

INTERNATIONAL SECTION

Neonatal Experiential Learning Site and outreach program in KwaZulu-Natal

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KEYWORDS

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Standards of care

Abstract The perinatal and neonatal mortality rates in South Africa are inappropriately high. In order to support an improvement in the standard of neonatal care in the hospitals in Area 2 KZN a Neonatal Experiential Learning Site (NELS) was created. Run by a full time coordinator, it consists of a centralized two week learning block and an outreach support and teaching programme.

Thus far there has been improved staff morale, increasing awareness by hospitals of the need to improve neonatal care, improved communication and collaboration between doctors and nurses and improved quality of care.

Unfortunately numbers accessing NELS training are inconsistent often including junior staff unable to implement change without senior support. Rapid turnover of staff limits sustainability of change. Ongoing poor staff patient ratios decrease the effectiveness of outreach visits and the ability of staff to implement quality improvement.

Ongoing support is imperative to ensure sustainable change. It is crucial for a senior nurse/doctor permanently employed in neonatal care to drive the quality improvement process in each hospital. Support from management is vital. Close liaison with Provincial departments will ensure standardization. Accreditation of neonatal units will encourage compliance with the norms and standards set.

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Introduction

“For the things we have to learn before we can do them, we learn by doing them” (Aristotle). (Bynum and Porter, 2005; Wikipedia)

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“Tell me and I will forget, show me and I may remember, involve me and I will understand” (Confucius). (Wikipedia; Confucius, n.d.)

Currently training of healthcare workers, particularly doctors, is strongly focused on self-directed, experiential learning. Experiential learning in

healthcare is learning from experience, focussing on the learning process for the individual. It enables learners to learn from and give meaning to their own experiences, to learn about their own beliefs and values and to apply this in providing meaningful healthcare for their patients (Ehlers, 2004). According to David Kolb it is dependant on the learner's: willingness to be actively involved in the process; ability to reflect on, analyse and conceptualize the experience; and his possession of decision making and problem solving skills in order to use the new ideas gained from the experience (Wikipedia; Smith, 2001). Effective and passionate facilitation plays a key role in experiential learning by ensuring learners remain stimulated and focused but can be challenging for educators experienced in more traditional methods. On the down side experiential learning can be very time consuming, expensive and in some situations threatening to the learners (Ehlers, 2004). It is dependant on the learner's confidence in a particular subject at a particular time and his or her own prior experiences and circumstances. Effectiveness of learning therefore, becomes context specific (Jennings, 2007).

Confucius said that "By three methods we may learn wisdom: First by reflection, which is noblest; second, by imitation, which is easiest; and third by experience, which is the bitterest" (Confucius, n.d.). Keil asked the question: "How can I learn what I don't know when I don't know what I don't know?" (Eva and Cunnington, 2004) Evidence shows that self-directed learning does not necessarily lead to autonomy or improved outcomes but never the less is high quality learning (Jennings, 2007). When caring for the most vulnerable and fragile in our society – neonates, particularly those at risk or critically ill – can we afford the luxury of learning from our bitter mistakes, or trying to "learn what we don't know" albeit quality education?

The objective of this initiative therefore was to introduce a Neonatal Experiential Learning Site (NELS) with a clinical governance structure in order to improve the standard of neonatal care in Area Two of KwaZulu-Natal thereby reducing neonatal morbidity and mortality.

Background

21 300 babies die in the first month of life each year in South Africa (Black et al., 2010) and about the same number are still born. In 2000 South Africa committed itself to the Millennium Development Goals (MDGs). MDG 4 calls for a 2/3rd reduction in

child mortality. Worldwide forty one percent (41%) of child deaths occur in the 1st month of life – the neonatal period (Oestergaard et al., 2011). South Africa is one of only eight countries worldwide whose neonatal mortality is climbing (Oestergaard et al., 2011). Some countries with similar gross national incomes e.g. Brazil and Egypt have halved their under-five mortality (Every Death Counts). South Africa needs an average reduction of 14% per year in order to achieve MDG 4 (Every Death Counts). In order to reduce child deaths neonatal mortality must be reduced.

According to the Every Death Counts and 6th Saving Babies 2006/2007 reports South Africa's Neonatal Mortality rate (NMR) is 21/1000 (est.), Stillbirth rate (SBR) is 23/1000 and Perinatal Mortality Rate (PNMR) 31.1/1000 (Marion Stevens). Perinatal Mortality in developed countries is <10/1000 and developing countries <50/1000 (Marion Stevens). As an emerging economy South Africa's rates are unacceptably high in comparison to health expenditure.

