ASSOCIATION OF PAEDIATRIC
CHARTERED PHYSIOTHERAPISTS

A COMPETENCE FRAMEWORK AND
EVIDENCE BASED PRACTICE GUIDANCE
FOR PHYSIOTHERAPISTS PROVIDING
RESPIRATORY INTERVENTIONS
FOR PRETERM INFANTS IN THE
UNITED KINGDOM
A Competence Framework and Evidence Based Practice Guidance for Physiotherapists Providing Respiratory Interventions for Preterm Infants in the United Kingdom

Fiona Price
Advanced Neonatal Physiotherapist,
Sheffield Teachings Hospitals NHS Foundation Trust & Sheffield Children’s Hospital NHS Foundation Trust

&

Christa Ronan
Senior Paediatric Physiotherapist,
Barts Health NHS Trust

On behalf of the APCP Neonatal Group

July 2014
CONTENTS

Acknowledgements 3
Introduction 4
Competence Frameworks 5
  Definition of Competence 5
  What it is and what it is not 5
The Competence Framework for Physiotherapists Providing Respiratory Interventions for Preterm Infants 6
  Evidence Base for Neonatal Respiratory Physiotherapy 7
  Role Description – Specialist Neonatal Respiratory Physiotherapist 13
Using this Document 16
  Continuing Professional Development 16
  Quality Assurance 17
  Service Review and Workforce Planning 17
The Future – Continuing Education Needs of Neonatal Physiotherapists 18
  Practice Development 18
  Teaching and Learning Strategies for Neonatal Physiotherapists 18
  Suggested Learning Strategies 18
  Preceptorship 19
  APCP Courses 20
Knowledge Base for Neonatal Respiratory Physiotherapists 21
Respiratory Competencies for Physiotherapists Providing Respiratory Interventions for Preterm Infants 22
Evidence of Competence 33
References 34

IMPORTANT NOTICE: This framework gives specific evidence based guidance and recommendations for providing respiratory physiotherapy interventions for preterm infants (infants below 37 weeks gestation) irrespective of the setting (Neonatal Intensive Care, Neonatal Surgical Unit, or Paediatric Intensive Care Unit). The guidance is not applicable to term equivalent and term age infants on Neonatal Intensive Care or Neonatal Surgical Units.
Acknowledgements

This competence framework has been based on the ‘Competence Framework and Evidenced Based Practice Guidance for the Physiotherapist Working in the Neonatal Intensive Care and Special Care Unit in the United Kingdom’ published by the APCP Neonatal Group.

The authors would like to thank all those who contributed to the development of this document. In particular they would like to express their gratitude to Adare Brady and Peta Smith for their contribution and support.

List of those involved in the consultation process

- Respiratory working group, committee and members of the APCP Neonatal Group - a Specialist Group of the Association of Paediatric Chartered Physiotherapists (APCP)
- National Committee and members of APCC - a Professional Network of the Chartered Society of Physiotherapy (CSP)

The document was also circulated for comment to:

- Association of Paediatric Physiotherapists in Respiratory Care (ACPRC)
- British Association of Perinatal Medicine (BAPM)
- BLISS – a support group for premature and sick babies and their families in the UK
- Chartered Society of Physiotherapy (CSP)
- Neonatal Nurses Association (NNA)
- PPIMS – Paediatric Physiotherapists in Management Support (PPIMS) – an Specialist Group of APCP

Record of consultations

Draft 1 was circulated to the respiratory working group of the APCP Neonatal Group in September 2012 for consultation feedback by 30th October 2012.

Draft 2 was circulated in December 2012 to the respiratory working group and the National Committee of the APCP Neonatal Group in December 2012 for consultation feedback by 29th January 2013.

Draft 3 was circulated to all the above organisations in August 2013 for consultation feedback by 10th September 2013.

