completing training, Process for training, Process and quality indicators for training
Target population have full and equitable access to intervention	Effective reach of intervention to neediest subpopulations Target Population and Priority Needs Identified Intervention Developed Dose and other Parameters Matched to Need
Intervention delivered to target population with required fidelity and quality	Number of people in target population (beneficiaries) receiving full intervention package Quality of delivery of intervention package

Web Appendix Table B: De-identified key informants contributing to qualitative aspects of the Saving Brains evaluation

	Organisation Type/Name	Position	Question theme
ECD POLICY AND PROGRAMMING			
1	Saving Brains	Executive	ECD research, policy and programming; contemporary challenges and future directions
2.	Multilateral UN organisation	Policy and programming.	
3.	Multilateral UN organisation	Policy and programming.	
4.	Private international ECD foundation	Policy maker.	
5.	International Financial Institution.	Policy maker.	
6.	Multilateral non-government organisation.	Policy &programming.	
7.	International Child Health Research Institution	Policy, programming & research.	
8.	Non-government disability-ECD organisation - national level.	Policy and programming.	
9.	Ministry of Health, sub-Saharan African country.	Policy and Programming	
OTHER EXPERTS IN FIELD			
	General		
10.	Public health academic institution, UK	Senior Researcher	Challenges, priorities and approaches in future ECD research.
11.	Public health academic institution, USA.	Senior Researcher.	
	Specific technical		
12.	Public health academic institution, USA.	Senior Researcher.	Impact metrics
13.	Public health academic institution, USA.	Researcher.	
14.	Public health academic institution, UK	Senior Researcher.	
15.	Multilateral UN organisation.	Senior Researcher.	
16.	Saving Brains Grant Recipient Research Institution.	Senior Researcher.	Implementation process metrics, human resourcing and cost-effectiveness
17.	Saving Brains Grant Recipient Research Institution.	Senior Researcher.	

18.	Saving Brains Grant Recipient Research Institution.	Senior Researcher.	Integration with existing services
19.	Academic Centre, USA.	Senior Researcher.	Implementation process knowledge gaps, priority questions and research methodology.
SAVING BRAINS PLATFORM			
Members of the Saving Brains Platform team who were consulted about various aspects of the evaluation, their experiences working within the Saving Brains portfolio and in regard to specific technical, programming and research related themes.			
GRANTEES			
Twenty-one of thirty-nine (54%) of research teams were specifically interviewed regarding their project and various aspects of their experiences within the Saving Brains portfolio.			

Web Appendix Table C: Interview and focus group topic guides from Saving Brains evaluation

Thematic questions for key informant interviews and focus groups (Toronto Saving Brains Community Meeting (June 21-22 2016) and webinars (August 17, 24 and September 2 2016).

Impact and outcome metrics question guide

Background

Limitations of child development metrics pose a major challenge in policy and programming efforts to improve early child development outcomes in LMIC settings. Various initiatives are underway to improve measurement of outcomes at population and individual level (e.g. newly published data from McCoy DC et al, funded by the Saving Brains Programme, Grand Challenges Canada, providing the first global and regional estimates of the number of children failing to reach developmental milestones based on parent report measures.1 However major challenges remain and collaboration is required to improve measurement of impact of interventions on child development outcomes at scale in low-resources settings.

Objectives

To discuss as a group;

1. Different approaches to impact measurement that have been taken across the Saving Brains portfolio
2. Challenges and benefits of different approaches taken
3. Lessons learned for policy makers and programmers attempting to measure impact of ECD interventions at scale

Questions

1. How has impact been measured across the Saving Brains portfolio?
2. How were decisions reached about impact measures used? What factors influenced these decisions?
3. How has use of these impact measures worked in practice?
4. How about intermediary outcome measurement in terms of environment, caregiver relationships etc.?
5. What have been the programming requirements to support this in terms of human resources, cost, timeline etc.?
6. Have measures used required translation and adaptation in your local context and if so, how has this been managed?
7. Do measures used include children less than 3 years and children with disabilities?
8. Could measures used within the Saving Brains portfolio be used if innovations were scaled up at National level? If so, how and what would be required to support this? If not, what alternatives would you recommend for programmers and policy makers?
9. Given the range of players involved, how can coordination within ECD networks be improved to support development of improved metrics?
10. Any other aspects of impact measurement that you think are important considerations which we have not covered?