Prematurity, sepsis and birth asphyxia have been identified as leading causes of neonatal deaths and stillbirths (Lawn, 2005) (Fig. 1). Health delivery is hampered by inaccessible services, insufficient facilities, poor physical infrastructure, inadequate equipment and problems with staffing – too few, inexperienced and unsupported with limited skills. Simple inexpensive interventions e.g. Basic antenatal care (BANC), skilled birth attendants, resuscitation, basic care of the new-born and kangaroo mother care (KMC) amongst others have been identified as effective at reducing these deaths (Darmstadt et al., 2005). The Saving Babies 2006/2007 report made the following recommendations - Train staff in basic neonatal care including: resuscitation, feeding and fluids, recognition and management of common conditions (especially sepsis); Produce standardised guidelines; Provide essential

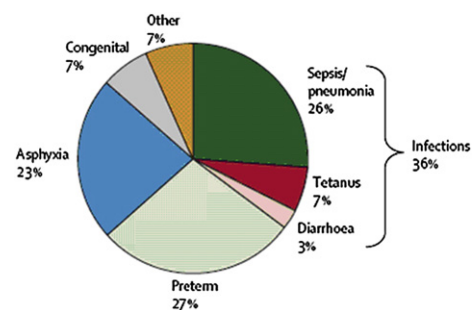


Fig. 1 Estimated distribution of direct causes of 4 million neonatal deaths for the year 2000. Based on vital registration data for 45 countries and modelled estimates for 147 countries (Lawn, 2005).

equipment and sundries including nasal CPAP; Implement KMC and improve neonatal transport (MRC).

Context

Kwa-Zulu Natal (KZN) lies on the East Coast of South Africa (Fig. 2). It has a population of ten million people – 3.5 million of which are children under 15 years. There are 3, 300 000 annual births with a neonatal Mortality 11/1000 (est.) and a life expectancy of 43 years. Of this population 1.1 million earn <R8 (\$1)/day. Of prime importance though is that KZN is the epicentre of the HIV pandemic with a prevalence of 38.7:1000 (Provincial and District Profiles; Appendix 3e).

Area Two is the western most of three areas in KZN. Its population of three million people (Appendix 3e) is divided into five districts. There are nineteen general hospitals: one level three hospital, four level two hospitals and fourteen level 1 hospitals (Appendix 3e). Patients are first

encouraged to attend the closest primary health-care clinic-these are managed by nurses. If requiring hospital level care they visit the nearest level one (district) hospital which will then refer them to a level 2 or 3 hospital if specialist services are required. There are about 60 000 children to every one paediatrician (Appendix 3e). In 2007 the 53 000 babies born annually (Appendix 3e) had access to ten Neonatal ICU beds (ventilated), one neonatologist and one neonatal trained registered nurse. The stillbirth rates in three of the districts, were above the national average (one of which was the worst in the country at 35/1000), as was the PNMR in a fourth district (Provincial and District Profiles).

The ability to provide advanced neonatal care was limited due to inadequate facilities. The beds at the tertiary hospital were permanently filled, with a waiting list. It was therefore evident that it was necessary to increase capacity at lower levels. It was hoped that by supporting lower level hospitals to provide improved basic care to sick and

