



World Health
Organization



WHO & UNICEF GLOBAL EXPERT CONSULTATION ON A **GENERIC** **MODEL FOR INPATIENT CARE OF** **SMALL AND/OR SICK NEWBORNS**

Friday 3 December 2021

13:00-16:00 CET (Geneva time)

Please note we have interpretation for English, French, Portuguese, Spanish and Arabic.
Please click the globe icon and choose your language in which you want to hear the presentation.

**ENDING PREVENTABLE
NEWBORN DEATHS and STILLBIRTHS**
by 2030



MEETING RULES



1. Due to the size of the meeting, we will not introduce each person.
You can give a greeting in a ChatBox
2. Please rename your profile to include your country name
3. Kindly remain on mute
4. Please post your questions in the ChatBox.
If there is additional time, we can give the floor to individuals who raise their hands during question time



AGENDA DAY 1



Time	Session:		
Time	Session 1 - Introduction (20min)	Moderator - Rajiv Bahl (WHO)	
13:00-13:05	Welcome, Objectives & Outputs	Rajiv Bahl	5 mins
13:05-13:20	Opening remarks	Kim Dickson (UNICEF) Lily Kak (USAID) Anshu Banerjee (WHO)	15 mins
Time	Session 2: Learning from Country experiences - Core elements of the model of care	Moderator – Gagan Gupta (UNICEF)	
13:20-14:05	Asian Experiences	India Bangladesh Viet Nam	15 mins each
14:05-14:25	Discussion		20 mins
14:25-14:35	Break		10 mins
Time	Session 2 (Continued) Learning from Country experiences: Core elements of the model of care	Moderator - Teshome Desta (WHO)	
14:35-15:35	Sub-Saharan Africa Experiences	Ethiopia Malawi Uganda Sierra Leone	15 mins each
15:35-16:00	Discussion		25 min

AGENDA DAY 2



Time	Activity		
13:00-13:15	Session 2 (continued): Learning from Country experiences	Moderator	
	Questions and Answers: Malawi, Ethiopia, Sierra Leone & Uganda	Teshome Desta (WHO)	10 mins
	Learning from Country experiences	Moderator	
		Hema Magge (BMGF)	
13:15-13:45	PAHO Experiences	Brazil	15 mins each
		Argentina	
13:45-14:00	Discussion		15 mins
	Session 3 - Specialist perspective on SSNC		
14:00-14:20	What does it take to scale up facility based newborn care?	Gagan Gupta (UNICEF)	20 mins
14:20-14:35	Synthesis of country experiences	Cyril Engmann (PATH)	15 mins
14:35-14:50	Discussion		15 mins
14:50- 15:00	Break		10 mins
15:00- 15:40	Country groups discussion to exchange lessons	Teshome/Gagan	40 mins
15:40-15:55	MNICU	Harish Chellani - Vardhman (India)	15 mins
15:55-16:10	HR road maps	Karen Walker (COINN)	15 mins



AGENDA DAY 3



Time	Session 3 continued	Moderator – Rajiv Bahl (WHO)	30 mins
13:00-13:30	Human Resources Roadmap Discussion on MNICU and HR	Karen Walker (COINN)	
	Session 4: New important, innovations, ‘looking forward’ topics	Moderator – Tedbabe Hailegebriel (UNICEF)	
13:30-13:45	Innovative technologies	Rebecca Richards-Kortum (RICE University) Adriana Velazquez Berumen (WHO)	15 mins
13:45-14:00	Lactation management, human milk banking	Kiersten Israel Ballard (PATH)	15 mins
14:00-14:15	Maternal wellbeing including mental health	Shanon McNab (Momentum)	15 mins
14:15-14:30	Developmentally supportive care	Susan Niermeyer (University of Colorado)	15 mins
14:30-15:00	Discussion		30 mins
15:00- 15:10	Break		10 min
15:10-15:55	Session 5: Open House – What should a generic model of care for SSNC look like (Putting it all together)	Moderator – Rajiv Bahl (WHO) & Luwei Pearson (UNICEF)	45 mins
15:55-16:00	Wrap up and next steps	Rajiv Bahl (WHO) & Luwei Pearson (UNICEF)	5 mins



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Session 3 (continued) Specialist perspectives on small and sick newborn care

Human Resource Roadmaps
DR KAREN WALKER - COINN

Discussion

MODERATOR: DR RAJIV BAHL WHO



Human resource strategies to improve newborn care in health facilities in low- and middle-income countries

Clinical A/Professor Karen Walker



Background

2018 - Initial discussions Kigali,
Rwanda

2019 - Technical expert meeting,
Geneva

Online expert consultations;
November 2019 and January
2020

Funded by United States Agency
for International Development
and the Chiesi Foundation



Purpose

To provide a framework and strategies for countries to transform their policies on human resources for health (HRH) and provide their health workers with the knowledge and technical and behavioural skills necessary for high-quality care by 2030, to ensure that all newborns survive and thrive



Vision & Goal

Every newborn will receive high-quality, evidence-based care from competent health workers with skills in newborn care consistent with WHO guidelines

To strengthen the provision of nurturing care by competent health workers at critical times at all three levels of care for maximum improvement of newborn survival, development and well-being





Strategy 1 : Improve and standardize the content, curricula and development of competence in neonatal care in pre-service programmes for health workers

- 1.1 Review pre-service educational programmes for health professionals in both the public and the private sector
- 1.2 Emphasize neglected topics in newborn care, including hygiene, infection prevention and control, pain management, neurodevelopmental care, family-centred, respectful care, cleaning and maintenance of equipment, and use of data for decision-making and quality improvement of facilities
- 1.4 Encourage educational institutions and regulatory and professional associations to foster intra- and inter-professional learning in both their pre-service and continuing professional development programmes, including North–South and South–South collaborations and public–private partnerships





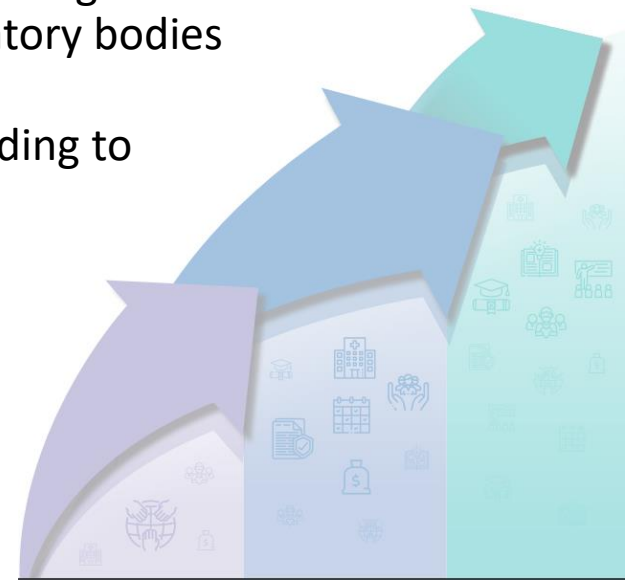
Strategy 2: Build the capacity of existing newborn care providers through orientation programmes, continuing education, skills training, quality improvement initiatives and support to maintain and increase competence

2.1 Supply relevant clinical guidelines and standards of care to neonatal facilities

2.3 Provide on-the-job or short continuing education with established training packages or digital learning, ideally with a hands-on skill enhancement component (blended learning) or through coaching and mentorship programmes

2.6 Establish mandatory requirements for continuing professional development, including tracking and documentation for re-licensure or re-certification by professional associations or other regulatory bodies

2.7 Provide orientation programmes and mentoring for new staff in neonatal care units according to established competences





Strategy 3: Upgrade existing cadres with additional specialized training in neonatal care, with additional qualification or certification at undergraduate level

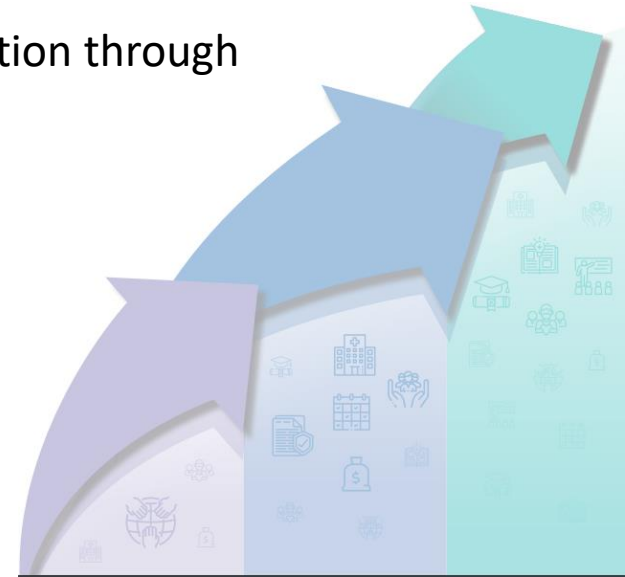
3.1 Extend the competence of existing cadres with 3-, 6- or 12-month training programmes in neonatal care

3.2 Establish competence-based specialist training for health workers to complete qualification or certification based on national or international standards

3.3 Assure accreditation of neonatal health workers with updated job descriptions and recognition by national policies for career progression and remuneration

3.4 Establish links between teaching and clinical care facilities for hands-on clinical skill acquisition through simulated learning and clinical preceptorship

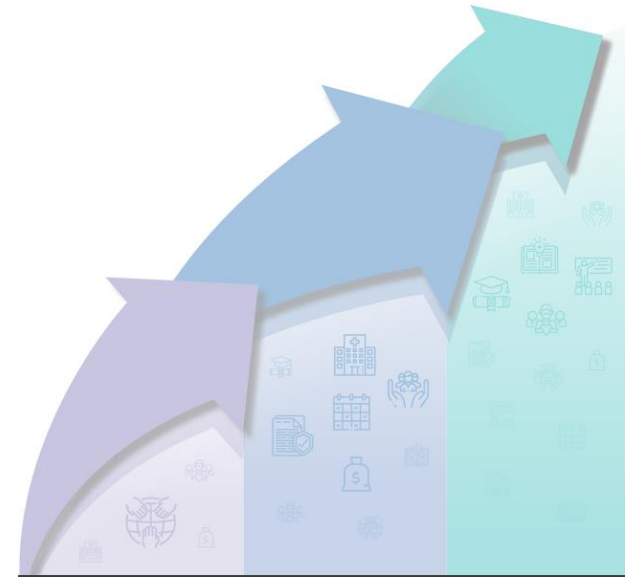
3.5 Consider the training requirements for other support services as neonatal units expand





Strategy 4: Create and train a new cadre of specialized neonatal nurses

- 4.1 Establish a new cadre through a national policy, with definition of the scope of practice, and regulations for integration of the cadre into the civil service structure, including registration
- 4.2 Assure programme accreditation by a relevant authority to strengthen the quality of educational institutions and their faculties
- 4.4 Review the selection criteria for the programme to ensure that students will meet the desired deployment goals
- 4.8 Consider direct-entry degree programmes for neonatal nurses





Strategy 5: Standardize the levels of neonatal care provision, with safe referral of mothers and infants

- 5.1 Integrate neonatal facilities in different geographical health areas into a network of health facilities organized by population size and needs
- 5.2 Set up effective, timely referral systems to link all levels of the health system for referral to both higher and lower levels of care, as necessary
- 5.3 Ensure that referral-level facilities at levels 2 and 3 have neonatal units with well-defined protocols and skilled personnel
- 5.4 Ensure that all facilities in the network can provide immediate life-saving care to stabilize newborns before transfer





Strategy 6: Establish strategies for health worker recruitment, well-being, motivation and retention

6.1 Ensure fair salaries and salary incentives paid consistently, including hardship allowances and family and lifestyle incentives (such as housing and education allowances), with formal employment contracts that state clear roles and expectations

6.2 Ensure that work processes and organizational management include a manageable workload and working conditions, with adequate facilities, a decent working environment (including water and electricity) and the availability of medications, supplies, equipment and treatment guidelines

6.3 Provide measures to improve occupational health and safety, including protective equipment and an inclusive working environment free from any type of violence, discrimination or harassment





Strategy 7: Ensure effective staffing, staff ratios and skill mixes in local neonatal units

- 7.1 Calculate staffing on the basis of the workload with WHO planning tools such as “Workload indicators of staff need”
- 7.3 Calculate the number of staff required for each unit and level from nurse-to-patient ratios, and calculate the number of staff required to maintain that ratio from the patient census
- 7.4 Establish the skill mix of staff according to the availability of staff and the activities they can perform
- 7.7 Prioritize a no-rotation policy for skilled and specialized health workers in neonatal units



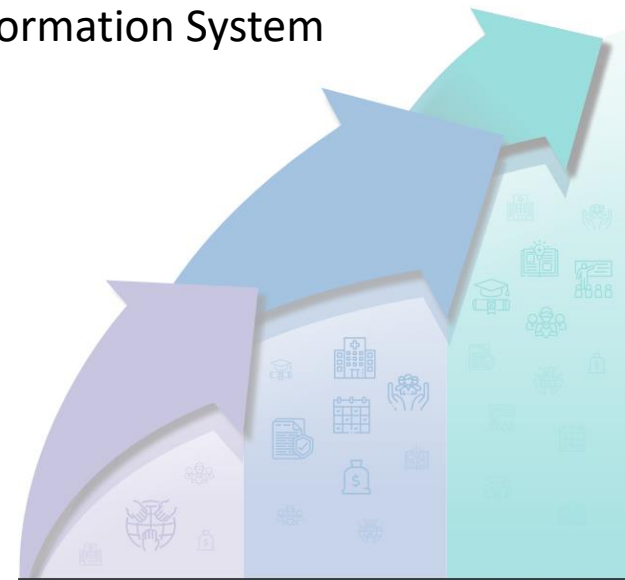


Strategy 8: Strengthen national human resources planning, policy and regulations for development and management of neonatal services at all levels

8.1 Improve national, regional and local HRH data collection, analysis and use from both the public and the private sector, including data on the availability, distribution, trends and requirements of personnel and on migration, attrition, population growth and projected epidemiological changes

8.5 Establish clear scopes of practice for all cadres, and ensure that health practitioners can work to the highest scope of practice allowed

8.10 Use technology for planning, such as databases that link human resource profiles and placement data (e.g. WHO National Health Workforce Accounts (NAWA) and the integrated Human Resources Information System (iHRIS)) and geographical mapping





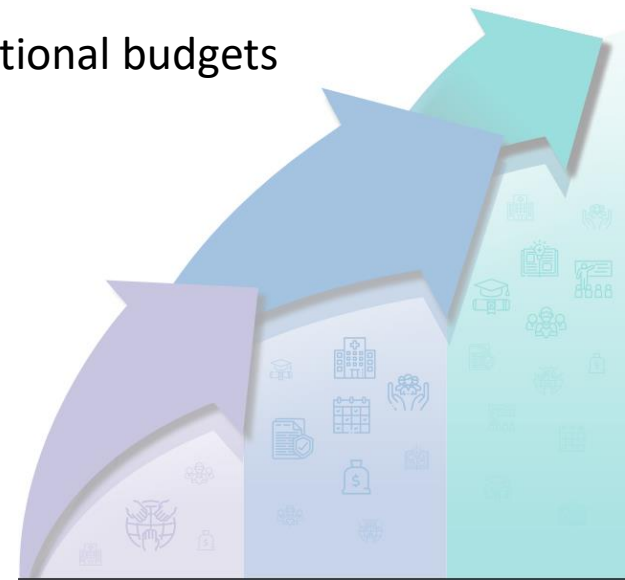
Strategy 9: Allocate adequate funds for capacity-building and support for neonatal care in the national budget for human resources for health

9.1 Focus investment on trainers, as there is good evidence of a high social rate of return for education strategies

9.2 Invest in educational infrastructure and innovative training methods that allow flexible learning, simulation and wider access to learning opportunities for remote and rural health workers

9.3 Reinforce public sector investment to ensure sufficient provision of health workers, equitable deployment and better motivation and performance

9.4 Dedicate a budget line to human resources for neonatal health in district, provincial and national budgets





Strategy 10: Promote global strategies, collaborations, accountability, leadership and governance for human resources for neonatal care, integrating innovative multi-country research and learning networks

10.1 Advocate for adequate investment in HRH by governments and partners, aligned with coordinated, long-term national needs as expressed in national sector plans

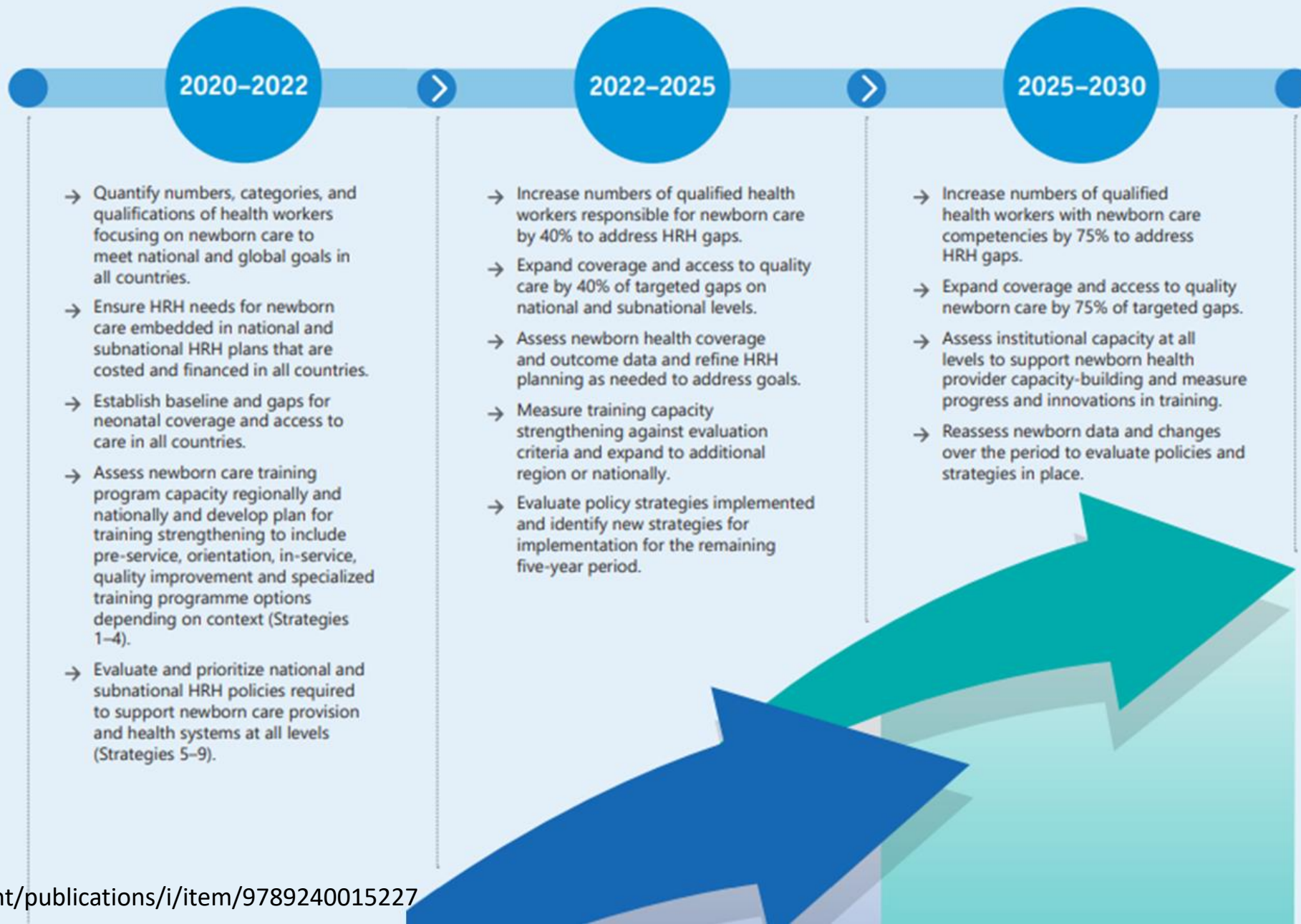
10.2 Support priority countries in developing their policies, programmes and monitoring frameworks

10.3 Ensure the involvement of all key health professional groups at all levels of policy development

10.6 Support the creation and strengthening of local and national professional organizations, and foster interdisciplinary partnerships with related global health professional associations



Priorities and timeline for action





To improve the outcomes for small or sick newborn and their families, the importance of the strategies and interventions within this roadmap are even more important

We must advocate now for collaboration, investment and strengthening of our health care workforce



Session 4

New important innovations & 'looking forward' topics

1. **Innovative technologies** - Rebecca Richards-Kortum (RICE University) – Adriana Velazquez Berumen (WHO)
2. **Lactation management, human milk banking** - Kirsten Israel Ballard (PATH)
3. **Maternal wellbeing including mental health** - Shanon McNab (Momentum)
4. **Developmentally supportive care** - Susan Niermeyer (AAP)

MODERATED BY DR TEDBABE DEGEFIE HAILEGEBRIEL (UNICEF HQ)



NEST360: Newborn Essential Solutions & Technologies

Alliance of **16 organizations** (11 in Africa) working with governments to meet SDG 3.2 for newborn survival.

Deliver a bundle of technologies & health systems package in 65+ hospitals to:

- Provide life saving SSNC (ENAP tgt, with WHO level 2+)
- Measure and sustain change
- Implementation learning/sharing (Toolkit) with global public goods



**INNOVATION
DELIVERED**

Developing and
delivering a bundle
of affordable
technologies for
newborn care



**EDUCATION
ECOSYSTEM**

Building human
resources to support
newborn care and
innovation



**LEARNING
TO SCALE**

Developing policy
and the investment
case to sustain
quality newborn care

REDUCE NEWBORN MORTALITY IN AFRICAN HOSPITALS BY 50%



WARNING

**This Medical Device
Can Only Save
Lives if it is Used**

Equipment Graveyard

Richards-Kortum R and
Oden M; Science, 2013.

Role of Innovation

Deliver a bundle of rugged, affordable, high-quality technologies

1. Ensure devices, consumables and spare parts are **available**
2. Ensure devices are **used well**
3. Ensure devices are **maintained**

Develop and manufacture next generation technologies

1. African-led **invention education** for biomedical engineers
2. **Global collaboration** to develop affordable, rugged technologies based on evidence and user-centered design

Deliver a bundle of technologies:

1. Ensure Devices Available

- Target Product Profiles
- Evaluate commercially available technologies
 - Technical specifications
 - Environmental testing
 - Usability testing
- NEST Qualified Technologies
- Feedback to Manufacturers



HATCH
TECHNOLOGIES

Delivering Lifesaving Solutions for Newborns



NEST Qualified Technologies

NEST qualifies technologies through a rigorous process that involves technical, environmental, and continuous usability testing. NEST partnered with UNICEF to develop **Target Product Profiles** for each essential category of care.

To reduce mortality hospitals, need access to all of the essential technologies that address these challenges.

NEST delivers these technologies as a package.

