



Impact Model Report: Year 1

2023-24

Table of Contents

- 1 BACKGROUND**
- 2 IMPLEMENTATION**
- 3 SURGICAL PROGRAM**
- 4 AMERICAN HEART ASSOCIATION**
- 5 SPECIALTY TRAINING**
- 6 HELPING BABIES BREATHE**
- 7 SURGICAL SIMULATION**
- 8 FUTURE PLANS**
- 9 ACKNOWLEDGEMENTS**

Background

For more than 40 years, Operation Smile has provided expert cleft lip and palate care to patients from around the world. The patient with a cleft has remained the center focus as we have worked to increase access to surgical care and comprehensive services through investments into medical education programs, hospital spaces, and policy & advocacy initiatives.

While we know the number of patients that *directly* receive care through surgical and non-surgical programs, we have not yet quantified the additional impact of educational, infrastructure, and indirect investments on patients outside of Operation Smile programs.

In 2023, we developed a global impact model to measure the long-term effect of education and capacity building programs on health systems and the communities they serve. This model aligns with the Lancet Commission on Global Surgery's proposed indicators to measure the strength of health systems. Additionally, the model will allow Operation Smile to quantify its impact towards the Sustainable Development Goals.

The impact model is divided into seven categories:



Direct Patient Care is measured by counting the unique patients seen through Operation Smile medical programs, which we call *direct impact*. To translate educational and non-clinical investments into patient care, we need to count trainees and investments, and then conduct research to understand how they benefit patients with and without cleft on a yearly basis. **This is indirect impact.**

Counting **X** **Research** **=** **Impact**

Implementation

The first phase of Impact Research is focused on quantifying the impact of educational programs. A survey was designed for trainees to report their perceived benefit of Operation Smile training for patients in their daily work. The survey was first piloted in Peru, October 2023, and subsequently launched on educational programs.

1082 Trainees surveyed	23 Programs
39 Countries	27% First-time trainees
93% Would recommend to a colleague	94% Reported increased confidence

To estimate how training with OS benefits patients they see in their daily practice, trainees were asked the following questions for patients with and without cleft:

1. Approximately, how many patients do you see in your work (with cleft/without cleft) outside of OS yearly?
2. What percentage of those patients (with cleft/without cleft) do you think benefit from the training you received through OS?

By multiplying these values together, we are able to estimate the average number of patients indirectly impacted per trainee at OS trainings yearly. This is the "research" variable to the impact model equation.

$$\begin{matrix} \text{Average \# patients seen} & & \text{Average \% of patients} & & \text{Average \# patients} \\ \text{per trainee outside of OS} & \times & \text{that benefit from} & = & \text{indirectly impacted per} \\ \text{yearly} & & \text{training} & & \text{trainee yearly} \end{matrix}$$

	Avg. # patients with cleft per year		Avg. % patients with cleft benefitted	=	Avg. # patients with cleft impacted yearly per trainee		Avg. # patients without cleft per year		Avg. % patients without cleft benefitted	=	Avg. # patients without cleft impacted yearly per trainee
All trainees surveyed	57	X	33	=	19		744	X	37	=	273

$$\begin{matrix} 1082 & & 19 & / & 273 & & 20,558 & / & 295,386 \\ (\# \text{ Trainees surveyed Y1}) & \times & (\text{Avg \# patients indirectly impacted per trainee yearly}) & = & (\text{Total \# pts impacted yearly by surveyed participants}) \end{matrix}$$

In total, from the 1,082 trainees surveyed, **315,944 patients with cleft and other surgical needs will benefit from our educational training programs.**

Surgical Programs

Impact Surveys were completed on 13 educational surgical programs from October to August 2024.



16 Countries



365 Respondents



32% In-training
68% Fully independent



211 Repeat
trainees

There are three models for educational surgical programs: Short Term Surgical Program (STSP), Surgical Training Rotation (STR), and Visiting Professorship (VP). By tracking impact on the different program models, we can evaluate impact by specialty and by program. More data will need to be collected in order to improve bias and evaluate significant variations.

	Avg. # patients with cleft per year	X	Avg. % patients with cleft benefitted	=	Avg. # patients with cleft impacted yearly per trainee	Avg. # patients without cleft per year	X	Avg. % patients without cleft benefitted	=	Avg. # patients without cleft impacted yearly per trainee
Surgeon	43	X	64	=	27	543	X	55	=	301
Anesthesiologist	14	X	75	=	10	580	X	77	=	445
Dentist/Orthodontist	9	X	46	=	4	427	X	64	=	272
Operation Room Nurse	50	X	41	=	21	648	X	66	=	430
PACU Nurse	5	X	41	=	2	391	X	61	=	237
Pre/Post-op Nurse	87	X	98	=	85	800	X	82	=	655
PACU Physician	12	X	76	=	9	874	X	65	=	568
Pediatrician	9	X	69	=	6	1344	X	72	=	962
Nutritionist	92	X	50	=	46	3295	X	92	=	3031
Psychosocial Provider	4	X	39	=	2	128	X	47	=	60
Speech Language Pathologist	6	X	23	=	1	45	X	46	=	21
Biomedical technician	52	X	35	=	18	84	X	33	=	28
Total (one trainee per specialty)				=	232				=	7010

