

MONITORING AND EVALUATION OVERVIEW

Equalize Health's ECHO Tele-mentoring Clinics

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1 Need for Health Worker Capacity-building

The health workforce – including doctors, nurses, midwives, community health workers, as well as nonmedical staff such as biomedical engineers, technicians, managers, and administrators – is a critical building block of any health system. It plays a central role in strengthening health system performance and improving population health outcomes. Low- and middle-income countries face a two-fold challenge in this regard: there are not enough health workers and there is not the needed training or competency. For instance, India, with 21 doctors, nurses, and midwives per 10,000 people (Karan et al., 2019), is well short of the World Health Organization’s (WHO) minimum recommended threshold of 44.5/10,000 (WHO, 2016). This density further varies by state and region within India. Sixty percent of the health workforce is concentrated in urban areas, where 28% of the Indian population resides, and 40% of the health workforce is in rural areas, where 72% of the population resides. Evidence also suggests that only 23%, that is, less than a quarter, of all health workers hold a formal medical qualification (Anand & Fan, 2016). These gaps, as well as our own needfinding in India, Rwanda, Kenya, and other countries highlight the imperative of expanding health workforces in low- and middle-income countries as well as building health workers’ knowledge, capacity, and confidence.

Equalize Health, following the model of [Project ECHO](#), is working towards the goal of knowledge-sharing and mentoring for health care providers in some of the world’s most inaccessible and overburdened health systems. By developing the knowledge, skills, and practices of skilled health workers in these settings, we believe we can improve the quality of health care provided, leading to improved patient outcomes and wellbeing.¹ We also believe that by investing in healthcare workers, we are strengthening the overall ecosystem.

2 About ECHO Tele-mentoring Clinics

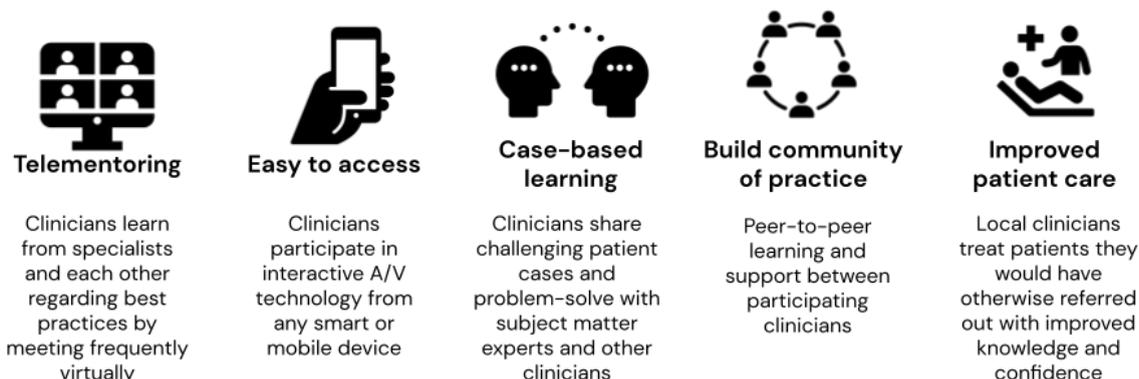
The Project ECHO model aims to amplify specialized medical knowledge to deliver best care practices for improved patient outcomes, with an emphasis on reaching underserved communities. Launched in 2003 in New Mexico, USA, Project ECHO is now a global movement implemented through partners sharing a vision of knowledge dissemination and learning through a virtual meeting platform. In 2018, Equalize Health partnered with Project ECHO, and by the end of 2020, we conducted 12 clinics for doctors and nurses throughout India. Our focus has been primarily on maternal and child health.

¹These efforts will also contribute to reaching the Sustainable Development Goal (SDG) related to health Goal 3. Target 3.c: “Substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing States”.

ECHO clinics, or consults, are conventionally designed to foster peer-to-peer learning of health care providers, meeting regularly online over a period of 3 months or more. Participants (or “learners”, usually doctors or nurses) share and discuss cases with local medical experts providing learning modules and facilitating conversation. The curriculum, pedagogy, timeline, and cohort specifics are customizable based on the target audience and knowledge gaps identified. Equalize Health provides technical and logistic support, in addition to all aspects of the monitoring and evaluation of the clinics.