[READ MORE](#)

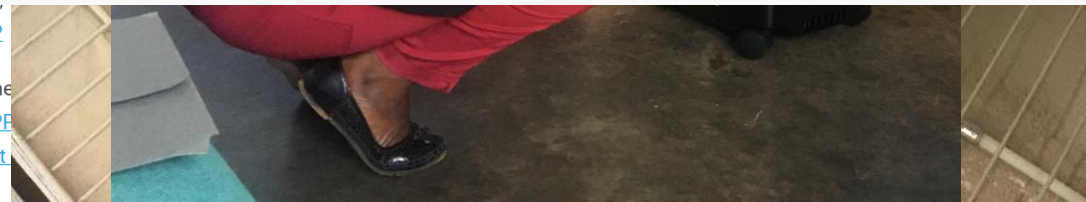


[Syringe Pump TPP](#)

[Jaundice Management TPP](#)

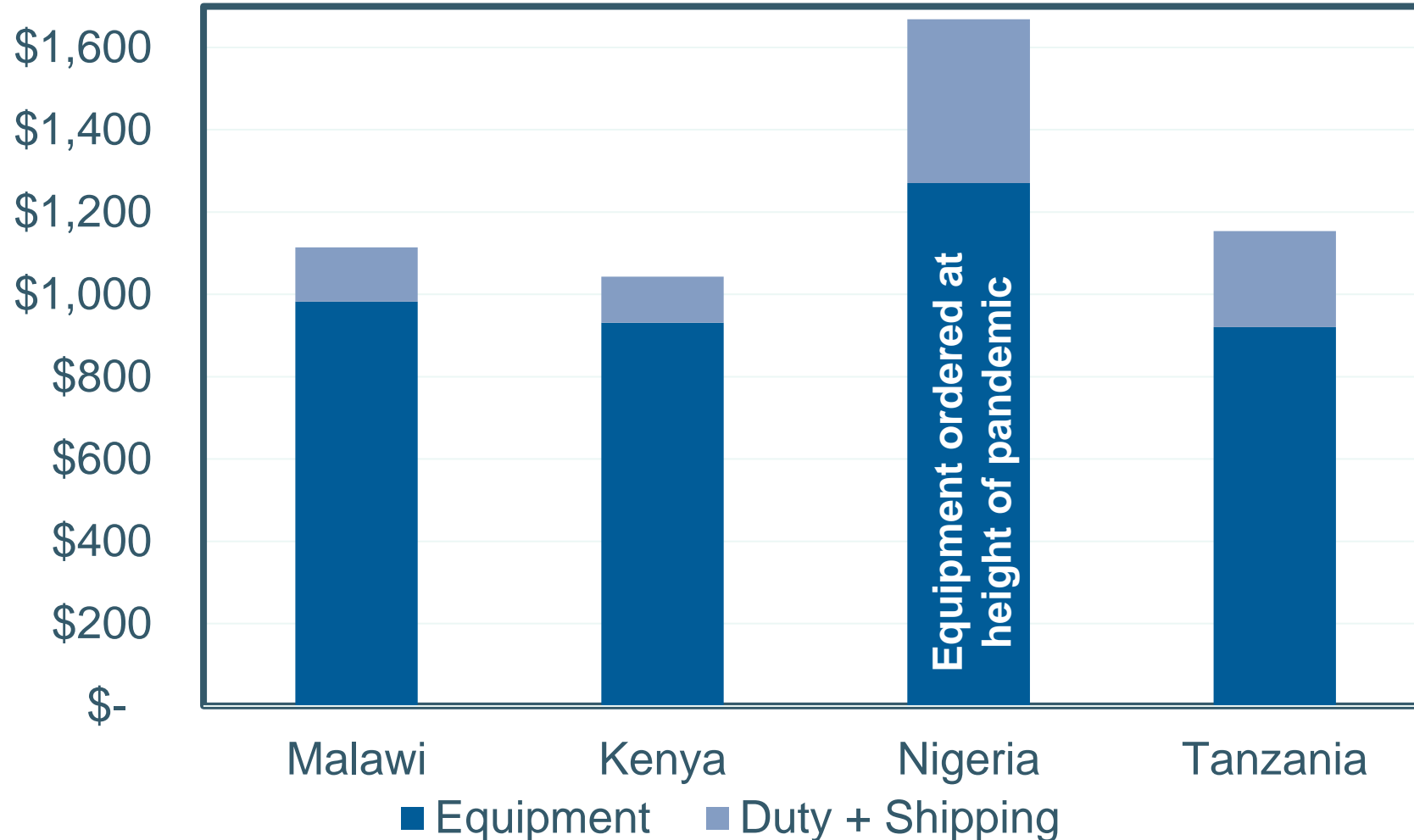
[Bilirubinometer TPP](#)

[Phototherapy Light TPP](#)



Set Up Cost per Bed to Equip Newborn Units:

Includes 1 yr. of consumables



Technology Bundle Includes Sufficient Numbers of:

- Oxygen concentrators
- Flow splitters
- Pulse Oximeters
- CPAPs
- Suction machines
- Radiant warmers
- Continuous temp. probes
- Phototherapy lights
- Bilirubinometers
- Glucometers and strips
- Consumables
- Surge suppressors!!
- Spare parts!!
- Repair tools!!

Deliver a bundle of technologies:

2. Ensure Devices Used Well

- Clinical Modules
 - Incorporated in natl. stds.
 - Incorporated in curricula
- In-Service Training
 - MOH + professional assoc.
- Pre-Service Skills Labs
- Monitor Usage



Alert: Canta oxygen concentrators at Kenyan hospital used more than normal.
Follow up: Walled oxygen broken; concentrators provided backup at perfect time.

Alert: CPAP not being used at hospital in Malawi.
Follow up: Distributor confirmed CPAP needed maintenance. Device fixed and immediately available for treatment.

Alert: 1 phototherapy at hospital in Kenya being used constantly; 1 not used at all.
Follow up: Unused lights in a room where phototherapy is not frequently needed. Unit brought to room where phototherapy is frequently needed.

Deliver a bundle of technologies:

3. Ensure Devices Maintained

- Technical Modules
 - Incorporated in natl. stds.
 - Incorporated in curricula
- In-Service BME Training
 - MOH + professional assoc.
- Pre-Service Skills Labs
- Monitor Up Time



Hatch Distribution Dashboard
Installed Assets by Location and Status

Data Refreshed 31Dec2020 05:39:05 GMT



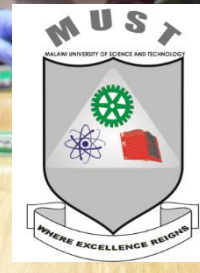
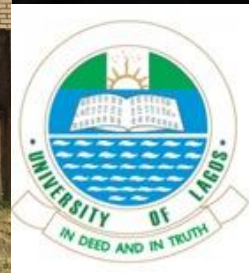
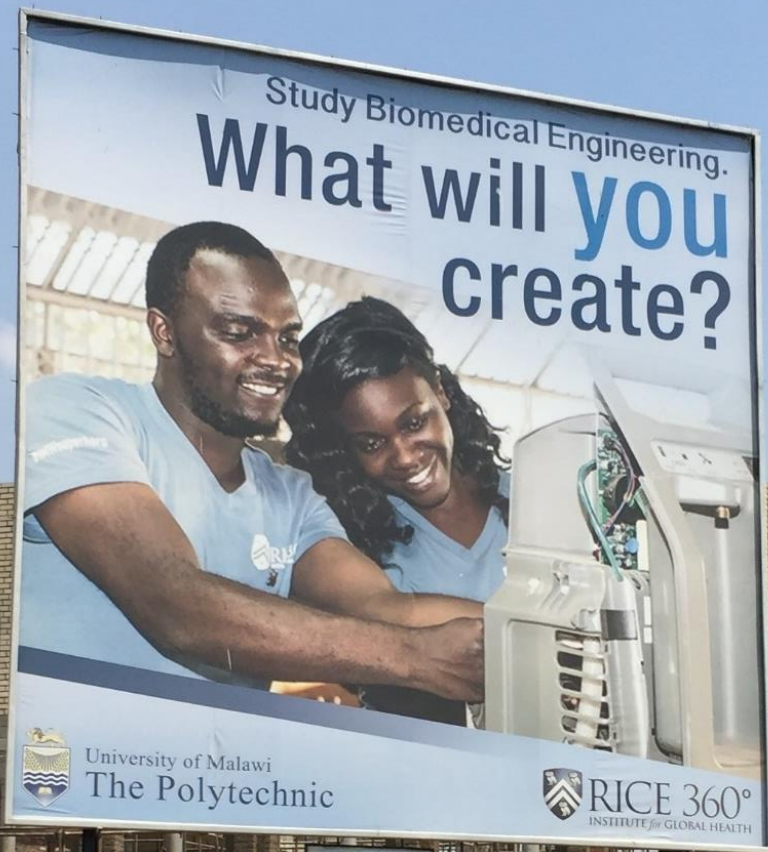
Location	Up	Up action required	Down action required	Total
⊕ Zomba Central Hospital	15		2	17
⊕ UCH	35			35
⊕ Trinity College of Nursing	2			2
⊕ Thyolo District Hospital	11		1	12
⊕ St. Luke's College of Nursing and Midwifery	2			2
⊕ St. Joseph's College of Nursing and Midwifery	2			2
⊕ St. John's College of Nursing	2			2
⊕ Rumphu District Hospital	16			16
⊕ Queen Elizabeth Central	31	2	2	35
⊕ Nyeri County Referral Hospital	22	1		23
⊕ Ntchisi District Hospital	17			17
⊕ Ntcheu District Hospital	18			18
⊕ Nkhoma Mission Hospital	3			3
⊕ Nkhoma College of Nursing	9			9
⊕ Nkhata Bay District Hospital	15			15
⊕ Mzuzu Central Hospital	16	1		17
⊕ Mzimba District Hospital	16		1	17
⊕ Mulanje Mission College of Nursing and Midwifery	2			2
⊖ Mulhimbili National Hospital - Mloanzila	13			13
Total	638	12	13	663

- Hatch is supporting >2,300 devices in Malawi, Kenya, Tanzania, and Nigeria.
 - Uptime: >98%
 - Response time to address eqpt. failure: <48 hrs



Develop and manufacture next generation technologies

1. African-led invention education for biomedical engineers



Must rolls out Covid-19 innovations



INNOVATIVE—Face shields produced at Must

Covid-19 response. Some said. He also advised the public to avoid being victims of uncertified products. Must Vice-Chancellor,

to the pandemic by rolling out various innovations focussing on both prevention and surveillance initially targeting healthcare workers and security officers.

“We have strength in prevention. If we really work on prevention, we can save our nation,” she said.

Among others, Malata sampled out a hand-washing tool which uses sensors to dispense water and soap without its user touching anything on it.

Madalitso Nyemba, who is one of the six students who have developed the Covid-19 tracking smartphone application, said the tool has the ability to alert users if they enter a Covid-19 hotspot.

Malawi has 36 confirmed Covid-19 cases out of which three have died while five have recovered. Worldwide, there are over three million cases with at

Rice University Engineers ‘MacGyver’ an Inexpensive Ventilator for Coronavirus Patients

The eight-pound machine uses parts available in hobby shops and could be mass-produced for less than \$200 apiece, its inventors say



CONTENT FROM OUR SPONSOR

Deloitte

CIO Insights and Analysis from Deloitte

Survey: M&A Alternatives Take Center Stage

Alternative deals—ranging from alliances a joint ventures to special purpose acquisition companies—are outpacing traditional M&A activity as the search for value intensifies in low-growth environment, according to Deloitte’s recent Future of M&A survey. Despite a steep drop in deal-making activity this spring, more than six in 10 survey respondents say they expect U.S. M&A activity to return to pre-COVID-19 levels within the next 12 months.

Please note: The Wall Street Journal News Department not involved in the creation of the content above.

More from Deloitte

DIT invents hand washing facility to fight Covid-19

The creators were currently in the final stages of assembling the machines which would be launched on April 5. They will be available in the market at the price of Sh170,000 per unit

By Helen Mwachogo
@helenmwachogo
helenmwachogo@kenyanews.com

Das es Solom, Innovators are grappling disease created by Covid-19 pandemic, after the Das es Solom Institute of Technology (DIT) invented a hand washing machine that enables a person to avoid touching the tap outlet.

The technology dubbed ‘Covid fighter’ uses a sensor to open water tap for washing

hands without touching. Sensor is a mechanical switch that is actuated by a magnetic coil to open and close an electric circuit, to open or close a tap and sanitizer dispenser automatically.

DIT computer design instructor Othman Das told The Citizen yesterday that there were many machines available in the market but user safety was not guaranteed, because a person must touch the tap, hence risking

It senses when a person approaching it for hand washing

DAZ | INSTRUCTOR

getting infected with the virus.

“Hands are the most common

ways that spread the virus from one person to another. Therefore, the innovation of ‘Covid fighter’ reduces the risk,” he said.

“After noting that a number of people were using ordinary public to wash hands, we have come up with another programmed automatic basket that senses when a person approaches it for hand washing,” he said.

According to him, they were currently in final stage to assemble the technology which will be launched on April 5, costing Sh170,000 per unit.

THE DAILY TIMES, Monday, April 20, 2020

BY ISAAC SALIMA

THE Faculty of Engineering at The Polytechnic in Blantyre has developed low-cost innovations aimed at helping in the fight against coronavirus. The innovations, which have been made using local materials are a drone, a ventilator, sanitiser and face shields.

Speaking when they demonstrated the prototypes at the school on Thursday, Manager of Innovations Design Studio at the facility Hilary Lodzanyama said they came up with the technologies because they have a role to play in bringing solutions in times of need.

“In such times most people look up to institutions like ours for solutions. That is why we came up with these technologies which can be acquired at a low cost and help people out there. The project also involved students from the institution because we realised that we have a pool of knowledge so there was no need to involve outside expertise,” Lodzanyama said.

Polytechnic develops tech to fight Covid-19



TO MAKE A DIFFERENCE—One of the innovators showcases the products—Picture by Isaac Salima



<https://www.fda.gov/medical-devices/coronavirus-disease-2019-covid-19-emergency-use-authorizations-medical-devices/ventilators-and-ventilator-accessories-euas>

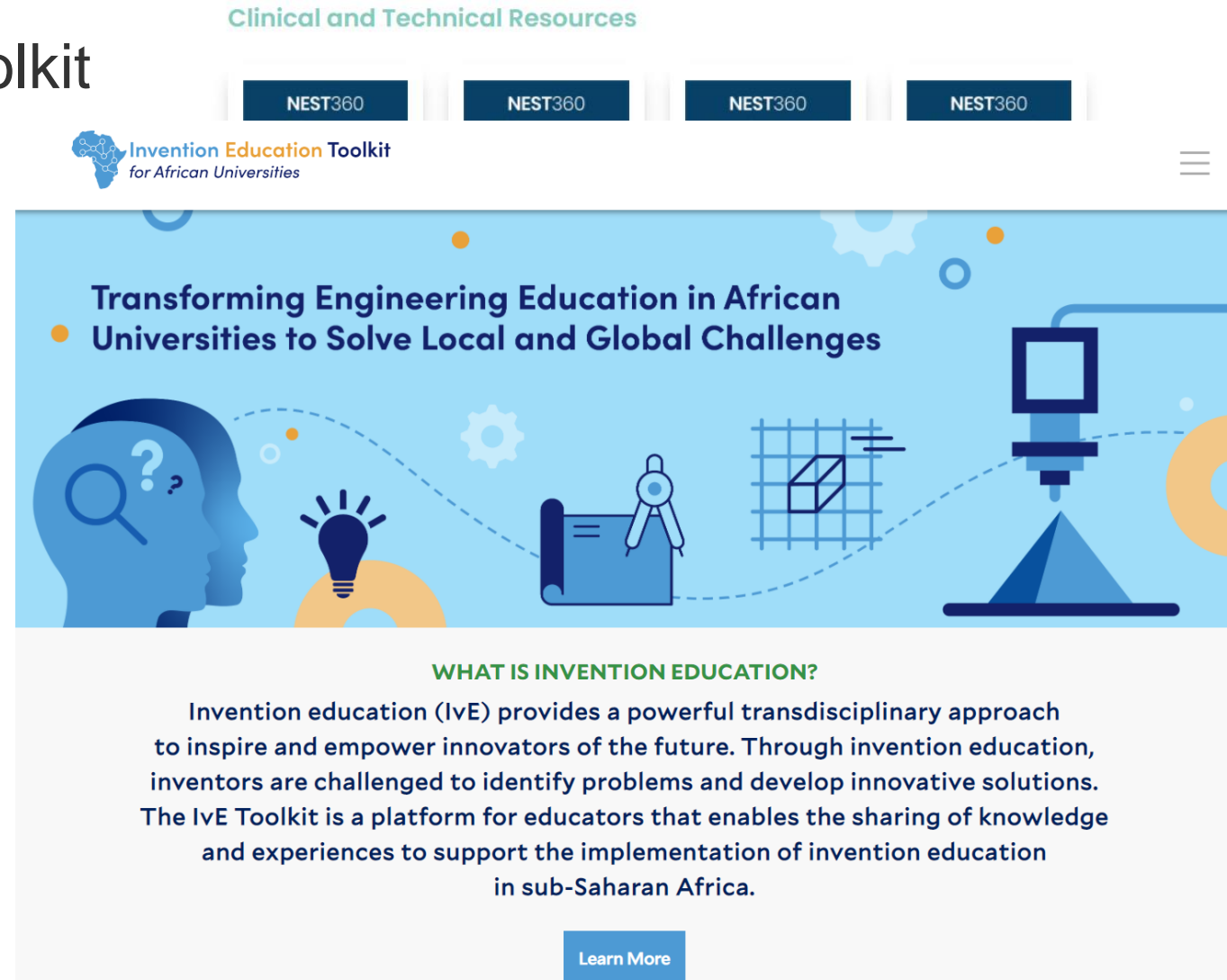
Develop and manufacture next generation technologies

2. Global collaboration to develop affordable, rugged technologies




Implementation Research: Learning more and faster together

- NEST/UNICEF Implementation Toolkit
 - <https://newborntoolkit.org/>
- NEST Resources
 - <https://nest360.org/resources/>
- Invention Education Toolkit
 - <https://ive-toolkit.org/>
- Coming Soon!
 - [Device Planning & Costing Tools](#)



Clinical and Technical Resources

NEST360 NEST360 NEST360 NEST360

 Invention Education Toolkit
for African Universities

Transforming Engineering Education in African Universities to Solve Local and Global Challenges

WHAT IS INVENTION EDUCATION?

Invention education (IvE) provides a powerful transdisciplinary approach to inspire and empower innovators of the future. Through invention education, inventors are challenged to identify problems and develop innovative solutions. The IvE Toolkit is a platform for educators that enables the sharing of knowledge and experiences to support the implementation of invention education in sub-Saharan Africa.

[Learn More](#)



NEST360



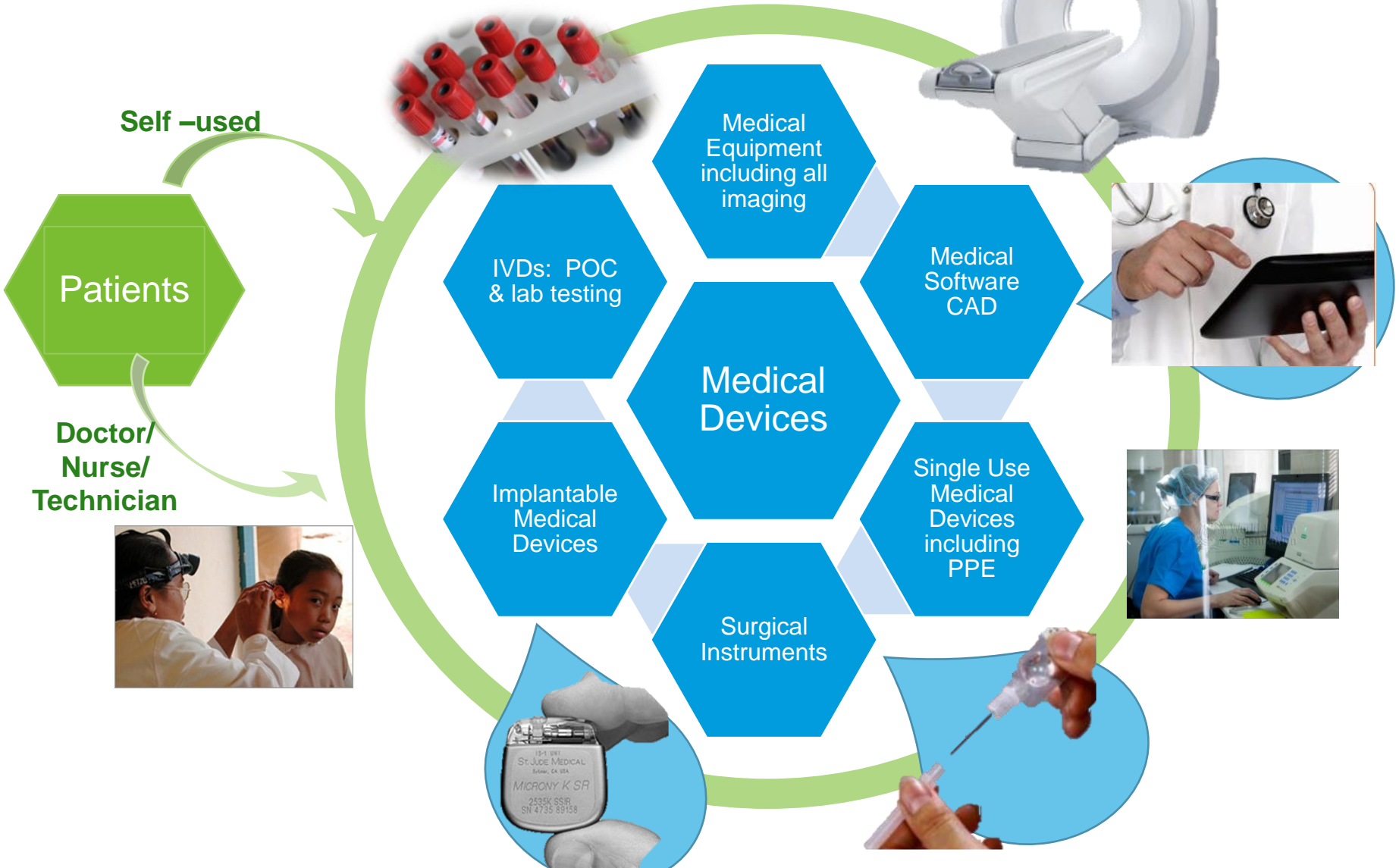
World Health
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SSNB need medical devices for diagnostic and treatment
safe and good quality,
affordable, available, accessible, acceptable

ADRIANA VELAZQUEZ BERUMEN, WHO TEAM LEAD MEDICAL DEVICES

Health technologies includes thousands of types of Medical Devices.

They have no pharmacological action.



Value chain to ensure improved access of safe, quality medical devices



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- Academia and
- Medical devices industry



- Health Technology Assessment
- Priority medical devices lists and Essential in vitro diagnostics



- Regulation process of medical devices
- Lists of approved MD for marketing in country.