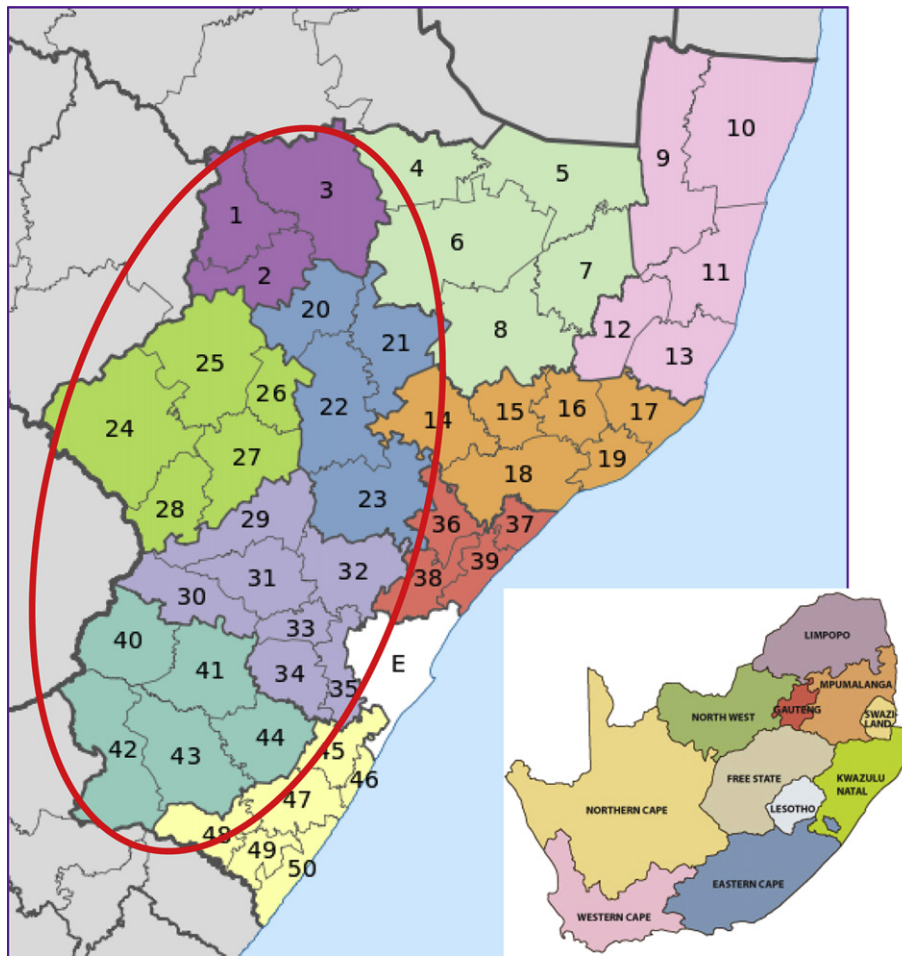


Fig. 2 Area 2 (Western) KwaZulu Natal consists of 5 districts: Ungungundlovu, Sisonke, Umzinyathi, Uthukela and Amajuba.

premature neonates' morbidity and mortality would be decreased and more beds would then be available at tertiary level to manage more complicated cases. This involved a paradigm shift in focus from in-patient curative care to caring for the catchment population. Holistic care must be provided including preventative, promotive, curative and rehabilitative care. There must be equitable access to uniform standards and levels of care. Norms and standards must be set and monitoring and evaluation must be implemented. This required the introduction of a clinical governance program for neonatal care in Area Two (Fig. 3).

Method and results

A full time coordinator was appointed to run the program supported by a team of paediatric and neonatal consultants doing monthly hospital visits. The initial plan was to conduct preliminary visits to two or three hospitals, offer an experiential learning program, support implementation via regular visits, wean, and then begin again with further hospitals. For the first year, due to the small number of hospitals involved, hospitals received weekly visits. However this plan had to be amended as the program was rolled out. It became apparent that in order to ensure on-going compliance visits could not be stopped as planned. The ability to build on capacity was hindered due to high staff turnover/rotation and poor support from hospital and district management. As hospitals began to show interest they were added to the program. This naturally meant a weaning of the frequency of visits to all the hospitals in the program. Unfortunately as the frequency of visits decreased so did the rate and maintenance of implementation. The whole program aimed at ensuring the implementation of the six tiers of

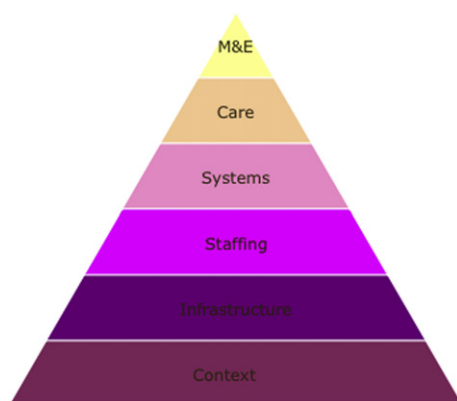


Fig. 3 Clinical governance structure.

clinical governance at each hospital with specific reference to neonatal care. The program is ongoing and continues to enrol new hospitals and support existing ones.

Six tiers of clinical governance

Infrastructure development

Infrastructure refers to the provision of appropriate facilities and equipment. Norms were developed for the design of maternity units with nurseries and when new stand alone units were planned or units upgraded the coordinator worked with the provincial architect and local staff to design appropriate facilities. The required number of neonatal beds, spacing, services e.g. gas and electrical points, and equipment required for each bed and unit had all been stipulated based on international norms. Hospital management was encouraged to include gradual achievement of these norms in their five year plans. Hospitals were also assisted with requesting and assessing specifications, and advised on recommended providers and models of equipment. Hospitals were guided in establishing an equipment maintenance system including a daily equipment checklist and an equipment register tracking purchase details, servicing, repair and monthly stock taking. Nurses were regularly supported in developing technical skills to manage the equipment purchased.

Progress to date

One new neonatal unit has been built, two substantially upgraded and one is in the process of being upgraded. Equipment resources have substantially improved in five hospitals (now close to stipulated norms). Funding provided through The Fuchs Foundation helped in the provision of vital equipment to some hospitals in the area. However on going problems at the provincial Health Technology Unit (HTU) is greatly affecting hospitals' ability to maintain their equipment. Liaison is on going with Central Provincial Stores and the HTU to try and facilitate procurement and maintenance of equipment. There is improved spacing in five hospitals. An equipment register has been developed and is awaiting printing and binding. A computerised version is under construction.