Cadre question guide

Background

Choices around human resources for implementation of ECD interventions have significant implications for effectiveness, sustainability and scale-up. Across the Savings Brains

Thematic questions for key informant interviews and focus groups (Toronto Saving Brains Community Meeting (June 21-22 2016) and webinars (August 17, 24 and September 2 2016).

portfolio, a broad range of workers have been used to implement innovations with potential lessons for policy makers and programmers aiming to implement ECD interventions at scale in a range of contexts.

Objectives

1. To discuss the range of workers used to implement innovations across settings.
2. To discuss rationale for choice of workers used across settings.
3. To discuss programming implications with use of different cadres of workers.

Questions

1. What was the rationale for selection of worker type across different SB innovations?
2. What challenges and benefits were noted with use of various cadres of workers across settings?
3. Where pre-existing categories of workers were used, what were the pros and cons experienced? How was the overall workload for individual workers managed when implementing 'additional' ECD intervention?
4. Where new worker groups were used, what were the pros and cons of this approach? How were issues of financing, governance and sustainability managed?
5. How were decisions around incentivisation reached?
6. Where community health workers were used, how were decisions reached around type of community health worker, level of training, supervision, equipment and incentivisation?
7. Where community health workers were used with the goal of improving equity and coverage of interventions, were these tracked? And if so, provisional recommendations or findings?
8. When thinking about decisions at a national scale, are there additional factors that need to be considered about human resources for implementation of ECD interventions?

Content (positive stimulation interventions) question guide

Background

Available evidence provides general guidance to policy makers and programmers about elements of positive stimulation interventions associated with increased effectiveness.2 In particular, use of a structured evidence based curriculum, provision of opportunity to practice skills with the child, provision of feedback to the parent, adequate training and supervision for staff, integrated health, nutrition and ECD elements and both community and government support are thought to be important in intervention effectiveness.2 There are also an increasing range of resources available to programmers implementing ECD interventions.3, 4 However, from a practical perspective programmers still face detailed choices about intervention design and pros and cons of alternate choices in different settings may not be clear.

Objectives

1. To consider key intervention design questions raised when implementing positive stimulation interventions across the SB portfolio.
2. To consider how choices were made around these intervention design elements.
3. To consider relevance of lessons learned to programmers developing models for ECD interventions at national scale.

Thematic questions for key informant interviews and focus groups (Toronto Saving Brains Community Meeting (June 21-22 2016) and webinars (August 17, 24 and September 2 2016).

Questions

1. Across the SB portfolio what factors have informed choices about the following elements of positive stimulation interventions;
2. Target of intervention (e.g. parent, parent and child, child only)
3. Age of children
4. Number of contacts
5. Frequency of contacts
6. Duration of contacts
7. Chosen curriculum (with as much detail re actual curriculum as possible)
8. With regards to choices made, what has worked well and why?
9. Are there areas which have not worked well and if so, please describe?
10. Are there design elements that need to change to enable scale up and if so, please provide examples?
11. Any other elements that you consider important for programmers at national level to consider when developing models for implementation at scale?

NB *That questions re universal vs targeted and integration of interventions are asked elsewhere but could also be covered here.*

Delivery setting question guide

Background

ECD interventions are delivered in diverse settings in terms of geography, rural/urban, different sectors, facility/communities or home or often a mix of settings.

Decisions about setting have implications for policy and on many aspects of programming.