- Technical specifications, procurement and supply
- Installation, inventories, training, maintenance, operations
- Post market surveillance and adverse event report
- Decommissioning, Replacement
- Safe use



Medical devices technical series



Innovation Regulation assessment
Assessment

Medical devices

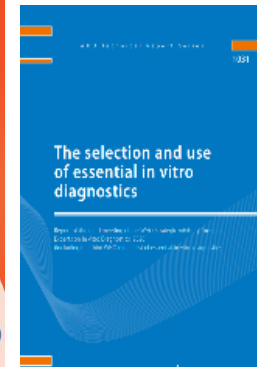
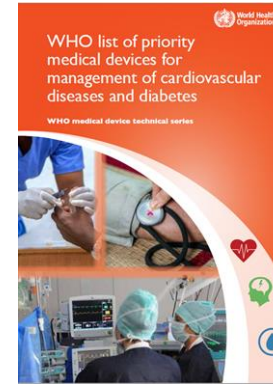
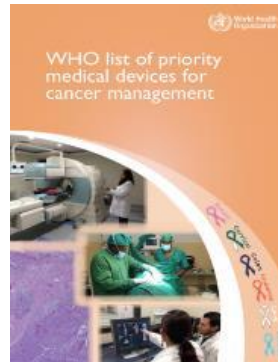
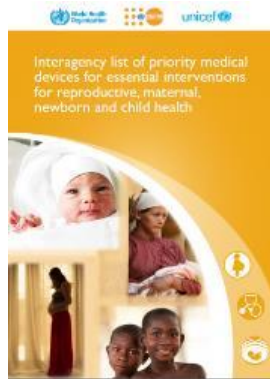
Management



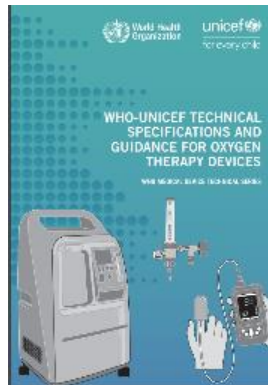
WHO Publications of priority medical devices and essential in vitro diagnostics and related technical specifications of **quality and safety** to be available, affordable, acceptable, appropriate.

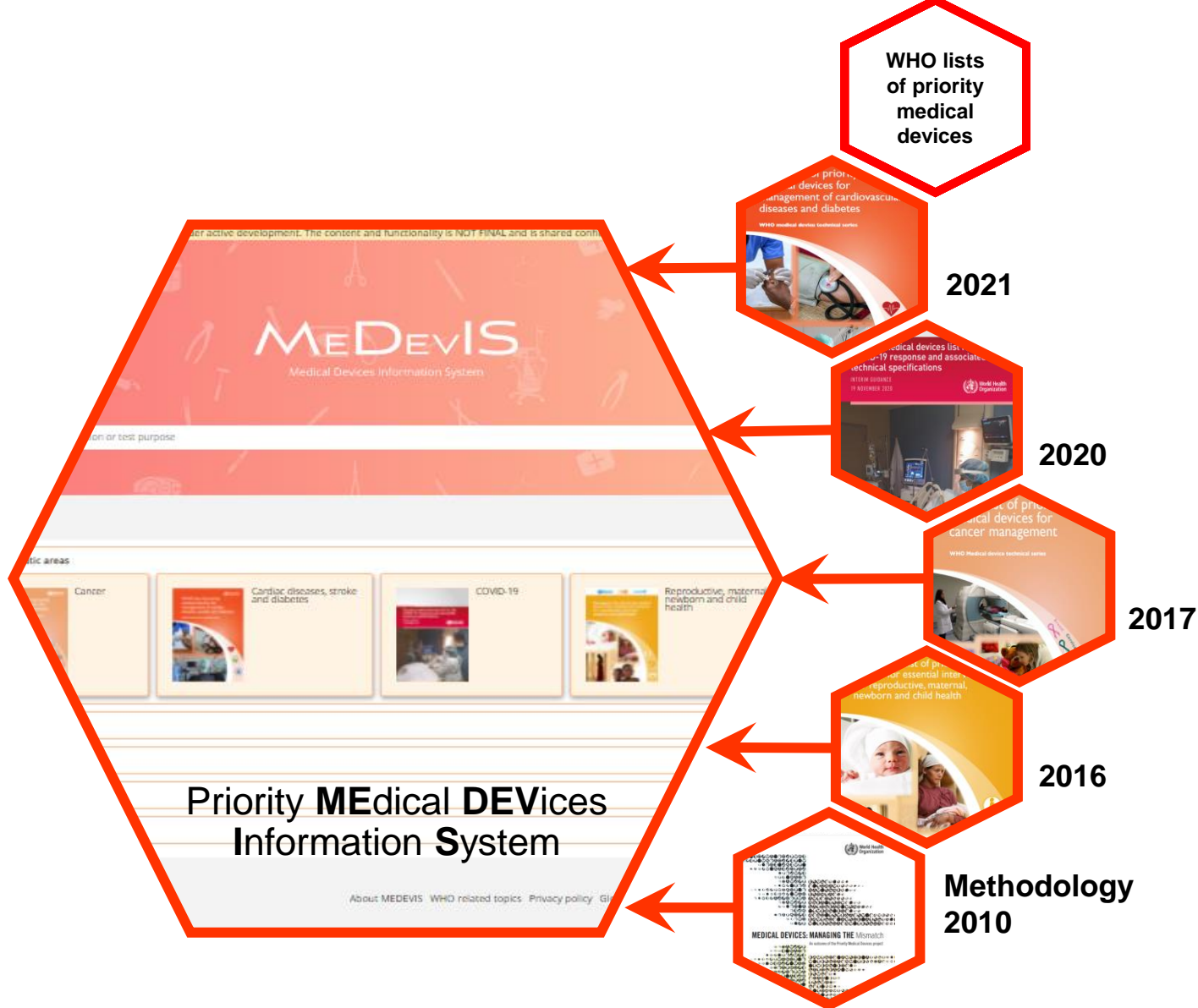


List of essential/
priority



Technical
specifications







MEDEVIS

Priority Medical Devices Information System

Search by name, indication or test purpose

Browse by the following categories and note that MEDEVIS will be continuously expanded to other medical devices for added health conditions and diseases.

WHO list of priority medical devices



Clinical areas

Service delivery platform

Type of health product

Capital, reusable or single use

WHO Medical devices information system

Filters: second referral level, ICU, Neonatal,



The MEDEVIS platform is currently under active development. It only includes medical devices listed in the WHO publications, limited to specific diseases, health conditions and health care settings. This is a Beta version.



MEDEVIS

Search by name, indication or test purpose



Service delivery platform: 6. Second ref... Life course: Neonatal Healthcare setting: Intensive care

- WHO list of priority medical devices
- Various conditions or disease specific
- Organ or system related according to ICD-11
- Life course
- Sex
- Service delivery platform
- Healthcare setting
- Type of medical device
- Capital, reusable, or single-use
- Consumables
- Knowledge level
- Regulatory classification (EU)
- Regulatory classification (FDA)

Apply filter

Found 33 results

Export results

Airway, oropharyngeal, Guedel

Bag, urine, collecting

Blood glucose meter

Bracelet, identification

Catheter, Foley, sterile, single use

Catheter, urethral, sterile, single use

Collector, urine, adhesive

Compress gauze, sterile & non-sterile, single use

Continuous Positive Airway Pressure (CPAP) system

Gloves, examination

Incubator, newborn, automatic, basic, with accessories

Infusion giving set, sterile, single use

The MeDEVIS platform is currently under active development. It only includes medical devices listed in the WHO publications, limited to specific diseases, health conditions and health care settings. This is a



MeDEVIS

Search by name, indication or test purpose



Export device

< Incubator, newborn, transport, with accessories

WHO list of priority medical devices	Reproductive, maternal, newborn and child health	
Various conditions or disease specific	Disease-specific	
Particular indications (ICD-11)	Multiple	
Organ or system related according to ICD-11	Many	
Interventions (non-exhaustive list)	T13	
Life course	Neonatal	
Sex	All	
Service delivery platforms	5. First referral level (District Hospital)	6. Second referral level and above (Regional or National hospital)
Healthcare setting	Emergency room	Specialized treatment
Type of medical device	Medical equipment	
Capital, reusable or single-use	Capital	
Requirements	electricity (batteries)	electricity (mains) gases (Oxygen)
Consumables	Skin ntemperature probes, air filters, fuses.	

Ventilator medical, child / newborn, with Continuous Positive Airway Pressure (CPAP) and accessories

Service delivery platforms 5. First referral level (District Hospital) 6. Second referral level and above (Regional or National hospital)

Healthcare setting Emergency room Intensive care Pre-hospital Specialized treatment

Type of medical device Medical equipment

Capital, reusable or single-use Capital

Requirements electricity (batteries) electricity (mains) emergency power supply gases (compressed air) gases (Oxygen)

Consumables Inlet bacteria filter, if applicable. Expiratory filters high efficiency. Nasal mask for adult and paediatric, with tubing. Oral/nasal mask for adult and paediatric, with tubing. Helmet for adult and paediatric, with tubing.

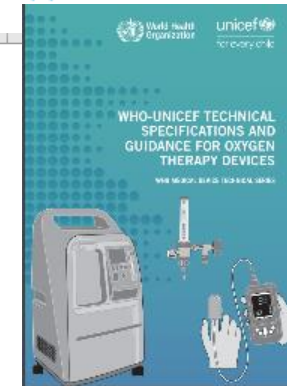
Level of technical knowledge Specialized clinical

Regulatory classification (EU) Class IIb [Directive 93/42/EEC](#) [Regulation \(EU\) 2017/745](#)

Regulatory classification (FDA) Class II

- WHO Resources
- [Interagency list of priority medical devices for essential interventions for reproductive, maternal, newborn and child health](#)
 - [WHO list of priority medical devices for cancer management](#)
 - [WHO List of Priority Medical Devices for management of cardiovascular diseases and diabetes](#)
 - [WHO List of Priority medical devices list for the COVID-19 response and associated technical specifications](#)
 - [WHO general medical devices](#)
 - [WHO prioritizing medical devices](#)

Technical specifications for procurement



World Health Organization

Continuous Positive Airway Pressure (CPAP) system

Published on: 19 November 2020 - **Version:** 3

Version 2: 18/06/2014 (modification of the initial version)

Version 1: 13/06/2012 (initial version)

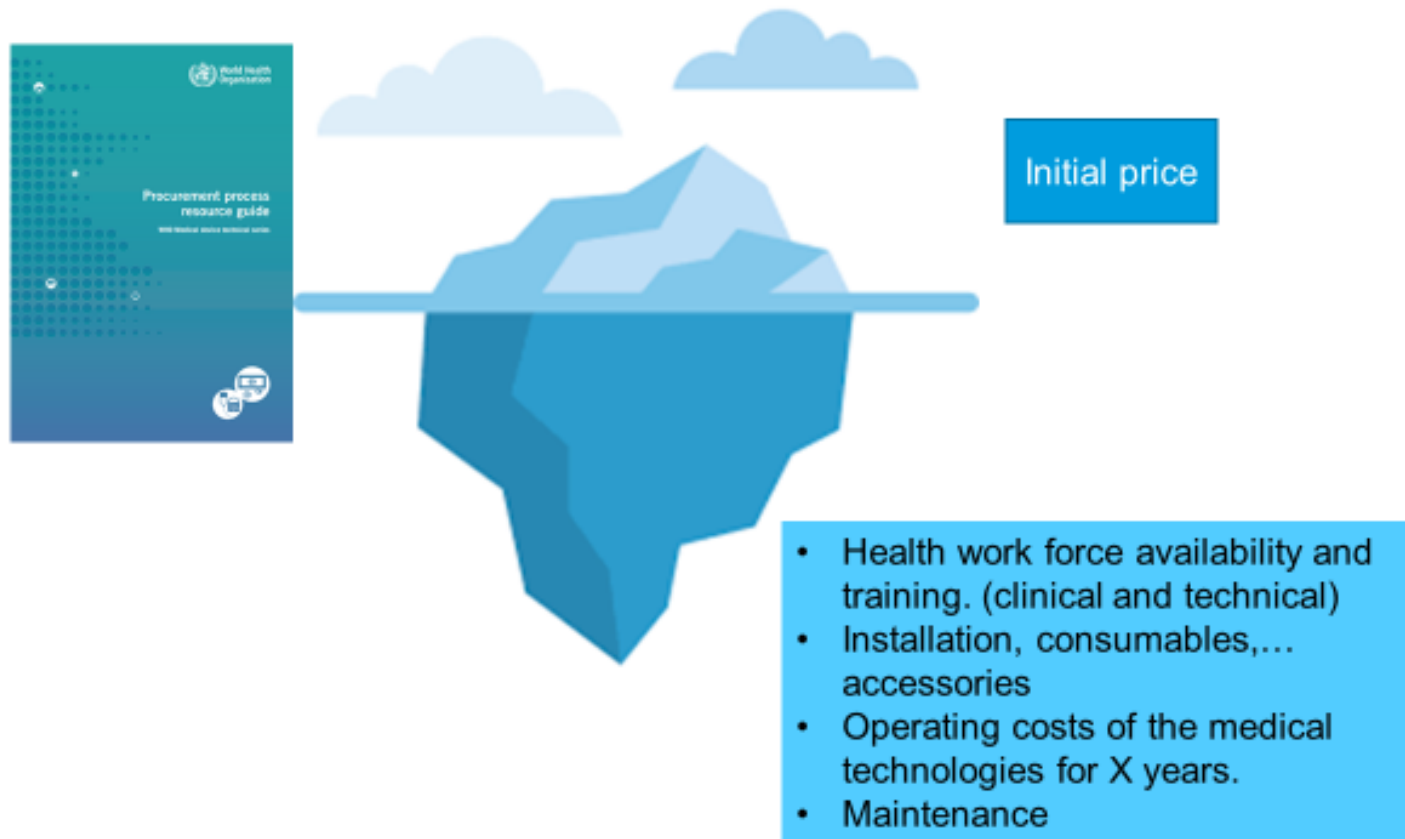
Technical Specification	Minimum requirements
General technical requirements	<p>Maintains continuous positive pressure in airway.</p> <p>Easy to operate user interface, numbers and displays to be clearly visible. Leakage compensation capability (preferable).</p> <p>In-built air compressor or turbine. Oxygen inlet.</p> <p>Capability to connect to an active humidifier system (preferable). Noise level < 35 dB at mid pressure range.</p> <p>Expiratory relief features that reduce the pressure slightly at the end of each breath to make it easier for the patient to exhale (preferable).</p> <p>Pressure ramp option that starts pressure at low level and slowly increases over a period (preferable). All parts withstand high disinfection procedures.</p> <p>Inspiration trigger for auto start.</p> <p>Class I or Class II or internally powered. Protection IP21 required (IP22 preferable).</p>
Ventilation modes	Non-invasive CPAP
Monitored and controlled parameters (by clinical user)	<p>FiO₂: 21–100% (preferable).</p> <p>Pressure: 4–20 cmH₂O.</p>
Displayed parameters (colour and graphics preferable)	<p>Display easily readable in low ambient light and sunlight. Pressure: cmH₂O.</p> <p>FiO₂ (%) (preferable).</p> <p>Flow (preferable).</p> <p>Air leak (%) (preferable).</p> <p>RR (preferable).</p>
Alarms, related to gas delivered (visual and audible)	<p>High/low pressure and/or minute ventilation.</p> <p>High/low oxygen (preferable).</p> <p>Breathing circuit disconnection.</p>
Alarms, related to	<p>Lack of water (preferable).</p> <p>System failure</p>

Foglio1

Procurement and maintenance: Importance of Total cost of ownership

Iceberg concept:

Total cost of ownership might not be visible for
decision makers

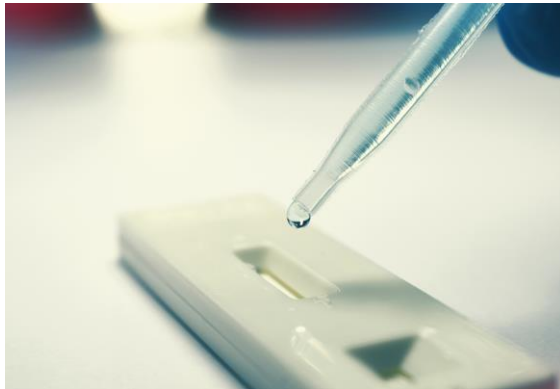


Presentation of the Essential in vitro diagnostics List



The WHO EDL is presented by health-care facility level in **two tiers** and a “Do Not Do” recommendations section

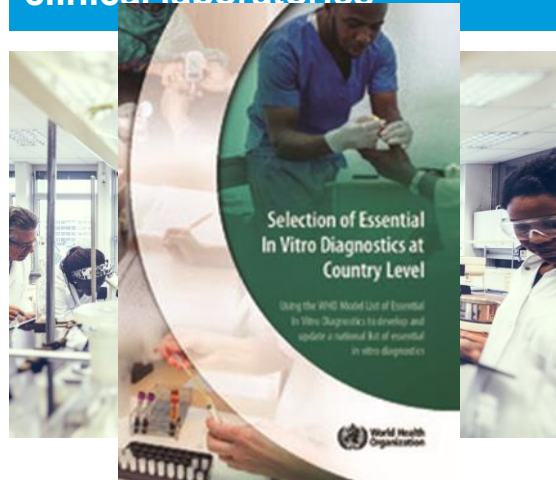
Community and health settings without laboratories



I.a General tests (arranged by discipline)

I.b Disease-specific tests (arranged by disease)

Health care facilities with clinical laboratories



II.a General tests (arranged by discipline)

II.b Disease-specific tests (arranged by disease)

II.c Bloods screening tests

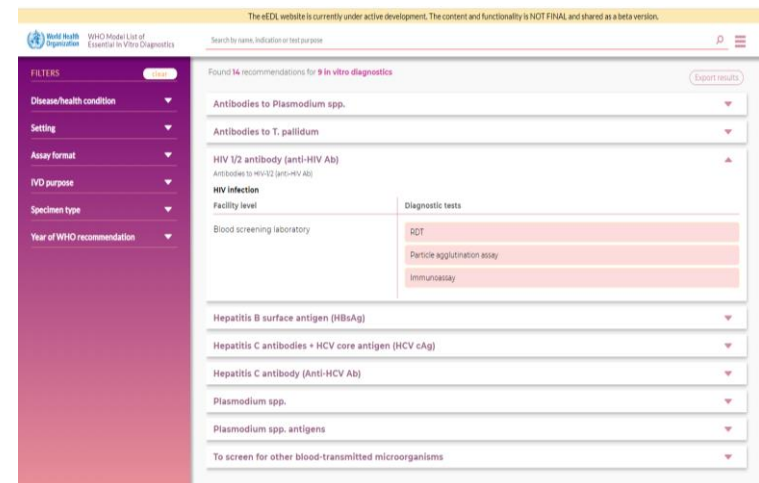
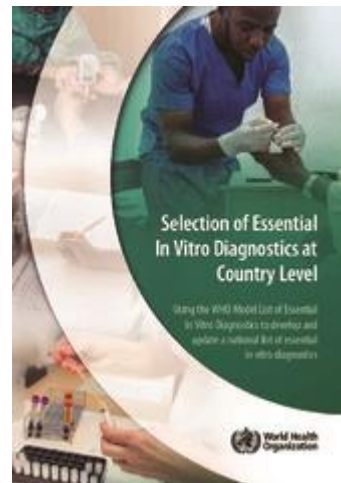
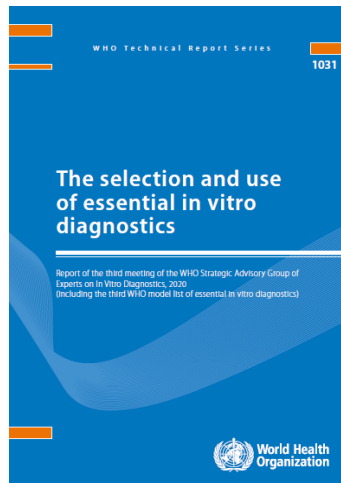
Do Not Do recommendations



Refer to test categories that have been listed for discontinuation

Additional tools to support countries

1. WHO Technical Report Series The selection and use of essential IVDs
2. Electronic EDL (eEDL)
3. Technical specifications to support selection and procurement of IVD products



Evidence based selection information for in vitro diagnostics

The eEDL website is currently under active development. The content and functionality is NOT FINAL and shared as a beta version.

Indication - Endocrine disorders

Export

Thyroid-stimulating hormone (TSH)

Facility level: 2. Laboratory

Assay formats	Immunoassay
Status history	First added in 2020
Purpose type	Screening, Diagnosis
Purpose	To screen for and to diagnose hypothyroidism and hyperthyroidism
Specimen types	Serum, Plasma, Capillary whole blood (newborns)
WHO prequalified or recommended products	N/A
WHO supporting documents	N/A
Codes	ICD11 code: 5B3Z

WHO recommendation

History

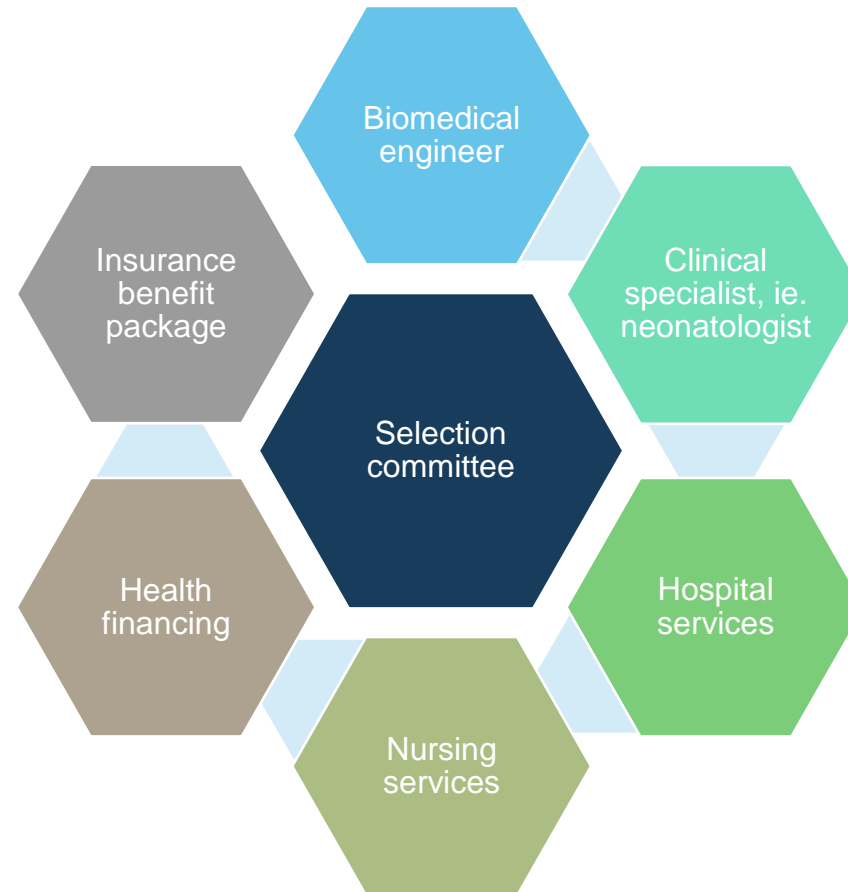
References

Summary of SAGE IVD recommendation

The use of the WHO model list to inform the development or update of the national lists.