Counting X Research = Impact

surgical trainees X Avg. # patients with cleft indirectly impacted per surgical trainee = # patients with cleft indirectly impacted by surgical trainees per year

50 surgical trainees X 27 patients with cleft indirectly impacted per surgical trainee = 1,350 patients with cleft indirectly impacted by surgical trainees per year

AHA Training

Operation Smile has offered American Heart Association (AHA) courses to volunteers for decades. Volunteers can take provider and instructor trainings for Basic Life Support (BLS), Pediatric Advanced Life Support (PALS), and Advanced Cardiovascular Life Support (ACLS). In January 2024, an AHA Impact Survey was sent via email to participants AHA courses from 2021-2023.



28 Countries



563 Respondents



14% In-training



65% Recertified

80% Fully independent

While direct impact of AHA on Operation Smile patients is tracked through adverse event reports, the *indirect* impact of AHA training is quantifiable by measuring the number of times participants use their skills on patients outside of OS per year. Below is a portion of the data gathered from the AHA survey. The full report is available on SAM.

	Avg. # patients with cleft per year	X	Avg. % patients with cleft benefitted	=	Avg. # patients with cleft impacted yearly per trainee	Avg. # patients without cleft per year	X	Avg. % patients without cleft benefitted	=	Avg. # patients without cleft impacted yearly per trainee
Surgeon	89	X	2	=	2	591	X	1	=	8
Anesthesiologist	41	X	5	=	2	827	X	2	=	18
Dentist/Orthodontist	23	X	7	=	2	469	X	6	=	30
Operating Room Nurse	46	X	10	=	5	1053	X	6	=	62
PACU Nurse	60	X	6	=	4	662	X	4	=	25
Pre-/post-op Nurse	65	X	4	=	3	936	X	2	=	18
PACU Physician	15	X	3	=	0	1056	X	5	=	49
Pediatrician	47	X	7	=	4	1723	X	1	=	10
Nutritionist	5	X	0	=	0	25	X	0	=	0
Psychosocial Provider	203	X	0	=	0	84	X	0	=	0
Speech Language Therapist	37	X	18	=	6	243	X	7	=	17
Biomedical Technician	1	X	0	=	0	3	X	20	=	1
Total (one trainee per specialty)				=	27				=	237

Counting

X

Research

=

Impact

pediatrician AHA trainees

X

Avg. # patients without cleft impacted per pediatrician trainee per year

=

patients with cleft indirectly impacted by BLS per year

100 pediatrician AHA trainees

X

10 patients without cleft impacted per pediatrician trainee per year

=

1,000 patients indirectly impacted by pediatrician trainees per year

Specialty Training

Impact Surveys were administered at six specialty trainings from February to August: SLP Workshop in Morocco, Nursing Conferences in Ethiopia & Peru, SLP Workshop in United Arab Emirates, Dental Orthopedic Surgery Course in Bolivia, and Dental Program in Rwanda.



22 Countries



133 Respondents



16% In-training
84% Fully independent



120 Repeat trainees

Specialty Training is a unique opportunity to focus on specialized skills that may not be covered during a typical surgical program. By measuring this data by specialty, we can compare how impact varies compared to other education models like surgical education programs. More data will need to be collected in order to improve bias and evaluate significant variations.

	Avg. # patients with cleft per year	X	Avg. % patients with cleft benefitted	=	Avg. # patients with cleft impacted yearly per trainee	Avg. # patients without cleft per year	X	Avg. % patients without cleft benefitted	=	Avg. # patients without cleft impacted yearly per trainee
Nursing Conferences (Ethiopia & Peru)	113	X	83	=	94	780	X	81	=	634
SLP Training (Morocco & UAE)	5	X	42	=	2	354	X	36	=	127
Surgical Orthodontics (Bolivia)	3	X	18	=	1	254	X	27	=	68
Dental Program (Rwanda)	10	X	77	=	7	3244	X	88	=	2843
Total (one trainee per specialty)				=	104				=	3671

Counting X Research = Impact

trainees at nursing conferences X Avg. # patients with cleft indirectly impacted per trainee at a nursing conference = # patients with cleft indirectly impacted by trainees at nursing conferences per year

100 nurse trainees X **94 patients with cleft indirectly impacted per trainee at a nursing conference** = **9,400 patients with cleft indirectly impacted by trainees at nursing conferences per year**

Helping Babies Breathe

Helping Babies Breathe (HBB) is a program designed by the American Academy of Pediatrics that teaches essential neonatal resuscitation and newborn care skills for low-resource settings. With the goal of reducing infant mortality in the region, Operation Smile Morocco and the MENA region hosted an HBB Training of Trainers from February 19-24th, 2024, in Casablanca, Morocco.