Objectives

To discuss as a group;

1. How decisions about implementation setting were made across the portfolio
2. Implications of those decisions, both positive and negative on program implementation and scale-up
3. Lessons learned for policy makers and programmers designing ECD programmes at national

Questions

1. How were decisions about the setting for implementation of your ECD programme reached (e.g. convenience, targeting of vulnerable subgroup, prior involvement with that sector etc.)?
2. What information did you use in deciding about the setting of implementation for your program?
3. Was there any information that if you'd had it earlier, would have altered your decision about setting?
4. Benefits specific to your setting?
5. Challenges specific to your setting?
6. What implications has setting choice had on the ease of program implementation?
7. What recommendations about delivery setting would you make to policy makers and programmers designing ECD programmes at national scale?
8. Anything further that you would like to highlight about implementation setting that we have not covered so far?

Thematic questions for key informant interviews and focus groups (Toronto Saving Brains Community Meeting (June 21-22 2016) and webinars (August 17, 24 and September 2 2016).

Universal and targeted approaches

Background

Universal approaches to improving ECD aim to increase protective factors and reduced risks for adverse child development at a whole population level. Targeted approaches are aimed specifically at children identified as having a higher-than-population-baseline risk of adverse developmental outcomes.

While systems which provide both universal and targeted ECD interventions are ideal, in resource limited settings, some have suggested that services should initially be targeted to the most vulnerable.5 Further, from a rights perspective, it can be argued that ensuring equity through inclusion of children with specific additional risk factors (e.g. disability, membership to ethnic minority subgroups etc.) is a priority, regardless of setting.

There are however many challenges. While effectiveness of interventions may be greatest for certain vulnerable population sub-groups, with potentially favourable 'benefit to cost ratio' for investment, scaling up services to include those 'hardest to reach' may involve higher initial costs.2 These complexities pose challenges for policy makers trying to develop ECD programmes which are equitable but also provide sustainable coverage at scale.

Objectives

To discuss as a group;

1. The rationale for selection of targeted versus universal approaches to ECD implementation in different settings within the SB portfolio.
2. Programming implications for both approaches
3. Requirements to inform policy makers in decisions about either universal or targeted approach to implementation

Questions

1. What was the rationale for selection of targeted versus universal approaches to ECD implementation in your context?
2. In interventions where a targeted approach was taken, how was the target population identified (e.g. data driven, empirically, opportunistically)?
3. What are the benefits and disadvantages of a targeted approach in different settings?
4. What are the benefits and disadvantages of a universal approach in different settings?
5. What have been the programming implications of different approaches taken (e.g. human resources, training and supervision, financial)?
6. Have there been implications for financial sustainability and if so, moving forward, what strategies might be used to address these?
7. For interventions taking a universal approach, what strategies have been implemented to ensure inclusion of disadvantaged population subgroups including children with disabilities?
8. What recommendations about intervention targeting would you make to policy makers and programmers designing ECD programmes at national scale?
9. Anything further that you would like to highlight about implementation setting that we have not covered so far?

Processes for monitoring coverage and quality at scale

Thematic questions for key informant interviews and focus groups (Toronto Saving Brains Community Meeting (June 21-22 2016) and webinars (August 17, 24 and September 2 2016).

Background

Processes to ensure quality and coverage are important for effective and equitable implementation of ECD interventions.2 However, review by Yousafzai et al has highlighted the need for further consideration of implementation processes to facilitate more comprehensive guidance as to how to effectively implement interventions.6, 7 The SB portfolio provides a unique opportunity to consider implementation processes in order to provide more detailed guidance for programming at scale.

Objectives

To discuss:

1. Priorities in measuring quality and coverage of intervention.
2. Approaches used to monitor quality and coverage across the portfolio.
3. Considerations for monitoring coverage and quality of ECD interventions at scale.

Questions

1. What do you think are the 3 most important elements of 'quality' of implementation to measure?
2. What indicators have been most helpful in measuring these?
3. What processes of supervision and training have been developed to support this? (As much detail as possible re number of supervisors per worker, frequency, duration and mode of supervision)
4. What has been required to support monitoring of quality and coverage in terms of;
5. Data sources - are these procedures integrated into existing national data collection systems or stand-alone systems?
6. Technical and funding support?
7. Incentivisation of workers?
8. How have findings from monitoring been incorporated into ongoing implementation?
9. Would these approaches to monitoring of quality be feasible and appropriate for interventions delivered at national scale?
10. What strategies have been used to ensure equitable coverage of interventions?
11. What strategies have been used to reach the most difficult to reach populations including children with disabilities?
12. What challenges have been faced with regard to retention of participants? How have these challenges been overcome?
13. How would these approaches need modified for implementation at national scale?