The document was finalised in January 2014 and published in July 2014.
Introduction

Clinical Competence Framework for Physiotherapists Providing Respiratory Interventions for Preterm Infants

This competence based framework has been developed as the second part of a project by the APCP Neonatal Group. This document aims to expand on the original APCP document ‘A Competence Framework and Evidenced-based Practice Guidance for the Physiotherapist Working in the Neonatal Intensive Care and Special Care Unit in the United Kingdom’ in order to meet the needs of physiotherapists carrying out specialist neonatal respiratory physiotherapy. The specific framework and evidence based guidance found in this document should be used in conjunction with the original competence based framework in order to provide a holistic and safe approach to neonatal care.

These competences represent the ideas, practices and knowledge of this specialist discipline and demonstrate the collective wisdom of physiotherapists who care for preterm infants and neonates. Although it is important to acknowledge the potential limitations of the use of competence frameworks, the government has clearly signalled its determination to proceed with this approach across the health sector.

Competence incorporates the values and philosophy of the person and the profession as well as knowledge, specific skills and abilities. Competence changes and is dependent on the context in which the individual works and his/her role. It is also dependent upon an individual’s ability to self evaluate and learn from experiences whether this is formal or informal learning.

A holistic approach to competence that recognises the complexity of practice on the neonatal unit (NNU) and that places learning and outcomes at its heart, is essential.

This competence framework is made up of a set of ‘outcome based’ competence statements. This is in line with the CSP’s approach to developing competence frameworks within physiotherapy practice. All paediatric respiratory physiotherapists working in the field of neonatology are expected to utilise both this competence framework and the original document as the basis for their ongoing learning and development. They will also be expected to develop portfolios of evidence of the work they undertake in their role to demonstrate their competence to practise as a neonatal respiratory physiotherapist.

Developing and demonstrating competence is fundamental to paediatric physiotherapy practice, thereby facilitating the development of evidence-based practice and supporting the clinical governance agenda.
Competence Frameworks

Definition of Competence

Competence can be defined as an individual's ability to do a job properly. The CSP states that competence is evidenced by performance that is consistently of a required standard. The CSP takes a holistic approach to competence, viewing it as a combination of many factors – a person’s skills, knowledge, job responsibilities, scope of practice (within that of the profession) and behaviour/professionalism².

The Nursing and Midwifery council 2004 defines competence as the possession of knowledge and skills for safe and effective practice when working without direct supervision³.

Competence means the caregiver can integrate knowledge, skills and personal attributes consistently in daily practice to meet established performance standards⁴.

Another definition is ‘The state of having the knowledge, judgment, skills, and energy, experience and motivation required to respond adequately to the demands of one’s professional responsibilities’⁵.

Skills for Health states competences can be grouped together into frameworks. They can be specifically relevant to a particular condition, or they can be grouped in other ways, such as qualification or role ⁶.

What it is and what it is not

Competence involves:
- thinking, critical analysis and learning;
- assimilation of new learning with previous learning;
- integration of new knowledge, skills and abilities with previous knowledge;
- application of new learning in practice;
- being aware of the limits of your own knowledge, skills and abilities.

Competence is not;
- just about knowledge, skills and abilities;
- about defining technical competence or the technical skills necessary to do a job;
- just about doing or completing a task;
- about competencies that are formally assessed and passed.

A competence framework provides a guide to the range of knowledge, level of that knowledge and skills a practitioner needs in order to work at a safe, effective, professional standard.
The Competence Framework for Physiotherapists Providing Respiratory Interventions for Preterm Infants

The original and respiratory competency frameworks have been designed to encourage neonatal physiotherapists to work towards a standardised model of good practice.

The project began in 2008 when a small working party identified the need for such a framework. The evolving nature of the speciality of neonatal physiotherapy meant there was much debate and discussion relating to the principles of best practice and the content of this framework. While the original document addressed neuro-developmental physiotherapy, it was recognised that neonatal respiratory physiotherapy required separate consideration. Following publication of the original document in 2011, work began on a neonatal respiratory competence framework and evidence based practice guidance.