Staffing

Staffing incorporates both numbers and training of staff. This aspect of clinical governance was the main focus of the programme and involved many

challenges. Internationally, stipulated staffing norms has been problematic as differences in context and staffing and patient profiles make ascertaining evidence-based ratios difficult. In addition once stipulated there is an expectation to deliver which many countries or hospitals are unable to do, conversely hospitals that have more staff than the stipulated norms may proceed to decrease their numbers in line with cost containment.

National decentralised post-basic neonatal nurse training is not available in the country although the University of Pretoria is offering a residential programme in advanced neonatal care. Doctors, professional nurses and other professional healthcare workers receive very little neonatal focus during their basic training. The implication thereof is that these healthcare professionals are expected to make crucial decisions regarding the neonates' health, without sufficient knowledge or experience of basic neonatal care. The lack of training, knowledge and skills results in inadequate neonatal care and a fear and reluctance of healthcare professionals to practice in units where neonates are cared for. Advanced midwives in general are allocated in labour wards or maternity units and very few choose to develop their neonatal skills. The neonatal units are frequently staffed with junior inexperienced nurses allocated regardless of preference and managed by whichever doctor is available daily. Staff receive very little supervision or guidance from seniors as the seniors are frequently overwhelmed with administrative duties, not present in the unit or lack knowledge and experience themselves.

Addressing the crisis in inadequate staffing numbers (a national if not international problem) was beyond the purview of the program which instead focussed on encouraging hospitals to realise that neonates require dedicated, trained staff of their own and to assist through training and support with the gradual realisation of this.

Staffing numbers

As most of the hospitals in the area fell short of the accepted minimum it was deemed important to provide norms in order to assist hospitals in motivating for more staff and allocating staff appropriately. The following minimum staffing ratios were recommended: General care – one professional nurse for every six to eight patients, intermediate care – one professional nurse for every two to three patients and critical care – one professional nurse for every one to two patients. Hospitals were also advised to retain a minimum of 2/3rds non-rotational staff in the nursery and that those that had been trained were to remain in the

unit. The realisation thereof is a gradual process. Regional and tertiary hospitals are more likely to maintain permanent staff in their units, but in district hospitals rotation remains entrenched with many hospitals allocating different nurses to the nursery on a daily basis. Four hospitals have committed to permanent nursing staff in their neonatal unit including one hospital which initially had no staff allocated at night. Five others are working on the 2/3rd recommendation – generally retaining a few senior staff and rotating junior staff. Two hospitals have staffed their 24 h kangaroo mother care (KMC) units independently from the unit.

Training

The Perinatal Education Program (PEP), a self-study course was developed to address the need for basic perinatal training in South Africa but unfortunately has little uptake in Area 2. The need for a short, basic in-service neonatal training course for Area 2 was therefore evident. The idea was based on the training offered by The Limpopo Initiative for New-born Care (LINC), but the decision was made to standardise with a two-week course open to all levels of staff caring for newborns. The program has both in-reach and outreach components.

In-reach

Neonatal Experiential Learning Site training (NELS)

NELS is a two-week course held over two months and offered four times per year. The two weeks are split between two months, e.g. one week in February and the second week a month later in March, to facilitate hospitals releasing staff. It also gives staff time to try and assimilate knowledge gained in the first week. Doctors and nurses of all levels are targeted in order to facilitate communication and the implementation of the changes learnt during the training. Initially specific hospitals were invited and attendance averaged about six delegates per course (on occasion only three). Then it was opened to all hospitals in Area 2 and now attendance averages 10–15 people.

Originally the plan was to offer experiential learning primarily based in the NICU at the tertiary hospital. The facilitator had little experience with this method of learning and further challenges arose as the program was rolled out. Participants were allocated to buddy with unit staff but these staff were generally unable to effectively teach or demonstrate as they were junior or extremely busy themselves. Participants struggled to prioritise learning needs, were unable to constructively

structure their time in the unit, learning was dependant on current cases and activity in the unit and therefore did not necessarily include all the knowledge or experience needed, and facilitation was difficult due to the growing number of students with differing ability and needs, and the changing demands of a busy unit. Theory was poorly covered with very little retention of information. It was evident in order for experiential learning to be effective more time and limited numbers of participants was required. Two weeks was just not sufficient for this and there was a need to accommodate as many participants as possible in order to address the urgent need for improved neonatal care.

The current curriculum therefore, evolved with a prime focus on theory and classroom-based learning. However 2 h are spent daily, in the second week, in the neonatal unit for practical demonstrations and experience. The program encourages interaction, participation and discussion with particular focus on sharing experiences and challenges currently faced in individual units. The use of case studies and group work is incorporated. Participants write down their objectives at the start of the program, are encouraged to assess their current practices, prioritise the need for change and plan their response and interventions on returning in order to insure practical implementation. Open and frank discussions between nurses and doctors in a non-threatening environment facilitate communication and teamwork.