6 Countries



77 Respondents



17% In-training
83% Fully independent



51 Repeat
trainees

The community health workers (CHW) and midwives from the February training have cascaded the training to a network of more than 3,000 midwives in Morocco over the coming year. Based on current data, this means that approximately **9,000** (3,000 X 3) **patients with cleft** are projected to be indirectly impacted per year by the network of midwives that will receive HBB training through the 46 CHWs & midwives trained in February.

	Avg. # patients with cleft per year	X	Avg. % patients with cleft benefitted	=	Avg. # patients with cleft impacted yearly per trainee	Avg. # patients without cleft per year	X	Avg. % patients without cleft benefitted	=	Avg. # patients without cleft impacted yearly per trainee
Surgeon	4	X	33	=	1	767	X	53	=	409
Anesthesiologist	72	X	93	=	67	148	X	93	=	138
Dentist/Orthodontist	0	X	8	=	0	2	X	10	=	0
Operation Room Nurse	9	X	47	=	4	1171	X	39	=	452
PACU Nurse	48	X	77	=	37	69	X	77	=	53
Pre/Post-op Nurse	1106	X	70	=	772	136	X	76	=	103
PACU Physician	10	X	53	=	5	667	X	57	=	378
Pediatrician	8	X	36	=	3	440	X	68	=	299
Nutritionist	55	X	30	=	17	506	X	40	=	202
Community Health Worker / Midwife	10	X	29	=	3	415	X	52	=	216
Total (one trainee per specialty)				=	909	Total (one trainee per specialty)			=	2251

Counting

X

Research

=

Impact

CHW trained at HBB

X

Avg. # patients without cleft impacted per CHW per year

=

patients without cleft indirectly impacted by CHWs participating in HBB per year

50 CHW trainees

X

216 patients without cleft impacted per CHW trainee per year

=

10,800 patients without cleft impacted by CHW trainees at HBB per year

Surgical Simulation

Medical Oversight and the Global Medical Education team worked together to pilot surgical simulators on three programs: Porto Velho, Brazil, April 7th, Kigali, Rwanda, April 23rd, and Guatemala City, Guatemala, July 9th. The simulators came from MakeMedical, a partner through the University of Michigan.



7 Countries



22 Respondents



46% In-training
54% Fully independent



19 Repeat
trainees

Simulation is an important tool for improving surgical skills, especially for highly specialized surgeries where surgeons may not see high case volumes, such as cleft lip and palate. According to current data, surgeon trainees participating in simulation training will have a greater impact on patients with cleft than those on educational surgical training programs. Surveys will continue to be used following simulation programs to better understand the impact of using these models.

	Avg. # patients with cleft per year		Avg. % patients with cleft benefitted		Avg. # patients with cleft impacted yearly per trainee		Avg. # patients without cleft per year		Avg. % patients without cleft benefitted		Avg. # patients without cleft impacted yearly per trainee
Surgeon	89	X	66	=	59		538	X	57	=	306

Counting X Research = Impact

surgical trainee X Avg. # patients without cleft indirectly impacted per surgical trainee at simulation course per year = # patients without cleft indirectly impacted by surgical trainees per year

20 surgical trainees X **306 patients without cleft indirectly impacted per surgical trainee per year** = **6,120 patients without cleft indirectly impacted by surgical trainees per year**

FY25 Plans

What's next?

We look forward to continuing to measure educational impact throughout FY25, as well as beginning to quantify other health system strengthening investments.



01 100 Hospital Project

- Develop and implement an impact framework to monitor and effectively communicate all aspects of the initiative
- Launch tracking model for infrastructure investments and equipment donations across all programs



02 Looking past “one year”

- The current model looks at patients impacted per year, next we will further that work to understand how this impact translates year over year.
- Includes measuring loss of skills and how skills are being taught to others to capture the waterfall effect.



03 Student Programs, Research, P&A

- Develop tool to quantify impact of StuPro on current and past participants (ISLC 2025)
- Pilot and launch survey to understand the impact of research by OS volunteers and staff
- Develop tool to measure impact of P&A initiatives

While we anticipate the numbers from this summary to change in the next year, we are excited to improve our confidence in reporting our impact as an organization and participate in the global conversation about health system strengthening using data driven evidence and solutions.

Acknowledgements

This research was a collaboration between the research team and dedicated in country staff, regional directors, and leads from many departments such as Global Medical Education, Volunteer Management, and Medical Oversight.

Thank you to all those who supported impact research during FY24, including the following country teams who hosted this research:

- OS Peru
- OS Guatemala
- OS Egypt
- OS Honduras
- OS Bolivia
- OS Brazil
- OS Morocco
- OS Ethiopia
- OS Madagascar
- OS Rwanda
- OS UAE



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