The overall aim of these frameworks is to provide neonatal physiotherapists with clear guidelines about their expected role, standards of performance, and the knowledge and skills required to achieve quality care in this specialist field of physiotherapy practice. It is expected that this will be a working document which will stimulate discussion and changes will be made as new knowledge, skills and innovations emerge.

There is currently insufficient distinction between generalist and specialist neonatal physiotherapists within paediatric physiotherapy. One aim of this document is to develop a definition of a specialist neonatal physiotherapist in terms of competence, as the basis for differentiating them from other paediatric physiotherapists, and to define essential neonatal physiotherapy competence for all registered physiotherapists.

It is also intended to guide managers and educators in the design and implementation of learning experiences that help practising physiotherapists achieve these competences.

These competences are not intended to replace other standards but are intended to be used in conjunction with:

- Information to Guide Good Practice for Physiotherapists: Working with Children – APCP 2007 (to be updated 2014)\(^7\)
- Quality Assurance Standards - CSP 2012\(^8\)
- Code of Members' Professional Values and Behaviour - CSP 2011\(^9\)
- Standards of Proficiency: Physiotherapists – HCPC 2013\(^10\)
- Common Core of Skills and Knowledge – (CWDC) 2010\(^12\)
- Children’s National Workforce Competence Framework for Children’s Services – SfH 2004
• Modernising Allied Health Professions (AHP) Careers: a Competence Based Career Framework - DH 2008

Physiotherapy standards need to be developed in tandem with multidisciplinary care standards and the APCP Neonatal Group has been involved with the development of the standards for physiotherapists working in neonatal units in the following published projects:

• Toolkit for High Quality Neonatal Services – DH 2009
• Specialist Neonatal Care Quality Standard – NICE 2010
• Service Standards for Hospitals Providing Neonatal Intensive and High Dependency Care - BAPM 2010
• National Occupational Standards and National Workforce Standards : Maternity and Care of the Newborn Framework –SfH 2006

Practitioners are personally accountable for their practice and are responsible for their own actions. They have a duty of care to infants, their families and carers, who are entitled to receive safe, competent care.

This framework is based on research evidence available at the time it was developed (2011 – 2013), and also reflects a consensus of best practice. It outlines the level of competence expected by every physiotherapist working in this field and is applicable to the practice of all registered physiotherapists regardless of practice setting.

Each competence centres on the needs of the vulnerable infants that we treat and aims to promote, optimise, maintain and improve health and development. Those using this document should always use their clinical reasoning skills to assess their relevance to their own patients and settings.

The competences were developed on the basis of the results of peer-reviewed published work reporting practice-based competences, evidence based guidelines, and recommendations and input from members of APCP Neonatal Group, from representatives of APCP and PPIMS, consultation with BAPM, members of Neonatal and Perinatal Networks across England, public comment from the neonatal and paediatric physiotherapy community at large.

The development of competences for the neonatal physiotherapist is believed to be essential to protect the quality and value of a specialist neonatal physiotherapist.

**Evidence Base for Neonatal Respiratory Physiotherapy**

Neonatal chest physiotherapy is a highly specialised area of respiratory care. Detailed understanding of the evidence base is required in order to apply treatment techniques judiciously and safely to preterm infants, which differ in vulnerability and physiology from their term counterparts. In some research, chest physiotherapy has been suggested to be associated with major neurological sequelaes. Knowledge of potential adverse outcomes is essential in order to minimise the risks.
This document aims to summarise the available evidence base, and is not intended to be prescriptive or exhaustive. While the evidence base is limited and sometimes not comparable to the pre-term population of today, evaluation of the available information concerning physiotherapy on preterm infants will give the neonatal respiratory physiotherapist a basis upon which to enable maximum safety and clinical effectiveness.