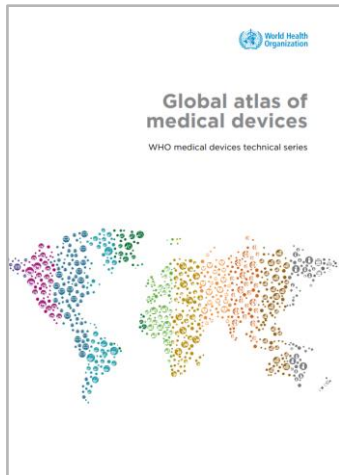


i.e. Participants in a committee to decide the priority medical devices to submit for MOH approval



Priority Medical Devices (including in vitro diagnostics)

Aim to inform national lists for procurement / reimbursement/ UHC coverage (lists for NICU, should be included)

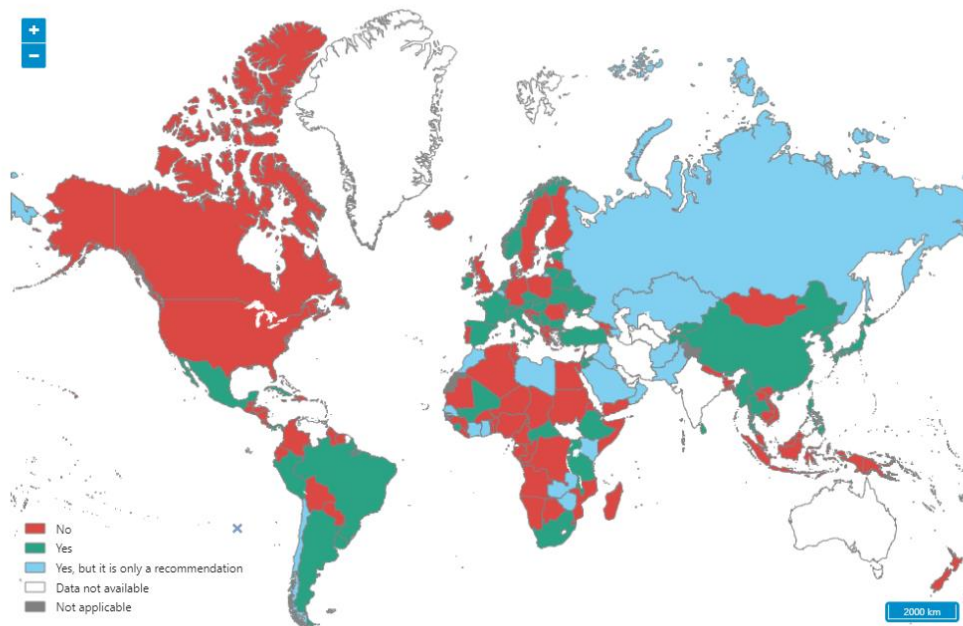


Availability of national list of approved medical devices for procurement or reimbursement

FILTERS

Year

Latest



The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on the map indicate areas that are not yet defined.

Country consultation of Global Atlas of Medical devices.

November, 2021



Global atlas



National policy on health technology

Health technology (medical device) national policy: Yes

Policy is part of the National Health Program/Plan: Yes

Website: —

Language(s): Français.

MOH responsible for health technology policy implementation: Direction des Infrastructures, de l'Équipement et de la Maintenance.



National lists of medical devices

National list of approved priority/essential medical devices, (including IVDs), for procurement or reimbursement:

Lists available: Yes, but it is only a recommendation

Unit: Direction des Infrastructures, de l'Équipement et de la Maintenance (DIEM).

Website: —

Nomenclature systems used for devices and tests: —

National list for different types of healthcare facilities (hospitals, laboratories, etc)

Lists available: Yes

Website - hospitals: —

Website - IVD: —

Nomenclature systems used for devices and tests: —

National list for specific clinical interventions/emergencies:

Lists available: —

Website: —



National health technology assessment unit

Designated unit/department for health technology assessment (HTA):⁵ Yes

National unit/department that includes HTA for medical devices: _

Website(s): —

Contact: — Email: —

Approved devices lists comments (...Annex 1):

Les listes d'acquisition provient du Plan National de développement Sanitaire PNDS.

Health care facilities lists comments (...Annex 1):

ListeTypeEquip CHR_HG_CSU_CSR: document de travail de la Direction des Infrastructures, de l'Équipement et de la Maintenance (DIEM).

Specific lists comments (...Annex 1):

Les procédures et directives sont dans le manuel de directives à l'attention du personnel des établissements de soins. il n'existe pas de liste spécifique à un domaine ou un programme de santé.

HTA unit comments (...Annex 1):

—

Universal health coverage compendium, interventions, actions



UHC Compendium

- Interventions by programme area
- Life course distribution
- Addressing SDG goals
- Explore the database
- Survey
- Frequently asked questions (FAQs)
- References for interventions
- Architecture of clinical services

Group	Subgroup	Intervention category	Intervention	Action category	Action	Life course	Sex	Keyw...
						j) Young adulthood: 20-64 years k) Later adulthood (>65 years)		
Communicable diseases	Communicable diseases (excluding NTDs)	Lower respiratory infections(excluding TB)	Management of acute lower respiratory infections	15. Procedures (including surgeries)	Mechanical ventilation (invasive)	a) Pregnant and lactating women d) Early childhood (28 days-4 years) f) Early adolescence (10-14 years) g) Later adolescence/early youth (15-19 years) h) Later youth (20-24 years) i) Early adulthood: 25-49 years j) Middle adulthood: 50-64 years k) Later adulthood (>65 years)	All	
Communicable diseases	Communicable diseases (excluding NTDs)	Lower respiratory infections(excluding TB)	Management of acute lower respiratory infections	15. Procedures (including surgeries)	Mechanical ventilation (non-invasive)	a) Pregnant and lactating women d) Early childhood (28 days-4 years) f) Early adolescence (10-14 years) g) Later adolescence/early youth (15-19 years) h) Later youth (20-24 years) i) Early adulthood: 25-49 years j) Middle adulthood: 50-64 years k) Later adulthood (>65 years)	All	
Communicable diseases	Communicable diseases (excluding NTDs)	Lower respiratory infections(excluding TB)	Management of acute lower respiratory infections	15. Procedures (including surgeries)	Surgical procedures for complications: thoracic surgery	a) Pregnant and lactating women d) Early childhood (28 days-4 years) f) Early adolescence (10-14 years) g) Later adolescence/early youth (15-19 years) h) Later youth (20-24 years) i) Early adulthood: 25-49 years j) Middle adulthood: 50-64 years k) Later adulthood (>65 years)	All	
Communicable diseases	Communicable diseases (excluding NTDs)	Lower respiratory infections(excluding TB)	Management of acute lower respiratory	15. Procedures (including	Thoracentesis	a) Pregnant and lactating women d) Early childhood (28 days-4 years)	All	

Disclaimer: This visualization illustrates content within the UHC Compendium database that is available to date. Content will evolve over time as the database is further expanded.

Last update Thursday, September 30, ...	Total interventions 49	Total actions 324
--	---------------------------	----------------------

Click to see more visualizations: [Life course distribution](#), [Addressing SDG goals](#).

WHO Compendium of Innovative Technologies for Low Resource Settings

searching for tech that can be transferred to LMIC



Evaluation for the compendium of innovative technologies for Low resource settings.



Inclusion in the Compendium does not constitute a warranty by WHO of the fitness of any technology or product for a particular purpose, as no rigorous review for safety, efficacy, quality, applicability or cost appropriability was conducted by WHO. WHO is not liable for any damage or injury arising from the use of any technology or product, or for any loss of any data or other use of any such technology or product.

Ventilator, with extended battery time

Country of origin | United States of America
 Primary function | Supporting or sustaining life
 Category | Medical device



Commercial information
List price (USD): \$15,000¹
Year of commercialization: 2018²
Number of units distributed: 101-1,000³
Currently marketed in: Sub-Saharan Africa and Southeast Asia³
Brand: Gradian Health Systems³
Model: Gradian CCV¹

Health problem addressed
 Mechanical ventilators, when operated by a trained medical professional, provide respiratory support to patients who cannot breathe or require assistance to breathe due to illnesses, such as pneumonia, COPD, and COVID-19, trauma, or other complications. They are essential to sustaining life while patients undergo treatment or until treatment can be accessed. A major factor inhibiting access is inadequate infrastructure to support delivery of critical care in facilities and during transport.³

Product description
 A comprehensive care ventilator can assist or replace the breathing of a patient requiring respiratory support, in any care setting. Gas is drawn from compressed sources of oxygen and medical air, or entrained from room air by an in-built compressor, and mixed by an integrated gas blender to an oxygen concentration prescribed by the care provider. A closed-loop control system regulates the delivery of breath through a breathing circuit, according to the prescribed mode and settings.¹

Product details
Accessories: Rolling stand, bag of 3 extra filters, kit – handle, swivel hooks, stand mount, external battery, extra exhalation valve, reusable adult and pediatric breathing circuits, SpO₂ monitor, HMEs, test lung, air and oxygen hoses, power cords, reservoir cylinder, humidifier and accessories.¹

Consumables: It is recommended that the device be used with bacterial/viral filters in order to avoid cross-contamination. When using the device without an active humidifier, a Heat and Moisture Exchanging Filter (HMEF) is recommended.¹

Other required products: Patient interfaces such as endotracheal tubes and non-invasive ventilation masks are required to use the device. The device should only be used in the presence of and in conjunction with other monitoring and life-supporting equipment required for administration of adequate critical care.¹

Warranty duration: 3 years¹
Lifetime: 10-15 years¹

Contact: Lina Sayed | Email: lina.sayed@gradianhealth.org | Telephone: +19176854066 | Website: <https://bit.ly/37wRM1H>

¹ Reported by manufacturer on 14 August 2020
² Reported by manufacturer on 8 January 2020
³ Reported by manufacturer on 15 December 2020

WHO ASSESSMENT

WHO specification comparison

This device partially complies with the WHO technical specifications for transport ventilators.
Compliant relevant characteristics: There is the option for using external low-pressure oxygen (approx. 20 psi) as a source. However, the instructions of use indicate that “Proper tidal volumes may not be provided with a gas source not providing a minimum of 80 LPM at 280 kPa (40 psi)”. The device includes non-invasive ventilation, an oxygen conservation feature, and IP22 degree of protection. The device can be used continuously in battery operating mode with standard ventilation for up to 21 hours total (7 hours on internal battery and 14 hours on external battery).
Non-compliant: The oxygen-air mixture accuracy is 12% as opposed to the WHO specification of 4%. The inspiratory pressure is 15 - 55 cmH2O instead of the WHO specified range of 0-40 cmH2O. The device does not have minute volume alarms and single limb circuits cannot be connected. Additionally, the device does not measure leak percentage or display/monitor minute volume and spontaneous minute volume. The display shows numerical indicators but no waveforms for all ventilation parameters.
Aspects that could not be verified: Minute volume alarms

Ventilator, with

COMMERCIALY AVAILABLE

Regulatory assessment

Pre-market assessment Proceed
 Post-market assessment Proceed
 Quality system assessment Proceed

All WHO requested information and documentation for all three Regulatory and Quality Assessment categories was provided. At the time of this report creation, the product was both EU CE Marked under the MDD and US FDA 510(k) cleared. The regulatory status for the various accessories was provided. The product's manufacturer (Allied Health) has obtained an MDSP ISO 13485:2016 certificate. Gradian provided all top-level SOPs for their regulatory and quality system responsibilities for the WHO countries. Gradian must also ensure they comply with local country import and pre-market regulations

Assessments



COMMERCIALY AVAILABLE

Technology evidence assessment

Domains	Evidence assessment <small>Risk/benefit ratio</small>	Innovation <small>Impact</small>
Medical		
Safety		
Economy		
Organizational		
Legal		
Social		
Ethical		
Green environment		

During emergencies, the technology has a dual purpose of regular clinic use and deployment. The pod has a continuous power supply and can use solar energy. It is robust and usable during severe weather and on uneven terrains. In terms of deployment, training is required for which video instruction is provided. It is easy to use, maintain, and decontaminate.

Summary

Transferability Technology readiness level **9**
 Evidence (according to GRADE) Technology evidence assessment **Recommended**

Deployable facility, for emergencies, shipping container based

Health technology and engineering management

Domains	Appropriateness	Domains	Appropriateness	Target setting: Public and home settings
Durability		Ease of maintenance		This product is a mobile, deployable facility for providing temporary clinical services. It is durable, easy to set up, use and maintain, and socially and culturally acceptable. The facility requires utilities such as electricity and compressed air in order to support various equipment. It is not clear if this product provides significant innovation over similar commercially available products.
Ease of Use		Infrastructure requirements		
Positive impact on clinical outcomes		Local access to sales support		
Affordability		Local access to technical support		
Engineering resources minimization		Local access to training		
Cultural and social acceptability		Local access to spare parts		
Environmental conditions		Local production		
Aesthetics		Locations of use within target setting		
Ease of cleaning				

Assessments Compendium product pages

WHO compendium of innovative health technologies for low-resource settings

2021 | COMMERCIALY AVAILABLE

Heart rate meter, for newborn

Country of origin | Norway
 Primary function | Monitoring
 Category | Medical device

Commercial information

List price (USD): \$150¹
 Year of commercialization: 2018
 Number of units distributed: 101-1,000
 Currently marketed in: Europe, Australia, New Zealand, and Tanzania²
 Brand: Laerdal Medical AS
 Model: NeoBeat Newborn Heart Rate Meter



Health problem addressed

An estimated 10 million newborns are born every year that are not breathing and require resuscitation. Due to insufficient oxygenation of the newborn, 0.7 million newborns died and 1.15 million newborns suffered permanent brain injury. To address this issue, there is a need for immediate provision of newborn's heart rate to support health care workers in performing effective ventilations, by application of a reusable ECG heart rate meter onto the wet newborn's chest and quick continuous display of the newborn's ECG heartrate.²

Product description

ECG signals from newborn's wet chest are picked up by dry stainless-steel electrodes that are embedded in one spring-elastic plastic buckle. A housing includes a rechargeable battery, signals processor, and a bright-LED display.

Product details

Accessories: USB 5V power supply (charger), AC plug kit to fit various global electrical systems³
 Warranty duration: 1 year¹
 Lifetime: 2-5 years¹
 Energy requirements: Continuous power supply (AC powered, 110V/220V, 5W)¹
 Facility requirements: Disinfection with 70% ethanol¹

Contact: Frode Liland | Email: frode.liland@laerdal.com | Telephone: +47 91 1106093 | Web: https://bit.ly/3hZpDfh

¹ Reported by manufacturer on 26 November 2020
² Reported by manufacturer on 11 January 2021
³ Reported by manufacturer on 16 December 2020

Information in this Compendium is derived from reports by WHO, WHO pre-market assessment, and WHO regulatory review for safety, efficacy, quality and performance. WHO does not guarantee the accuracy, reliability, or validity of any data and all liability rests with the manufacturer for any damage of any kind that may arise from use of the health technology or product.

WHO ASSESSMENT

WHO specification comparison

At the time of report creation, WHO technical specifications are not available to compare against for this type of technology.

Regulatory assessment

Some WHO requested information and documentation for all three Regulatory and Quality Assessment categories is absent. Therefore, a thorough review of this product was not possible at this time. Laerdal has obtained an EU MDD CE Mark for the AS NeoBeat Newborn Heart Rate Meter. The regulatory status for the various accessories is currently unclear. Laerdal has obtained an ISO 13485:2016 certificate. Laerdal must also ensure they comply with local country import and pre-market regulations.

- Pre-market assessment: Proceed with caution
- Post-market assessment: Proceed with caution
- Quality system assessment: Proceed with caution

COMMERCIALY AVAILABLE

Technology evidence assessment

Domains: Evidence assessment (Risk/benefit ratio), Innovation

Domains	Evidence assessment (Risk/benefit ratio)	Innovation	Notes
Medical	⚠️	💡	This portable device is clinically useful for timely monitoring of critical newborns that require resuscitation.
Safety	⚠️	💡	There is no need for extra workers other than the health care personnel resuscitating the newborn. The device is battery-powered, simple, and easy to use.
Economy	❌	💡	Decontamination is necessary after each use. The manufacturer provides the device to low-resource settings at a subsidized cost. Spare parts can be procured through the manufacturer's website. Additional safety and regulation documentation is needed and further clarity is required for labeling.
Organizational	❌	💡	
Legal	➡️	💡	
Social	⚠️	💡	
Ethical	❌	➡️	
Green environment	⚠️	💡	

Summary: Transferability (➡️), Evidence (according to GRADE) (⚠️), Technology readiness level (B), Technology evidence assessment (Recommended with caution)

Health technology and engineering management

Domains: Appropriateness, Target setting: Neonatal ICU

Domains	Appropriateness	Target setting: Neonatal ICU	Notes
Durability	➡️	➡️	
Ease of Use	⚠️	➡️	
Positive impact on clinical outcomes	⚠️	➡️	
Affordability	⚠️	➡️	
Engineering resources minimization	➡️	➡️	
Cultural and social acceptability	➡️	➡️	
Environmental conditions	➡️	➡️	
Aesthetics	➡️	➡️	
Ease of cleaning	➡️	➡️	
Ease of maintenance	➡️	➡️	
Infrastructure requirements	➡️	➡️	
Local access to sales support	➡️	➡️	
Local access to technical support	➡️	➡️	
Local access to training	➡️	➡️	
Local access to spare parts	➡️	➡️	
Local production	➡️	❌	
Locations of use within target setting	➡️	❌	

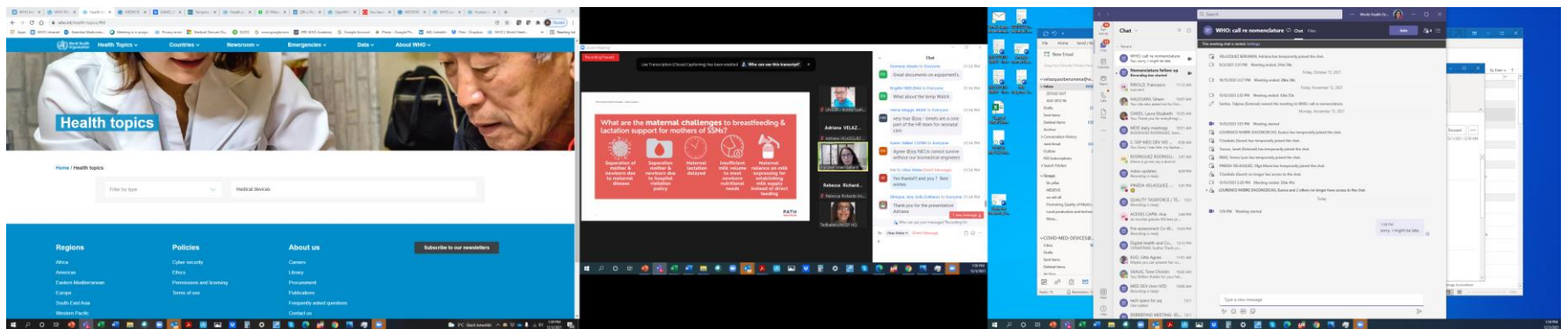
This product is a heart monitor for newborns. It is applied to the newborn's chest with an elastic spring and buckle and dry stainless-steel electrodes make contact with the skin. A housing with a rechargeable battery, signal processor, and LED display is on the center of the buckle. The device includes a charging stand. The device must be attached to the newborn skin up to two minutes in order for the heart rate readings to appear. Although the product is easy to apply, there are concerns about pressure and skin irritation on the fragile newborn chest due to the long duration of use. The manufacturer suggests that the product can assist during emergencies, however, it would obstruct a chest x-ray or cardiac resuscitation if urgently needed. The product requires minimal maintenance, is easy to clean, and seems to be well supported by sales and technical staff.

Heart rate meter, for newborn

The fitness of any technology or product for a specific use, or the acceptability of its use, is not guaranteed by WHO. WHO disclaims any liability for any damage of any kind that may arise from use of the health technology or product.

Conclusions

- WHO has developed lists of medical devices, based in evidence, by interventions or clinical settings.
- Include technical specifications and regulations and more information
- For countries to use to develop or update their national lists
- Role of Biomedical engineers to support from planning to use.
- Harmonized Nomenclature is indispensable for all medical devices process.
- More work to be done for NICU



**Gracias
Thank you
Merci
Shokran
Xie xie
Spasiva**



**World Health
Organization**

WHO

20, Avenue Appia
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Switzerland

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Adriana Velazquez Berumen

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Equitable access to human milk for the small and sick newborn -

Optimizing feeding and skilled lactation support
in low-resource settings

WHO/UNICEF Global Newborn Expert Consultation
3 December 2021

Kiersten Israel-Ballard, DrPH – PATH Team Lead; Maternal, Newborn, Child Health & Nutrition



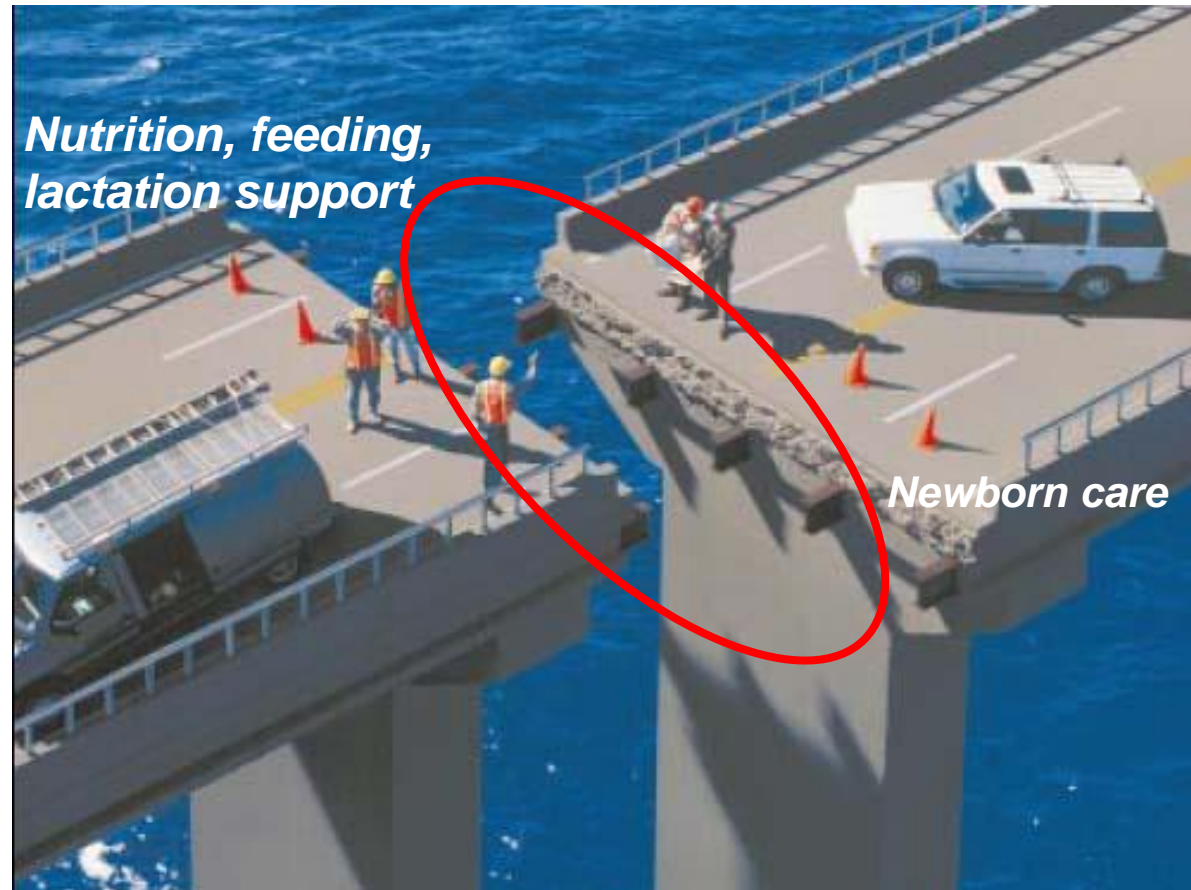
Where is the data on feeding and lactation support for SSN?

Data is lacking to understand:

- How inpatient newborns are fed globally.
 - What percentage have access to their own mother's milk?
 - What percentage of the diet is mother's own milk versus formula or another alternative?
- Early maternal lactation practices for mothers with small and sick newborns.
 - How many mothers are supported to start expressing milk within the first hour, whether baby is present or not?
 - How many settings have training for skilled lactation support for those working with vulnerable newborn populations?
- Inequities facing small and sick newborns and their families.
 - What is the true burden? Where should priority be placed?
 - Who has access to safe alternatives—i.e., donor human milk, fortifiers?