Integration

Background

Integrated delivery of ECD with interventions in other sectors is often recommended to promote holistic care of children and their families, to maximise synergies of interventions and for efficiency. However, an integrated approach to service delivery also has many implications for programming.

Objectives

To consider as a group;

1. Experience with integrated innovations across the SB portfolio in terms.

Questions

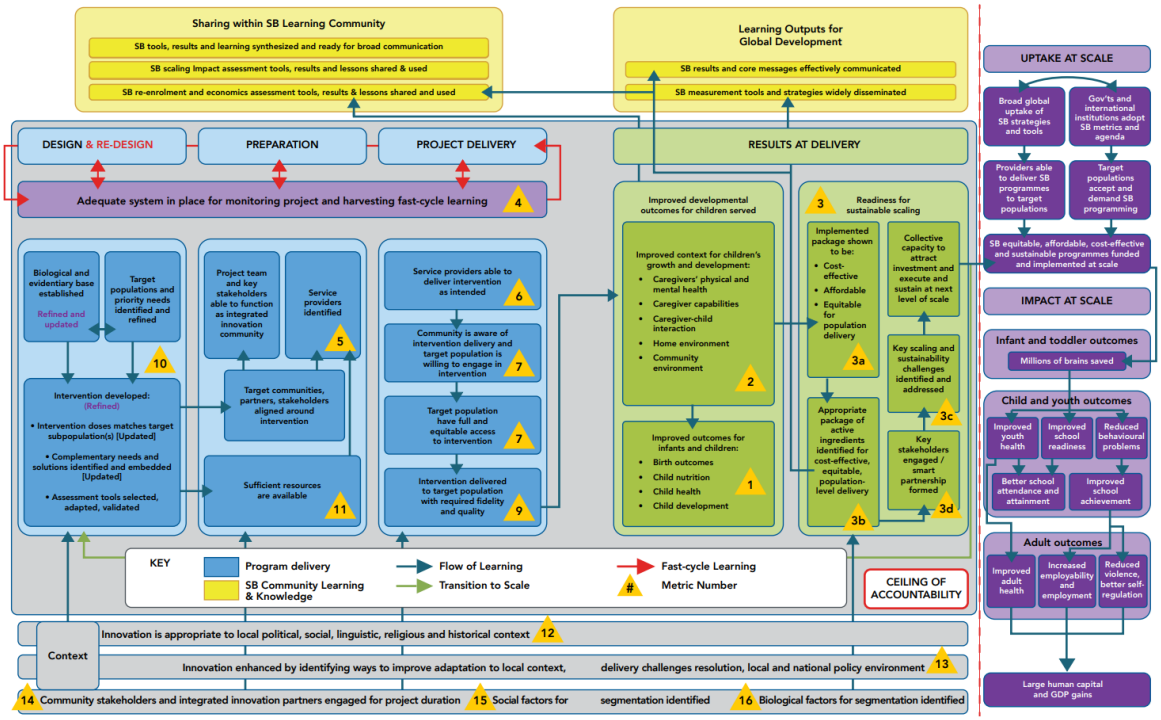
Thematic questions for key informant interviews and focus groups (Toronto Saving Brains Community Meeting (June 21-22 2016) and webinars (August 17, 24 and September 2 2016).

1. What has been the rationale for choosing ECD specific or integrated ECD approaches in different settings across the portfolio?
2. Where integrated approaches have been taken, how has this worked?
3. What have been the programmatic implications of an integrated approach in terms of;
4. Work-load for workers?
5. Training and supervision?
6. Equipment?
7. Cost?
8. Monitoring and evaluation?
9. How has governance across sectors been managed?
10. What are the implications of an integrated approach for implementation at national scale?
11. Are there other elements of an integrated approach which are important to consider in implementation of ECD programmes at national scale?

