CHIFA Discussion on Newborn Care #2
Who is caring for the newborn?

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LONG EDIT (38 pp)

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http://www.hifa.org/projects/newborn-care

Background to the discussion: http://www.hifa.org/news/join-chifa-global-discussion-newborn-care-low-and-middle-income-countries

There were 99 contributions from 40 CHIFA members in 18 countries (Brazil, Canada, Georgia, India, Kenya, Nigeria, Pakistan, Philippines, Rwanda, South Africa, South Sudan, Sudan, Sweden, Tanzania, Turkey, Uganda, UK, USA). Special thanks to our super-contributors Sue Prullage (11 messages) and Ruth Davidge (8 messages) - we have learned so much from your work in Rwanda and South Africa, respectively.

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Introduction

Who will step up during the next decade to implement and integrate life-saving interventions and services for newborns? Decision-making leading to the implementation of newborn health services and interventions within broader health programmes requires multiple actors and levels of involvement. It is only with the mobilisation of communities and civil society, health workers and professional groups, and parents as well as leadership and champions within the health system, that the implementation of quality newborn care will be integrated into existing health system structures. These very groups are our CHIFA members, and we invite you to contribute to the next phase of the discussion.

Background

We are now four years on from the publication of The Lancet Every Newborn series. This series provided the evidence for the launch of the Every Newborn Action Plan, a global multi-partner project that aims to end preventable maternal and newborn deaths, and stillbirths by 2030. The Lancet series included an article titled 'Who has been caring for the baby?' which reviewed the progress made in bringing newborn health to the forefront of the child health agenda, and reminded us of the 1990s when newborn care, particularly care for sick newborns, was viewed as too complex and technological - out of reach for lower income health systems.

The Lancet Every Newborn series provided firm evidence that interventions and services for newborns, including those born small and sick, are affordable. Rising levels of facility deliveries globally mean that more newborn deaths are occurring within hospitals, and over two-thirds of these deaths could be prevented with effective hospital care of small and sick newborns. For example, up to 70% of preterm deaths could be averted with the provision of basic inpatient care iincluding warmth, feeding support, infection prevention and kangaroo mother care. Such care does not need to be unaffordable for health systems; in fact, the cost of failing to provide this care could be far greater.

Questions

1. Who is the health worker caring for the newborn? In your countries and programmes who is caring for small and sick newborns? Midwives and nurses? Obstetricians? Who are the champions of newborn care? Has this changed?

2. Where in the hospital are small and sick newborns cared for? What infrastructure, equipment, commodities, guidelines are needed for small and sick newborn care?

3. How is the family involved in caring for small and sick newborns? Is there family centred care in neonatal units? Are your facilities implementing kangaroo mother care? What does family-centred care mean in your context? What can be done to strengthen the quality of family-centred care?

4. Who in the ministry is responsible for newborn programmes, at the national level? What about referral systems? What about measurement and accountability?

5. Who are the key players in the global health architecture for newborn care? UNICEF is making newborns their advocacy priority this year. Is this the UN responsibility alone? What about WHO, donors, professional groups and academics?

About the CHIFA Newborn Care Project

The CHIFA Newborn Care Project supports the CHIFA community (>3500 child health professionals worldwide) in global discussions to explore and address how to improve quality of care for newborns within the overall care continuum, particularly for those born small and sick in low and middle-income countries.

The Project is supported by the Every Newborn Action Plan (ENAP), which aims to end preventable newborn deaths and stillbirths by 2030. The work is contributing valuable, diverse perspectives to inform the World Health Organization-led Quality, Equity Dignity (QED) efforts for women and newborns, building on the technical and advocacy work of ENAP.

We are grateful for the technical support of leading newborn health professionals from ENAP, London School of Hygiene and Tropical Medicine, Makerere University, Save the Children, USAID and others.

1. Who is the health worker caring for the newborn? In your countries and programmes who is caring for small and sick newborns? Midwives and nurses? Obstetricians? Who are the champions of newborn care? Has this changed?

1.1 Typology of healthcare providers caring for newborn

Moderator: Would it be useful to outline a typology of 'health worker attendance' from the perspective of the mother/newborn?
This might perhaps look like:
1. Mother and baby alone or cared for by family members
2. Traditional birth attendant (untrained, or trained in basic care)
3. Community health worker (presumably this is a highly diverse group, ranging from those with no skills in childbirth/newborn care to those with basic skills)
4. Community midwife/nurse in primary care setting
5. Newborn care team in hospital setting (basic newborn care - with or without obstetrician and paediatrician)
6. Newborn care team in hospital setting (comprehensive newborn care).
The above is probably quite inadequate - I offer it here as a discussion starter and look forward to hear your views/comments. Indeed, perhaps there is an already-agreed typology, in which case please do let us know. Or perhaps it makes more sense to define the typology on the basis of the care provided rather than the provider (as in 'unskilled' versus 'skilled basic' versus 'skilled comprehensive')?

Joseph Ana, Nigeria: I would add two increasingly available locations/groups that are 'competing' with health facilities for patients in LMICs. So the amended typology will look like this:
1. Mother and baby alone or cared for by family members
2. Traditional herbalist / native doctor increasingly being used due to poor access/unavailability of other providers, cultural beliefs and norms, ignorance and illiteracy
3. Religious houses also increasingly competing for attention due to weak health system/lack of health facilities, religious beliefs, illiteracy and poverty
4. Traditional birth attendant (untrained, or trained in basic care)

5. Community health worker (presumably this is a highly diverse group, ranging from those with no skills in childbirth/newborn care to those with basic skills)
6. Community midwife/nurse in primary care setting
7. Newborn care team in hospital setting (basic newborn care - with or without obstetrician and paediatrician)
8. Newborn care team in hospital setting (comprehensive newborn care).

1.2 Community Health Workers

Corazon B Bernabe, Philippines: Mainly healthcare is rendered by BHW (Volunteer health worker) and the midwife. We have our MNCHN program and small and sick babies gets to be referred to paediatrician if and when they are available. Otherwise the municipal health officer, usually GP like myself handles them using our training in IMCI

Mmusetsi Mokwatsi, South Africa: There is a move to train community health workers to carry out paediatric care during their home visits. The department of health is working together with other stakeholders to address the curriculum for the community health workers. I just completed my Masters studies in Child Nursing, thus qualifying as an Advanced Nurse Practitioner. This is a new level in South Africa, and in the next decade the advanced nurse practitioner will play a critical role in implementing key interventions to ensure quality new-born care, both clinically and academically.

Moderator: One of the groups of health workers caring for the newborn are Community Health Workers. Indeed, as we have discussed much on our sister forum HIFA (www.hifa.org/joinhifa), CHWs often have a vast range of responsibilities, often with little if any specific training to identify and address life-threatening problems. They also typically work in relative isolation. I would like to highlight WHO training materials produced (in 2015) for CHWs whose responsibilities include newborn care (usually in the home). Here is the overview: These training materials provide guidance for community health workers to conduct home visits in the antenatal period and the first weeks after the baby is born. They promote that families seek care from a skilled health professional for antenatal care and care at birth and support families in adopting appropriate home care practices for the mother and baby, during pregnancy and after childbirth. The materials draw on experiences of training community health workers in caring for the newborn at home in several research studies, particularly the SEARCH study in India and the NEWHINTS study in Ghana…
http://www.who.int/maternal_child_adolescent/documents/caring-for-the-newborn-at-home/en/

Sara Hassanain, Sudan: It is worth telling that around 80% of deliveries in Sudan take place in rural settings and the entry point for sick new-borns should be the village midwives (VMWs) however the needed skills and equipment are yet lacking. Short scale projects are in place aiming at training VMWs on new-born resuscitation skills and helping babies breathe. The outcome of these projects was promising. Sudan is now applying a primary health care expansion project that relies on VMWS, Community health workers (CHWs) and medical assistance however the specific skills for handling some of maternal and child health issues needs more investments and strengthening. For example early case picking and referring for the during pregnancy risk factors like malaria or high blood pressure/preeclampsia, as causative factors for low birth weights or growth restriction as well as new-born sickness needs systemized strengthening.

Sara Hassanain, Sudan: The 'integrated community case management interventions are still in a limited coverage stages though it is an excellent platform for early maternal/pre natal' management and could also be a triage system for most at risk new-borns who are expected to have low birth weight due to congenital malaria and for sepsis and pneumonia signs. Rigorous identification of priority diseases and training of CHWS in new-born management, enforcement of community based health management information system, and efficient referral are really needed.

1.3 Staffing of neonatal units

1.3.1 Neonatal units: International

Indira Narayanan, USA: Now I have been in the arena of global health for 19 years in Africa, Asia and LAC. Currently being an Adjunct Professor in Pediatrics/Neonatology at the Georgetown University Medical Center, my colleagues and I have collected information from some hospital neonatal units in Uganda, Indonesia and India to highlight the state of facility readiness for the care of the high risk/small and sick babies that is just ready for sending for publication.

Indira Narayanan, USA: I am glad to see the discussions on staffing related to facility-based care of the newborn. This includes the care of the high risk/small and sick babies who need a considerable degree of care. Both medical (Pediatricians/trained physicians) and nursing staff are important, but the latter are particularly critical as they provide the greatest proportion/duration of care required.

Indira Narayanan, USA: In a recent study that we carried out including some centers in Uganda, Indonesia and India, we noted that in some referral hospitals in Africa, based on the bed strength, the nurse bed ratio was 1:15 or worse, especially at night. The situation can be aggravated by the frequent practice of having more than one baby in a cot/incubator. Interestingly, nearly half the babies in the neonatal units were more than 2500 gm. Not all are really sick but are often transferred to the unit for extra observation or minimal care that the centers feel cannot be provided in the maternity wards. Hence we feel that adding the term, 'at-risk or high-risk' to the small and sick babies may have relevance. In addition, this also highlights the need for increasing staffing in the maternity wards and not just in neonatal units. It is true that task shifting and use of mothers in the non-specialized care of the baby can help. However, this is a make shift arrangement as, ultimately, we need skilled, qualified staff.

Indira Narayanan, USA: While it is the responsibility of all concerned to achieve this end, Pediatricians can play a significant role to this end. Motivated, trained Pediatricians/ Neonatologists working with skilled nurses are knowledgeable on what is required for the proper care of these babies. Through their relevant professional bodies, they can strongly advocate for more trained skilled nurses and doctors. In addition, the latter group in well-functioning centers have the responsibility to promote and be involved in training/mentoring of others While involvement of mothers will still be important, their role will then be for other issues such as the provision of breast milk, kangaroo mother care and being part of the family centered care. All of these are evidence-based benefits for the baby, for empowering the women and building their confidence in the subsequent home care of the baby; not just to cover the lack of suitable care providers.

1.3.2 Neonatal units: India

Indira Narayanan, USA: Having looked after neonatal units in India earlier, and visited many in Africa among the major challenges frequently noted include inadequate staffing, notably nurses. While in some centers in India there are well qualified and trained nurses, a number are not so skilled in the care of the high risk/small and sick babies, especially in many centers in Africa. Equipment and supplies, especially single use items and safe blended oxygen with adequate monitoring in the baby are also deficient. More emphasis is required on quality of care including prevention of infection and maintenance, review and use of data.

1.3.3 Neonatal units: Kenya

Mike English, Kenya: At a recent meeting in Nairobi emerging data were discussed with senior Kenyan nurses and paediatricians that indicate how much care for newborns is actually not done. This results from the very high patient to nurse ratios and the huge volume of tasks that nurses are expected to complete in caring for the sickest babies. Sick newborns are especially vulnerable to the major deficits in human resources for health and action is required to address this issue if we are to make gains in newborn survival.

Sue Prullage, Rwanda: I wonder how long is the orientation process in Kenya? Is it uniform and manditory for all to work in neo units to complete a program? I am asking questions because I do not think Kenya and Rwanda are the only ones dealing with this issue of poor staffing and orientation. That maybe there should be collaboration to stand strong on these issues

Sara Tornquist, Sweden: My quite slim experience from low income settings are that 1. mothers and babies are too often discharged far too early due to limited space 2. The knowledge of the needs of small and vulnerable babies are quite inadequate. 3. The need for better knowledge on neonatal recusitation is huge. With this comes of course training but also RESOURCES.