It is loosely based on the Perinatal Education Programme (PEP) with the aim to touch on the most important aspects of neonatal care. It is not an in depth study but raises awareness of the subject, encourages further reading and refers the participants to the relevant guidelines. Basic care of the neonate e.g. resuscitation (a full day workshop), physical and gestational assessment, infection control, fluids and feeds, KMC and developmental care are covered in the first week. In the second week a systems based approach is taken covering common conditions and immediate management. Participants are required to purchase the PEP Newborn manual. They study each chapter on their own (subject material covered during the day), discuss their post test answers the following day and write the final exam at the end of the course.

The course is held at the tertiary hospital due to the availability of venues, and access to a neonatologist and other consultant support. The participants spend practical time the unit and are introduced to the staff. This improves understanding and communication between referring

and receiving units. They also visit the regional hospital in order to compare and contrast units and to visit the 24-hour KMC unit there. They attend Perinatal Problem Identification Program (PPiP), Child PiP, unit, and paediatric departmental clinical and journal club meetings.

Participants are provided with resource books with detailed information and journal articles on the topics covered, a book of Area 2 Neonatal Guidelines and a set of standardised records (if not already in use in their unit). They are expected to complete a workbook and skills checklists. Originally this was supposed to be signed by the facilitator during follow-up visits but due to logistical problems in coordinating the participants' on duty time and the facilitator's visiting schedule, it was decided to allow the doctor responsible for neonates or the unit manager to sign off for them.

Thirteen (13) NELS courses have been held thus far accessed by fourteen (14) hospitals (1 Tertiary, 3 regional and 10 districts) from all five districts. Seventy six (76) nurses (registered or enrolled) and ten (10) doctors have been trained. Awareness of the course and hospitals accessing the course has much improved. Retention of these trained staff within the hospitals remains problematic as doctors and nurses rotate and staff often leave hospitals for career or personal reasons. Feedback from participants has however been very positive including the following comments: "It is interesting, we come here with the wrong practice, but now we are brave and skilled to save babies"; "The course has been very helpful. Practical approaches were offered to handling situations. I am now inspired to improve conditions at my hospital"; "I have gained confidence to practice independently and also to teach my colleagues"; "This course has motivated me to try and improve quality of care in my institution and making sure that what I have learnt should be practiced and taught to others"; "It was an eye opener!!".

However two weeks is still not sufficient and many participants have requested a third purely experiential week. In addition sets of PEP self-study manuals have been distributed to all 18 hospitals through external funding.

Outreach

The outreach component of the programme entails resuscitation training and hospital visits.

Resuscitation training

In an attempt to address the large mortality and morbidity due to birth asphyxia, resuscitation training has been prioritised. In addition to the resuscitation workshops given during the NELS courses the program coordinator and neonatologist

run two workshops in each district per year. Doctors and nurses in labour wards, nurseries and 24 h clinics that offer a midwifery service are targeted. The workshop content is based on the South African Paediatric Association (SAPA) and American Academy of Paediatrics (AAP) Neonatal Resuscitation Program (NRP) guidelines. Currently the 6 h workshop is divided 50:50 between theory and practical experience. Theory includes: background; pathophysiology of asphyxia; preparation for resuscitation; neonatal resuscitation algorithm; initial steps (warm, dry, clear airway, position, oxygen); bag-valve-mask (BVM) ventilation; cardiac compressions; intubation; medications; exit and follow up. The practical session involves hands on practice using manikins of: checking the BVM; BVM ventilation; and cardiac compressions. Groups of participants also participate in resuscitation scenarios and the whole group comments on the effectiveness of the resuscitation given. Intubation practice is offered on request usually during the lunch break. The participants complete a written theory test before and after training to provide a base line and assess the effectiveness of theoretical knowledge transmission.

The course has been amended a number of times to try and optimise the training but the 6 h period remains too short and concern exists that the participants will struggle to retain the knowledge gained particularly if they have little exposure to neonatal resuscitations. With the recent development of the Helping Babies Breathe (HBB) program, (also developed by the AAP) aimed at low resource settings, consideration will have to be given to, possibly, adapting the workshop in line with this program or actually offering the HBB program itself.