Questions for experts in the field

1. What do you consider to be priority needs for policy makers and programmers in implementing ECD programming at national scale, once a decision has been made to invest in early child development?
2. With regards to ECD programmes at scale, what do you consider to be the key design decisions for policy makers and programmers?
3. Given the challenges of measuring impact in ECD programmes and the constraints that this poses to progress in policy and planning, what do you see as next steps in improving developmental outcome metrics within programmes and at national scale?
4. If it were possible to monitor 3 indicators on the pathway to improving ECD at a national level, what would you measure and why?
5. What key lessons can be learned about cadres of worker for delivery of ECD interventions from other global child health interventions? In particular, what lessons around use of CHWs are relevant for CHW delivery of positive stimulation interventions in home settings?

Web Appendix Figure A: Saving Brains Portfolio-level Theory of Change



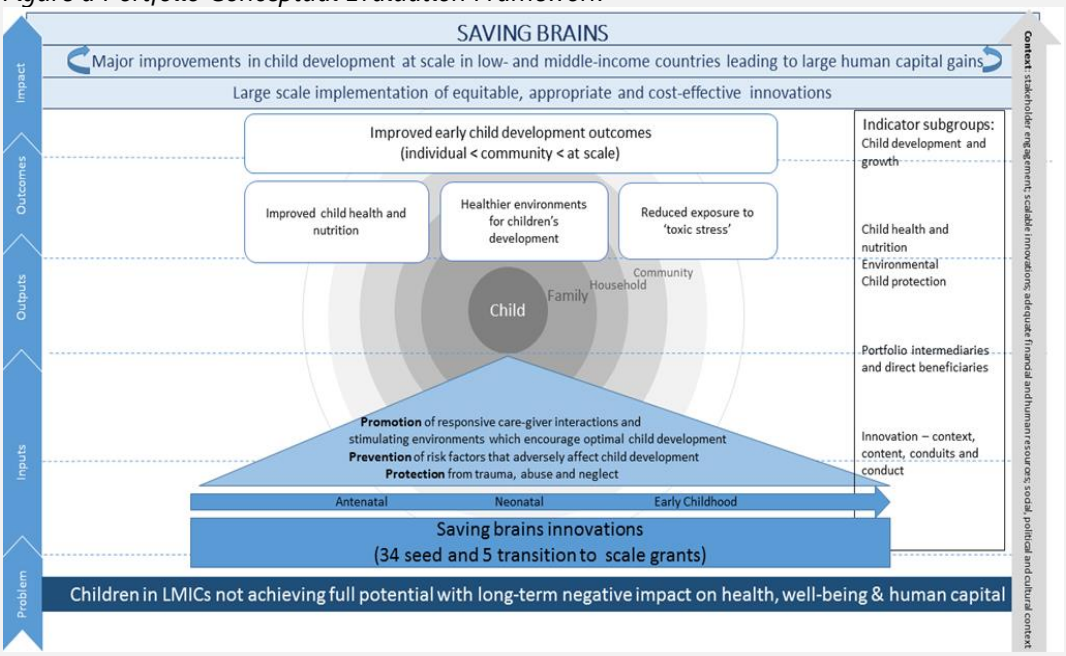
Web Appendix Textbox A: Methods of Saving Brains portfolio impact and process evaluation

We undertook an impact and process evaluation of child development projects funded by Saving Brains, Grand Challenges Canada (GCC) between 2011 and 2016.

Conceptual Evaluation framework (Figure a)
To guide evaluation design, a Conceptual Evaluation Framework was developed. (Figure a) This used key structural elements of the Saving Brains Portfolio monitoring and evaluation framework specifically an existing Portfolio level Theory of Change (ToC) and related indicators which had been developed by a diverse team of ECD experts coordinated by the Saving Brains partnership (Web Appendix Figure A) The evaluation framework provided a structure for considering processes by which outputs, outcomes and impact were expected to be achieved across Saving Brains Seed and TTS projects.