Sara Tornquist, Sweden: My experience is that a lot of the change is put on the staff. Staff who is working at long hours, many times 6-7 days a week with very low pay. Staff who might have a diploma or certificate in nursing and more than likely went through training in a very busy environment with very little supervison and support.

Sara Tornquist, Sweden: We can have all the guidelines and protocols in the world, but if there is not a ton more resources put in health care, and in maternal and child health, nothing will change. Money is needed at all levels. In the health care system and in the educational system.

Mary Nyikuri, Kenya: To contribute to the question of who is caring for sick newborns in facilities, a scope around Nairobi's (Kenya) public, faith based and private hospitals indicates that newborns are cared for mainly by nurses. While the high end private facilities ensure that these nurses have specialsied training in neonatal care, the public and faith based hospitals deploy any nurse irrespective of their speciality. Additionally, students play a major role in the care of hospitalised newborns in both public and faith based facilities.

Mary Nyikuri, Kenya: Staffing in newborn units in Kenya vary a lot the different sectors. For the high end private hospital, staffing for the very sick is 1:1 and the stable is 1:3. This ratio does not change whether day or night, for the public hospital the staffing ranges between 1:15 to 1:25 irrespective of the acuity. There are two nurses during the day and one nurse at night. For the faith based hospitals, the staffing is also per ward and not per number of newborns and it ranges between 1: 8 to !:53. Two nurses work during the day and one nurse works during the night. This is similar to the public hospital and takes a similar pattern on the weekends. Training for nurses in Kenya starts at diploma, continues to degree, and masters levels and a nurse can either be trained at a public or private training institution. Diploma level training is for general nursing with less emphasis on newborn care.

1.3.4 Neonatal units: Rwanda

Sue Prullage, Rwanda: The Chiesi Foundation and COINN is just completing a survey of all the neonatal units in Rwanda. We have 2 pending but what we can share at this point is the people caring for babies in the neonatal units are: nurses and midwives often responsible for up to 20 babies per nurse per day shift going down to 1 nurse for all the babies at night. The average was 2 nurses on days and 1 nurse on night no matter how many patients there were. When the orientation process was surveyed the average was 7 - 10 days of orientation prior to being responsible for the babies. There was very little didactic associated with orientation most was on the job training with whomever was scheduled for the day. The premature mortality rate across the country was higher than the asphyxia rate. When questioned about things related to prematurity (cup feeding, developmental care and positioning; adding humidity to the incubator and taking care of a baby in incubator etc.) revealed the participants are often very uncomfortable to comfortable caring for infants that need this level of care.

Sue Prullage, Rwanda: As I have advocated in the past education is needed. As the doctor from the Philippines wrote they were caring for babies using the IMCI guidelines. The IMNCI guidelines give information on how to identify danger signs in a baby less than 2 months of age in order for the infant to be transported to the nearest hospital. But as they wrote that is costly and often not feasible.

Transport of these vulnerable infants need to be addressed also. They are often placed in the back of an ambulance with an individual not trained in neonatal care.

Sue Prullage, Rwanda: But I think what else needs to be addressed is the staffing of the units. It is very difficult to assess and maintain continual assessment of vulnerable babies when there are 2 nurses for over 40 babies or even 20 babies. The staffing at night is worse where they often went down to one nurse and sometimes turned the care over the busy midwifery staff.

Sue Prullage, Rwanda: Recently the government has hired 'mentor' nurses and doctors who come to spend 2 days to a week in each neonatal unit in the country. These mentors are to be experts and round with the staff to discuss the baby. Nice concept but they give conflicting advice sometimes and focus on things that maybe could be better left alone. Recently they have demanded that we do not allow the mothers in the NICU due to possible infection. We have stood the ground that this is not family centered care. But if these mentors are going all over the country telling the staff to not let the family in due to possible infection the care for neonates are going backwards instead of forward. I think we should share this research with the mentors stating that infection rate went down!! Wonderful work in India.

Sue Prullage, Rwanda: Do we need the standards of the developed nations that determines neonatal staffing?? This will be a huge commitment from the government. The knee jerk response may be to just beef up the staffing but without neonatal education it will give more warm bodies but not necessarily decrease mortality. Perhaps we should look at what nurses/midwives are required to do during the shift. Do time studies perhaps they are spending a great deal of time doing non-nursing things such as running to pharmacy or lab. But we need to document what they do. Our survey asked about what the know and learn but not a great deal about how they spend their time.

Sue Prullage, Rwanda: The staffing [as reported by Mary Nyikuri, Kenya] is similar to what we found. That it is by ward and that it is the same as internal medicine or any other ward. Yet the staff is working with cpap and IV as well as responding to deliver and resuscitation. Literature from other countries show that staffing affects mortality.

Sue Prullage, Rwanda: As well as education and certification. I know in Kenya you have a MScN in neo do the individuals that graduate from this group work in hospitals or are the primarily administrators or educators? Where I volunteer the Bachelor program has one course in neonatal where they do a clinical in the neo unit. This exposes then to neo but by no means prepares them to work there. The general nurses are similar they receive minimal training in neo issues. Our research showed the average time for orientation to working in neo units was 7 days. I personally believe this is inadequate.

Sue Prullage, Rwanda: As I have written before the nurses/midwives that are working in neonatal units are working in difficult situations. They are working with minimal to no orientation as to how to handle these small or sick babies. They are working very short staffed average of 2 during the day going down to 1 at night. They have lack of equipment and working equipment. There doesn't seem to be much empowerment going on. There is interest by the MoH to look at why babies are dying and they are beginning to look at systems which may show these deficients that were mentioned before. Things often move slowly. I think to improve the situation it will take a huge commitment to manpower (educated manpower), ensuring that there are sufficient equipment to care for the babies. Often the districts are working with one cpap machine and no IV pumps, some of the larger hospitals have more equipment but it seemed several of them had lots of broken equipment (need a qualified technician on duty to fix them and many of the hospitals said they had technicians yet the machines are broken). Perhaps they need a source of parts for broken machines is why the machines were non-functioning in spite of having a technician.

1.3.5 Neonatal units: South Africa

Mmusetsi Mokwatsi, South Africa: In the Northern Cape Province of South Africa, the newborns are cared for by a number of professionals (Nurses, Doctors and other allied professionals) all contributing toward the care of newborns. At the district hospitals, newborns are cared for in maternity units (because there are no dedicated neonatal units) before being discharged home. Here their care is mostly done by midwives and medical officers. Newborn care at Kimberley hospital (Tertiary hospital) is done in a dedicated neonatal unit and here the care is done by the professional nurses who some of them have undergone speciality training in neonatal and child nursing. There are medical officers who are supervised by a paediatrician.

Mmusetsi Mokwatsi, South Africa: Small and Sick Neonates receives the same care as that of sick newborns. They are cared for by the same health professionals at their different spheres. If they are at the district hospital, they will be cared for by a medical team comprising of a medical officer and nurses who have been prepared at neonatal or child nursing specialities. Some districts have a paediatric dyad (Paediatric Nurse and Paediatrician) within the district clinical specialist team, in which case the small and sick neonates will be under their care. Other districts do not have the complete team, the care will be done by a medical officer and the nursing team.

Ruth Davidge, South Africa: In South Africa sick and small babies are cared for in hospitals at various levels and with varying resources.
Who is caring for babies?
- In level one hospitals they will be cared for by general nurses and/or midwives with daily rounds by a medical officer
- In level two and three hospitals they will be cared for by general nurses and/or midwives and will have 24hr medical cover(intern/medical officer/registrar) that and consultant oversight by a paediatrician or neonatologist.
- Identification and referral of sick and small babies in the community occurs through home visits by community care givers, and assessment by nurses in primary health care clinics

Ruth Davidge, South Africa: [in response to Sue Prullage above] So often when external experts are brought in they don't understand local context. It is critical that whatever teaching or supervision is given in whatever context that it has been standardised (among teachers) and is in line with current evidence and national/local guidelines. Presenting mixed messages is a sure way of ensuring zero compliance and worsening standards of care.

Ruth Davidge, South Africa: What training do they have?
- Generally neither the medical officers nor the nurses have received specialised training in caring for sick or small newborns.
- Some nurses and doctors may have completed self study modules of the Perinatal Education Program (https://bettercare.co.za/) or received in service training (from a couple of days up to week) on routine management of newborns and care of sick and small babies
- Some nurses particularly in level 2/3 hospitals may have advanced training in intensive care, paediatrics or midwifery. There is some content in midwifery training on identifying and immediate management of sick and small babies. A small handful may have received specialised neonatal training before it was discontinued.

Ruth Davidge, South Africa: What interventions are being implemented?
- Recommendation that at least 50% of maternity/neonatal staff should be non rotational
- Lobbying for specialized neonatal nurse training
- Recommendation that at district hospitals the neonatal units should be managed by advanced midwives and at regional and tertiary level the neonatal unit manager should have a relevant advanced qualification
- Progressive increase in nursing staff with relevant advanced qualifications staffing neonatal units at level 2/3 hospitals

- Increase in outreach support visits to level one hospitals by paediatricians/neonatologists at level 2/3 hsopitals (recommended 1 visit per month/hospital)
- Weekly telephonic consultant rounds at district hospitals
- Regular supportive supervision focusing on clinical governance by specialised clinical teams based in each district focused on maternal and child health
- Standardised clinical records and systems in some provinces.

Ruth Davidge, South Africa: Sadly what nurses are expected to do during their shift is hugely underestimated and a large amount of time is spent on non clinical work. There have been a number of studies looking at this and an assessment tool (NAS) was used in a neonatal unit here to help the hospital determine on a day by day basis the patient accuity and the need to employ agency nurses or not.

Ruth Davidge, South Africa: We are fortunate in the public sector of SA (speaking particularly about Kwa Zulu Natal) that all our hospitals offer lodging facilities for our mothers. The quality of this service varies greatly but does ensure that mothers are available to provide breast milk and support for their baby. This is a great gift for mothers, newborns and facilities alike but frequently comes at the cost of care for families/siblings at home who may land up being cared for next door neighbors if no family are available. Mothers often are away from employment or schooling so there is a cost to their presence at the bed side apart from the bed and meals provided by the facility. These mothers deliver basic care for their baby including et al: naso gastric/cup feeding and breast feeding, changing nappies, administering oral medications, cleaning the baby's incubator, bathing baby etc. There is limited involvement in decision making and policies regarding visiting of siblings and fathers varies greatly between facilities.

Ruth Davidge, South Africa: It has been been suggested that mothers could also be involved in recording basic observations for their babies following close support and education but this has not been trialed or implemented at any facility yet. All our facilities offer skin to skin care at birth, some offer skin to skin in post natal and all offer 24hr KMC for preterm babies even if this is only 2 beds in the post natal unit.
God bless

1.3.6 Neonatal units: Sudan

Sara Hassanain, Sudan: From a personal experience I can tell that empirical treatment and guidelines are not well updated nor enforced. Treatment of early signs of neonatal sepsis could be based on very risky and expensive antibiotics. Polypharmacy is also practised which is mainly due to lack of guidelines enforcement. Private sector is taking over and the new-born management is very expensive. Unless the family is covered by 'Prepayment Plans/insurances getting incubation or hospitalisation might be impossible. Oxygen concentrators are not emplaced in an equitable manner in Sudan. Infection control is also a challenging area for new-born health management and control.

Sara Hassanain, Sudan: I believe things couldn't improve unless the government increases the public spending and put maternal and child health as a priority on its top political agenda. Implementation and increasing coverage of low cost and grass root interventions might also help.

2. Where in the hospital are small and sick newborns cared for? What infrastructure, equipment, commodities, guidelines are needed for small and sick newborn care?

Moderator: We look forward to hear your experience, past or present, in looking after newborn babies in a hospital setting (ranging from the smallest rural health facility through to district and referral hospitals). Did you have the staffing and equipment to deal effectively with the situation?

Moderator: We would be interested to hear your experience with antenatal care, childbirth (including caesarean and other emergency obstetric capacity), neonatal resuscitation, prevention and management of sepsis, and special newborn care facilities for preterm newborns (incubators, oxygen, CPAP...). What are the priorities for staff to achieve better health outcomes?