Through these clinics, Equalize Health aims to connect health workers practicing in low-resource settings with experts in their fields to increase the health workers’ capacity to tackle complex medical situations and provide more specialized care. Participants learn from both experts and each other regarding best practices in various areas of maternal, neonatal, and pediatric care. The clinics are also used as a platform to gain shared understanding on updated clinical guidelines and protocols. Some of the key features of our ECHO clinics include: tele-mentoring; ease of access; case-based learning; focus on building a community of practice; and improved community care.

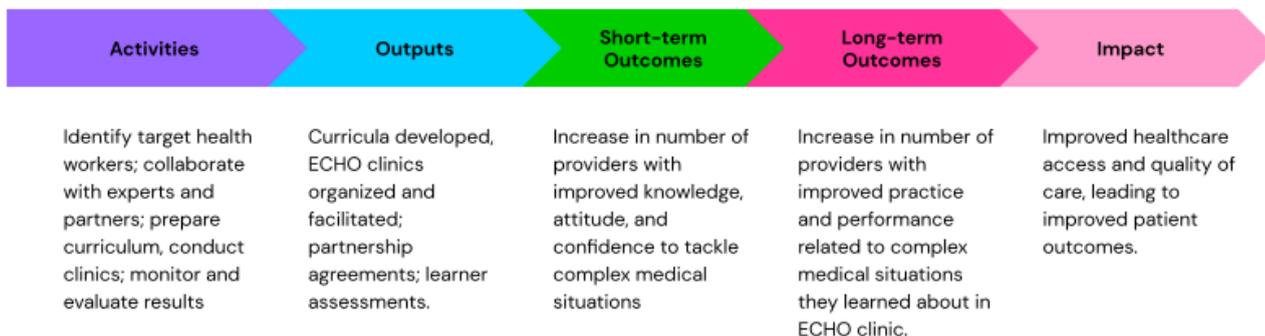
Key features of ECHO Clinics



3 Equalize Health’s Theory of Change for ECHO

Equalize Health’s theory of change (see figure below) drives the monitoring and evaluation of its ECHO work. Our theory is that through the identification of key partners, collaboration with expert presenters, development of curricula, skilled facilitation of the ECHO sessions, and execution of learner assessments, we will increase the number of providers with the knowledge, attitude, and confidence needed to handle complex medical situations. The next change that we expect to see is the health workers’ application of that knowledge and competence in their work, resulting in improved practice and performance. We expect improved practice and performance, in turn, to lead to improved quality of care and better patient outcomes.