Lack of alignment or integration has resulted in a critical implementation and policy gap



PATH's 'Asset Tracker' mapped key MNCH interventions along the pathway to effective coverage

ASSET OVERVIEW #13: FEEDING OF SMALL AND SICK NEWBORNS (FSSN)

Despite increased global momentum to improve the quality of care for small and sick newborns, inclusion of feeding as a core component of care is lacking. Data, implementation models, and operational standards are needed.

"A major barrier is not enough coming together between funders and investors – looking at health systems strengthening for newborn nutrition to address these issues." – KII

1 Scale-up status

India has specific guidelines for FSSN, but countries embed guidance within general SSN or IYCF guidelines, with limited detail and costed plans.¹

Countries lack operational guidance, implementation strategies, monitoring, and funding for FSSN.

There is no data on SSN feeding or lactation support for mothers.



2 Background and context

- Small and sick newborns include those with any medical or surgical condition or weighing <2,500 g at birth (includes preterm and low-birthweight newborns).¹
- Until the '90s, clinical practices emphasized withholding feeds or feeding formula. But data showed human milk improve health and development outcomes.²
- 2011 WHO guidelines for feeding LBW infants emphasized primary role for human milk, followed by 2013 Expanded BFHI for NICU and 2020 BFHI for SSN.
- SSN populations struggle to meet BFHI target of "80% of infants (preterm and term) receive only breast milk (either from their own mother or from a human milk bank) while in the hospital."³

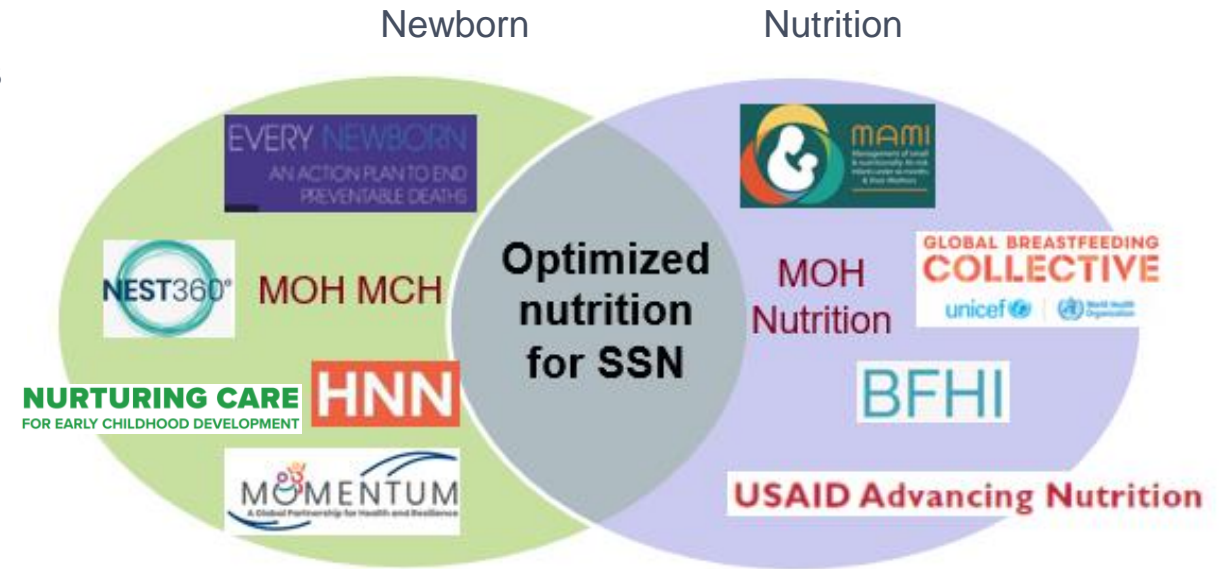
3 Top barriers

<p>A Suboptimal focus on special feeding needs</p> <p>SSN face challenges in accessing mother's milk, due to inability to suckle, mothers' delayed lactogenesis, birth complications, or mother-baby separation.¹⁻³</p> <p>Lack of capacity-building and nutrition-focused training leads to neonatal staff lacking lactation support skills and understanding of specialized feeding needs.</p> <p>Supporting provision of human milk is challenging due to baby separation, infrastructure limitations, lack of breast pumps and storage for expressed milk, and limited family engagement.</p>	<p>B Policy misalignment</p> <p>Nutrition for SSN is considered a "blind spot for the newborn community." This policy gap must be filled to achieve progress.⁴</p> <p>Momentum for improving SSN quality of care has increased globally, but clear guidance on operationalizing SSN feeding – especially for LMIC regions most impacted – is lacking.</p> <p>Lack of policy cohesion and clarity between newborn and nutrition fields, with neither field claiming responsibility.</p> <p>Although FSSN is stated as a global priority, it is not prioritized at national levels due to lack of operational actions.⁵</p>	<p>C Documenting feeding gaps</p> <p>Lack of routine data collection on infant feeding practices and maternal lactation support practices for SSN populations at global and national levels.</p> <p>We still don't know how SSNs are fed, what proportion receive human milk, if it is mother's own milk, shared other mother's milk, donor human milk, formula, or if supplements or fortification is used.</p> <p>We need standardized multi-country assessments to quantify and describe the problem and inform strategies.</p>
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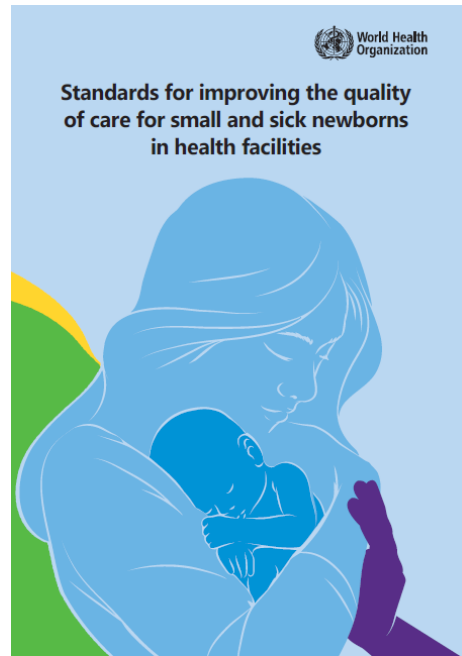
Aligning priorities and investments at the nexus of newborn and nutrition agendas shifts FSSN to the critical center of improving quality of care, and as a link across KMC, nurturing care, and respectful maternal care.

Guidance tells WHAT to do, but gaps remain for HOW to optimize nutrition for the small and sick newborn

- The **policy and attention** for optimizing nutrition for SSN and providing specialized support for their mothers has fallen through the cracks; we are not meeting current needs
- Challenges exist in **ensuring access** to human milk for this vulnerable population.
- Innovative strategies are needed to establish **systems** for protecting, promoting, and supporting breastfeeding



Integration and collaboration is required to optimize nutrition for SSN



New global standards for improving quality of care for SSN require additional **operational guidance** for HOW to implement optimal nutrition and lactation support

What are the newborn feeding challenges of accessing mother's own milk, when available, for SSNs?



Before 34 weeks, preterm newborns experience difficulty in sucking, swallowing, & respiration⁶



Separation of mother & newborn in hospital settings leads to reliance on donor human milk or formula



Staffing shortages & stressful NICU environment prevent adequate lactation support for mothers



Reliance on cup/spoon/tube feedings of expressed mother's milk



Criteria at hospital discharges newborns before they are feeding at the breast

6. Cartwright et al. (2017): Integrative review of interventions to promote breastfeeding in the late preterm infant

What are the **maternal challenges** to breastfeeding & lactation support for mothers of SSNs?



Separation of mother & newborn due to maternal disease



Separation mother & newborn due to hospital visitation policy



Maternal lactation delayed

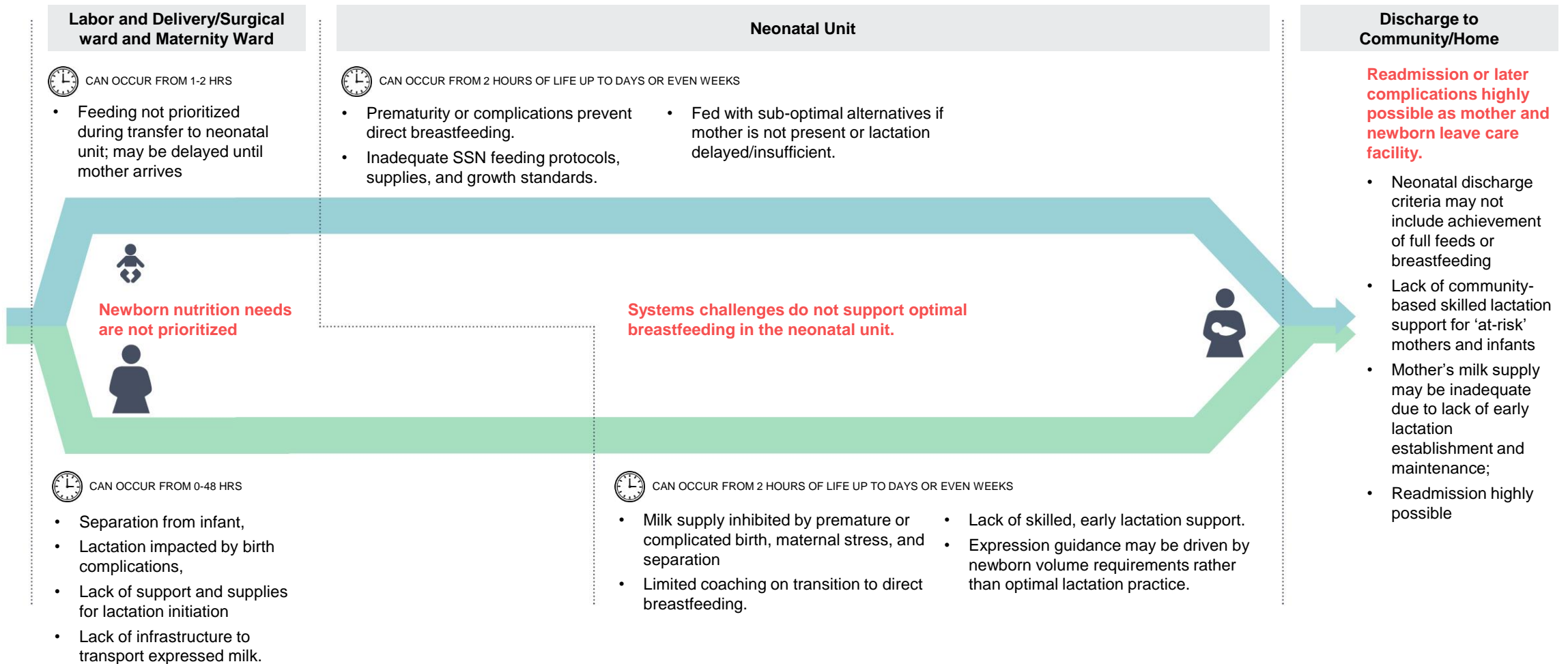


Insufficient milk volume to meet newborn nutritional needs

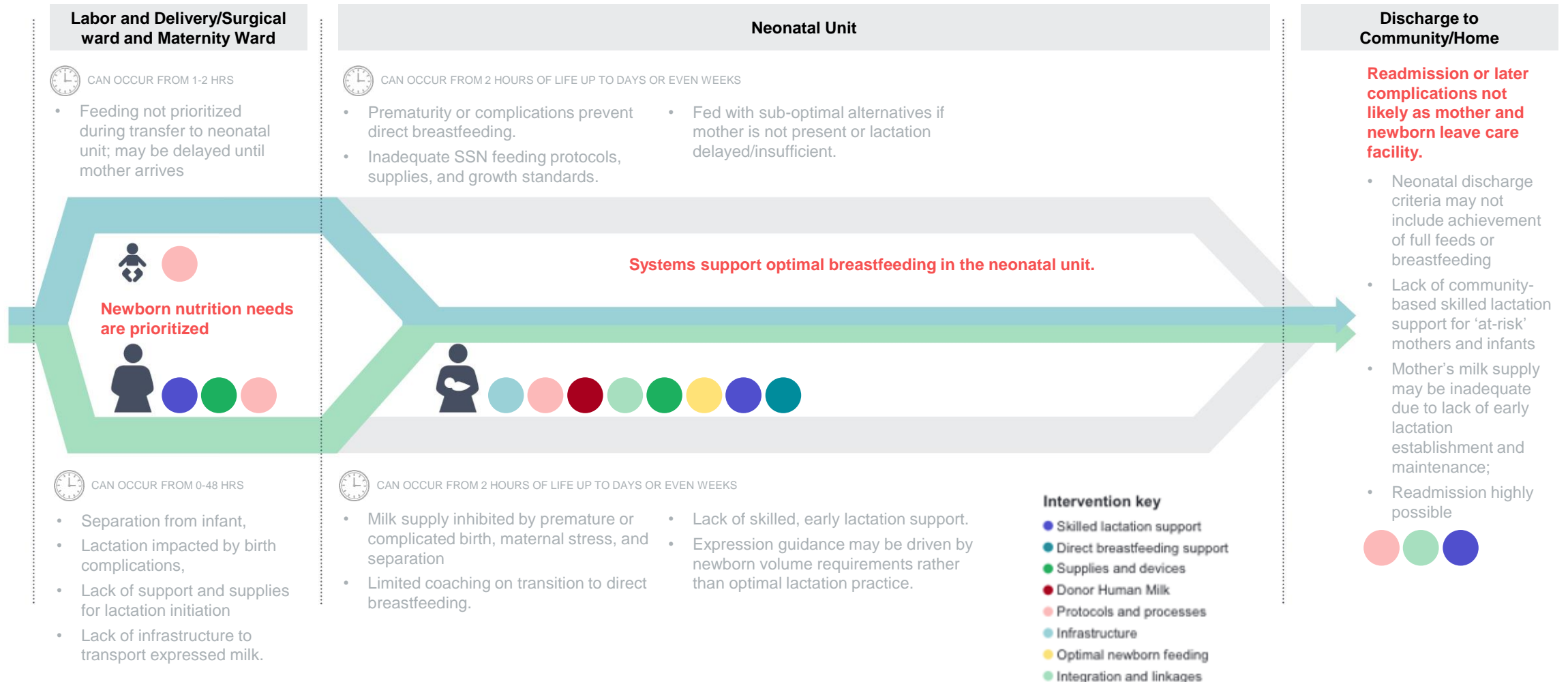


Maternal reliance on milk expressing for establishing milk supply instead of direct feeding

Gaps exist in current care systems for SSN and their mothers, preventing optimal access and intake of human milk



Purposeful intervention along pathways of care would create an enabling environment for optimizing newborn nutrition



Labor and Delivery/Surgical ward and Maternity Ward

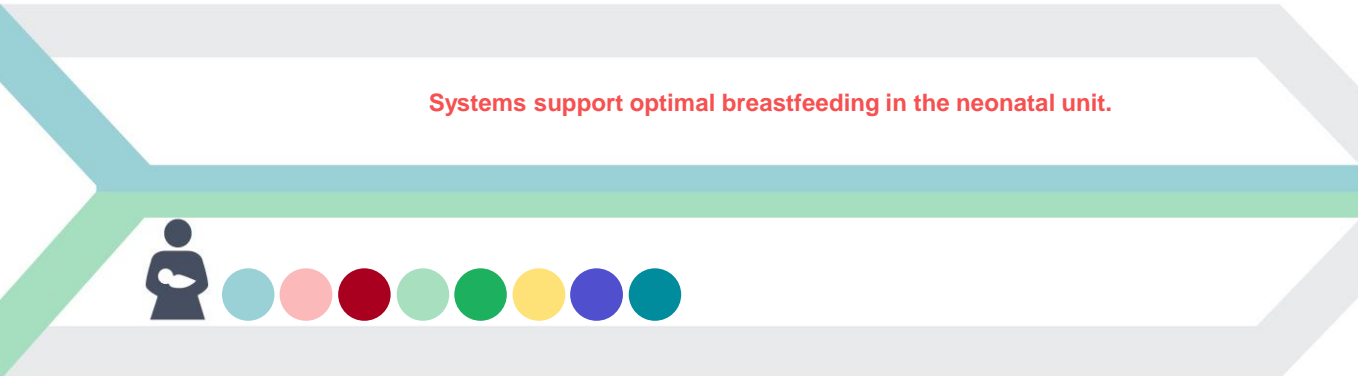
- CAN OCCUR FROM 1-2 HRS**
- Feeding not prioritized during transfer to neonatal unit; may be delayed until mother arrives



- CAN OCCUR FROM 0-48 HRS**
- Separation from infant,
 - Lactation impacted by birth complications,
 - Lack of support and supplies for lactation initiation
 - Lack of infrastructure to transport expressed milk.

Neonatal Unit

- CAN OCCUR FROM 2 HOURS OF LIFE UP TO DAYS OR EVEN WEEKS**
- Prematurity or complications prevent direct breastfeeding.
 - Inadequate SSN feeding protocols, supplies, and growth standards.
 - Fed with sub-optimal alternatives if mother is not present or lactation delayed/insufficient.



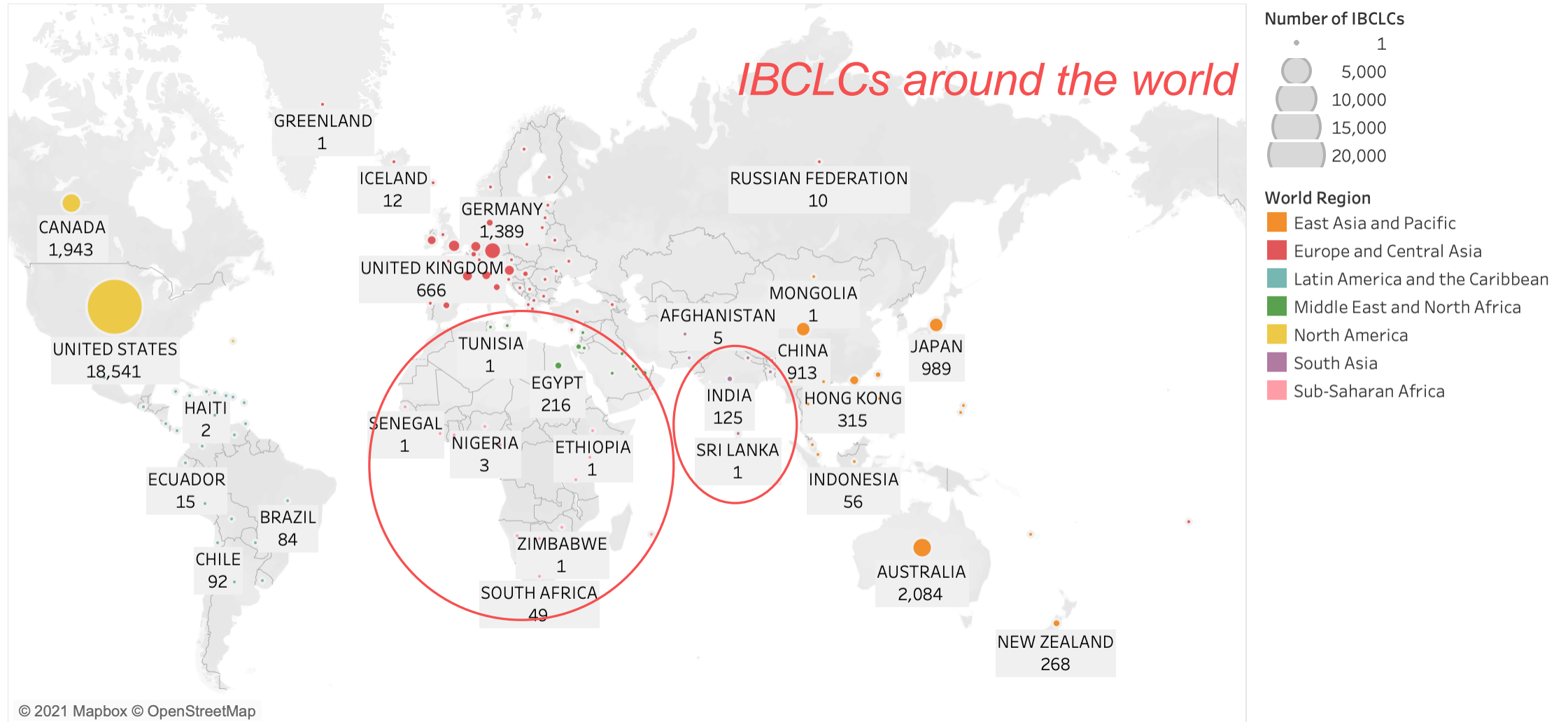
- CAN OCCUR FROM 2 HOURS OF LIFE UP TO DAYS OR EVEN WEEKS**
- Milk supply inhibited by premature or complicated birth, maternal stress, and separation
 - Limited coaching on transition to direct breastfeeding.
 - Lack of skilled, early lactation support.
 - Expression guidance may be driven by newborn volume requirements rather than optimal lactation practice.

Discharge to Community/Home

- Readmission or later complications not likely as mother and newborn leave care facility.**
- Neonatal discharge criteria may not include achievement of full feeds or breastfeeding
 - Lack of community-based skilled lactation support for 'at-risk' mothers and infants
 - Mother's milk supply may be inadequate due to lack of early lactation establishment and maintenance;
 - Readmission highly possible

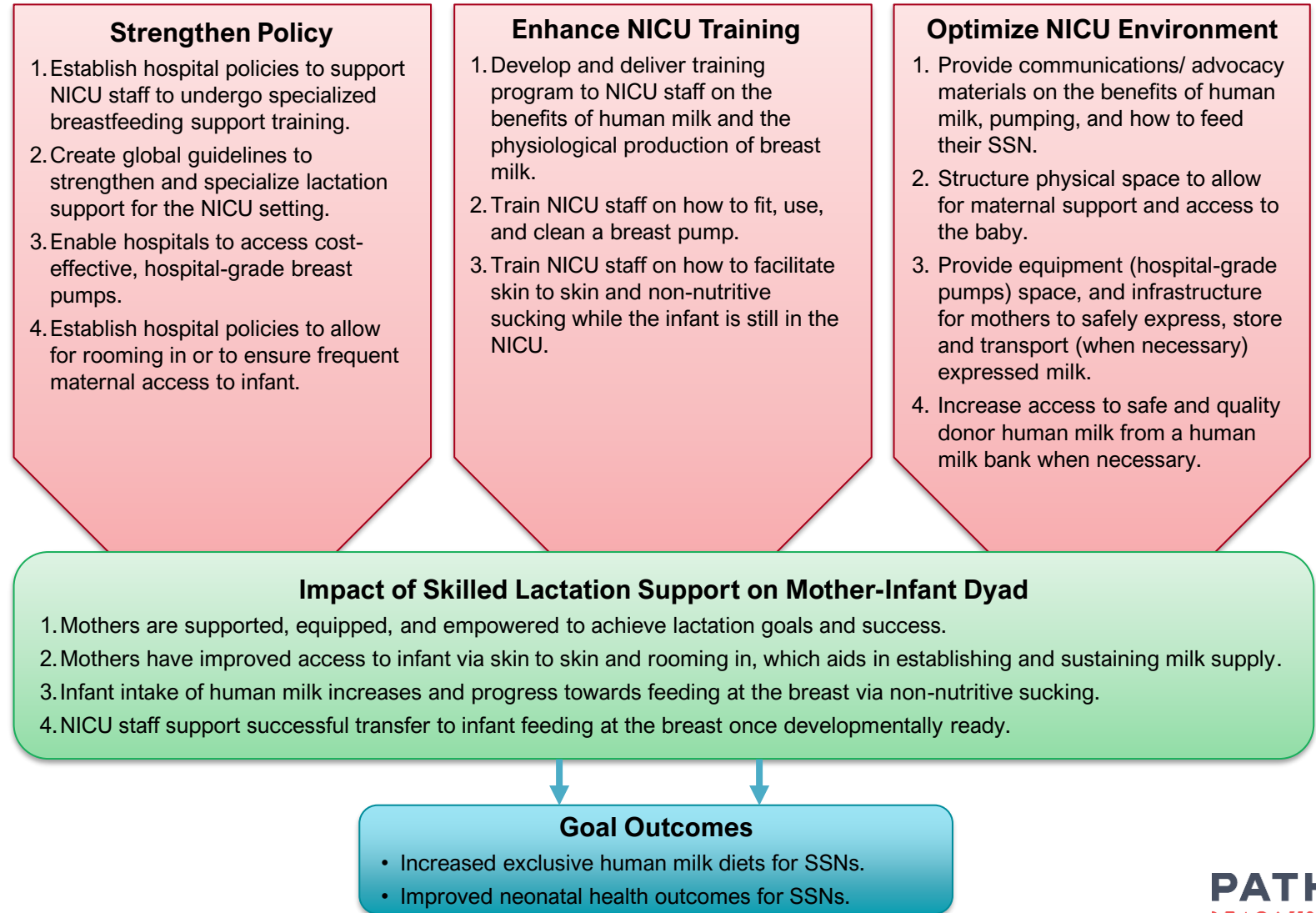


Skilled lactation support is lacking in LMIC settings



A Call to Action: Specialized lactation support must be a required component of neonatal care to ensure equitable access to lifesaving human milk

There remains a critical gap in supporting early maternal lactation to ensure feeding of mother's own milk for the SSNs.