2.1 Infrastructure and equipment

Corazon B Bernabe, Philippines: All of the hospitals have pediatric wards, but the specialist may not always be available and the equipments and commodities are very basic and usually lacking. Only the facilities in the big cities and mainland would be equipped but they can be very costly and not accessible.

Sue Prullage, Rwanda: Here is the information from the survey we just did in Rwanda. We queried did they have this equipment; how many units? and how many were functioning.
Oxygen: Every facility had some form of oxygen either concentrators, O2 tanks or walled oxygen.
CPAP: 33.7% had no available CPAP the remaining 66.3% had access to one machine where some facilities had as many as nine machines (not all functional).
Pulse oximeters: only one hospital did not have the ability to perform pulse oximeter. The range for oximeters were one to ten units once again not all were functional.
IV pumps: 25% of the facilities did not have pumps. 75% had access to at least one pump up to ten pumps. The same pattern not all the pumps were functional.
Breast pumps: 68.5% did not access to a breast pump. The remaining 31.5% had at least one up to three pumps not all functional.
Every hospital had access to phototherapy and NG tubes.
In a previous study I did in a catchment in Rwanda (surveyed 13 health centers) there was more than sufficient thermometers, stethoscopes, ambu bags and bulbs.

Sue Prullage, Rwanda: The basic equipment such as thermometers, stethoscopes were present. But to the important equipment such as CPAP, IV pumps, oxygen there seems to be a lack of access and is probably causing the staff to ration what is available. In my own experience we have split oxygen to ensure that all babies receive some oxygen but the exact amount is not known and is really a dangerous practice. For one baby may need 1 liter of oxygen but the other baby may only need 0.5 L which puts them at risk for hyperoxia thus affecting lungs and eyes etc. I know that in Rwanda when CPAP first came to one hospital they actually studied how many infants died because they did not have access to the machine that was being used on another infant. This was done to show how important CPAP is needed for these infants. In several of the hospitals we queried they were creating their own CPAP with water bottles and tubing (we did this for a long time). All in the hope that the homemade CPAP will help the babies.

2.2 Medical records and audit

Ruth Davidge, South Africa: We have standardized all our neonatal and pediatric nursing and medical records and admin systems and audit tools in KZN (51 hospitals)
I am happy to share with whoever would like them.

3. How is the family involved in caring for small and sick newborns? Is there family centred care in neonatal units? Are your facilities implementing kangaroo mother care? What does family-centred care mean in your context? What can be done to strengthen the quality of family-centred care?

3.1 Family-Centred Care

Judith Robb McCord, USA: Please see www.everypreemie.org for the Family-Led Care materials including our provider orientation flip chart and family monitoring forms.

Moderator: Would it be helpful to pull together case studies from different countries (perhaps COINN, the Council of International Neonatal Nurses) is already doing this, or could be supported to do more?

3.1.1 Family-centred care: Philippines

Corazon B Bernabe, Philippines: In the rural area the families would be continuing the care at home and given instructions. But if they're admitted, usually hey are just informed of the baby's condition with care being rendered by health workers.

Corazon B Bernabe, Philippines: KMC is still a new concept for us. Family-centered care for me is when the family is directly involved not only in decision making and consenting but more in the actual care of the patient. Whatever participating they can be involved with will be taught for them to handle. This will help in the faster recovery of patient and the family understanding. The health workers must be oriented in the concept and importance of family-centered care.

Indira Narayanan, USA: Family oriented approach and KMC are important globally. Even maternal involvement in the neonatal unit where we initiated in our hospital in the 80's was found to be useful. We found that they provide support to the nursing staff by taking part in the non-specialized care. This intervention also helped in building up confidence and competence in the mother to promote subsequent home care of the baby after discharge which often take place earlier than in high income countries, partly due to large numbers of babies in countries such as India.
[Refs- (a.) Narayanan I, Singh S, Singhal R, Gatwala G. Maternal participation in the care of the high-risk neonate. Ind. Pediatr. 1986; 23: 796-797. And (b) Narayanan I, Gupta A, Mandal RN, Chugh R, Singh I. Early mother - infant interaction: Global perspectives and developing country concerns. J.Trop.Pediatr. 1987; 33: 120-123.] It is heartening to note increased interest in family-oriented facility based newborn care.

3.1.2 Family centred care: Rwanda

Sue Prullage, Rwanda: At many of the neonatal units in Rwanda mothers are involved in the care of the infants even giving NG tube feedings. What I could see that is needed is a developed program of what is expected and not expected of them. At the hospital where I work when I am in Rwanda we have had the mothers at bedside all the time. They do the feeds, change the diapers and are around for rounds, they help each other get into KMC. As with the India experience the older or more experienced family member often assumed the role of teacher to the other families in the unit. We love this for usually one woman always step up we call them the 'mama' of the room. There are times that we have a family that doesn't understand the feeding times and this experience person will take it under their responsibility to make sure the family that is struggling is ready to give the feeds. Sometimes the family never catch on and the 'mama' will assign another mother to feed the baby. This is something I think they would not allow in India. But with such a low staff we utilize our mothers very much.

Sue Prullage, Rwanda: One of the survey questions [*see note below] was related to if the parents give the NG feeding and the majority of the facilities stated that the parents did give the feedings. With this kind of staffing the infants would not receive their feedings without the parents to feed them. The problem with this process is the amount the infant receives is mother reported. In my own experience I have seen the nurse tell the mother what to give the baby yet she was unable to produce the amount ordered but will not say anything at first. This is another whole issue 'breastfeeding' there is an overall feeling that a mother does not have a problem with breastfeeding. So women will struggle for days to produce milk before it is discussed.

Sue Prullage, Rwanda: I think the family can play a role and should be involved in KMC and cue based feedings this would take a small part of the burden. But there is no other alternative to well trained specialized nurses available to listen to families and to assess babies.

Sue Prullage, Rwanda: In the unit where I work and many units across Rwanda the families are providing the bathing, diapering and feedings either NG, cup or breastfeeding. Recently due to fear of infection there has been a call to limit the time of the mothers in the room. The literature is not positive for not allowing families around their babies. I would suggest that possible the infection could be related to poor staffing and difficulty for the staff to take time to wash between each baby. The majority of the facilities had running water, soap and gel yet 7.2% of the hospitals did not have running water and 4.2% did not have soap, 42.3% did not have hand gel at each bedside. So this would make one wonder if they had the availability to wash hands was it related to lack of time to do so that could be contributing to the infection rate in hospitals. The call to remove families may demonstrate that by doing this it will not decrease the mortality rate as much as possibly contributing to it by requiring overworked staff to pick up more work. As demonstrated from the video of family centered care in India the families are excited to be involved in the care of their infants. They are conscientious to wash their hands and take every precaution needed to get their baby home. Our experience has shown that the mothers do wash their hands if they don't the other mothers in the room remind them.

Sue Prullage, Rwanda: India is on the right track by utilizing the family to care for their own baby. We are doing it but need better policies related to what a family can do or not do. 39.2% did not have family visiting policies yet only 12% of the facilities did not allow parents to participate in their infants care. 83.5% allowed the parents to give NG feeds, and 83.9% gave education about how to give feeds yet 78.5% did not have a written family NG feed policy. I think family should be used in the NICU but with specific task and guidelines. Policies should be written to prevent overuse by the overworked staff and to allow the families to be involved.

Lily Kak, USA: I would like to thank Sue Prullage for sharing very interesting and relevant information about the neonatal units in Rwanda. I look forward to learning more about the results of the survey once it is completed. USAID and UNICEF are supporting a multi-country survey of neonatal units and will have results from 8-9 countries by the end of this year. Your preliminary findings regarding severe nursing shortage in the units makes me wonder if family-centered care can help alleviate the staffing shortage by involving parents in doing some of the non-medical tasks. Do you think this would be feasible in the Rwandan context? FCC is now a national policy in India and we will learn a lot from there as the policy is rolled out. Please refer to Dr. Arti Maria's comment and link to her ISQUA presentation from last week. [http://www.hifa.org/dgroups-rss/link-isqua-webinar-family-centred-care]

Lily Kak, USA: I think the type of responsibility given to parents will be context-specific. In the India example, parents were not asked to provide NG feeding since it is a medical task and may affect safety. Safety will be a key consideration for encouraging the introduction and rollout of the family

centered approach in countries. I think We need more evidence on the safety considerations. I hope we hear from our colleagues in India.

3.1.3 Family-centred care: South Africa

Ruth Davidge, South Africa: Family centered care:
- This is encouraged but still not well implemented
- Most hospitals offer lodging facilities for breast feeding mothers
- Mothers are encouraged to participate in care of their babies including tube feeds, oral medications, changing nappies etc
- Visiting of fathers and siblings is encouraged but has slow uptake
- Skin to skin care is practiced from birth in labour wards
- Skin to skin is recommended and is slowly being practiced in post natal units
- Most hospitals offer at least 2 beds for 24hr KMC care of small babies
- Many level 2 hospitals have stand alone KMC units

Ruth Davidge, South Africa: We have discussed in KZN the possibility of increased parental responsibility for recording of observations and feeds etc and believe this is feasible and could be helpful in settings with very high nurse patient ratios. However it is dependent on parental presence (lodging facilities), parental literacy and time to orientate parents to what is required and what danger signs are (and this time may not be available in really bad settings)

3.2 Kangaroo Mother Care

Sara Tornquist, Sweden: I am a midwife from Sweden and here we have resources so its not easy to compare. But, I have been working at a community Clinic in Kenya on and off since 2011 and simple things like uninterrupted skin-to-skin care was not done the first time I was there, and it seems like its not a usual procedure in spite the well researched benefits for both baby and mother.

Melissa Morgan, USA: I'm a neonatologist from San Francisco and a researcher with the MARCH Centre at LSHTM, and have worked in neonatal units in Kenya, Uganda, and India. I fully agree that kangaroo care is practiced suboptimally in many low-resource facilities for a variety of reasons. We recently published a study in the Journal of Global Health (http://www.jogh.org/documents/issue201801/jogh-08-010701.htm) exploring the feasibility and acceptability of KMC among clinically unstable neonates weighing =2000g at a hospital in Uganda. We found that the median daily duration of skin-to-skin contact ranged from 4.5 to 9.7 hours, and few neonates achieved the target duration of 18 hours per day (mothers were counselled to practice KMC as close to continuously as possible). Barriers to the practice of KMC included lack of resources (beds/space, monitoring devices), privacy issues, inadequate education, and difficulties motivating mothers to devote time to KMC. Recommendations from parents and local healthcare providers included staff/peer counselling, resources, family support, and community outreach. We concluded that KMC for unstable neonates was feasible and acceptable at this Ugandan hospital. There remains a need for an evidence-based approach to consistently define stability criteria for KMC to improve care, and randomised controlled trials are urgently needed to demonstrate the effect of KMC on survival among unstable neonates in low-resource settings. Would be interested to hear others' thoughts on this topic.

Melissa Morgan, USA: Here are a few other helpful references on KMC:
Cochrane Review (2016):
http://www.cochrane.org/CD002771/NEONATAL_kangaroo-mother-care-reduce-morbidity-and-mortality-low-birthweight-infants

Kangaroo mother care to reduce morbidity and mortality in ...
www.cochrane.org

Evidence from this updated review supports the use of KMC in LBW infants as an alternative to conventional neonatal care, mainly in resource-limited settings. Further ...
WHO guidelines on interventions to improve preterm outcomes (2015):
http://apps.who.int/iris/bitstream/10665/183037/1/9789241508988_eng.pdf

Systematic review of KMC literature (2016):
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4871067/

Hemant Nandgaonkar, India: Thank you for enumerating reasons for poor practice of KMC. Recently I came across one study, where one group was not given KMC. I pointed out that it's NOT acceptable and unethical to deny KMC to control group. I feel such studies should be discouraged.

Pauline Njoroge, Kenya: In Kenya, Kangaroo Mother Care is being uptake well in most facilities within the Country. Working in the Country's capital - Nairobi and in the high volume facilities, the concept has worked in reducing the reliance to incubators, reduced formula milk required for the babies as well as reduced hospital stay for the babies. Mothers and fathers are actually liking and embracing it.

Pauline Njoroge, Kenya: Having facility based champions has worked well for us. However, the major challenge we have had is lethargy among health workers in initiating babies in KMC as well as facility based constraints such as limited space. At times mothers also view KMC room as a special room.