How Equalize Health will make impact through ECHO Telementoring

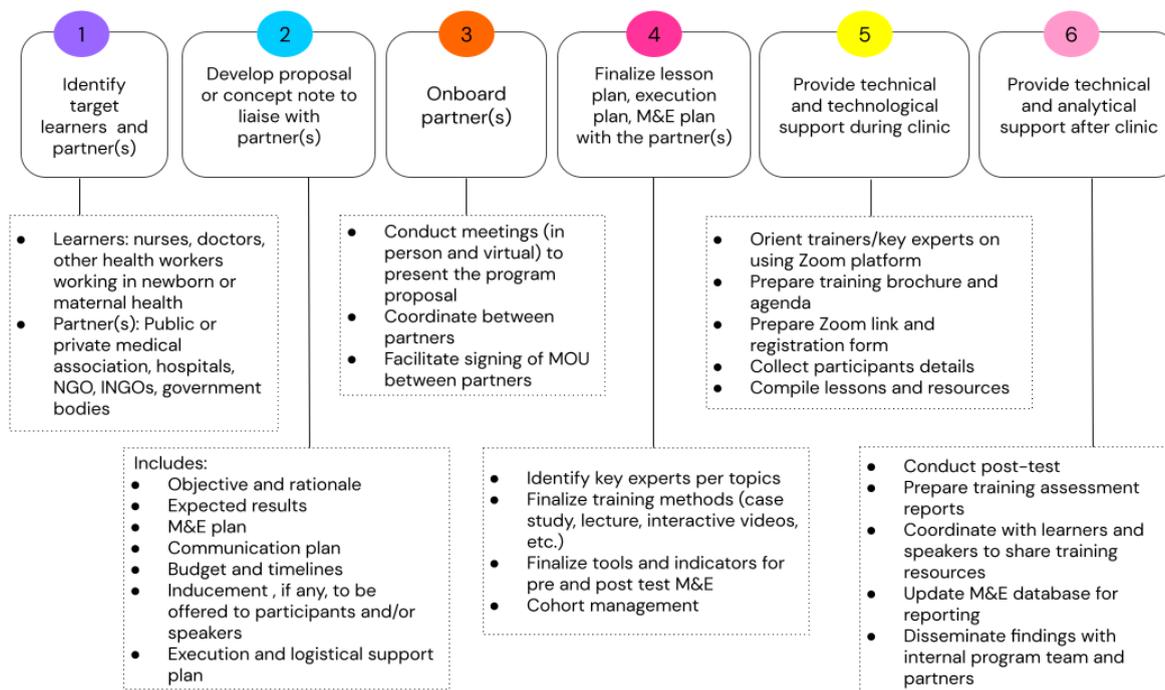


This theory of change is consistent with the “Expanded Outcomes Framework” developed by Moore, Green, and Gallis (Moore 2009) for evaluating physician–training programs, and recommended by Project ECHO itself as a useful framework for understanding and evaluating successive levels of impact. Moore et al.’s levels, or stages of impact, are: Participation and Engagement > Satisfaction > Declarative and Procedural Learning > Competence > Performance > Patient Health > Community Health.

4 How ECHO Tele-mentoring Clinics Work

Partnership and collaboration are key to conducting the tele-mentoring Clinics. One of Equalize Health’s most important roles is to identify and work together with appropriate partners for the clinics. Partners include organizations and institutes as well as individual subject matter experts. Equalize Health has partnered with Indian Academy of Pediatrics (IAP), for example, to conduct clinics on Pediatric Ventilation and Patient Management. In all cases, Equalize Health and its partner(s) collaboratively develop the schedule, curriculum, teaching methods, and monitoring and evaluation plan. The figure below highlights the key roles and responsibilities of Equalize Health in operationalizing the tele-mentoring Clinics.

Activities involved in planning, running, and evaluating an ECHO Clinic



Equalize Health starts engaging with partners and collaborators at least a month before the launch of the clinic to ensure participants are registered, speakers are familiarized with the program methodology, online platform, etc. Baseline assessment takes place at registration.

A typical clinic has a duration of four to six months. The length of the clinic is based on the number of sessions required to cover each topic defined in the curriculum. Each session is divided into two parts: a presentation by the subject matter expert, and then a case-based discussion. The objective of the latter is to encourage participation by the learner in sharing real cases and allowing peer-to-peer exchange of lessons learned. The session lasts about 45 minutes to an hour and occurs on a weekly or bi-weekly basis. Equalize Health provides technical support to learners and speakers before and during the clinic.

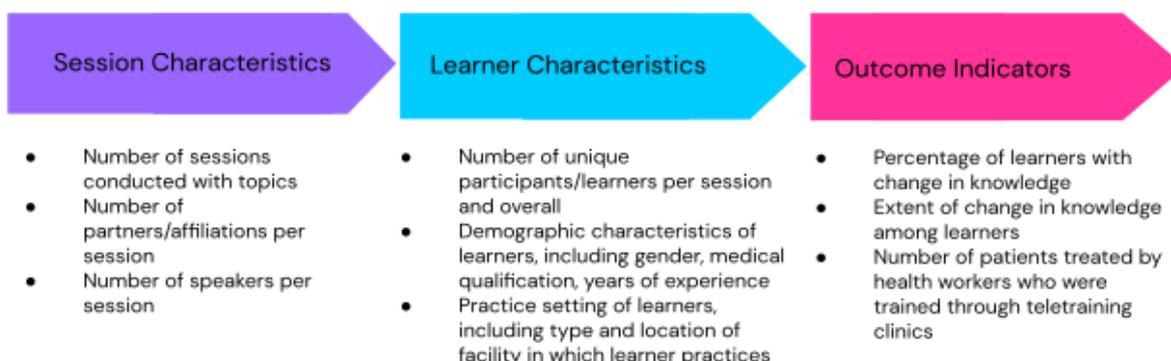
Upon conclusion of the clinic, Equalize Health conducts an endline assessment, coordinates with learners and speakers to share training resources, and reports on program results to partners.

5 Overview of Internal Monitoring Plan

In order to validate our theory of change and measure progress towards our goals, Equalize Health tracks a number of indicators related to provision of and participation in

its ECHO clinics. The list of indicators on which the data is collected can be categorized into three sub-groups: session characteristics, learner characteristics, and outcomes indicators.