A multi-pronged approach is needed to ensure **ALL** babies everywhere have access to human milk



Innovative systems strengthening is required to enable and support an exclusive human milk diet

Supporting needs of mother *and* baby

Human Milk Bank implementation and integration

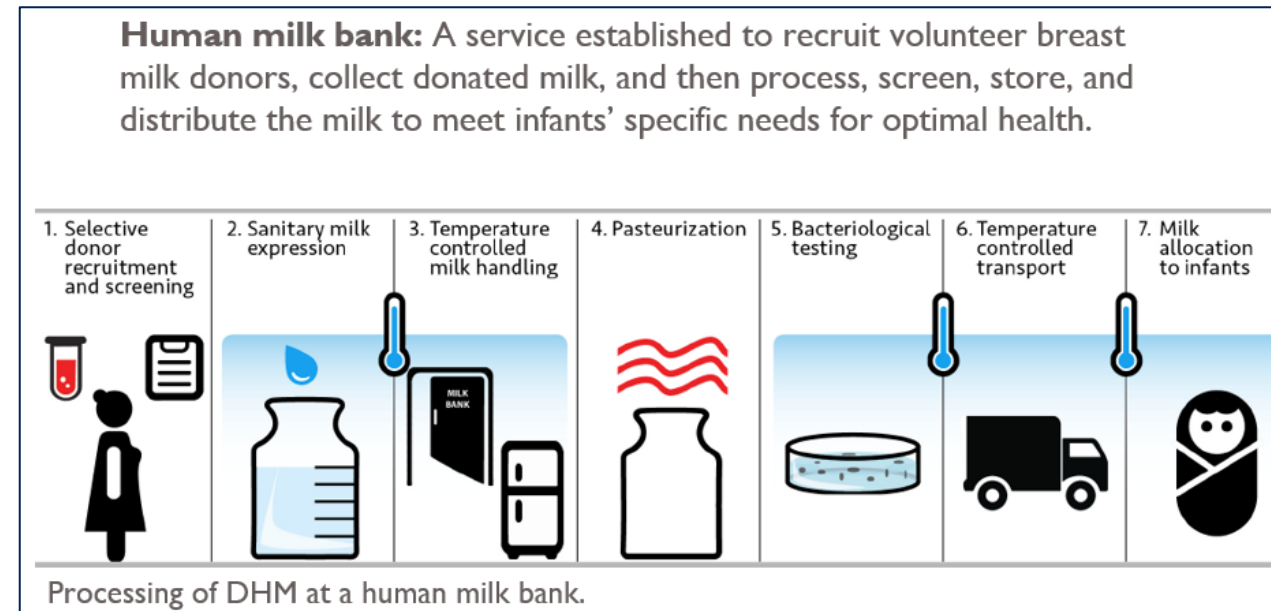


Purpose

- To enable exclusive human milk diets for small and sick newborns.
- To establish locally-appropriate, sustainable, human milk bank systems as an integrated component within nutrition and newborn care programming.
- To ensure donor human milk can be ethically sourced and distributed, in support of breastfeeding.
- To establish robust safety and quality processes to ensure a standardized approach is utilized across human milk bank systems, in compliance at local and global levels.

Approach

- Systematic and purposeful partnership to ensure country-level leadership for development and establishment of locally-developed and locally adapted systems to ensure sustainability and integration within health systems.



Process steps of human milk banking.

OPEN

Journal of Perinatology (2016) 00, 1–6

www.nature.com/jp

STATE-OF-THE-ART

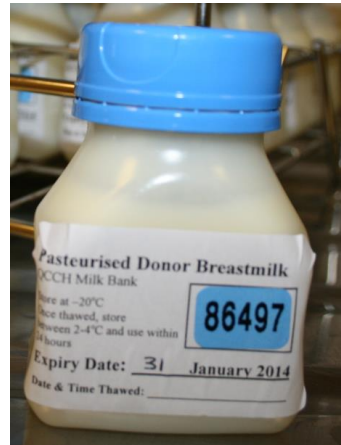
Establishing an integrated human milk banking approach to strengthen newborn care

A DeMarchis^{1,2}, K Israel-Ballard¹, Kimberly Amundson Mansen^{1,3} and C Engmann^{1,3,4,5}

The role of donor human milk: Establishing systems to support appropriate use



...as a **bridge** to exclusive direct feeding at the breast



...as a **replacement to formula**, not mother's own milk

Global state of human milk banking is inequitable, yet LMIC-appropriate implementation is feasible



~700 human milk banks worldwide is not adequate. Lack of scale-up has led to limited access to donor human milk in regions of greatest need.



In partnership with MOH, PATH led implementation of an integrated HMB model in South Africa, India, Vietnam, Kenya. LMIC-appropriate systems can be feasible.

**PHASE I:
ESTABLISHING OWNERSHIP**

- DEVELOP LEARNING EXCHANGES
- CONDUCT FORMATIVE ASSESSMENT
- INSTILL LOCAL OWNERSHIP FOR MOTHER-BABY FRIENDLY INITIATIVE PLUS (MBFI+)
- DEVELOP COUNTRY-SPECIFIC STRATEGY AND GUIDANCE

**PHASE II:
OPERATIONALIZING**

- CONDUCT BREASTFEEDING PROMOTION
- ESTABLISH HUMAN MILK BANK QUALITY CONTROL SYSTEMS
- IMPLEMENT MBFI+ HUMAN MILK BANK PILOT PROGRAM AT LOCAL FACILITIES

**PHASE III:
RESEARCH AND EVALUATION**

- CONDUCT RIGOROUS EVALUATION
- DISSEMINATE FINDINGS TO ENSURE SUSTAINABLE EXPANSION
- REVISE SYSTEM BASED ON PILOT RESULTS
- FINALIZE SCALE-UP PLAN

Phased approach for establishing a HMB in a new region.

Lack of global guidelines on safety, ethics and clinical use has been a major barrier to scale-up. WHO guidelines development is planned for 2022-23.

Kenya Phase I: Country-led, local context ownership is critical for feasibility and sustainability

Kenyan hospital opens human milk bank – a rarity in sub-Saharan Africa

April 16, 2019 3:01pm BST

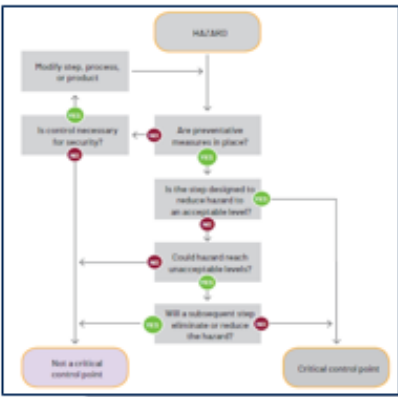
THE CONVERSATION
Academic rigour, journalistic flair

Ownership



- 44% of newborns separated from mothers >1 hour to days
- Only 14% fed on MOM
- 36% not fed on anything.
- 23% fed on formula or cow's milk

Engage key stakeholders, formative assessments.



Gather global and local evidence around best practices; SADOH-KMOH learning exchange.

Technical training in Glasgow.

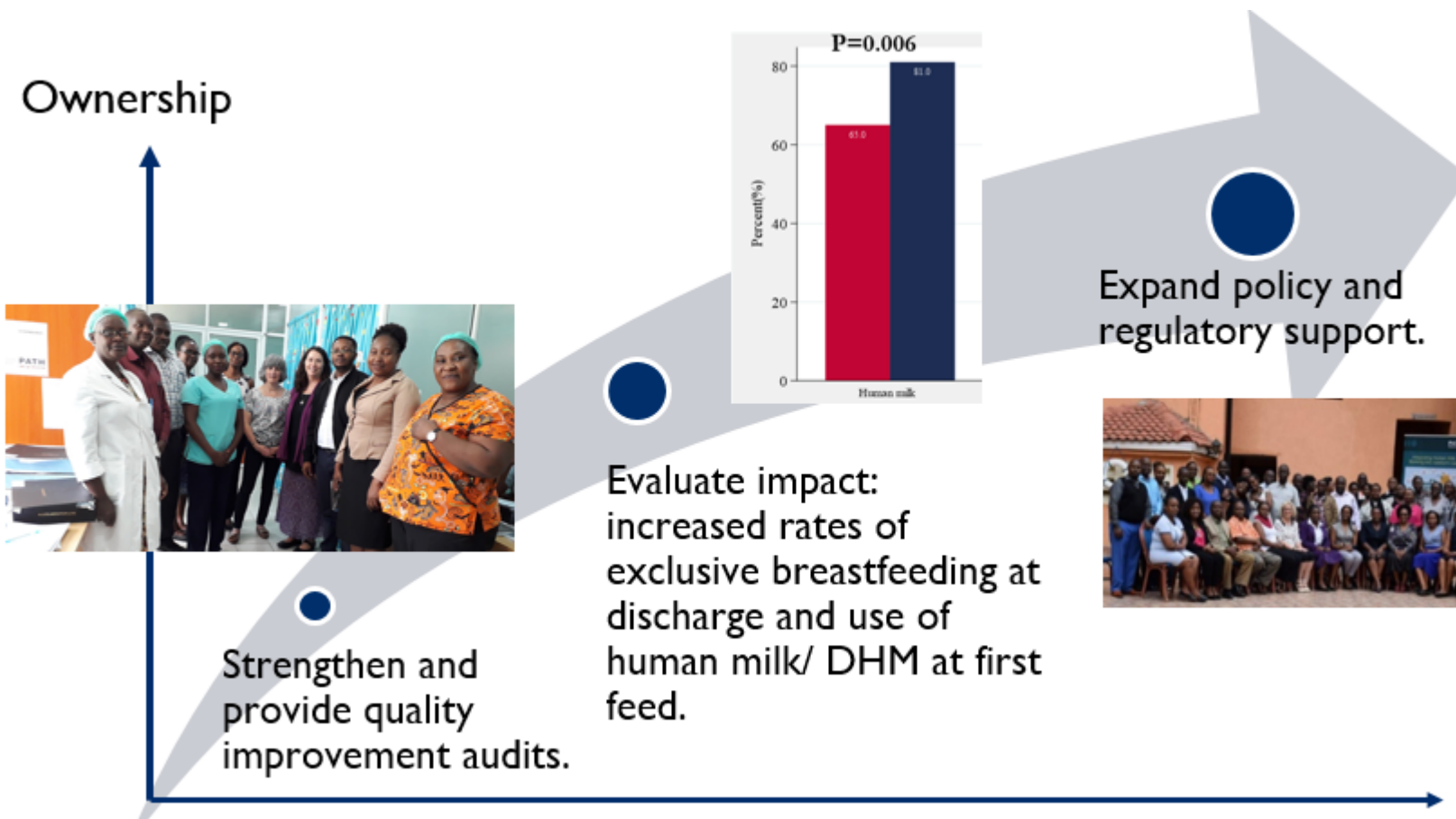
Adapt SOPs and guidelines to the context of Kenya.



Kenya Phase II: Establishing purposeful integration is critical for ensuring safe and appropriate use of donor human milk

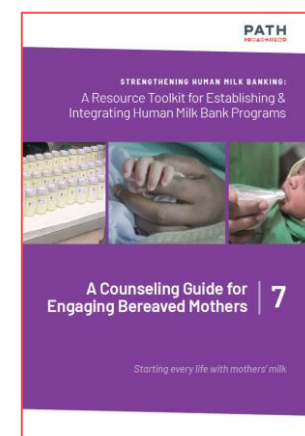
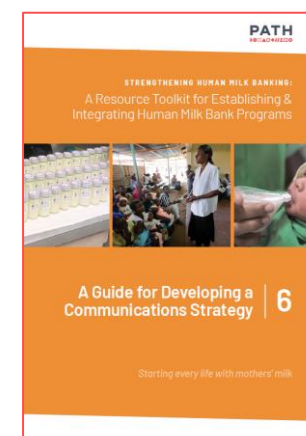
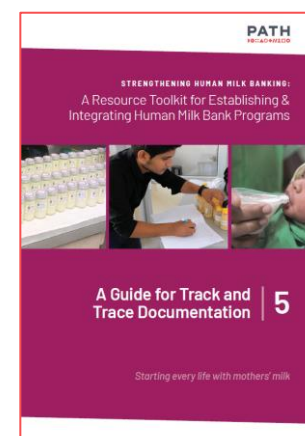
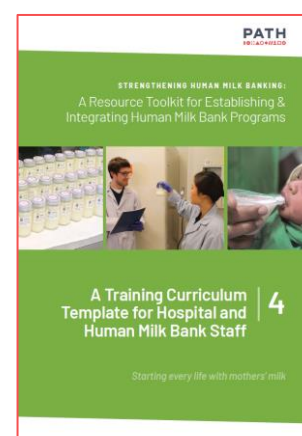
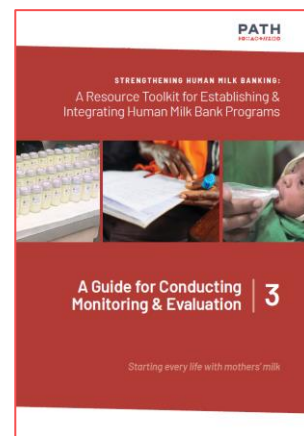
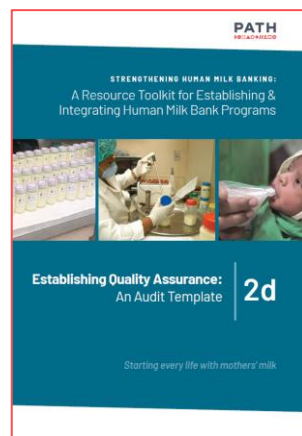
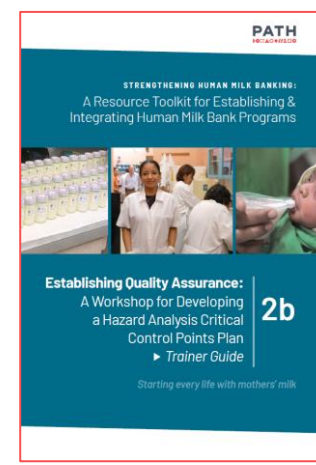
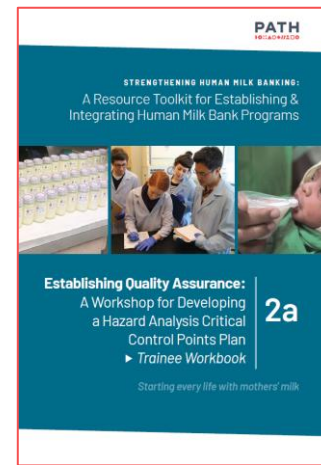
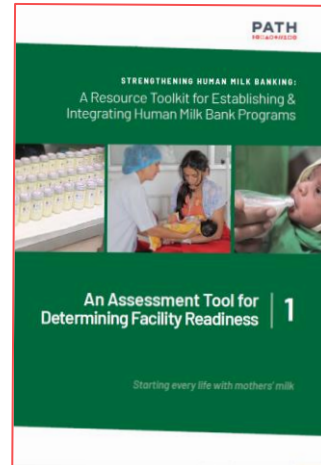
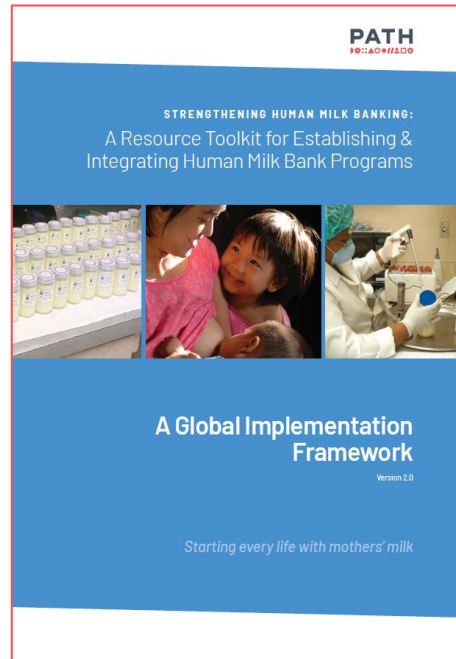


Kenya Phase III: Strengthening, stabilizing and evaluating demonstrated feasibility and increased breastfeeding, evaluate, and plan for scale



- Operational feasibility was demonstrated, withstanding COVID impacts
- Vision of East Africa Center of Excellence as cost-effective platform for sharing resources and learnings

Strengthening Human Milk Banking: A Resource Toolkit for Establishing and Integrating Human Milk Banks



Filling the gap: A newborn nutrition package of care as an innovative model and interlinked approach

A package of care, with interlinked multi-faceted components, is required to advance newborn nutrition, leading to a comprehensive model for feeding of the SSN.



Assessing readiness



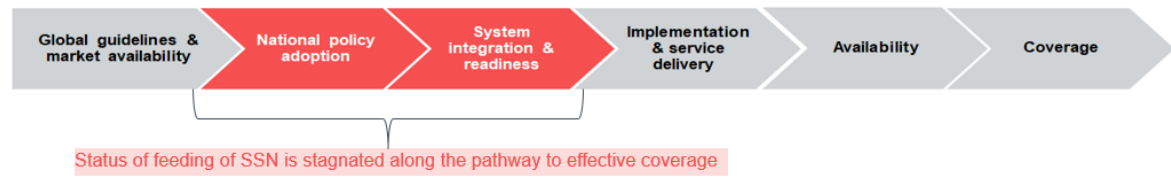
Purpose

- To document current feeding practices and existing systems for feeding and lactation support to identify gap areas that need to be addressed prior to implementation.
- To guide decision-makers at hospital, national, regional, and local levels to identify and plan for requirements needed to create a comprehensive, safe, and sustainable integrated program for feeding of the small and sick newborn into nutrition and newborn programming.
- To aid the planning and development of safe and sustainable human milk banking systems, including general planning for equipment, budgeting, and use-cases for donor human milk.

Approach

- Conduct formative (acceptability, feasibility) research and facility assessments to ensure appropriateness of implementation for the local context and systems-level readiness to guide infrastructure changes, procurement and financial decision-making.
- Conduct data review and needs assessment to understand and quantify the problem, target population and current barriers.
- Review and align newborn/nutrition policies and guidelines to ensure unified approach across clinical care.
- Utilize a human-centered design approach with mothers, clinical staff and architects/design teams to 'reimagine the NICU' as an advocacy tool for establishing family-centered models for prioritizing optimal feeding and lactation support for SSN.

Readiness identified as key barrier in achieving effective coverage in feeding of SSNs



PATH's [Asset Tracker](#) project mapped the status of scaling up feeding of small and sick newborn.

See this link for in-depth examples:

[PATH's Strengthening Human Milk Banking: A Resource Toolkit for Establishing and Integrating Human Milk Bank Programs--An Assessment Tool for Determining Facility Readiness.](#)

Newborn nutrition package of care:

Curriculum development and accreditation

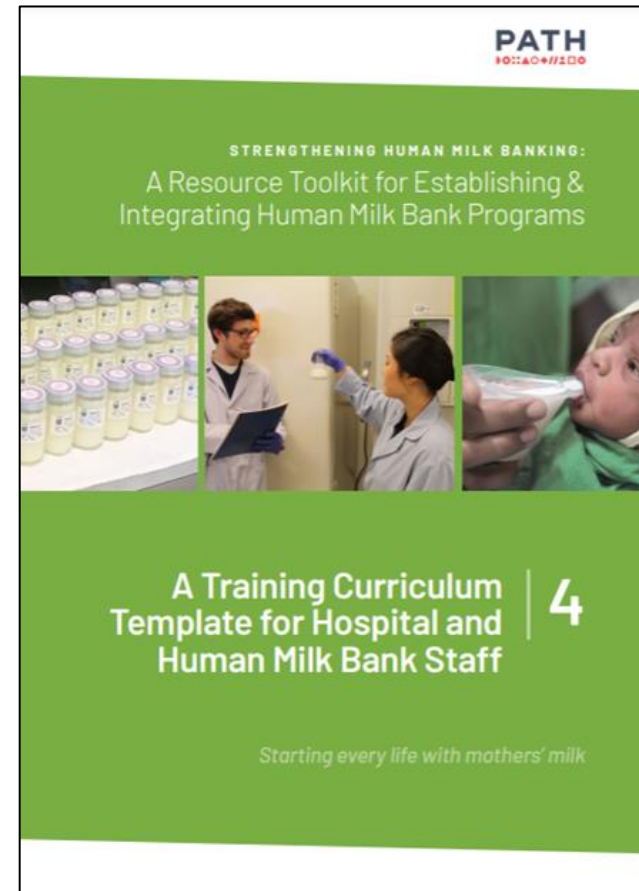


Purpose

- To address knowledge gap in NICU clinical staff through standardized curriculum,
- To fill gap in available models for scaled implementation focusing on feeding of SSN (currently does not exist).
- To create an accreditation system to incentivize programs with standardized, minimum requirements, adaptable to local context/systems.

Approach

- Review of current neonatal curriculum packages – adding lactation and feeding components.
- Develop distinct modules for operationalizing guidelines at facility level.
- Build on existing training curriculum templates to create comprehensive curriculum for improved newborn nutrition combining skilled lactation, optimal newborn feeding, and use of donor human milk.



More examples are available at the following links:

[AAP Essential Care for the Small Baby](#)

[WHO's BHI for Small, Sick, and Preterm Newborns](#)

Curriculum can be developed based on existing, related services, including this [human milk banking training](#).

Newborn nutrition package of care:

Training and capacity building



Purpose

- To address knowledge gap in NICU clinical staff through pre-service and in-service training.

Approach

- Align existing training opportunities to include hands-on lactation support training.
- Implement with ongoing BFHI training opportunities to include skilled support for the mother of the SSN.
- Employ alternative models for trained workforce/support network where staff is limited: i.e. peer-support for lactation in the NICU and maternity/labor wards.
- Perform implementation research to determine most effective counseling approaches for early lactation initiation and maintenance for mothers of SSN.