Sue Prullage, Rwanda, In our neonatal unit we do intermittent KMC and have a KMC room. What we have found is the nurses do not embrace it as a treatment and forget to tell the family to do it. Yet the other mothers help each other put their babies in KMC. I agree with Pauline from Kenya that until the staff embraces it the procedure will remain a concept. I tried to make it more uniform by adapting a KMC Scoring Sheet from Groote Schuur Hospital and Kalafong KMC Unit. (I have attached it). I thought if the staff was required to score the baby daily they'd begin to see the benefit of KMC and ensure it is done. This has not happened and the sheet is utilized very infrequently.

Sue Prullage, Rwanda: We have the KMC room but the families see it as the next step to being discharged and they only put babies in there that are very close to discharge. The mothers do not do prolong KMC but treat the room as stepdown and the very next day after admit begin to ask for discharge.

Sue Prullage, Rwanda: Training isn't the answer for the staff has had lots of training about KMC. What would be very interesting is to do a qualitative study to look at what the nurses and families feel about KMC and what the barrier is?

Ruth Davidge, South Africa: My attitude to KMC changed once I understood the evidence behind the recommendations and the improved outcomes. Training should focus on the research done on the benefits of KMC. Compliance with KMC implementation improved once hospitals were informed it was standard of care at provincial and national level including for term babies. Skin to skin care is also included in ESMOE/HBB training. It needs to be promoted by multiple role players at multiple levels to ensure an unequivocal message is given. All hospitals in SA are starting to be assessed as to their compliance with KMC norms.

Ochiawunma Ibe, USA: I posit that we have all the evidence we need regarding the impact of Kangaroo mother care (KMC) on the survival of clinically stable preterm infants. With previous contributors reporting that we need to advocate for KMC implementation by the nurses and midwives

that care for these infants in the health facilities the question then is how much of the evidence around KMC is incorporated into the preservice training curriculum of these professionals. How much of KMC have we incorporated into the training of medical doctors, nurses, midwives, clinical officers especially in low and middle income countries where it is desperately needed even though there is evidence if its usefulness in advanced settings. This link to a systematic review on enablers and barriers for KMC could be useful in this discourse.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4750435/

I Abdulkadir, Nigeria: In Nigeria, KMC indeed appears to be a promising intervention as many more facilities continue to implement it. In my experience it is easily accepted by mothers and their families though challenging to practice the continuous KMC as desired. Efficient and sustained counselling and support gets most mothers motivated to practice it.

Sara Tornquist, Sweden/Kenya: At the nearest hospital to the Clinic I work at in Kenya they claim to do KMC. They point to a poster on the wall. Mothers are located at the postnatal ward and come to the neonatal ward to express milk and feed their babies with a sond. The babies lies in incubators, that are usually not turned on. My question is: how can we MEASURE HIGH (PROPER AND CORRECT) QUALITY KMC?

Sara Tornquist, Sweden/Kenya: Another topic is skin to skin care, I usually say "uninterrupted skin-to-skin care" to point out the importance to not disturb and interrupt. Dont touchen, dont try to make the baby latch, dont stress. Dont weigh, dont mesure.... Dont separate mother and baby after sectio, or while suturing. By skin-to-skin care we dont mean 10-15 minutes, its preferable at least 2 hours. Only for the mother to get up, go to urinate and wash. Then back skin-to-skin.

Sarah Moxon, UK: Thanks, Sara, for your important question and thank you to others for their important comments on the challenges of scaling up KMC in the health system. These challenges are well documented and so often vary between country, culture and health system. As Sara says, the barriers to effective scale up are more often related to flaws in the system than refusal of mothers or lack of willingness from families to provide KMC.

Mary Kinney, South Africa: On the Healthy Newborn Network, there is a KMC page with a lot of different resources including a Kangaroo Mother Care Resource Toolkit - learn more here. https://www.healthynewbornnetwork.org/issue/kangaroo-mother-care/ As we are looking to keep the toolkit update and relevant, please share materials you would like to adds a resources (you can email mkinney AT savechildren.org

Mary Kinney, South Africa: Save the Children has been promoting the KMC Challenge since 2016 to raise awareness about the importance of this intervention, to demonstrate some of the physical realities a woman experiences when she provides KMC and to open up dialogue around the enablers and barriers. KMC may be low-cost and low-tech compared to an incubator, but there are still associated costs to the mother, family and healthy system which should be recognized. See below a blog summarizes why we started the challenge and some first reactions. We have since taken the challenge to Women Deliver, IPA, COINN and ICM meetings as well as to internal Save the Children meetings with positive response. It would be good to know if others have tried the challenge as part of training and advocacy efforts.

Mary Kinney, South Africa: https://www.healthynewbornnetwork.org/resource/kangaroo-mother-care-challenge-brief/
A challenge to you: Try kangaroo mother care for one day (Mary Kinney's blog from August 2016)

Mary Kinney, South Africa: Recently a dedicated pediatrician invited me to visit her neonatal intensive care unit to see firsthand all of the work her team was doing to improve newborn care. Their efforts were impressive, especially given the crowded and under-resourced setting. One thing in particular stood out, however: not one mother was practicing kangaroo mother care (KMC) even though the unit had six dedicated beds for that purpose. In this facility, we asked mothers and caregivers why they were not practicing KMC. Their reasons included, 'My C-section wound is too sore,'□ 'Her mother is sleeping,'□ 'I am too tired,'□ and 'His mother is in the bathroom.'□

Mary Kinney, South Africa: What can be done to improve coverage and quality of KMC, in this hospital and around the world? Every day, more than 41,000 babies are born preterm before 37 weeks gesttation and preterm birth complications are now the leaading cause of death among all children under 5 years, with over 3,000 dying each day. KMC, a well-known, feasible, and cost-effective intervention, requires continuous skin-to-skin contact between the baby and mother for at least 20 hours every day and exclusive breastfeeding. Although the intervention could prevent thousands of these deaths, it is not being used effectively in most settings, and only a very small proportion of preterm babies receive this life-saving intervention.

Mary Kinney, South Africa: The KMC Acceleration Partnership (KAP), a global consortium of organizations active in promoting the uptake of KMC, is looking for answers to this question. The partnership has called for increased and concentrated action at global and national levels to achieve a 50 percent increase in coverage of KMC by 2020. Dr. Queen Dube is a pediatrican who works closely with the Partnership to scale up quality KMC services in Malawi. She believes we need a shift away from the message that KMC is an easy or cheap solution. While it is less expensive and more effective than conventional neonatal intensive care, there are still costs to the health system, the mother, the family, and the community, all of which need to be considered in planning for scaleup. Quality KMC requires trained health workers to support and care for the mother and baby, space in a health facility for KMC beds, and community support for the mother to be at the facility and to care for her baby upon discharge.

Mary Kinney, South Africa: In May 2016, Save the Children launched the 'Kangaroo Mother Care Challenge'□ at the Women Deliver conference in order to raise awareness about some of these realities. The challenge asked people to practice KMC with a baby doll for 24 hours (including sleeping in an upright position with the baby still on the front of the person skin-to-skin). Twenty-five people agreed to take on the challenge. While only a handful succeeded in making it the full 24 hours, all of them told us what an eye-opening experience it was. Check out their stories below.

Mary Kinney, South Africa: We are now taking the KMC Challenge to the meetings of the Council of International Neonatal Nurses and the International Pediatrics Association in Vancouver in August, and to additional meetings leading up to World Prematurity Day in November 2016.

Mary Kinney, South Africa: Will you take on the Kangaroo Mother Care Challenge? Follow #KMCchallenge on Twitter to see who else does and share your experiences.

Mary Kinney, South Africa: What people said about the KMC Challenge
I think the biggest challenge was trying to sleep at night. Trying to lie on my back, propped up with the for pillows that I had in my hotel room, and not rolling over onto the doll. I can only begin to imagine what it must be like for a mother carrying in KMC position a baby much heavier than my doll, who is peeing and pooing, needing feeding when she may only have rags for nappies, no spare clothes for herself, and no luxury hotel pillows to prop herself up with. These women are amazing, but let's recognise the challenges to better support them and their babies.
- Dr. Hannah Blencowe, LSHTM

The curious thing was that about 30 minutes after starting the doll KMC, I had the same feelings of sedation and calm that I recall having when I did KMC with my own children. Maybe there is a marketing opportunity here!
- Dr. Anthony Costello, WHO
First putting on the wrap was incredibly complicated. Normally I would just use a scarf. I wore the baby for two hours, and during that time I experienced stigma and people were less willing to network with me. I was overheating and sweating which made me unprofessional in appearance. So I made the decision to take off the baby and put it in my purse, which is the 'baby in a bag' scenario! What this really highlights is the challenge of doing good practice in kangaroo care.
- Whitney Sogol, Concern Worldwide
There are positives and negatives. There are definitely women who have come up to me and said I couldn't do that if I had a preterm baby.
- Dr. James Litch, GAPPS
It is so difficult, so hard. But I only try to think that my mom carried me for three months since I was a preterm baby. That's 1972. We have to go back to natural and go back to this approach of kangaroo mother care.
- Endang Handzel, CDC
I took the challenge for about four hours. During that time, I found myself on high alert and being very sensitive to every move—checking every now and then to make sure the chilld was in the right position, not slipping down, neck not twisted, hat not off, and careful of not moving and twisting too fast. This was challenging and my reaction was total respect and appreciation to mothers who do this in real life to save the lives of premature babies.
- Doris Maholo-Saydee

Mary Kinney, South Africa: Personally, I was thrilled to have the opportunity to take part in this simulation of KMC. I'm happy to report that I succeeded in 'wearing the baby' for the full 24-hours (even while sleeping) and I confess it was a bit hard to give the baby back at the end of the 24-hour period! I felt that I gained not only more attention, but also more respect and credibility while speaking about maternal/newborn health issues during the conference…while actually 'practicing' KMC! The exercise raised the awareness of many colleagues (both within and beyond the conference venue), who were curious and intrigued enough to ask questions. This also made me improve my own understanding of and ability to explain to others the importance and impact of KMC.
-Erin Anastasi, UNFPA

Judith Robb McCord, USA: Hello Neil and others and forgive my delayed response. I am actually attending the KMC South Africa workshop and have been so impressed with the level of commitment and caliber of work highlighted here — from Ghana to Iran andd Bangladesh, Malawi and South Africa, we have engaged in some excellent discussions regarding the continued importance of KMC as a life-saving intervention for early/small babies and the need for continued learning and harmonization as country teams move to introduce and scale KMC.

Judith Robb McCord, USA: In terms of family engagement in care of the small/sick newborn, Every Preemie—SCALE is currently testing a faamily-led model of care in Balaka district, Malawi that is based on strengthening clinical competence among health care providers at the community, hospital and health center level and empowering mothers and other family members to actively engage in the care of the small newborn while in the facility. In addition to training health care providers in Essential Care for Every Baby and Essential Care for Small Babies (ECEB/ECSB) and in Family-Led Care, we worked with MOH counterparts to 1) design an orientation guide for providers to use when a mother/baby pair is being admitted to KMC and prior to discharge, and 2) to design low-literacy materials for family members to use to monitor their babies while in the KMC unit and once home post discharge. The emphasis is ensuring that family members are confident in caring for their babies

once home and that they will understand 'normal' for their baby and be able to recognize when there is a problem that needs medical attention. We're also actively building referral linkages with the Health Surveillance Assistants so that they find families who do not return for their follow up visits and encourage and accompany them (where necessary) to the facility for this important care.

Judith Robb McCord, USA: Participants at the South Africa KMC conference were really excited about the 'family empowerment' aspect of Every Preemie's Family-Led Care model. We have designed implementation research to measure the effect of the model and should have mid-term results this summer and will have final results late 2018/early 2019. We hope to have something to say about newborn outcomes including reduction in % of facility-KMC newborns who died before discharge and increase in the % of KMC newborns who showed adequate weight gain at their first facility-based follow up visit. We will keep you posted on progress!

Judith Robb McCord, USA: As a next step in Balaka district, Malawi, we are going to work with the district hospital to start introducing the concept of family-led care and KMC for the sick newborns who are receiving more advanced care so that they too will benefit from this important intervention.