Invitations to the workshop are extended by the district Maternal, Child and Woman's Health (MCWH) coordinator to all relevant institutions. Unfortunately often the invitation only reaches the actual units shortly before the workshop resulting in the institutions struggling to release staff or sending junior or inappropriate staff (e.g. students or non maternity staff) just to fill the required numbers. Very few doctors attend mainly due to difficulties in releasing them for the day. This can cause difficulties in implementing change, as the doctors are sometimes reluctant to change/update their practice based on nursing input. A further challenge is effective time management during the workshop as many participants experience transport problems arriving hours late or having to depart early. There is a need for on-going reinforcement and practice at unit level. Purchase, by hospitals, of inexpensive resuscitation manikins (e.g. an inflatable doll available from *Laerdale*

International) would assist with this. Appointing resuscitation champions, at unit level, to support improvement in neonatal resuscitation may strengthen implementation.

To date twenty-five (25) district resuscitation workshops have been held. Four hundred and twelve (412) people have received training including twenty-four (24) doctors and six (6) paramedics. Average improvement in pre- to post test results was 50%.

Hospital visits

The Red Cross Air Mercy Service, who provides air or vehicular transport, facilitates these. Paediatric/neonatal consultants, based at the tertiary hospital, visit allocated hospitals monthly. The main focus of their visits is medical support-seeing problem cases, running specialist clinics, ward rounds and teaching and support for implementation of systems and programs.

The NELS coordinator visits hospitals participating in NELS training. Initially a few hospitals were supported intensively on a weekly basis which was very effective. Implementation of recommendations was fairly rapid and sustained as the coordinator was there regularly and frequently to follow up. Standardised record keeping was implemented, infection control practices improved and admission criteria tightened up. As the interest and participation in the NELS program has grown, with more hospitals sending participants for training or requesting support visits, the frequency of the visits has had to be reduced to monthly or bi-monthly. This makes change slower and more difficult to maintain but ensures access for more hospitals.

The NELS visits focus on: motivation and support of staff, teaching and reinforcement of knowledge and skills acquired during NELS training, clinical demonstration, assistance with and supervision of medical and nursing care, case reviews, reinforcement/implementation of norms, systems, practice and guidelines, and record auditing. The teaching provides support for the experiential learning occurring in the units and focuses on the teachable moment. When required, meetings are held with management within the hospital to try and resolve challenges or problems experienced with implementation. The success of these visits is largely dependant on the circumstances in the unit at the time, the availability and busyness of the staff and the support and pro-activeness of the hospital management. The visits are generally well received by the units with evidence of improved morale and commitment in the staff. Hospitals do tend to use them, however, to support clinical practice rather than as a support for training and systems.

The appointment of more coordinators would enable more regular and frequent visits ensuring more sustained improvement in care. However staffing of the nurseries also impacts on the effectiveness of the visits. Acute or chronic staff shortages limit the ability of staff to spend time with the coordinator and rotation of staff inhibits interest in learning, the development of a unit culture, sustained growth and development of the staff and improved care.

Eleven (11) hospitals received outreach visits by the coordinator (10 in Area 2 and one in Area 1). In total two hundred and fifty five (255) visits have been conducted. Despite the daily presence of the neonatologist, non rotational staff and a strong unit manager, staff in the tertiary hospital still request and appreciate weekly 2 h supportive visits by the coordinator which also ensures compliance and standardization with the program.

Systems

Systems relate to processes used to ensure the smooth running of the unit and delivery of quality care. The program thus far has focussed on the: procurement, equipment maintenance (as discussed under infrastructure), record keeping, communication and staffing systems.

Apart from lack of staff, amongst the problems encountered in improving standards of care, the lack of resources is possibly the most frustrating. It demoralises staff as they are unable to implement the care they have been taught. They may know the importance of hand washing, and how to do it, but if there is no soap or paper towels it's impossible to do. The coordinator therefore spends a lot of time trying to assist and facilitate units with the procurement system. Staff were taught the basic procurement process, given a list of essential neonatal sundries detailing companies, order codes and approximate costs and encouraged to use a standardised recording system to monitor and track orders. Most of the neonatal sundries required are not routine stock items in hospitals. The coordinator therefore held meetings with Central Provincial Stores (CPS) to try and facilitate getting neonatal products onto the standard provincial stores catalogue. This would assist hospitals to keep neonatal products in stock. The non-stock item (NSI) tracking register is now in use in many hospitals visited which assists with the laborious and lengthy process of procuring surgical, other sundries and equipment. Procurement and maintenance of adequate stock levels remains a challenge.

Standardised record keeping facilitates communication, standardisation and continuity. Good quality records support good quality of care. Following a process of trial and review, discussion and widespread input a standardised record keeping system has been developed and implemented. Thirty (30) standardised records have been developed. These are in regular use in eight hospitals. Problems with replication and distribution are inhibiting more general usage. It is hoped these records will soon be available through CPS as photocopying at institutional level results in very poor quality records.

Weekly unit team meetings are encouraged in all hospitals in order to improve communication amongst staff, provide in-service training and incorporate auditing.