There is a paucity of high quality evidence which considers neonatal chest physiotherapy. Although this area has been of clinical interest, few randomised controlled trials (RCTs) exist, with the majority of these considering post extubation atelectasis (PEA) in isolation. Large scale long term follow up studies are also available which consider neurological outcomes. The remainder of the evidence is old, uncontrolled, has very small samples or methodological flaws. As little high quality recent evidence is available, both older studies and those with methodological flaws will be discussed. A large proportion of this research considers ‘routine’ treatment of preterm infants which is in contrast to the careful clinical reasoning used today. The results of this research therefore needs to be interpreted with caution.

This document will identify the available evidence, signpost the neonatal physiotherapist to the literature (which can then be further personally critiqued) and highlight the need for future high quality research.

i) Clinical Efficacy of Neonatal Respiratory Physiotherapy

Effects of neonatal chest physiotherapy on lung mechanics (compliance and resistance)

Neonatal airways are comparatively smaller than their paediatric counterparts, and as such secretions have a magnified effect on airway resistance19. Compliance of neonatal lungs is inherently poor, affected by a primary deficiency of surfactant which causes a propensity towards atelectasis and ventilation inhomogeneity, with areas of collapse and overdistension20. It has been postulated that by removing airway secretions or improving ventilation distribution, lung mechanics can be improved21,22,23.

Chest physiotherapy (in combination with suction) has been shown to have some immediate effects on decreasing resistance and improving compliance in preterm infants, however the samples sizes of the studies are small19,23,24. Reduction in resistance has also been shown after suction alone without incorporation of physiotherapy techniques25. With conventional chest physiotherapy these effects have not been shown to carry over to two hour repeat measurements21. In treatments which aim to affect ventilation distribution, including ‘lung squeezing’19 and ‘manual expiratory chest compression’23, significance remained at both four hours after treatment19 and 70 minutes post treatment23. Further research on the effects of physiotherapy on lung mechanics is available, however this considered the effects of routine treatment of infants in the first 24 hours of life22. As this is no longer considered safe practice26 this evidence is clinically inapplicable. Chest physiotherapy is therefore suggested to show an immediate improvement in lung mechanics, which may only show long term carry over with the ‘newer’ physiotherapy techniques which address ventilation distribution. Accurate conclusions cannot be drawn due to small sample sizes, poor methodology and the variety of treatment protocols.
Effects of neonatal respiratory physiotherapy on secretion clearance and gas exchange

Secretion clearance and improvements in oxygenation and carbon dioxide clearance are often cited as reasons for neonatal chest physiotherapy however there is a paucity of high quality evidence. Significant increases in oxygenation have been shown immediately after percussion, however the longer term effects were not considered and the study is quite old. Additional old studies on small samples have shown improvement in oxygenation with percussion and vibrations. Dall'Alba & Burns found a significant negative correlation between the amount of secretions removed during chest physiotherapy and the mean transcutaneous oxygen levels in the preceding hour. Low sputum producers tended to have a trend towards lower PO2 following physiotherapy. Fox et al studied the effects of vibration, suctioning and manual hyperinflation (MHI). While PO2 decreased after suction and increased after MHI, this is no longer applicable to current practice where MHI breaths are avoided on premature infants due to risks of pneumothorax and barotrauma. This will be discussed further in the ‘safety concerns’ section.

One study considered volume of secretions cleared with vibrations and percussion, showing this to be significantly improved in comparison to suction alone. As this was an old study on a very small population, it was considered insufficient in a recent Cochrane review. This concluded that there is insufficient evidence to demonstrate that chest physiotherapy has a beneficial effect on either secretion clearance or gas exchange in a preterm population.

Effects of neonatal respiratory physiotherapy on long term respiratory outcomes

Longer term respiratory outcomes specific to the neonatal population include the incidence of chronic lung disease (CLD), bronchopulmonary dysplasia (BPD), and length of oxygen therapy. In a large RCT where neonates given regular post extubation percussion and suction, Bagley et al found no significant difference in any long term respiratory outcomes. This is corroborated by Bloomfield et al who showed no differences in the development of CLD in a large retrospective review. Both studies concluded that routine chest physiotherapy has no impact on long term clinical outcomes.