3.3 Breastfeeding

Sue Prullage, Rwanda: Sarah, You bring up a very important point ["Are Kenyan women and babies really that different??? when it comes to breastfeeding"]. Are African women any different when it comes to breastfeeding struggles? I would suggest not at all. As a person who has worked in a neonatal unit we have seen infants be admitted for presumed sepsis and placed on antibiotics. When we looked at the CBC the labs were normal and when appropriate questions about breastfeeding asked it becomes evident the mother had been struggling. When an infant is only available to the midwives in the general ward for 24 hours it is difficult to ascertain how well the breastfeeding is going. Education is not given and there is a general belief that breastfeeding is innate and everyone is capable of doing it without an issue. Real assessment of latch and positioning should be part of morning rounds. Not just the question how is it going?

Sue Prullage, Rwanda: Then the struggle in the neonatal unit. The longer a baby is in the unit and unable to suckle the more the mothers struggle. I watched this for years before I decided to bring a hospital grade double pump to the unit. The nurses said the mothers wouldn't use it. And I know the government is fearful of infection from this avenue. But breastmilk is drying up in neonatal units. We give the formula but the family cannot continue to pay for the formula once discharged and they babies are going home to cows milk or worse. So I brought the pump. I didn't bring it down to the unit at first but one day a mother was crying at the bedside. When asked what the problem was it was her milk was drying up. No wonder the infant had been losing weight for several days (although I would ask everyday was she making milk and the answer was yes). She would give what she got with hand expression and no one else noticed any different since the mother's feed the babies. So I talked the nurses and the mother into trying the pump. Within 36 hours she was pumping 150cc and this baby went home on total breastfeeding. I say all of this to say our mothers in the neo units in Africa struggle as much as any mother of a premature infant who if born in an developed country would be told to start pumping at 6 hours. Literature shows that hand expression is good but over time the mother will need a pump. 64% of the neonatal units in Rwanda have a breast pump (not hospital grade but a pump of some sort). Could we not dialogue about why we have a different standard for mothers in one part of the world compared to another when they both suffer with the same issue. Could we not give guidelines of cleaning the units?

3.4 Engaging children in health care

Clare Hanbury, UK: Have you [*see note below] considered involving the siblings in the parenting discussions? Very often young adolescent siblings support the mother and help to care for other members of the family. They can be more literate than mothers and may help their parents remember the instructions given by health care workers.

3.5 Follow-up and Immunisation

Sara Tornquist, Sweden: Another thing is the fact that mother and babies are leaving the clinics very soon after birth, no matter if its a vulnerable baby and/or mother and the schedule to come back is following the immunization program, not the guidelines for neonatal/postpartum follow ups. This means the baby might get the BCG and polio vaccination at discharge, or at the next few days (if they come back) and then they are to come back at around 45-50 days of age.

4. Who in the ministry is responsible for newborn programmes, at the national level? What about referral systems? What about measurement and accountability?

Moderator question: Have you been involved in efforts to measure the delivery of health services and/or quality of care, at national, district or facility level? What are the challenges and lessons learned? How would we define Universal Health Coverage in the context of newborn care?

Moderator question: Can CHIFA members comment further on measuring the numbers of stillbirths and neonatal deaths? (One commentator suggested that some early neonatal deaths may be classified as stillbirths - can anyone provide further information on this alarming possibility?)

Moderator question: In the era of the Sustainable Development Goals, how can we define Universal Health Coverage in the context of newborn care?

4.1 Who is responsible for newborn programmes at the national level?

4.1.1 Philippines

Corazon B Bernabe, Philippines:At the national level we have the department of health (DOH) that has its own divisions. But the implementation is handled at the local level because of devolution

4.1.2 India

Arti Maria, India: India has demonstrated steady commitment to improve the QoC for sick newborn in both policy and action. The country has witnessed improvement in infrastructure & systems strengthening over the last 8 to 10 years with establishment of District SNCUs in each of the distr & institutionalising a structured Facility Based Newborn Care (FBNC) across these. For the last few years, there has been a focus on improving QoC: setting up of District Early Intervention Centres (DEIC), MAA program (a nationwide launch of breast feeding program), Family Participatory Care (FPC) & now LaQkshya initiative (to strengthen Delivery Rooms & OTs) are some of the initiatives taken by our government. One can visit the link to view more of these guidelines: http://nhm.gov.in/nrhm-components/rmnch-a/child-health-immunization/child-health/guidelines.html

Arti Maria, India: Some of the commendable steps being taken by our government include standardisation of various operational & training Guidelines for various programs, considering infrastructural revisions to promote family centred care & KMC, concept of mother-newborn care units, strengthening delivery rooms & OTs, Creating universal opportunities for capacity building,

mentoring & auditing mechanisms by state medical colleges to act as state resource centres, putting in place systems for perinatal death audits & Child death Reviews, having checklists for care etc Having uniform Govt of India online SNCU database that helps to monitor, audit & compare performances objectively and use data further to motivate states to outperform each other, creating Mother-child tracking systems, trying to form linkages through public-private partnerships.

Shirish Tiwari, India: I have been associated and working in the field of maternal, newborn care and nutrition from the past five years and I have worked in almost five states of India. This gives the clear picture of the status of programs that have been initiated at national or state level and what has trickled down to the grass root. For example, the flagship program of RMNCH+A involves a majority of elements and components to address maternal and newborn care primary and secondary level but discrepancies implementation with the added shortage of skilled staff deteriorates the condition to an unaccepted level which does not provide the desired outcome. Consequently, there are training and supportive supervision sessions been formulated and even conducted at the various level of implementation but the quality and effectivity have not been uniformly maintained at all.

4.2 Referral systems

Moderator: Can you comment on how well the government empowers health workers at primary, district and national levels to give the best care possible to newborns? How could support be improved? How well does the referral system work for mothers and newborns - from primary to district level? from district to national level?

Shirish Tiwari, India: Moreover, with the underlying gaps and incoming challenges, different programs and guidelines have been issued from time to time. This has further elevated the miscommunication among the primary and secondary level staff for better implementation so that targets could be achieved. In which the newborn care has always been at a critical point. The start of INAP [India Newborn Action Plan] envisaged from ENAP [Every Newborn Action Plan] is a full package in itself but hardly been implemented in its proper sense. The program management unit and the medical officers responsible for its implementation are still in nascent stage. The question then comes is how can we expect from the ground level staffs and caregivers to have full potential and knowledge to efficiently implement at primary and grassroots level where there should be very clear understanding is of dire need.

Sue Prullage, Rwanda: Referral: There is a clear cut guideline that states that infants less than 2 kg are to go to the neonatal unit from the health center. What becomes a problem is when a infant needs to go from district to a national level. Often the national level hospital is hours away and there are no guidelines on how to send a baby safely. There are no neonatal transport systems in Rwanda. In my experience we transport a baby with a nurse who works in the neonatal unit. But she has limited equipment to take with her and no help if the baby decompensates along the way for she is alone. We often see the doctors transfer babies that seem futile. Perhaps a clear statement as to who and what babies should be transferred. For example an omphalocele transferred to a unit that doesn't have a ventilator, no working cpap or available incubators because it is stated that they need to be transferred to a higher level. Often the parents refuse transport because of cost and hardship for the family.

Moderator Question: Sue, please would you be able to clarify about the 2kg rule. Is this for transfer from the health centre to the district hospital? The lack of specialised ambulance transport is clearly a major danger for referral. (I am reminded of the time I witnessed a major road traffic accident in Mali - the 'ambulance', when it eventually came, was empty - no equipment, no trained personnel.) Can others comment on the situation in their country?

Sue Prullage, Rwanda: To clarify the 2 kg rule it is from the health center to the hospital

Sue Prullage, Rwanda: The MoH needs to address out born infants. Currently at one of the larger provincial hospitals it is the practice to admit all out born babies to the pediatric unit where there are no cpap,macines, IV's, incubators and they are next to infectious infants. Clear cut guidelines need to be developed. A commitment to minimal transport (neo nurse to go, IV in place with fluids, KMC) with written guidelines who can transport. Sometimes a nurse from another unit is sent for a sick baby thus putting that infant at risk.

4.3 What about measurement and accountability?

Moderator: On the subject of 'measurement and accountability', we have heard about difficulties in measuring stillbirths and neonatal deaths (we have also learned, alarmingly, that some early neonatal deaths are miscategorised as stillbirths). We invite more comments on this. Have you been involved in efforts to measure the delivery of health services and/or quality of care, at national, district or facility level? What are the challenges and lessons learned? How would we define Universal Health Coverage in the context of newborn care?

4.3.1 Measurement and accountability: Georgia

Mari Tvaliashvili, Georgia: In Georgia, all maternity homes have specific levels such as: I, II and III. The supplier of all levels of perinatal service must have a quality assurance program that includes a clinical audit system of documented paragraphs and / or delivery of cases of near-miss cases, as well as a quarterly documented record of the following basic data:
A) Number of primary cesarean sections (as well as their share in the total number of childbearing) low risk women;
B) Total number of obstetrical bleeding (in case of vaginal delivery and cesarean section);
C) Transfer of mothers in critical care department and / or other facility;
D) Number of maternal deaths according to reasons;
E) Transfer of newborns to newborn intensive service provider and / or other institution (according to weight categories);
F) Number of intrinsic mortality;G) the number of cases of neonatal mortality according to the reasons.

Mari Tvaliashvili, Georgia: II level of neonatal care provides a service delivery for healthy, durable (=34 0/7 weeks gestational age) and newborns of moderate intensity.
Perinatal service provider may, in exceptional cases, provide II level obstetrical care and III level neonatal care services simultaneously. This applies only to the institutions which have been granted the level of perinatal service up to April 1, 2017. Annual turnover of these institutions should be =1800 childbearing year (or = 150 births per month) and they should also have a newborn intensive care unit (department, etc.). The exception is the decision of the Coordination Group to provide perinatal services to the medical institution (annual turnover <1800) Whose reach is more than 120 minutes before the supplemental supplemental (III level) perinatal care service provider and is located in the border settlement area. Within the mentioned perinatal service, the institution has the right to receive early childbirth and provide III level neonatal care in accordance with the applicable legislation.

Mari Tvaliashvili, Georgia: The supply of sub-specialty (III level) care for maternal and newborns should be provided in the perinatal center, which is a multi-profile clinic (subtype "AC") or referral multiprocessor (sub "AD") ("On determination of classification of medical institutions" Minister of Defense 2016 It is part of the Order N01-9 / N of March 4). In addition, the auxiliary beds should be 150 or more. 1/5 or more of this bedside should have a bed beds. The Center provides high quality medical care for interdisciplinary management of pregnancy and child complications. Perinatal Center carries out obstetric and neonatal care as both physiological and risk-free pregnancy and childbearing, Rendered patients management The suppliers of this service should have a unit of intensive management (NICU) unit (department, department, etc.), intensive care and critical state management

unit (department, department, etc.) and powerful laboratory-diagnostic capabilities , Therapeutic and surgical profile specialists Domoba.

Mari Tvaliashvili, Georgia: Newborn care for sub-specialty (III) levels may be provided with pediatric multi-profile hospitals (subtypes "AC 1 ") and pediatric referral multi-profile hospitals (subtype "AD 1"(Order N01-9 / N of March 4, 2016 of the Minister of Labor, Health and Social Affairs of Georgia on Determination of Classification of Medical Institutions) having NNUU units (Department, Department, etc.) Provide intensive / critical neonatal services, including cases of referral patients In addition, in the specialized hospitals providing the newborn intensive care service (NICU), which have obtained a permit for a stationary institution (with appropriate permit attachment) for enactment of this Order. At this level all the newborn health care services need to have intensive / critical care or have a very small (<1500 g) and / or low gestational age (<34 weeks).

4.3.2 Measurement and accountability: Nigeria

I Abdulkadir , Nigeria: In the ministry, in Nigeria, neonatal programmes and policies are handled under the Directorate of child health and partly under reproductive health as Maternal and child health programmes. It is mainly however, under child health department.

I Abdulkadir, Nigeria: One has been opportuned to work on policy at national level, currently however the society of neonatal medicine in the country is providing the much desired push and coordination to ensure appropriate attention is accorded to neonatal issues.