Select indicators that Equalize Health monitors



Equalize Health collects and analyzes data related to these indicators at various points before, during, and after the clinic.

Pre-ECHO	<ul style="list-style-type: none"> • Collect demographic data and context details through registration • Baseline knowledge assessment
During ECHO	<ul style="list-style-type: none"> • Feedback after each session using poll or online survey • Knowledge assessment quiz • Collect attendance data, feedback, and other information
Immediately post-ECHO	<ul style="list-style-type: none"> • Self assessment of related skills and attitude • Endline knowledge assessment
1 month post-ECHO	<ul style="list-style-type: none"> • Self assessment of related skills and attitude • Endline knowledge assessment
3 months post-ECHO	<ul style="list-style-type: none"> • Self assessment of related skills and attitude • Endline knowledge assessment
6 months post-ECHO	<ul style="list-style-type: none"> • Self assessment of related skills and attitude • Endline knowledge assessment
Final Analysis and Report	<ul style="list-style-type: none"> • Analysis of data gathered <ul style="list-style-type: none"> ○ Improvement in knowledge skills and attitude ○ Geographic reach ○ Retention rate ○ Knowledge retention ○ Testimonials
External studies	<ul style="list-style-type: none"> • Additional data collection and assessments may take place depending on the requirements of third-party researchers studying clinic outcomes.

Below are details on how we measure some of our key indicators.

5.1 Measuring Improvement in Knowledge

We measure improvement in knowledge using knowledge surveys (or tests) administered before and after the clinic. Learners answer their baseline survey (or “pre-test”) when they register for the clinic. The survey consists of 20–25 multiple-choice questions on the topics covered by the training. At the end of the last session of the clinic, Equalize Health conducts an endline survey (or “post-test”) with the same set of questions as appeared in the baseline. We conduct a pre–post analysis to assess change in knowledge among the learners. The test questions are directly related to the topics discussed during the clinics and are clinical in nature. We only assess change in knowledge of those learners who attempt both baseline and endline, and assess the change in two forms: (1) share of learners in the cohort whose knowledge improved; (2) extent of improvement among learners whose knowledge improved.

a. How do we measure the **percentage of learners in the cohort whose knowledge improved?**

We measure improvement in knowledge by comparing the scores of learners before and after the clinic. In order to count as a learner whose knowledge has improved, the learner’s score on her post-test must be better than the score of her pre-test. For instance, if a learner answered five questions correctly before the clinic, and answered more than five questions correctly after the clinic, that demonstrates an improvement in knowledge. The unit of analysis is the learner and results are reported at a cohort level.

Example of measurement of percentage of learners with change in knowledge:

	Baseline correct answers (out of 20)	Endline correct answers (out of 20)	Difference	Change in Knowledge
Learner 1	11	18	+7	Yes
Learner 2	12	10	-2	No
Learner 3	10	19	+9	Yes
Learner 4	10	18	+8	Yes
Learner 5	14	20	+6	Yes
Learner 6	13	12	-1	No
Learner 7	12	20	+8	Yes
Learner 8	7	14	+7	Yes
Learner 9	12	20	+8	Yes
Learner 10	13	20	+7	Yes

Calculation: [Total number of learners with improvement in knowledge] / [Total learners completing both pre and post tests] = [Fraction of learners with positive change in knowledge]

Total number of learners with positive change in knowledge = 8
Total number of learners completing both pre and post test = 10
% of learners with improvement in knowledge = **80%**

b. How do we measure the **extent of change in knowledge?**

We measure the extent of change in knowledge also using the pre- and post-test scores. However, the unit of analysis changes from learners to responses. The learners are given a score for all correct responses, and these are aggregated at the cohort level to estimate the extent of change in knowledge. We can also weight the scores based on criticality and difficulty.

Example of measurement of extent of change knowledge:

	Baseline score (correct answers)	Endline score (correct answers)
Learner 1	11	18
Learner 2	12	10
Learner 3	10	19
Learner 4	10	18
Learner 5	14	20
Learner 6	13	12
Learner 7	12	20
Learner 8	7	14
Learner 9	12	20
Learner 10	13	20
Average score	11.4	17.1

Calculation:

$$\frac{[\text{Average endline knowledge score}] - [\text{Average baseline knowledge score}]}{[\text{Average baseline knowledge score}]} = \% \text{ change in knowledge}$$

$$[17.1 - 11.4] / 11.4 = .50 \quad \text{or} \quad 50\% \text{ improvement in knowledge}$$

5.2 Measuring Application of Learning

In addition to change in knowledge, we measure the percentage of learners who report applying the ECHO clinic learnings at work. This data is collected one month after the clinic has ended.