Training maternity ward and NICU staff ensures skilled lactation support is available to address early feeding challenges

More examples are available at the following links:

[Global Health Media Videos on Caring for the Small Baby](#)

[PROVIDE Training Materials for supporting mothers in the NICU](#)

[PATH's Ensuring the Special Lactation Needs of Small and Sick Newborns: A Call to Action](#)

Quality Improvement



Purpose

- To ensure standardized, safe and quality systems are utilized at facility, regional and national levels.
- To create locally-specific tools and approaches for routine self-evaluation of systems for identifying gaps and enabling real-time changes.

Approach

- Establish mentorship systems for on-site training and support for neonatal skilled lactation support, including peer support groups.
- Establish Standard Operating Procedures with focus on real-time assessment of neonatal feeds and lactation progress.
- Develop internal and external audit systems to guide corrective and preventive actions to optimize quality clinical care for feeding and lactation practices.
- Strengthen routine indicators to include neonatal feeding and lactation specific to small and sick newborns.

In-depth examples are available at the following links:

[PATH's Strengthening Human Milk Banking: A Resource Toolkit for Establishing and Integrating Human Milk Bank Programs—Establishing Quality Assurance: An Audit Template](#)

Staff and Infrastructure	Aligns (Y/N/S) (Yes/No/Not applicable)	Deviation (C/NC) (Critical/Non-critical)	Action Items	Verification	
Staff					
<ul style="list-style-type: none"> ▶ The HMB has a dedicated leader or champion who can promote the HMB and breastfeeding while also providing clinical and operational expertise . ▶ The HMB has an adequate amount of dedicated staff time to operate effectively—including maintenance of space and equipment. ▶ The HMB team consists of representatives from a range of disciplines including microbiology, lactation and nutrition support, medicine/neonatology/pediatrics, infection control, management/ administration, and community relations. 					
Facility					
<ul style="list-style-type: none"> ▶ The facility provides sufficient space for equipment and storage of materials to ensure milk can be processed in a sanitary environment. ▶ The facility has clear demarcation of zones and access control to ensure movement of storage items and non-designated personnel do not impact the hygiene levels within the milk-handling areas. ▶ The facility is free from pests, and there are effective preventative measures taken to prevent contamination by pests. ▶ The facility floors, walls, and ceilings are constructed to withstand external pollution and facilitate adequate and easy cleaning. ▶ The water supply is in compliance with local ordinances for potable water. 					

STANDARD OPERATING PROCEDURE

SOP No: PMHL-HMB-03
SOP Title: HMB: Milk Expression

1. PURPOSE

1.1.1 The purpose of this Standard Operating Procedure (SOP) is to ensure adherence to MIYCN guidelines on breastmilk expression. This promotes efficient, safe, and hygienic expression of donor expressed breastmilk. Therefore, the SOP is useful to health workers giving health education in all areas of service.

2. SCOPE

2.1.1 Guide to the health worker in the method and process of breast milk expression including pre-expression, expression, and post-expression procedures. This SOP is to be used to guide the mothers who have been recruited, screened, and consented to donate breastmilk. Though this SOP is specific to donor mothers, expression and hygiene principles are applicable to all mothers expressing breast milk, regardless of intent to donate.

2.1.2 Breastmilk expression intended for donation will take place in the HMB expression room at Pumwani Maternity Hospital. Under special circumstances breastmilk expression may happen at the bedside with the approval of the HMB in charge. This should be done under the supervision of a trained health worker

Audit tools and Standard Operating Procedures provide critical guidance and feedback.

Newborn nutrition package of care:

Cross-learning



Purpose

- Facilitate learning across settings, especially where new services are not yet available in-country for learning

Approach

- Facilitate and drive leading initiatives and organizations in early nutrition and newborn efforts to collectively join forces.
- Develop regional centers of excellence to serve as primary hubs for hosting learning exchanges.
- Facilitate virtual learning opportunities, such as through infrastructure virtual tours of human milk banks.
- Build upon newly formed (currently informal) Global Alliance for Milk Banking Association (GAMBA) for cross-setting shared learnings (facilitated by COVID-19 cross-setting learnings).
- Host virtual webinars for sharing best practices for lactation support for mothers of SSN and feeding practices for SSN.



[Virtual walk through of the first human milk bank in Vietnam](#) as learning platform

More information is available at the following link:

[Strengthening Newborn Nutrition Through Establishment of the First Human Milk Bank in Vietnam](#)

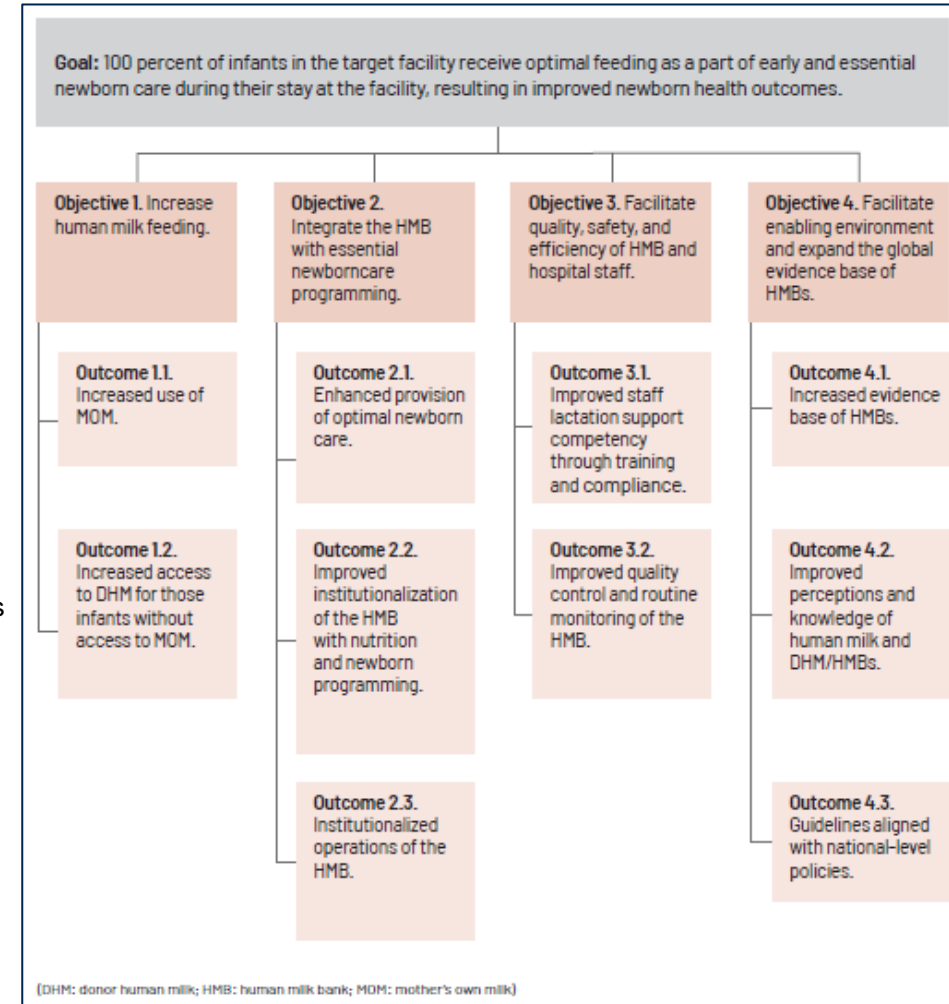
Evaluation

Purpose

- To generate evidence on the operations and impact of an integrated newborn nutrition program
- To establish a gauge for optimizing performance and achieving results.

Approach

- Costing analysis of the implementation and running costs of enhanced feeding of the small and sick newborns, including human milk banking programs
- Evaluate the models appropriate for implementation in LMIC settings
- Pre-post implementation evaluation, including newborn outcomes at 3 varying country sites for improved newborn feeding and maternal lactation support



Additional templates and examples available at this link:

[Strengthening Human Milk Banking: A Resource Toolkit for Establishing and Integrating Human Milk Bank Programs- -A Guide for Conducting Monitoring and Evaluation](#)

Monitoring and evaluation framework template to document impact.

Innovation

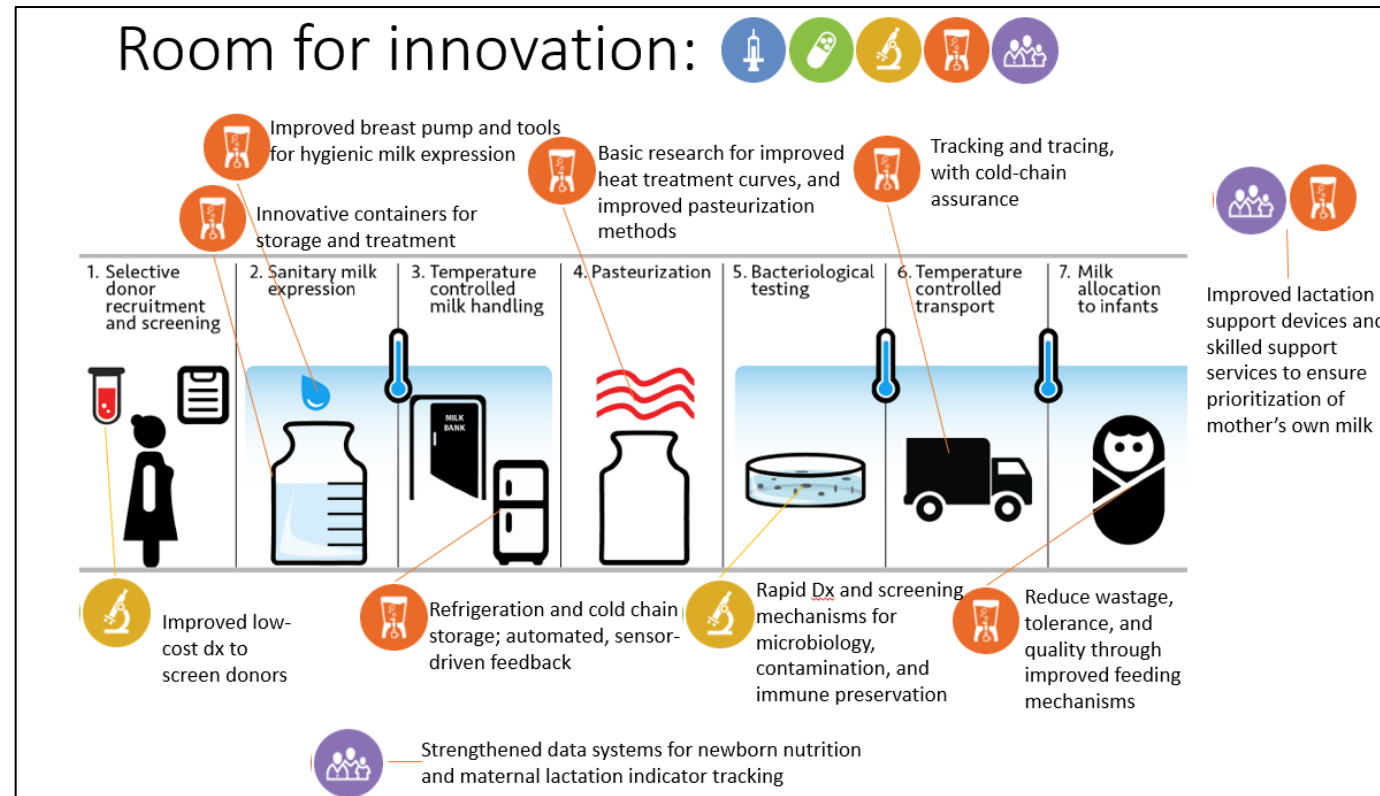


Purpose

- To co-design country-led innovative solutions to improve quality, efficiency, and access of human milk feeds to drive feasible uptake in LMIC settings.

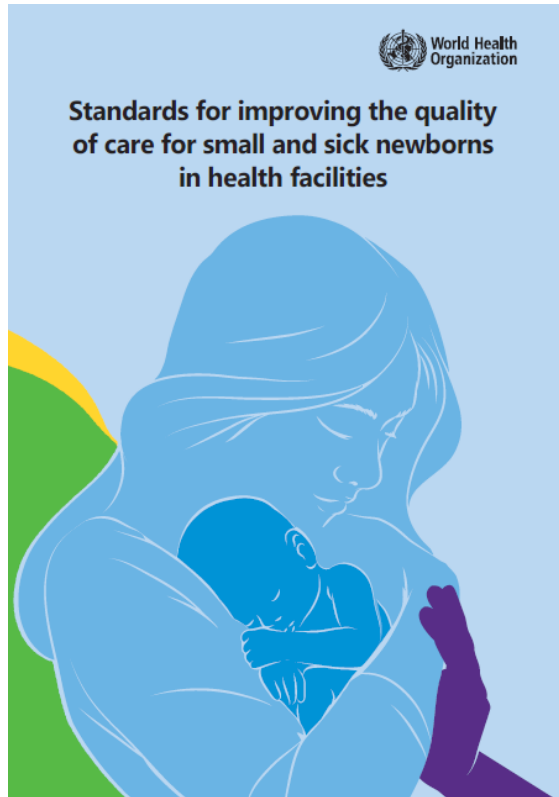
Approach

- Develop a newborn nutrition innovation 'bundle' for improving the feeding experience and target identified gaps for supporting the mother-infant dyad.
- Needed innovations include:
 - Storage: cold chain
 - Feeding: cup, tube, spoon
 - Fortification: human milk fortifiers, human milk analyzers
 - Improved alternative feeds: donor human milk, parenteral nutrition
 - Data/digital: landscaping, decision-making
 - Market dynamics: mapping access, cost, availability



Examples of needed innovations to optimize human milk banking for LMIC settings.

Feeding of the SSN must be a key component in operational models for new standards of care



Specific needs of this population must be addressed with **targeted interventions**.

Country-led innovation is needed to inform and guide **context-appropriate** models.

For more information, contact:
Kiersten Israel-Ballard
kisrael-ballard@path.org





Maternal Mental Health

Shanon McNab, MPH, MIA

MOMENTUM Country and Global Leadership
Consultant



USAID
FROM THE AMERICAN PEOPLE





Landscape Analysis

The Silent Burden:
A Landscape Analysis
of Common Perinatal
Mental Disorders in
Low- and Middle-
Income Countries

Methodology



Tier 1: Scoping Review

A scoping review was conducted, to allow for an iterative and inclusive search given the complexity of understanding maternal mental health.³ Over 400 articles were reviewed. Data extraction tool was established, and categories relevant to the MMH were selected: **adolescent, child, COVID, family planning, gender/GBV, HIC, humanitarian, measurement, nutrition, newborn, policy, and perinatal health**



Tier 2: Qualitative Data Collection

60 Key Informant Interviews (KIIs) and 2 FGDs were conducted with experts in the fields of mental health, maternal, newborn and child health, adolescent health, humanitarian/conflict settings, faith based service delivery, nutrition, gender-based violence, stillbirth and perinatal loss, and advocacy.



Tier 3: Policy Analysis

Policy review was conducted for all 19 countries (16 MCGL countries + 3 additional based on policy examples)

Maternal Mental Health

Common perinatal mental disorders (CPMDs) typically include **depression, anxiety, and somatic disorders.**

Women with common perinatal mental disorders (CPMDs) are:

- Less likely to attend ANC/PNC
- More likely to experience obstetric complications
- More likely to have a preterm birth
- More likely to practice self-harming behaviors or commit suicide
- More likely to engage in unhealthy lifestyle behaviors (substance use disorders, smoking etc.)
- More likely to be stigmatized and ostracized by their community when they need support most

Prevalence of common perinatal mental disorders

In low- and middle-income countries: around **15% antenatally** and **19% postnatally**
In high-income countries: around **10% antenatally** and **13% postnatally**

Up to 20% of mothers with perinatal mental health conditions experience suicidal thoughts or undertake acts of self-harm

Pregnant women assessed after the onset of the COVID-19 pandemic reported **significantly higher rates** of depressive (up to 58%) and anxiety symptoms (up to 72%) than women assessed before the pandemic



Risk Factors:

The risk factors that lead to poor maternal mental health in pregnant women and mothers.

Socio-Economic and Political Context:

- Race
- Ethnic and religious persecution and inequity
- Humanitarian/conflict setting
- Harmful gender norms and practices
- Lack of or harmful policies
- Poor accountability systems
- Shame and stigma
- Limited autonomy and agency
- Imbalanced power dynamics

Structural Determinants:

- Low education/dropout
- Unmarried mothers
- Pregnancy in adolescence
- Income inequality including household poverty
- Food insecurity
- Early marriage or forced marriage
- Lack of economic opportunity
- Reliance on others and partners for economic support
- Lack of access to resources (food, transportation, medicine etc.)
- Lack of dietary diversity and malnutrition
- Disrespect by providers and organizational culture at health facility

Intermediary Determinants:

- Obstetric trauma (obstetric complications, miscarriage, stillbirth)
- Small and sick newborn
- Unplanned, mistimed and unwanted pregnancy
- History of unsafe abortions

Social Cohesion and Social Capital:

- Low social support/isolation
- Spousal discord/imbalanced power dynamics
- Gender-based violence
- Intimate partner violence

Newborn and child health

Children whose mothers have experienced CPMDs are more likely to have the following outcomes:

- Low birth weight
- Shorter at birth
- Less likely to be breastfed
- Stunting and underweight
- Wasting
- Suffer from greater number of childhood illnesses
- Lower weight for length z-scores
- Poor cognitive development

*NOTE: Call for more rigorous research has been made to better understand the causal pathways between CPMD and child outcomes.



Impact of CPMDs on women's and children's outcomes

The implications of perinatal mental health on women's outcomes and children's outcomes.

Poor Mental Health



Adolescents:

- High rates of suicide
- Increased risk of mental illness during puberty



Pregnancy:

- Reduced ANC / PNC attendance
- Inadequate nutritional intake
- Increased risk of preterm birth
- Increased risk of pre-eclampsia



Children:

- Increased risk of stunting and underweight
- Increased risk of poor cognitive development
- Increased episodes of diarrhea and childhood illnesses
- Lower immunization rates



Postpartum:

- Increased risk of difficulty breastfeeding
- Poorer nurturing care practices



Infancy:

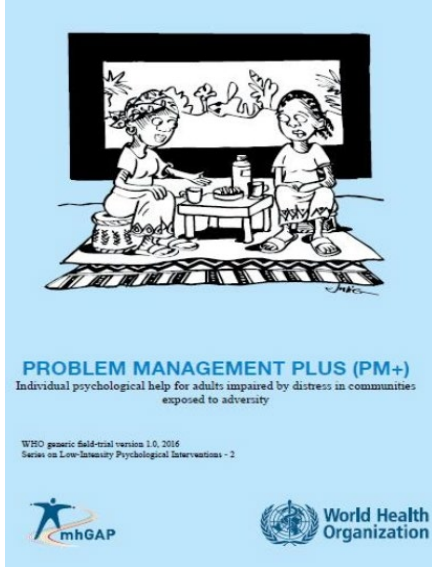
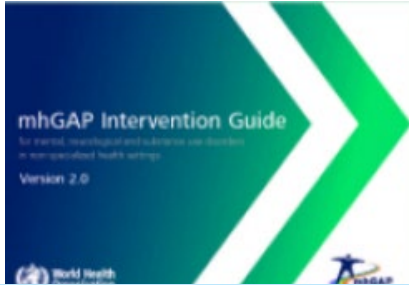
- Increased risk of mortality
- Increased risk of LBW
- Lower rates of exclusive breastfeeding
- Disruptions in maternal-infant bonding and attachment

Impacts of COVID

- Mother/baby separation
- Limited or no companionship
- Reduced care seeking
- Women reported stopping breastfeeding earlier than they had planned
- Increases feelings of sadness, anger, fear and distress in parents
- Increased depression and anxiety among mothers/carers
- Toll on health care workers
- *Short- and long-term effects on children exposed to the pandemic include “developmental delays, stunted acquisition of executive functions, changes in mental health, changes in metabolic states, and obesity”*



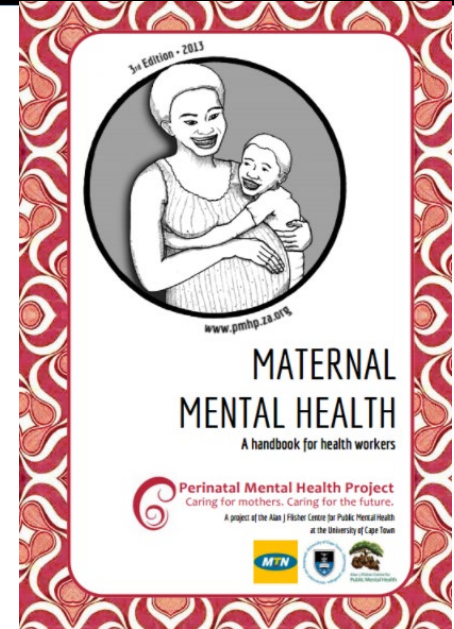
What is being done?



THINKING HEALTHY
A manual for psychosocial management of perinatal depression



Perinatal
Mental
Health
Project



Intervention Strategies for SSN

- MMH interventions should be integrated into existing MNH, SSN, nutrition, child health and early childhood development platforms
- Specific intervention examples:
 - Newborn care educational programs
 - Thinking Healthy (cognitive behavioral therapy)
 - Women's support groups
 - Kangaroo Mother Care, including nurturing/family centered care
 - Promotion of RMC for mothers and newborns
 - Improved intrapartum quality of care

Where to begin integrating MMH services?


- **Community level:** Community health workers, peers, grandmothers, or new mental health cadres are able to meet women where they are, as people women trust. This also helps to engage women who are not seeking care at the health facilities.¹¹¹
- **Children and family approaches:** Key informants described how many approaches use children as “trojan horses” for entry. This approach can remove the pressure, guilt, and stigma from mothers.
- **Facility level ANC and PNC:** Having health care workers who are trained in CPMDs was a core component of most interventions that engaged in health system strengthening.³⁶
- **Provider pre-service education:** A comprehensive response to CPMDs will require training incoming generations of health workers to diagnose and treat CPMDs.⁹⁵
- **Traditional healers and faith-based organizations:** Several key informants noted the powerful link between mental health and spirituality/faith and working with local traditional healers and faith leaders if there is to be any true change in women’s perinatal mental health.

Where are the gaps in knowledge?

1. Expand the evidence to include findings from different contexts (including vulnerable populations such as small and sick newborns);
2. Better understanding of the causal pathways between CPMDs and newborn and child outcomes;
3. Identification of integrated approaches that improve both women's and children's health;
4. Expand the evidence base beyond postnatal depression;
5. Center research and practice on the expressed desires of women and girls.

What to consider as we move forward

1. The cure should not be worse than the problem;
2. Measurement/screening without access to good quality services has ethical implications;
3. This must not be a siloed approach;
4. Human resources at health center level are already stretched and addressing CPMDs does require additional training;
5. Respectful bereavement care should be a part of the conversation as well;
6. The language used to describe mental ill health, suffering, depression is deeply contextual and effort must be made to understand how women and carers in communities understand and articulate this pain;
7. Mental health conditions are not a binary - and should not be treated as such.



Addressing maternal mental health is not a luxury:
the lives of newborns and women are at stake.

THANK YOU

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Infant- and family-centered developmental care

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WHO Collaborating Center for Family and Child Health



To thrive, not just survive



THEMATIC BRIEF

Nurturing care for every newborn



What is nurturing care?