Joseph Ana, Nigeria: Do the Ministries actually handle neonatal care in Nigeria?. And is the management of neonatal care in Nigeria uniform? From the federal ministry policies and strategies to the states and local government levels, the management varies widely. It varies even more at the points-of-care from primary health to secondary and tertiary care levels. A lot is said of 'maternal and child care' but infact there are not many devoted and functional neonatal care facilities across the country, which is why neonatal care remains poorly coordinated and poorly delivered. For sure there are well constructed and published policies and aspirations but at the point of delivery there is very much more work to do if Nigeria is to achieve its plans for saving neonates.

I Abdulkadir, Nigeria: Ministry handles programmes and policies at national level while a Gulf of gap exist between policies and implementation at facility level. At the level of care there exist little or no neonatal care facilities to a large populace. While majority of the level I and II neonatal care are only unsatisfactorily, inaccessibly and most times unaffordably available at tertiary health facilities which are albeit supposed to provide level III or IV care. A number of non government private for fund facilities also provide scanty haphazard level I care with worse still very poor referral system and facilities.

I Abdulkadir, Nigeria: There is a need to define and disseminate minimum bench mark for neonatal levels of care in Nigeria while ministries ensure these are respected by facilities. The government will need to do more in terms of provision of standardized optimally functional neonatal care levels I-III/IV, provide facilities, provide equipment, manpower and training and as well collaborate with and provide supervision, mentorship, monitoring and support to private facilities providing neonatal care. Above all, the local government, state and federal government will need to work synchronously towards set goals for any meaningful success to be recorded in provision of neonatal care.

4.3.3 Measurement and accountability: Philippines

Corazon B Bernabe, Philippines: DOH as the national body, but we have specialist groups that collaborate.

4.3.4 Measurement and accountability: Rwanda

Sue Prullage, Rwanda: This is a wonderful article and project. In my own experience I have seen a lot of investment of education at the community level and not much investment of education at the hospital level. The author documented that education, family involvement and not rotating staff decreased mortality. This program would flow well with family centered care. I also like that it was an 18 module education program. Neonatal care encompasses so much I am glad to see they took the time to try and address most of the common issues.

4.3.5 Measurement and accountability: South Africa

Mmusetsi Mokwatsi, South Africa: The Province has a programme or framework called Maternal, Neonatal, Child and Women's Health and Nutrition (MNCWHN) which has been cascaded down from the national department of health. This framework set out the objectives that must be achieved and the care that should be provided. Newborn care and Management of Small and Sick Neonates (MSSN) are located within this programme, and this programme is cascaded down to the districts where there are districts coordinator for the programme. There is regular MSSN training that happens including helping babies breathe, and this usually takes place at the districts level by district paediatricians working in the District Clinical Specialist Teams (DCST).

Ruth Davidge, South Africa: Data management:
- All hospitals are now required to analyse every stillbirth or neonatal death using the Perinatal problem identification program (PPIP) https://www.ppip.co.za/
- These are discussed monthly at a perinatal meeting with senior management and action plans devloped
- Basic data on births and deaths are captured using DHIS 2 https://www.dhis2.org/
- In KZN we are in the process of adding further neonatal data elements to DHIS including discharge diagnosis, cause of death and implementation of basic care eg immunisations, KMC, nasal CPAP et al
- In KZN we are rolling out a neonatal dashboard to capture the results of quality of care assessments for use in every hospital (based on national recommendations)

Ruth Davidge, South Africa: Resources/ Oversight:
- There are national guidelines on the management of sick and small babies
- There are national norms for bed numbers, infrastructure, equipment and consumable requirements for neonatal units et al
- There is a national system for 24 hr death reporting
- There is an evolving system of monitoring and assessment of implementation and quality of care

4.3.6 Measurement and accountability: Uganda

Mickey Rostoker, Canada: A new publication in the BMJ Global Health highlights the well thought out and well structured newborn program in Mbale Regional Referral Hospital, Uganda.
Staged implementation of a two-tiered hospital-based neonatal care package in a resource-limited setting in Eastern Uganda
Kathy Burgoine, Juliet Ikiror, Sylivia Akol, Margaret Kakai, Sara Talyewoya, Alex Sande, Tom Otim, Francis Okello, Adam Hewitt-Smith, Peter Olupot-Olupot
DOI: 10.1136/bmjgh-2017-000586 Published 19 February 2018
http://gh.bmj.com/content/3/1/e000586?cpetoc

Mickey Rostoker, Canada: What local hospital & federal MOH protocols are needed to see that this kind of endeavour continues with locally empowered authorities & health professionals? One thing that I have not seen is the existence of 'small centers of excellence'. We tend to think of centers of excellence as being large, but perhaps small centers should have the benefit of having their successful programs visited by physicians, nurses, administrators who look after newborns in other Uganda jurisdictions.

Mickey Rostoker, Canada: Ultimately, political will has to be there at multiple levels and each level has to be supportive of the other. What happens when the foreign specialist leaves? How many internationalist health workers have designed and implemented programs with their host country colleagues and on top of that trained others to carry on the work, only to see everything fall apart when the foreigner leaves?

Mickey Rostoker, Canada: Uganda has lots of fine clinicians. What holds the other regional referral hospitals (and even district hospitals) from doing the same good work as Mbale? Ever mindful that one's utterances can be ill informed, I am ready to accept the fact that similar good newborn programs are in place around the country, but that it is only Mbale that has published.

5. Who are the key players in the global health architecture for newborn care? UNICEF is making newborns their advocacy priority this year. Is this the UN responsibility alone? What about WHO, donors, professional groups and academics?

5.1 Who are the key players?

Moderator: Who are the key players in the global health architecture for newborn care? Here is a preliminary list of 7 key players (can you suggest others?):
1. World Health Organization
2. UNICEF
3. Partnership for Maternal, Newborn and Child Health
4. Save the Children International
5. Healthy Newborn Network
6. US Agency for International Development
7. Bill & Melinda Gates Foundation

Are you familiar with the work of any of the above in newborn care? If so, please send a brief description to: chifa@dgroups.org
Possible guidance questions might included:
1. What are your key strengths? How do these relate to other key players?
2. What challenges do you face in your work?
3. How might your impact be maximised?

Bill Keenan, USA: Missing from this list: the providers. ICM, IPA, FIGO and ICN at the minimum.
[*Note from HIFA moderator (Neil PW):
ICM = International Confederation of Midwives
IPA = International Paediatric Association
FIGO = International Federation of Gynecology and Obstetrics
ICN = International Council of Nurses]

Michael K. Visick, USA : Yes, in agreement with Bill, I would add:
IPA
ICM
AAP (American Academy of Pediatrics)
Laerdal Global Health
LDSC (LDS Charities)
ACNM (American College of Nurse Midwives)

Massimo Serventi , Tanzania: if by 'key players' you mean All actors engaged in the preservation of life for newborns I'd rather say that the major role is played by the available local health staff, paid by local governments.
I take the opportunity to write the following: expatriate doctors/nurses, experts of public health arriving from UN agencies, whoever does not belong to a particular area or culture of a poor country should refrain from working there. I am one of the above expatriates, I made so many mistakes, I became rich working with the poor.
To send doctors in Angola where there are 1200 local doctors unemployed is a wrong move.
To recruit expatriate to fight malnutrition is a nonsense:they should stay home and fight obesity.
Things are changing, poor countries have quality&quantity staff enough to offer health service to all.

Alfred Ocen, Uganda: I am in agreement with Massimo Serventi to greater extend that at the local level in the community, Village Health Team/Para-social workers or local health workers are key players as evidenced in Uganda. Only needed thing to empower them in order to have quality improvement in their endeavors and link to the main Health facilities effectively and efficiently.

Carole Kenner, USA: I would suggest COINN should be added-Council of International Neonatal Nurses, Inc. (COINN).

Moderator: It would be great to hear from representatives (or observers) of the above, to hear more about the special roles of each of the above organisations in the global newborn care architecture, and perhaps some comments on how these organisations coordinate their work for maximum impact. In addition to the above, CHIFA members added professional organisations such as ICN, ICM, COINN and FIGO. We look forward to hear more about these organisations, too, and how they coordinate with the above.

Moderator: The wider framework of the Sustainable Development Goals is also presumably critical in defining a shared vision against which impact can be measured: "By 2030, end preventable deaths of newborns... with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1000 live births..." Would anyone like to say more about the SDG framework and newborn health?

Moderator: In summary, we look forward to learn more about the 'key global players' in the conventional sense (UN agencies, NGOs, Partnerships, Professional Associations), and how they support others (eg governments, health professionals, citizens) to improve the health of newborns.

5.2 UNICEF and WHO

Moderator: The text below is reproduced from the UNICEF website, with a petition 'to call on health ministers and leaders gathered at the World Health Assembly on 2126 May to stopp the tragedy of 7,000 newborns dying every day'. Read online and sign the petition here:
https://www.unicef.org/every-child-alive/
'7,000 newborn babies are dying every day
That means that, as you read this, a new mother is grieving the loss of her child. As is another. And another.
The scale of these losses is unthinkable. It€™s preventable. And YOU can do something about it. Raise your voice to demand affordable, quality health care for every mother and newborn. Take 30 seconds to sign this petition there€™s not a minute to waste.

'Sign the petition
I call on health ministers and leaders gathered at the World Health Assembly on 2126 May to stop the trageddy of 7,000 newborns dying every day…'
'These children are not dying because we don't have the tools to save them. More than 80 per cent of all newborn deaths are caused by three preventable and treatable conditions: complications due to prematurity or during delivery, and infections like sepsis, meningitis and pneumonia.

'But treatment and interventions are not reaching the mothers and children who need them most the families who live in the most disadvantaged areas, enduring the harshest conditions.

Lily Kak, USA: Earlier this week, UNICEF launched a campaign, 'Every Child Alive: the Urgent Need to End Newborn Deaths. They published a very strong (and beautiful) report [https://www.unicef.org/publications/index_102640.html] rich with data, the urgency to do more, and the importance of quality of care. I especially liked the reference to the four Ps to enhance quality of care: Place (clean functional health facilities equipped with water, soap and electricity), people (competent human resource), products (10 life-saving commodities/equipment), and power (empowering girls, mother and families to demand receive quality care. Last week, the CHIFA discussion made a lively contribution to the issues related to place, people, and power. I would love to hear your views about products. The 10 life-saving articles that the report refers to are bag and mask for newborn resuscitation, antibiotics, blankets and cloth for thermal care, chlorhexidine, CPAP, oxygen concentrator, phototherapy machines, micronutrient supplements during pregnancy, tetanus toxoid, and thermometers. Are these products available in your health facilities? How can global and national stakeholders support the availability and accessibility of these products? What are the challenges that we must consider if we are to overcome barriers? What can we do to engage the private sector? What is the role of innovations and innovators?

Kausar Skhan: The report [Every Child Alive: the Urgent Need to End Newborn Deaths] draws attention to a very serious issue i.e. rate of still births. However, it offers a service oriented solution, and does not address the social determinants of still births. For example, it is not enough to cite the well known variable of income and education, but to ignore empowerment issues like the place of woman in her family, and the social mechanism that control women. It ignores the fact that services cater to the practical needs of women, and not her strategic interests. (this is a well known dyad for gender analysis of women's status in society). It could have used the ecological framework to probe into social causes of still births. Furthermore, it draws no attention to the functionality of health systems and their determinants. It could have analyzed this phenomenon with the help of WHO report on social determinants of health, and used its framework to examine the social determinants of still births.

Nick Spencer, UK: Thanks to Kauser Khan for drawing attention to the social determinants of stillbirth and infant mortality. Improvements in service delivery may have some impact but are not able to address the fundamental drivers of these adverse perinatal outcomes. Lack of education, poverty and female disempowerment all increase the risk of adverse perinatal outcomes as well as increasing the risk of lack of access to healthcare. Health professionals have a duty to address these drivers as well as promoting service improvements. As Kauser suggests, the WHO Commission Report on Social Determinants of Health is essential reading providing convincing evidence for advocacy.