Care

Obviously the whole NELS program, ultimately, is focused on improving standards of neonatal care and each aspect of clinical governance impacts on this. Many aspects of care are taught during NELS training however the following are stressed: use of standardised guidelines to inform care (as recommended in the saving babies report (MRC)), implementation of developmentally supportive care (internationally considered to reduce neonatal morbidity (Symington and Pinelli, 2006)), neonatal resuscitation, provision of kangaroo Mother Care and exclusive breast feeding (all recommended as cost effective interventions proven to reduce neonatal mortality (Darmstadt et al., 2005)).

The development of standardised guidelines and care was a laborious and time-consuming task. The guidelines are two-page basic guides to direct care incorporating medical and nursing care. It is believed that this will facilitate more systematic, logical and cooperative care. Nurses are encouraged to refer to these to guide their care particularly in the absence of consistent medical care. Sixty five (65) guidelines and nineteen (19) nursing care plans have been developed. The guidelines require sponsorship to be printed/bound in a professional user-friendly book to be distributed to individuals for easy reference. Additional neonatal resources including posters, parental hand-outs, a neonatal wound assessment tool and a photographic clinical guide amongst others have been developed but are awaiting reproduction and distribution.

Developmental care posters have been displayed in four hospitals and theoretical and practical training given during the NELS course.

However on-going training, reinforcement and support are required to ensure awareness of the importance of developmentally supportive care in the reduction of long term morbidity implementation and its consistent implementation. The use of a SoundEar[®] (Draeger Medical) helped raise awareness of the high noise pollution in many units. Sound levels however remain high despite raised awareness. Again the use of champions, within the units, reinforcing these principles daily may have greater impact.

Upon request hospitals have been provided with resources such as duvets, KMC jackets, camp chairs, TV's etc. to establish 24-hour KMC units. Intermittent KMC is encouraged from birth in the neonatal units/maternity wards. 11 hospitals now offer 24-hour KMC beds including four new 24-hour KMC units, which have been established. However despite the evidence that abounds on the cost effectiveness and importance of KMC in decreasing neonatal mortality, many hospitals will not prioritise the establishment and use of 24-hour KMC units. Even when a unit is available it is frequently used for postnatal patients or not staffed at all.

Breast feeding remains of vital importance in the prevention of infection and reduction in neonatal and infant mortality (Darmstadt et al., 2005) and is still poorly enforced in many hospitals. The Baby Friendly Hospital Initiative (BFHI) is actively encouraged by the provincial Department of Health and support for implementation offered by the NELS program. Hospitals have been supported in the establishment of central milk kitchens, providing pasteurised breast milk using flash or Pretoria pasteurising methods, promoting exclusive breast feeding and currently plans are under way for expanding access to and support for a donor breast milk bank for the area, based at the tertiary hospital, in order to decrease the incidence of necrotising enterocolitis (NEC) in the premature population.

In addition one regional hospital has commenced ventilating babies and a second is undergoing renovation and should start offering neonatal ventilation within the year. This will increase the number of ventilated beds available to 18.

Monitoring and evaluation

Clinical, infection control and record audits have been developed, and graphs produced with which to display monthly audit results. Hospitals are encouraged to include regular auditing as part of their quality improvement process. This should occur with the whole team during weekly unit meetings. Action

on the results of the audits is stressed. Units are encouraged to display their perinatal and mortality statistics and audit results in order to ensure accountability and motivation to continually strive to improve. As teams are small and frequently change, regular, constructive auditing has not yet been achieved in most hospitals and unit managers have therefore been encouraged to delegate responsibility for this to various members of their teams and hold them accountable for its execution.

PPIP is the cornerstone of monitoring and evaluation and is promoted at all visits. Hospitals are supported in identifying a coordinator (usually the labour ward unit manager) and progressing from capturing data purely on paper, to loading it on a computer, and transmitting it to the district and province. Capturing and presentation of morbidity data, in addition to mortality, together with regular, constructive, action based unit and district meetings is encouraged.

PPIP meetings are now occurring in all five districts although not reliably in all hospitals. The units that are most successful have: a strong coordinator (usually the labour ward unit manager) driving the process, a reliable paper based system and access to a computer with email. Unfortunately the absence of action plans and accountability at the monthly meetings limits the effectiveness of PPIP in driving change. More effective and active coordination at hospital, provincial and national level would assist the effectiveness of this program.

A new admission/discharge register and statistical data collection tool has been developed in order to try and standardise what data is collected, and to provide basic data on common diagnoses, provision of key interventions e.g. corticosteroids and KMC and neonatal outcomes. This is awaiting provincial approval and roll out.