What happens during early childhood (pregnancy to age 8) lays the foundation for a lifetime. We have made great strides in improving child survival, but we also need to create the conditions to help children thrive as they grow and develop. This requires providing children with nurturing care, especially in the earliest years (pregnancy to age 5).

Nurturing care comprises five interrelated and indivisible components: good health, adequate nutrition, safety and security, responsive caregiving and opportunities for early learning. Nurturing care protects children from the worst effects of adversity and produces lifelong and intergenerational benefits for health, productivity and social cohesion.

Nurturing care happens when we maximize every interaction with a child. Every moment, small or large, structured or unstructured, is an opportunity to ensure children are healthy, receive nutritious food, are safe and learning about themselves, others and their world. What we do matters, but how we do it matters more.

When cared for in a nurturing environment, babies not only survive, they are also helped to thrive. However, too many infants are deprived of their right to receive nurturing care, including when they require inpatient hospital care.

Every year an estimated 140 million babies are born, and among these about 30 million need inpatient hospital care with 8–10 million requiring neonatal intensive care (1). Since 1990, global newborn mortality has more than halved, but in 2019 an estimated 2.4 million newborns still died in the first month after birth (2). Babies who are born prematurely, have low birth weight or experience birth complications are at the greatest risk, not only of death but also of lifelong disability. Progress in reducing newborn mortality will be compromised unless investments are also made in nurturing care.

Birth is the critical transition for every newborn from being nurtured in the womb to being cared for in the outside world. Essential newborn care - with immediate skin-to-skin contact, warmth, hygiene, early initiation of exclusive breastfeeding and zero separation of caregiver and newborn - is designed to make this transition as smooth as possible and provide the infant with a nurturing environment in the first minutes and hours after birth, needed for the brain and body to grow and develop (3).

Photo credit: © Partnership for Maternal, Newborn & Child Health/Isabel Pinto



<https://www.who.int/publications/i/item/9789241515887>
<https://nurturing-care.org/nurturing-care-for-every-newborn>

Five components of nurturing care for newborns

GOOD
HEALTH



Preventing and managing illness

ADEQUATE
NUTRITION



Optimizing exclusive breastfeeding or breast-milk feeding

SAFETY AND
SECURITY



Zero separation, respectful care – privacy, quiet, warmth, cleanliness; minimizing stress

OPPORTUNITIES FOR
EARLY LEARNING



Stimulating development through appropriate sensory experience – tactile, vocal, visual, olfactory/gustatory, proprioceptive, vestibular

RESPONSIVE
CAREGIVING

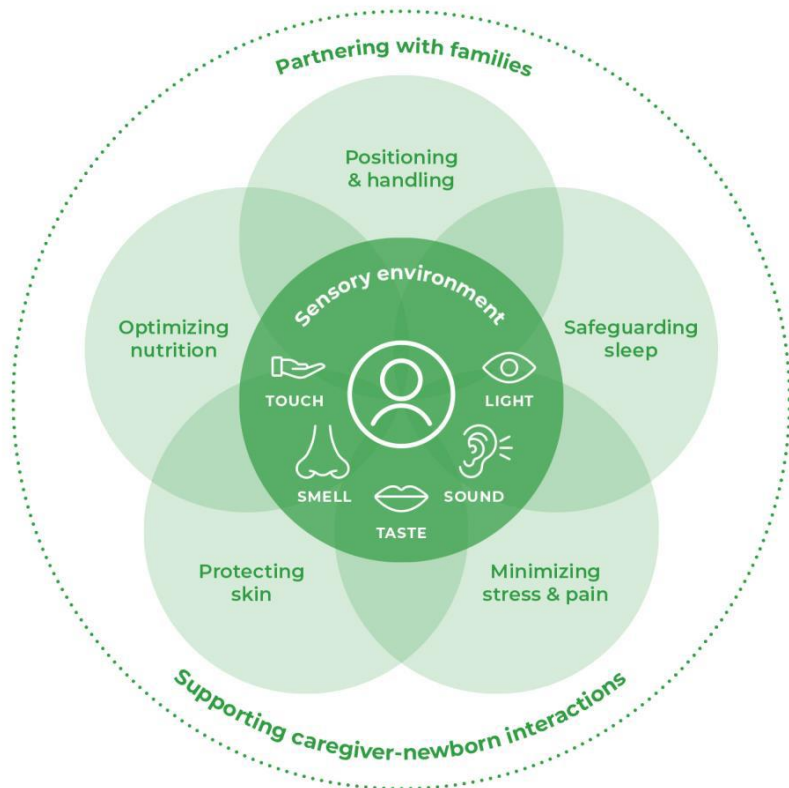


Awareness of newborn's signals and needs and reacting to them appropriately

Components of infant- and family-centered developmental care (IFCDC)

physical – developmental – behavioral/emotional

Figure 1. Components of infant- and family-centred developmental care (9)



<https://www.who.int/publications/i/item/9789241515887>

Nursing/health care workers

- Organization of services
- Collaboration and information sharing
- Dignity and respect

Infant

- Developmental timeline
- Needs for medical support

Family/caregivers

- Participation/engagement in care and decision-making
- Needs for individualized support
- Transition to care at home

Optimizing nutrition



- Providing human milk
- Cue-based infant-guided feeding
- Parental involvement in feedings
- Promoting skin-to-skin contact to improve breastfeeding initiation and support milk production

Safeguarding sleep



- Clustering care and assessment to coincide with sleep/wake cycles
- Minimizing noise and light
- Promoting skin-to-skin contact

Graven SN, Browne JV. Sleep and brain development: the critical role of sleep in fetal and early neonatal brain development: a systematic review. *Joanna Briggs Inst Libr Syst Rev* 2009; 7:22

Minimizing stress and pain



- Minimizing noise and light
- Recognizing signs of stress and pausing intervention when possible
- Using positioning and boundaries to provide containment
- Promoting self-regulation and skin-to-skin contact

Bergman N. The neuroscience of birth – and the case for zero separation. *Curationis* 2014; 37:1
Gudsruk K, Champagne F. Epigenetic effects of early developmental experiences. *Clin Perinatol* 2011; 38:703
Benoit B, et al. Staff nurse utilization of kangaroo care...for procedural pain *Adv Neonatal Care* 2016; 16:229

Positioning and interacting



- Maintaining head in midline and limbs and trunk flexed, tucked
- Handling with slow, gentle movements
- Providing support during transfers
- Promoting skin-to-skin contact

Picheansathian W, Woragidpoonpol P, Baosoung C. Positioning of preterm infants for optimal physiologic development: a systematic review. *Joanna Briggs Inst Libr Syst Rev* 2009; 7:224.

Hunter J. Therapeutic positioning: neuromotor, physiologic and sleep implications. In *Developmental Care of Newborns and Infants*. Glenview, IL: National Association of Neonatal Nurses 2010, p. 285

Protecting skin



- Maintaining humidity during skin maturation
- Monitoring susceptible skin/mucosal areas for breakdown
- Promoting skin-to-skin contact

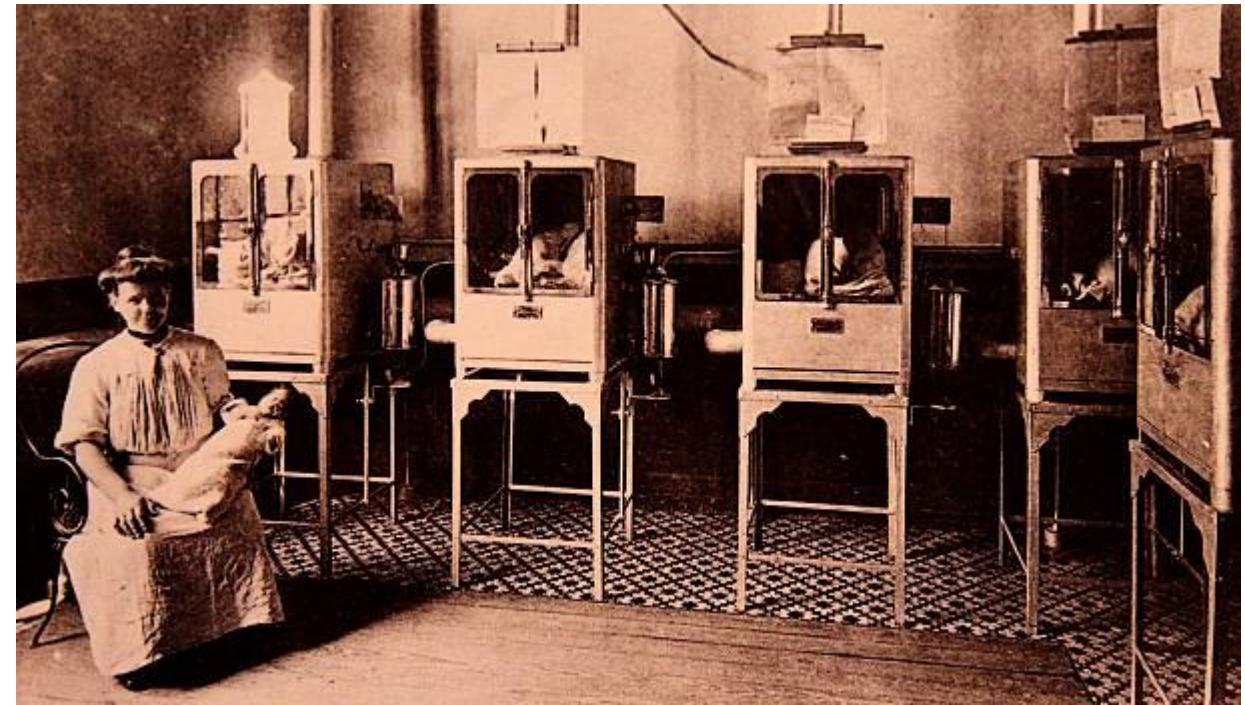
Hoath S. The skin as a neurodevelopmental interface. NeoReviews 2001; 2:e292

A concept from a past time



Chicago World's Fair - 1933

Infant incubators – early 1900s



Skin-to-skin care as the basis for IFCDC



Advantages of skin-to-skin care for infant development

Component	Continuous skin-to-skin care	Conventional incubator care
Preventing hypothermia and infection	Single infant (or multiples) with consistent caregiver and stable temperature Colonization with family bacteria	Single infant per incubator/warmer ? Adequate cleaning, temperature control ? Multiple caregivers/hand hygiene ?
Promoting breast(milk)feeding	Stimulation of milk production Responsiveness to feeding cues	Scheduled nasogastric feeding by pump Scheduled cup feeding by nurse/parent
Safety and security	Zero separation	Separation of infant and caregiver
<ul style="list-style-type: none"> • Safeguarding sleep • Minimizing stress/pain • Protecting skin 	Concordant caregiver/infant cycles Quiet surroundings with cycled light Breastfeeding and skin-to-skin contact during procedures Human touch	Staff schedules rather than infant cycles Exposure to noise and light Physical and pharmacologic interventions Chemical, mechanical stimuli/irritants
Opportunities for early learning	Positioning + vestibular stimulation Continuous modulated interaction	Supportive positioning in inanimate environment Brief interaction with staff
Responsive caregiving	Pleasant tactile stimulation, graded vocal and visual interaction, reciprocity	Gentle handling, supportive positioning ? Reading infant cues ?

IFCDC: developmental and behavioral dimensions

Infant behavioral and mental health

- Vocalizations and conversational turns – impact of parental talk
Caskey M et al. Pediatrics 2011; doi:10.1542/peds.2011-0609
- Sensory profiles – atypical auditory, visual, tactile, vestibular, oral sensory processing and threshold/response continuum in preterms
Wickremasinghe AC et al. J Perinatol 2013; 33:631
- Movement quality, arousal, and excitability – impact of holding and parental presence
Reynolds LC et al. J Perinatol 2013; 33:636
- Childhood and adolescent mental health – increased risk of psychiatric disorders among NICU graduates
Chiorean A et al. Arch Dis Child 2020; 105:684



IFCDC: developmental and behavioral dimensions

Maternal/family mental health

- Lactation success
- Depression/anxiety
- Self-efficacy



IFCDC: developmental and behavioral dimensions

Health care worker wellbeing



“Nurses themselves felt less stress, more confident, and a deep connection with both neonates and each other when developmentally supportive care (DSC) was woven into the daily routine.

The structure of DSC invigorated staff, giving a renewed sense of purpose and deeper spirituality.”

Implementation of IFCDC in South Africa



- Austin B, et al. Experience of nurses providing developmentally-supportive care. *Nurs Hlth Sci* 2019; 21:336
Maria A, et al. Assessment of feasibility and acceptability of family-centered care...in India. *BMC Pediatrics* 2021; 21:171
Mhango P et al. Implementing family-led care model...in Malawi. *African J Primary Hlth Care Fam Med* 2020; 12(1)

Infant and family-centered developmental care *a model for high-quality care*

Principles and evidence base of IFCDC

- Baby as a competent communicator and interactor
- Individualized care – for each baby and family
- Family integration
- Environmental protection
- Neuroprotection of the developing brain
- Infant mental health
- Systems thinking in complex adaptive systems

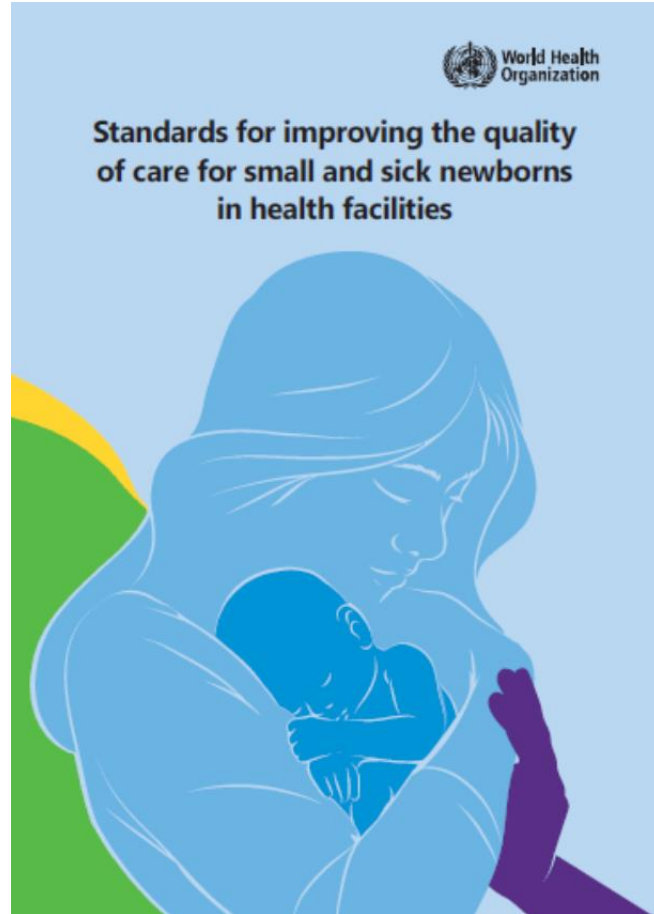


Consensus Committee of the Standards Competencies and Best Practices for Infant- and Family-centered Developmental Care

<https://nicudesign.nd.edu/nicu-care-standards>

Kenner C, Brown J, Jaeger C. J Perinatal Neonatal Nursing 2021; 35(4):294

IFCDC central in the standards for small and sick newborn care







1. Evidence-based practices
2. Actionable information systems
3. Functional referral systems
4. Effective communication and meaningful participation
5. Respect, protection and fulfilment of newborn rights and preservation of dignity
6. Emotional, psychosocial and developmental support
All small and sick newborns are provided with family-centered developmental supportive care and follow-up
7. Competent, motivated, empathetic multi-disciplinary human resources
8. Essential physical resources for small and sick newborns






IFCDC central in the nursing roadmap




NATIONAL AND SUBNATIONAL TRAINING OPTIONS TO OPTIMIZE CURRENT HRH CADRES AND TO PLAN SPECIALIST ROLES

-  Improve and standardize the content, curricula and development of competence in pre-service programmes for health workers in neonatal care.
-  Build the capacity of existing newborn care providers through orientation programmes, continuing education, skills training, quality improvement initiatives and support to maintain or increase competence.
-  Upgrade existing cadres with additional specialized training in neonatal care, with additional qualification or certification at undergraduate level.
-  Create and train a new cadre of specialized neonatal nurses.

NATIONAL AND SUBNATIONAL ACTIONS FOR THE PROVISION OF NEONATAL CARE

-  Standardize the levels of neonatal care provision, with safe referral of mothers and infants.
-  Establish strategies for health worker recruitment, well-being, motivation and retention.
-  Ensure effective staffing, staff ratios and skill mixes in local neonatal units.
-  Strengthen national human resources planning, policy and regulations for development and management of neonatal services at all levels.
-  Allocate adequate funds for capacity-building and support for neonatal care in the national budget for human resources for health.

GLOBAL ACTIONS FOR THE PROVISION OF NEONATAL CARE

-  Promote global strategies, collaborations, accountability, leadership and governance for human resources for neonatal care, integrating innovative multi-country research and learning networks.

IFCDC and WHO health system building blocks

SERVICE DELIVERY

HEALTH WORKFORCE

INFORMATION

MEDICAL PRODUCTS, VACCINES & TECHNOLOGIES

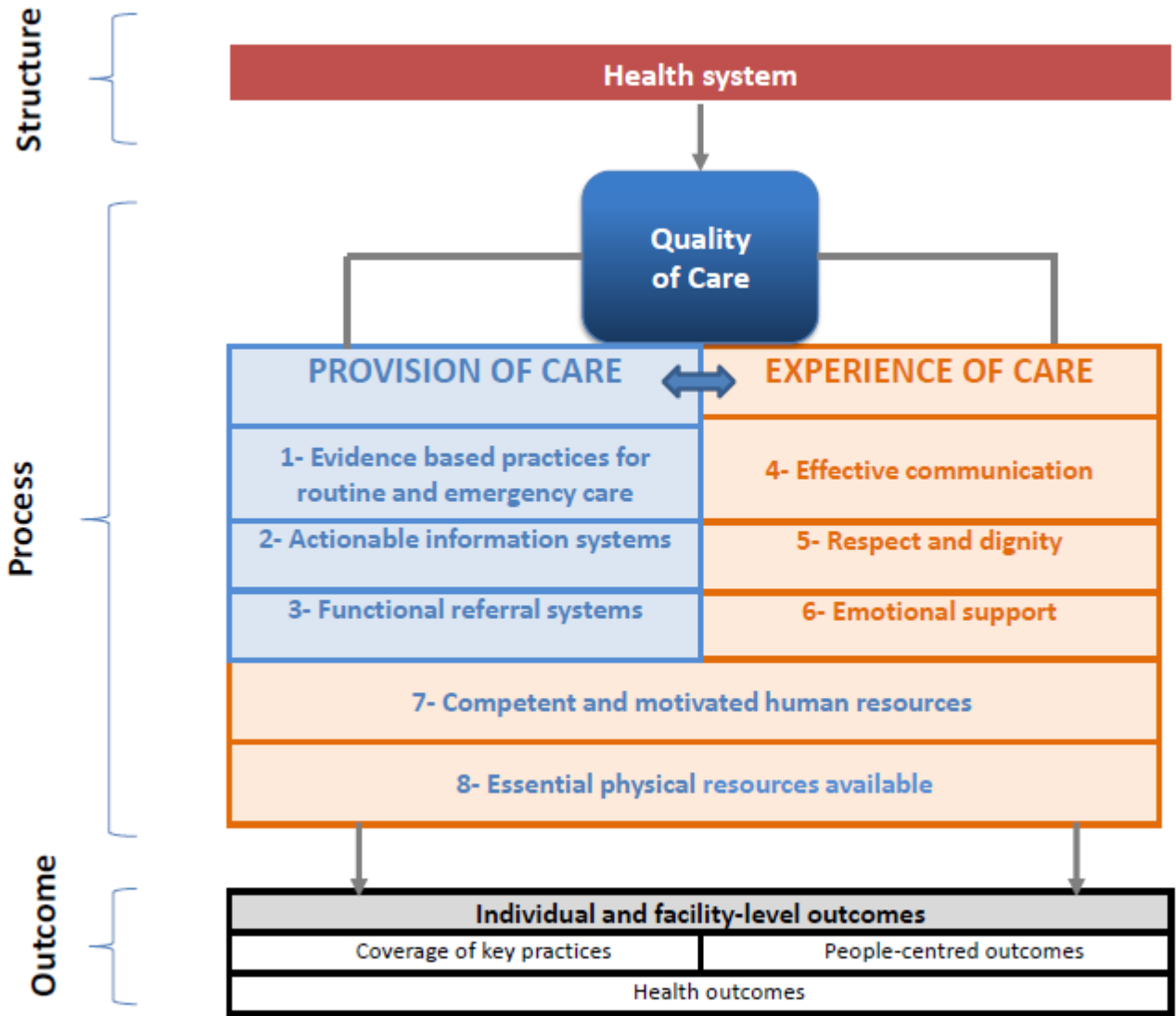
FINANCING

LEADERSHIP / GOVERNANCE

- Build an enabling environment for IFCDC
 - Promote zero separation
 - Reconfigure special newborn care units
- Invest in the workforce and their education
- Track utilization, ensure appropriate follow-up, link to infant outcomes
- Design for care of mother/baby dyad
- Update basic health coverage benefit package; demonstrate cost effectiveness
- Revise policies to support zero separation, family engagement, networks of care

WHO Quality Framework for Maternal and Newborn Health

IFCDC: Quality of care for small and sick newborns





Manzou (age 4 months) was born prematurely at 29 weeks in Mali and thrived with kangaroo mother care. Photo: Amadou Keita, SSGI/Save the Children



Session 5

Open House Discussion

What should a generic model of care for SSNC look like?

Putting it all together- consensus on the key elements of a generic model for scaling up quality SSNC

MODERATED BY DR RAJIV BAHL (WHO) & DR LUWEI PEARSON (UNICEF)



10 draft components of the generic model

- 1 - Vision, political commitment, national plan (based on SSNC standards)
- 2 - Financing (adequacy and sustainability)
- 3 - Human resource (availability and capacity)
- 4 - Infrastructure
- 5 - Equipment (including medicines, commodities, supplies and maintenance)
- 6 - Robust data system and effective use of data
- 7 - Labour care, childbirth care and maternal wellbeing
- 8 - Family involvement
- 9 - Developmentally supportive care (including responsive caregiving)
- 10 - Post discharge care (including early intervention)

Quality (including respectful maternal and newborn care), IPC and coverage are cross cutting



World Health
Organization



WRAP-UP AND NEXT STEPS

Luwei Pearson (UNICEF)

Rajiv Bahl (WHO)

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**ENDING PREVENTABLE
NEWBORN DEATHS and STILLBIRTHS**
by 2030





Conclusions and recommendations

1. All countries should strive to have at least one functional level 2 special Care Unit (SNCU) with respiratory support including CPAP in every district by 2025.
2. In making these units functional, all partners should support countries in a coordinated manner under ENAP umbrella and the government leadership.
3. All countries should adapt/adopt the WHO quality standards for improving the care for small or sick newborn and MNH standards as the basis to scale up SNCU.
4. Incorporate innovations in Special Newborn Care Unit design when building new Hospitals or renovating old ones.



Next Steps

1. WHO and UNICEF, in collaboration with other ENAP partners, will develop an implementation guidance that defines the model of care, what and how to scale up inpatient care for small or sick newborn in every district.
2. Continue to build commitment of national governments for scale up of SNCUs.
3. Resource mobilization from domestic and external sources
4. Coordinated support of all partners



END OF DAY 3 THANK YOU



**ENDING PREVENTABLE
NEWBORN DEATHS and STILLBIRTHS
by 2030**