5.3 Every Newborn Action Plan

Moderator: EVERY NEWBORN ACTION PLN (ENAP)
Arguably the greatest step forward for newborn health collaboration and collective action is the Every Newborn Action Plan (ENAP), a collaborative roadmap to ending preventable newborn deaths, launched in 2014 and steered by many of the above listed actors (and many more). 'If we commit to working together as a global community to take the specific actions outlined in the Every Newborn action plan, we can achieve our vision of a world in which there are no preventable deaths of newborns or stillbirths, where every pregnancy is wanted, every birth celebrated, and women, babies and children survive, thrive and reach their full potential and in doing so create equitable societies and transform human development.' We look forward to hear from steering group members of ENAP and others. Could you describe further what ENAP is aiming to achieve, and how this is being achieved? What are the main challenges?

Moderator: The ENAP Metrics group is currently supporting CHIFA to contribute to this collective effort through the CHIFA Newborn Care Project (http://www.hifa.org/projects/newborn-care). What more can global health communities of practice such as CHIFA do to help engage the full range of stakeholders and thereby accelerate progress towards the ENAP vision?

5.4 Addressing inequality

Dharmendra Kumar Dewan, India: The key players here should seriously consider taking up the role of being direct stakeholders when it comes to roping in the huge corporate private health institutional platform existing in predominantly urban settings where costs of institutional neonatal care are prohibitive but the state of the art infrastructure (including neonatal transportation), remains underutilized.

Other

Training materials

Joseph Ana, Nigeria: On HIFA and CHIFA forums it has been shared many times that literally, context is everything, especially in health matters. External expertise is often needed and occasionally the only answer but it behoves the external experts to first ensure that they understand the environment, cultures, socio-economic circumstance of those they are asked to support and train and help to serve the patient better. Our recent experience with PACK Nigeria guide for all cadres of PHC clinicians is that the pilot went very smoothly to produce excellent results because PACK Global and PACK Western Cape South Africa were localised to fit the PHC in Nigeria. It took six months to localise by a team comprised of local physicians, community health practitioners, nurses and midwives. The team consulted thirteen existing guidelines and protocols in use in PHCs and invited subject experts e.g. in mental health, HIV, TB for their input. In addition before finalising the guide there was an end-user consultation and questionnaire survey, whose ideas were taken into account. Policy makers, managers and providers need to take context in their interventions in Newborn care.

Joseph Ana, Nigeria: We are about to scale up PACK Nigeria Adult.
[http://knowledgetranslation.co.za/programmes/pack-nigeria-adult/]
PACK Child has completed pilot and is in use in South Africa.
Funding allowing, we shall be Localising PACK Child for Nigeria this year. Work is on to get a sponsor.

Joseph Ana, Nigeria: This is a Child forum but all the same I share our experience in the Pilot of PACK Nigeria Adult guide for PHC workers in Nigeria because implementers of Newborn/Child care programmes / projects can learn from the PACK (Practical Approach to care Kit) experience: 'From May to November 2016 HRIWA Nigeria, with support from KTU University of Cape Town, and BMJ, localised the PACK guide and training materials, aligning content with Nigerian regulations, clinical protocols and available diagnostic tests, equipment and medications. The result is PACK Nigeria Adult, a single, integrated, comprehensive, evidence-informed, policy-aligned clinical guide to support all cadres of health care worker managing adult patients in PHCs in Nigeria. The pilot in 2017 followed the localisation of the guide.

Joseph Ana, Nigeria: Relevant to what we are discussing on CHIFA is that before training (Master trainers Training in each state) commenced, the State Primary Health Care Development Agencies (SPHCDAs) in the three states were provided with a list of all the medicines, tests and equipment included in PACK so that they could ensure that the necessary resources were in place.

Joseph Ana, Nigeria: They were also encouraged to develop a communications plan to help promote PACK not just to the clinicians themselves but also to all those who are responsible for the delivery of

primary health care services in the state and to the patients and communities they serve'. We found that getting the state authorities to get the 'facilities Ready' was a key indicator for a successful pilot.

Stillbirths and neonatal deaths

Indira Narayanan, USA: The importance of numbers cannot be over-emphasized. However, neonatal mortality cannot be fully estimated by merely counting newborn deaths, difficult as it may be. Based on experience on caring for the newborn in low and middle-income countries and on a recent study of facility-based care of the newborn, I feel it is necessary to also look into two additional data to get a better picture. In all countries stillbirths, notable fresh stillbirths need to be taken into account as in some centers, some neonatal deaths may, for a variety of reasons, be recorded as still births. Additionally, babies that are discharged against medical advice (DAMA), should also be taken into account. Some of these are taken home because of the families perception of the futility of care in a sick baby, especially where they have to pay for it. Hence, although the exact numbers of stillbirths that have been wrongly classified or the proportion of the DAMA babies that die at home or in another facility may not be clear, documenting all three components can give a more holistic picture and highlight what other interventions need to be considered.

Dharmendra Kumar Dewan, India: In low income countries domiciliary deliveries or those attended by untrained birth attendants need to be factored-in while calculating/estimating Neonatal Mortality rates

Dharmendra Kumar Dewan, India: Since Still births are reflective of (mainly) the quality of Antenatal care and the fresh neonatal deaths (of obstetric & paediatric care at birth), staff orientation on identifying and dealing appropriately & promptly, can make a significant difference if such practices get institutionalized.

Dharmendra Kumar Dewan, India: There is a need for the governments (in underdeveloped or developing countries) to start regularly sourcing ground level data (births & deaths--civil registration system) thru creating robust systems instead of relying on small sample sized field surveys every two to four years (which normally cover only < 1 % of the total population)... this data analyzed regularly will help policy formulation even for creating posts at hospitals (of nurses, doctors, paediatricians etc).

Neonatal sepsis

Anil Cherian, South Sudan: I am based in Kampala train mid-level health workers for South Sudan. One major cause of neonatal death and most of this is early onset neonatal sepsis. However I find that there is a "conceptual gap" and that the concept of early onset neonatal sepsis and the perinatal risk factors and ethology is hardly discussed. One of our midwifery students did her research on this topic and found that 30-45% of the infants born at a level 3 health centre (Primary Health Centre which is managed by nurses and midwives) were " at risk of sepsis". One of the reasons for this could that 21% of the women who delivered and included in the study were HIV positive, 36% had four or more pelvic examination. While the midwives conducted most pelvic examination with gloves, sterile packs or vulval swabbing with anti-septic solution were not practices. Again most of the delivery packs were not completely sterile. I am unable to put a reliable figure to the proportion of early newborn deaths due to neonatal sepsis, I would suspect that it would be around 25% if not more.

Anil Cherian, South Sudan: In this context the administration of parenteral antibiotic becomes and I recollect a study done by Abay Bang et al which showed that if a risk criteria was taught to health workers and they were also trained to administer IM antibiotics in the postpartum period the mortality due to early onset neonatal sepsis could be reduced.

Improving neurodevelopmental outcomes

Moderator: Previous messages on CHIFA have focused on follow-up care of newborns with brain injury, but prevention (through adequate antenatal/intrapartum care and resuscitation) is arguably more important. Can anyone comment on the quality of antenatal/intrapartumn care and resuscitation efforts. What percentage of hypoxic ischaemic encephalopathy might have been avoided with basic antenatal/introapartum care and resuscitation? What training in resuscitation is available at different levels of the health system?

Samantha Sadoo, UK: In relation to the question [What percentage of hypoxic ischaemic encephalopathy might have been avoided with basic antenatal/introapartum care and resuscitation? What training in resuscitation is available at different levels of the health system?], this meta analysis estimates that neonatal resuscitation in the facility setting may reduce intrapartum-related neonatal mortality by 30%. The impact in the community/ home-based setting is unclear, though estimated to reach 20%.
https://bmcpublichealth.biomedcentral.com/articles/10.1186/1471-2458-11-S3-S12

Hemant Nandgaonkar, India: We are developing the new program of early intervention since a year. We could do it in one hospital so far. Its aim is to reduce developmental morbidity by early intervention. The hospital is a children private hospital and away from the city. Most of the hospitals refer to Occupational therapist after NICU discharge and it's usually 3 months age of the baby. But if risk factor for developmental morbidity are present then we encourage neuro protective measures right in NICU itself. The program we are offering is regarding training the staff in NICU for neuroprotective strategies and early stimulation to improve long term outcome.

William Keenan, USA 1) Mortality, while important in itself, is a stand-in for morbidity which is life long. 2) again, I hope all of us can support the providers especially professional leadership to work vigorously with clear focus on the well being of mothers and children.

Profiles

CHIFA profile: I Abdulkadir is a Lecturer and consultant paediatrician/neonatologist, a member of the paediatric association of Nigeria and currently the head of department of paediatrics Ahmadu Bello University/ Teaching Hospital Zaria, Kaduna in northern Nigeria where access and affordability to healthcare remain great challenges. I have worked as consultant to organisations/ programmes including GHAIN, PATHS and CHAI. I am committed to teaching, training and research towards improving child health with particular interest in newborn health. isaburamla AT yahoo.com

CHIFA profile: Joseph Ana is the Lead Consultant and Trainer at the Africa Centre for Clinical Governance Research and Patient Safety in Calabar, Nigeria. In 2015 he won the NMA Award of Excellence for establishing 12-Pillar Clinical Governance, Quality and Safety initiative in Nigeria. He has been the pioneer Chairman of the Nigerian Medical Association (NMA) National Committee on Clinical Governance and Research since 2012. He is also Chairman of the Quality & Performance subcommittee of the Technical Working Group for the implementation of the Nigeria Health Act. He is a pioneer Trustee-Director of the NMF (Nigerian Medical Forum) which took the BMJ to West Africa in 1995. He is particularly interested in strengthening health systems for quality and safety in LMICs. He has written Five books on the 12-Pillar Clinical Governance for LMICs, including a TOOLS for Implementation. He established the Department of Clinical Governance, Servicom & e-health in the Cross River State Ministry of Health, Nigeria in 2007. Website: www.hriwestafrica.com Joseph is a member of the HIFA Steering Group:
http://www.hifa.org/people/steering-group
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CHIFA profile: Anjuli Borgonha is the Communications Manager for the Every Newborn Action Plan metrics project at the Centre for Maternal, Adolescent, Reproductive, and Child Health (MARCH), the central hub for women's and children's health within the London School of Hygiene & Tropical Medicine in the UK. MARCH AT LSHTM.AC.UK

CHIFA profile: Anil Cherian is the Director of the ICMDA National Institute of Health Sciences Jonglei in South Sudan. Professional interests: Paediatrics, Public Health, Health Economics. anilcherian AT gmail.com

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CHIFA profile: Dharmendra Kumar Dewan is Director Family Welfare, Directorate of Family Welfare, Government of Delhi, India. Professional interests: Public Health issues on Maternal & Child Health: Neonatal care strengthening, Improving institutional deliveries & quality care, Childhood immunization, Gender Ratio imbalance & role of regulations & Acts. dharmdewan22 AT yahoo.co.in

CHIFA profile: Mike English trained as a General Paediatrician in the UK but has worked in Kenya (where he is still based) for over 20 years supported by a series of Wellcome Trust research fellowships. He initially formed the Child and Newborn Health Group but this transitioned in 2011 to the broader Health Services Unit which Mike heads in collaboration with Kenya's Ministry of Health, the Kenya Paediatric Association and the University of Nairobi. He also leads the Oxford Health Systems Research Collaboration (OHSCAR). He is a member of the CHIFA Newborn Care working group.
http://www.hifa.org/projects/newborn-care
http://www.hifa.org/support/members/mike
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CHIFA profile: Marcio Fossari is a medical doctor from Brazil, currently working for the public system 100%. His interests include child and maternal health, including ways to improve the management of childbirth by non-medical people. marcio.fossari AT gmail.com

CHIFA profile: Gulbin Gokcay is Professor at the Istanbul University Institute of Child Health, Turkey. Professional interests: Pediatric Epidemiology, Immunization, Breastfeeding, Pediatric nutrition, Well Child Care, Social Pediatrics. gokcay AT superonline.com

CHIFA profile: Clare Hanbury qualified as a teacher in the UK and then worked in schools in Kenya and Hong Kong. After an MA in Education in Developing Countries and for many years, Clare worked for The Child-to-Child Trust based at the University of London€™s Institute of Education where, alongside Hugh Hawes and Professor David Morley she worked to help embed the Child-to-Child ideas of childrens participation in health into governmeent and non-government child health and education programmes in numerous countries. Clare has worked with these ideas alongside vulnerable groups of children such as refugees and street children. Since her MSc in International