Recommendations

There is an urgent need to expand the program. More coordinators with a small group of hospitals to mentor would be more effective. Other areas in the province need to be included and the introduction of a Maternity Experiential Learning Site (MELS) would help address antenatal and intrapartum problems. It is believed that the introduction of a Neonatal Accreditation Program might provide the incentive and motivation for hospitals to comply with the norms and standards set. National decentralised neonatal nurse training urgently needs to be undertaken. Appointment of neonatal nurse practitioners to carry out the role of medical officers needs to be considered in order to address the lack of dedicated doctors to care for neonates.

Conclusion

This article gave an overview of the identified need to address neonatal morbidity and mortality in Area 2 KwaZulu-Natal by implementing a supportive program called NELS based on the clinical governance structure. The aspects addressed included: examining the context, addressing infrastructure development, providing training, implementing systems, improving care and monitoring and evaluating progress. The findings thus far are anecdotal and observational. It is apparent that standards of care have improved but whether this has impacted on mortality needs to be formally investigated. Hospitals visited show a progressive awareness of the need to prioritise neonatal care and to budget accordingly. Staff morale and confidence improved in those hospitals trained and supported. Systems, facilities and resources steadily improved with on-going regular supportive visits. Improvements in standards of care were evident when staff were retained in the unit. There are though remaining challenges that need to be addressed for the on-going success of the program and recommendations were made above.

In conclusion improving neonatal outcomes is a multifaceted global problem, requiring advocacy, and prioritising at all levels. Problems must continue to be highlighted and every effort made to implement evidence based recommendations. The provision and development of, and support for trained and properly resourced, dedicated neonatal caregivers remain key to this process.

References

- Appendix 3e: KwaZulu-Natal Province. pp. 76–79. CoMMC report 2008/09.
- Black, R.E., Cousens, S., Johnson, H.L., Lawn, J.E., Rudan, I., Bassani, D.G., et al., 2010. Global, regional, and national causes of child mortality in 2008: a systemic analysis. *Lancet* 375 (9730), 1967–1987.
- Bynum, W.F., Porter, R. (Eds.), 2005. *Oxford Dictionary of Scientific Quotations*, vol. 21. Oxford University Press, p. 9.
- Confucius, n.d. *BrainyQuote.com*. Retrieved 12 0111, from: [BrainyQuote.com](http://www.brainyquote.com/quotes/quotes/c/confucius134717.html) <http://www.brainyquote.com/quotes/quotes/c/confucius134717.html>.
- Darmstadt, Gary L., Bhutta, Zulfiqar A., Cousens, Simon, Adam, Taghreed, Walker, Neff, Bernis, Lucde, for the Lancet Neonatal Survival Steering Team, March 2005. Evidence-based, cost-effective interventions: how many newborn babies can we save? *Lancet Neonatal Survival*, 19–30.
- Ehlers, Valerie, 2004. *Teaching Aspects of Healthcare*. Ch. 11 *Experiential Learning*. Juta & Co.
- Eva, K., Cunningham, J., 2004. How can I know what I don't know? *Personalities. Advances in Health Sciences Education* 9, 211–224.
- Every Death Counts. *Saving the Lives of Mothers, Babies and Children in South Africa-data Supplement*.
- Jennings, Stephen F., 2007. Personal development plans and self-directed learning for healthcare professionals: are they evidence based? *Postgraduate Medical Journal* 83, 518–524 <http://dx.doi.org/10.1136/pgmj.2006.053066>.
- Lawn, Joy, March 2005. 4 million deaths: when? Where? Why? neonatal survival 1. *The Lancet*, 13.
- Marion Stevens Impact Indicators Section A Chapter 6 District Health Barometer 2007/2008 www.hst.org.za/publications/850.
- MRC Research Unit for Maternal and Infant Health Care Strategies, PPIP Users and the Saving Babies Technical Task Team *Saving Babies 2006-2007 Sixth Report on Perinatal Care in South Africa*.
- Oestergaard, M.Z., Inoue, M., Yoshida, S., Mahanani, W.R., Gore, F.M., et al., 2011. Neonatal mortality levels for 193 countries in 2009 with trends since 1990: a systematic analysis of progress, projections, and priorities. *PLoS Med* 8 (8), e1001080. <http://dx.doi.org/10.1371/journal.pmed.1001080>.
- Provincial and District Profiles Section B District Health Barometer 2007/2008 www.hst.org.za/publications.
- Smith, M.K., 2001. "David A. Kolb on Experiential Learning", the *Encyclopedia of Informal Education*. Retrieved 12 0111 from: <http://www.infed.org/b-explrn.htm>.
- Symington, A.J., Pinelli, J., 2006. Developmental care for promoting development and preventing morbidity in preterm infants. *Cochrane Database of Systematic Reviews* 2, CD001814. <http://dx.doi.org/10.1002/14651858.CD001814.pub2>. www.en.wikipedia.org/wiki/experiential_learning.

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