For evaluation purposes, projects were also described by type, according to the focus of their intervention (i.e. 'promote', 'protect' and/or 'prevent'). These terms, defined below, map to domains within the WHO NCF.

Figure a Portfolio Conceptual Evaluation Framework



Since the majority of projects in the portfolio focused on responsive stimulation or early learning, this comprised the main focus on the evaluation.

Data sources and collection
A wide range of data sources were used for both quantitative and qualitative components of the evaluation (Web appendix Table A).

Quantitative
Project teams collected quantitative impact and process data using pre-specified data collection tools provided by Grand Challenges Canada, in particular;

- Service Delivery Forms (SDFs): Microsoft Word documents with tables comprising data on contact point, cadre types, remuneration, supervision and training of workers, logistics of intervention delivery, including duration and frequency of contact time with participants, and who received the intervention and white space boxes for information on fidelity and quality of interventions.
- Results-based Management and Accountability Framework (RMAF): Microsoft Excel document comprising data on numbers of recipients and beneficiaries (intermediary and final) of interventions; child growth and development outcomes; intermediary outcomes (including parental and home environment outcomes); resource availability, funds leveraged and costing; service provider recruitment, training and supervision; community reach, coverage and demand for intervention; and social, biological and policy context.

Textbox A (continued): Methods of Saving Brains portfolio impact and process evaluation

Qualitative

Thematic areas of enquiry

Broad thematic areas of enquiry, relevant to ECD policy and programming at scale, were established based on literature review, stakeholder consultation and analysis of written portfolio documents (Web Appendix Table A).

Pragmatic literature review included a searche through Medline and Embase, using the following Medical Subject Heading terms; 'Child development' OR 'Developmental Disabilities' AND 'Developing Countries'. Additional articles were retrieved through reference lists of identified articles and Saving Brains materials. Grey literature was searched through websites of major multilateral organisations engaged in ECD programming including the World Health Organisation, UNICEF, Save the Children Fund, the World Bank, World Vision International, other related organisations, and Google.

The following thematic areas of enquiry were established for further exploration; partnerships, content and adaptation of intervention, universal/targeted approaches, delivery strategies, contact points, workforce (recruitment, training, supervision and incentivisation), integration with other sectors, use of technology, processes for monitoring impact, quality, coverage and cost, challenges and strategies for resolution.

Interviews, meetings and focus group discussions

Key informants were purposively selected with snowballing from professional networks including national and international programmers, policy makers, ECD researchers, Saving Brains project leads and members of the Saving Brains Platform (Web appendix Table B). All project leads were invited to focus group discussions (FGD) and/or interview via email. FGD participants were exclusively project leads. Interview participants were key informants and project leads. FGD and in-depth interviews with key informants were conducted both online via Skype and face-to-face at Saving Brains meetings.

Interviewers and FGD facilitators were members of the LSHTM evaluation team and members of the wider Saving Brains partnership. Interviews and FGDs were directed by 'topic guides' developed according to emergent thematic areas of enquiry. Audio recordings of FGDs, interviews and meetings were transcribed by a third party.

Written documents

Research proposals and progress reports included qualitative data on project design, context of intervention delivery and in-depth information on challenges, lessons learned and next steps for innovation teams (Web Appendix Table A). These written documents were submitted by innovation leads to GCC in Microsoft Word or PDF format.

Data analysis

Quantitative

Quantitative data were entered manually or automatically imported into Microsoft Excel for data cleaning and management. Data analysis, using Stata v14, included basic statistical methods including mode, mean, median, ranges and interquartile ranges of frequencies, percentages and ratios for a range of variables across the three areas of interest (contact point, cadre and content).

Quantitative

Project documents and meeting, interview and FGD transcripts were imported into NVivo11 and data were coded independently by two members of the LSHTM evaluation team (KM and MKL). An inductive approach was used to create an evolving coding framework, and data was abstracted relevant to initial and emergent themes, until saturation was reached. Thematic content analysis was undertaken on review of NVivo11 node contents and coding summary reports.