Maternal and Child Health, Clare has worked freelance and focuses on helping government and non-government programmes to design and deliver child-centered health and education programmes where children are active participants. Clare has worked in many countries in East and Southern Africa and in Pakistan, Cambodia and the Yemen. Her current passion is for distilling health information for teachers, health workers and others into simple practical heallth messages actionable by children.
http://www.hifa.org/projects/citizens-parents-and-children
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CHIFA profile: Sara Hassanain is a Sudanese Pharmacist and is Coordinator of the Comprehensive Approach to Lung Health, helping pneumonia in children and working at The Association of Public Health Research. She has worked for 2 years with the Khartoum State Ministry of Health. sarahazim AT gmail.com

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Citations

1. Neonatal resuscitation

CITATION: Pejovic NJ, Trevisanuto D, Lubulwa C, et al Neonatal resuscitation using a laryngeal mask airway: a randomised trial in Uganda Archives of Disease in Childhood 2018;103:255-260. http://dx.doi.org/10.1136/archdischild-2017-312934

ABSTRACT

Objective: Mortality rates from birth asphyxia in low-income countries remain high. Face mask ventilation (FMV) performed by midwives is the usual method of resuscitating neonates in such settings but may not always be effective. The i-gel is a cuffless laryngeal mask airway (LMA) that could enhance neonatal resuscitation performance. We aimed to compare LMA and face mask (FM) during neonatal resuscitation in a low-resource setting.
Setting: Mulago National Referral Hospital, Kampala, Uganda.
Design: This prospective randomised clinical trial was conducted at the labour ward operating theatre. After a brief training on LMA and FM use, infants with a birth weight >2000?g and requiring positive pressure ventilation at birth were randomised to resuscitation by LMA or FM. Resuscitations were video recorded.
Main outcome measures: Time to spontaneous breathing.
Results: Forty-nine (24 in the LMA and 25 in the FM arm) out of 50 enrolled patients were analysed. Baseline characteristics were comparable between the two arms. Time to spontaneous breathing was shorter in LMA arm than in FM arm (mean 153?s (SD±59) vs 216?s (SD±92)). All resuscitations were effective in LMA arm, whereas 11 patients receiving FM were converted to LMA because response to FMV was unsatisfactory. There were no adverse effects.
Conclusion: A cuffless LMA was more effective than FM in reducing time to spontaneous breathing. LMA seems to be safe and effective in clinical practice after a short training programme. Its potential benefits on long-term outcomes need to be assessed in a larger trial.

WHAT IS ALREADY KNOWN ON THIS TOPIC?
Birth asphyxia contributes to almost 1 million neonatal deaths.
Positive pressure ventilation is the most important component of successful neonatal resuscitation.
Ventilation with face mask (FM) is a difficult skill to master, particularly in low-income settings.

WHAT THIS STUDY ADDS?
A cuffless laryngeal mask airway (LMA) reduced time to spontaneous breathing compared with FM during newborn resuscitation in a low-resource setting.
LMA is effective and easy to use after a short-term training programme even in the hands of inexperienced staff.

EXTRACTS
Each year, intrapartum-related complications (birth asphyxia) result in 1.2?million stillbirths, 700 000 term newborn deaths and an estimated 1.2?million babies developing neonatal encephalopathy (previously called hypoxic ischaemic encephalopathy).1 2 Of these, 96% occur in low-income and middle-income countries.3 4 Successful resuscitation could prevent a large proportion of these deaths and improve the outcomes of neonates surviving asphyxia.3 5 6 Therefore, all birth attendants, including physicians, midwives and nurses ought to have the knowledge and skills required to perform neonatal resuscitation.

2. Stillbirths

Gulbin Gokcay , Turkey: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5509129/

Anjuli Borgonha, UK: In 2016 The Lancet released an influential series of Ending Preventable Stillbirths which can be found here:
http://www.thelancet.com/series/ending-preventable-stillbirths

3. Kangaroo Mother Care

Melissa Morgan, USA/UK: Thank you for your input [Newborn Care (52) Kangaroo mother care (5)]. I have heard similar feedback about the use of KMC scoring sheets in other African facilities. It's

quite interesting to hear that some mothers view the KMC room as a stepdown unit. There have been a number of qualitative and mixed methods studies evaluating barriers to KMC in facilities, including a study in a Ugandan hospital that we recently published as well as several systematic reviews (links below for anyone who might be interested). [see Citations]
http://www.jogh.org/documents/issue201801/jogh-08-010701.htm
https://academic.oup.com/heapol/article/32/10/1466/4093363
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4439040/pdf/pone.0125643.pdf

Barriers and Enablers of Kangaroo Mother Care Practice: A ...
www.ncbi.nlm.nih.gov
Kangaroo mother care (KMC) is an evidence-based approach to reducing mortality and morbidity in preterm infants. Although KMC is a key intervention package in newborn ...

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4750435/pdf/BLT.15.157818.pdf

Kangaroo mother care: a systematic review of barriers and ...
www.ncbi.nlm.nih.gov
Methods. We searched PubMed, Embase, Scopus, Web of Science and the World Health Organization€™s regional databases, for studies on 'kangaroo mother ...

Sarah Moxon, UK: Within this paper, published as part of series on health system bottlenecks for maternal and newborn health (led by UNICEF and WHO), there is a helpful visual figure which outlines the health system requirements for KMC at different levels of the health system and how different entry points allow KMC to be integrated into small and sick newborn care: https://bmcpregnancychildbirth.biomedcentral.com/articles/10.1186/1471-2393-15-S2-S5 In addition to other factors that have been mentioned in this discussion, this analysis also identified lack of health information and standardized measurement systems as a major challenge to improving coverage and quality of KMC.

Sarah Moxon, UK: The question of how we can measure high quality KMC has received a lot of attention in recent years. For those working within the system to implement KMC, I'd draw attention to this paper, which presents the results of a consensus based approach to identity a core set of indicators to track effective implementation of KMC. In simpler language , this paper answers the question: What should we measure to make sure that everything in the system is working to enable mothers to provide KMC effectively? https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5644361/

4. Neonatal deaths

CITATION: A comparison of early neonatal deaths among preterm infants with term neonatal deaths at the University Teaching Hospital, Lusaka, Zambia
P. Kamfwa, Y. Ahmed, B. Vwalika
Medical Journal of Zambia, Vol 44, No 4 (2017)
https://www.ajol.info/index.php/mjz/article/view/168220

ABSTRACT
Background: Prematurity is a common complication that contributes significantly to high neonatal mortality. In spite of many efforts by the government and other partners, non-significant decline has been achieved in the recent past. Globally, 15 million babies are born preterm (<37 weeks gestation) each year, and more than 1 million of those do not survive their first month of life. Preterm birth accounts for 75% of all perinatal mortality in some series thus identifying the determinants of preterm deaths is very crucial for policy improvement. This study was aimed at establishing factors associated with preterm deaths at UTH compared to those of term neonatal deaths.

Methods: A case-control study was conducted among 208 neonates that were early neonatal deaths i.e. within 7 days in neonatal intensive care unit (NICU) at UTH in 2015. Antenatal and intrapartum details (parity, multiple pregnancy, birth weight, antenatal steroid exposure, antibiotic exposure, and the indication of admission to NICU) were obtained from 104 neonates that were preterm (between 24- 36 completed weeks gestation) and had died and of a further 104 term neonates (>37 weeks gestation) that died around the same time. The data was collected by int e rvi ewe r- administered structured questionnaire and analyzed by SPSS v21. Bivariate analysis was used to identify variables for multivariate logistic regression model to identify obstetric determinants amongst deaths in neonates that were preterm compared to those born at term.

Results: There were few differences between the two groups. The sex of the neonate significantly influenced the odds of dying. We confirmed that male neonates had a 57.1% higher risk than females (42.9%) of dying during the early neonatal period. More term neonates that died were male (P=0.0031) and had a very poor Apgar score (1-3) (P=0.0048). Both the indications for admission to NICU and cause of death were different in the two groups with preterms (P<0.0001) and terms P=0.0309. On multivariate regression analysis, poor Apgar score was associated with six-fold odds of RDS. More preterm neonates had died despite receiving steroids. None of the other factors reached statistical significance (adjOR 6.0, 95% CI 3.03-11.92, p<0.0001). Poor Apgar score was also the only factor associated with sepsis, though it was a neonate with a good Apgar score that had higher odds of dying due to sepsis. Primiparity was associated with a 2.6-fold odds (95% CI 1.03 to 6.68, p=0.04) of hypoxic ischaemic encephalopathy. On logistic regression, a preterm neonate dying only had a higher odds of being a LBW (<2500g) than any other factor [adjusted OR 132.72 (95% CI 39.49 to 387.66) P<00001]. Considering the main causes of death, hypoxic ischemic encephalopathy in preterm neonates was only associated with poor Apgar score (i.e. <7) [adjusted OR 2.03 (95% CI 1.12 to 3.67) P =0.02]. Sepsis in term neonates OR 0.2 (95% CI 0.15 to 0.54) P<00001]. Respiratory distress syndrome in preterm neonates dying was only associated with poor Apgar score [adjusted OR 6.01 (3.03 to 11.92) P<00001].

Conclusions: Hypoxic ischemic encephalopathy as a cause of early neonatal death is commoner in term neonates but also common in preterm. Sepsis is commoner in preterm neonates as a cause of early neonatal death. Comparing different causes of death, poor Apgar score featured in all cases calling for improved resuscitation.

Moderator comment: The authors conclude that 'Hypoxic ischemic encephalopathy as a cause of early neonatal death is commoner in term neonates but also common in preterm'. They refer to the need for improved resuscitation at birth. They refer to Apgar scores, but without indicating whether this refers to scores at 1 minute or 5 minutes.

5. Community-based intervention

Moderator: Below are the citation and abstract of a new paper from Zambia. The findings are consistent with the work by Anthony Costello and others on the impact of women's groups.

CITATION: Jacobs C.; Michelo C.; Chola M.; Oliphant N.; Halwiindi H.; Maswenyeho S.; Baboo K.S.; Moshabela M.
Evaluation of a community-based intervention to improve maternal and neonatal health service coverage in the most rural and remote districts of Zambia.
PLoS ONE. 13 (1), 2018. Article Number: e0190145.
Date of Publication: January 2018.
http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0190145

ABSTRACT
Background: A community-based intervention comprising both men and women, known as Safe Motherhood Action Groups (SMAGs), was implemented in four of Zambia's poorest and most remote districts to improve coverage of selected maternal and neonatal health interventions. This paper reports on outcomes in the coverage of maternal and neonatal care interventions, including antenatal care (ANC), skilled birth attendance (SBA) and postnatal care (PNC) in the study areas.

Methodology: Three serial cross-sectional surveys were conducted between 2012 and 2015 among 1,652 mothers of children 0-5 months of age using a 'before-and-after' evaluation design with multi-stage sampling, combining probability proportional to size and simple random sampling. Logistic regression and chi-square test for trend were used to assess effect size and changes in measures of coverage for ANC, SBA and PNC during the intervention.

Results: Mothers' mean age and educational status were non-differentially comparable at all the three-time points. The odds of attending ANC at least four times (aOR 1.63; 95% CI 1.38-1.99) and SBA (aOR 1.72; 95% CI 1.38-1.99) were at least 60% higher at endline than baseline surveillance. A two-fold and four-fold increase in the odds of mothers receiving PNC from an appropriate skilled provider (aOR 2.13; 95% CI 1.62-2.79) and a SMAG (aOR 4.87; 95% CI 3.14-7.54), respectively, were observed at endline. Receiving birth preparedness messages from a SMAG during pregnancy (aOR 1.76; 95% CI,
1.20-2.19) and receiving ANC from a skilled provider (aOR 4.01; 95% CI, 2.88-5.75) were significant predictors for SBA at delivery and PNC.

Conclusions: Strengthening community-based action groups in poor and remote districts through the support of mothers by SMAGs was associated with increased coverage of maternal and newborn health interventions, measured through ANC, SBA and PNC. In remote and marginalised settings, where the need is greatest, context-specific and innovative task-sharing strategies using community health volunteers can be effective in improving coverage of maternal and neonatal services and hold promise for better maternal and child survival in poorly-resourced parts of sub-Saharan Africa.

END

Compiled by Neil Pakenham-Walsh, 2 April 2018