Example: For instance, we survey a cohort of 50 learners of whom 35 respond. The survey comprises a set of questions around the use of techniques learned during the clinic on patients and perceived self-confidence to provide necessary care.

Calculation:

[Number of learners who report practicing learning at work] / [Total number of learners surveyed one month after clinic] = [Share of learners who report practice learning at work]

$$25/35 = .72 \text{ or } 72\% \text{ reported practicing learning at work}$$

5.3 Intermediary Knowledge Assessment through Quiz and Polls

Along with pre-post knowledge assessment, quiz and polls are conducted at intermediary points (mostly during or at the end of sessions) to cross-sectionally assess the knowledge level of learners on specific topics. The Equalize Health team conducts quizzes and polls using various online tools. Results from the quizzes and polls help speakers and experts identify concepts that need more attention and test whether learners have achieved learning goals. It also drives curriculum development changes. Such intermediary assessments are helpful especially when the clinic takes place over a longer period of time so that necessary changes in the curriculum can be made.

6 Measuring Impact

The impact which Equalize Health aims to achieve through tele-mentoring clinics is to improve patient health outcomes by increasing the number of providers with improved health service practices and performance. However, the ideal method of assessing practice and performances is on-site observation rather than surveys or interviews. Eventually, Equalize Health plans to conduct observatory studies to assess the impact of training on performance. Longitudinal cohort studies as well as quasi-experimental evaluations could be conducted to measure impact.

In the meantime, we track the indicators above, and measure the scale of our likely impact on patients by estimating: (1) the number of patients treated during a certain

period by the ECHO-trained clinicians; and (2) the smaller number of patients treated by those who showed an improvement in knowledge.

6.1 Estimating the number of patients treated during a certain period by the ECHO-trained clinicians

At registration, Equalize Health asks learners about the approximate number of patients that they treat in a week. A combined mean of the average number of patients treated per week for a cohort is multiplied by 4 (number of weeks in a month) to get an average number of patients treated in a month. Secondary literature suggest varied rates of knowledge and skills retention period among health care providers after the training, ranging from from 6 weeks to 2 years post-training (Yang et al., 2012). Assuming the learners trained through our tele-mentoring clinics will retain and practice the learnings for at least six months, we multiply the average number of patients seen per cohort per month by six months to get total patients treated.

Example:

Number of unique learners in cohort	Average no. of patients treated per week in cohort	Total no. of patients treated per month in cohort	Total patients treated by ECHO-trained clinicians
30	20	$30 \times 20 \times 4$ (weeks in a month) = 2,400	$2,400 \times 6$ months = 14,400

6.2 Estimating the number of patients treated by those who showed an improvement in knowledge

The patients treated by clinicians who showed an improvement in knowledge is calculated by multiplying the number of patients treated by the percentage of participants in the cohort who showed an improvement in knowledge.

Example:

Number of unique learners in cohort	Subset of learners in cohort showing improvement in knowledge	Average no. of patients treated per week in cohort	Total no. of patients treated per month by learners in cohort showing improvement	Total patients treated by ECHO-trained clinicians showing improvement in knowledge
30	21 (or 70%)	20	$21 \times 20 \times 4$ (weeks in a month) = 1,680	$1,680 \times 6$ months = 10,080

The measurement parameters presented in this document are the most common approaches we use to monitor and assess outcomes and impact. We can further disaggregate by region (rural/urban), years of learner experience as health care worker, gender, type of facility (private/public), etc. We can also customize our measurement matrix based on specific cohort or partner requirements.

7 Our Reach and Impact to Date

For a glance at the tele-mentoring clinics Equalize Health has conducted to date, and related impact, please visit the [Equalize Health ECHO](https://equalizehealth.org/products/echo) project page (<https://equalizehealth.org/products/echo>).

8 References

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If you have questions, comments, or an interest in collaborating with us on programs or research initiatives, please contact us at: info@equalizehealth.org.