Effects of neonatal respiratory physiotherapy on specific conditions

Significant interest, including several RCTs, has been dedicated to the role of chest physiotherapy in the prevention of PEA and re-intubation rates. A Cochrane review of the available evidence failed to show a benefit of chest physiotherapy for PEA, however did demonstrate a significant reduction in re-intubation rates with chest physiotherapy in the first 24 hours following extubation. Interestingly, this significance was lost when only the most recent (and therefore most clinically applicable) trials were considered.

With the exception of PEA, specific neonatal conditions have not been adequately investigated. Studies considering the efficacy of chest physiotherapy have considered mixed samples of infants with various underlying conditions without sub-group analysis to ascertain which pathologies are responsive. The available literature mainly investigates the effects of routine chest physiotherapy regimes, often on stable patients with conditions not felt to be responsive to physiotherapy, for example Respiratory Distress Syndrome of Prematurity (RDS), CLD or Pulmonary Interstitial Emphysema (PIE).
clinical practice involves treatment of infants based on clear objective signs of deterioration, including radiographical changes, or superadded infections with increased secretion load or worsening ventilatory parameters \(^{37}\), which is not reflected in the available literature base. Infants with uncomplicated RDS, PIE or CLD do not require treatment in the absence of objective indicators of deterioration.

**ii) Safety Concerns Related to Neonatal Respiratory Physiotherapy**

**Neurological**

Chest physiotherapy has been associated with a serious brain injury called encephaloclastic porencephaly (ECPE) \(^{38,39}\). This is potentially fatal or results in severe neurological sequelae \(^{38}\). In a study considering outcomes of preterm infants, those demonstrating ECPE had received 2-3 times more chest physiotherapy than the rest of the population \(^{39}\). Interestingly, these patients were also significantly more hypotensive and had a worse state at delivery suggesting that physiotherapy may not have been the causative factor \(^{39,40}\). Chest physiotherapy was postulated as the cause as the ECPE cases only occurred after chest physiotherapy became available 24 hours a day by a combination of physiotherapists and nursing staff, i.e. the frequency increased as the skill levels decreased \(^{39}\). ECPE was also associated with physiotherapy as it was similar in properties to injuries seen in older ‘shaken babies’ \(^{38,41,42}\). On investigation of the primary units where these cases occurred, it was suggested that these units carried out percussion more vigorously than at other centres, for a longer duration, without holding the head and allowed physiological stability to fluctuate more \(^{43}\). Physiotherapy treatment was also performed by staff with minimal training, carried out routinely rather than on specific assessment findings, and there was a greater propensity to treat smaller and younger infants \(^{43}\).

Proposals were therefore made that chest physiotherapy on preterm infants should only be carried out infrequently for specific indications following robust assessment, and incorporating a head hold as standard \(^{41,44}\). Percussions should be of moderated vigour and maintaining physiological stability should be paramount \(^{43}\). Following adherence to this change of practice, no further cases were seen in the primary units. Further studies investigating this area considered populations treated within these recommendations and found no ECPE and no increase in Periventricular Leukomalacia (PVL) or later development of cerebral palsy \(^{45}\). Intraventricular haemorrhages (IVH) were found to be increased when patients received chest physiotherapy in the first 24 hours of life \(^{22}\). Of note, these patients were given a head down tip which is now considered unsafe practice as preterm infants are unable to auto-regulate their cerebral blood flow leading to increased intracranial pressure (ICP) and risk of IVH \(^{26,46}\). Additionally, infants under 1500g are no longer treated in the first 2-4 days of life \(^{47}\) to minimise the risks of IVH which may be caused by a stress response to handling alongside physical effects of chest physiotherapy \(^{48,49}\). Further research following best practice recommendations \(^{41,43,44}\) showed no increase in IVH in patients who received chest physiotherapy \(^{33}\).

**Orthopaedic**

Premature infants are at risk of developing metabolic bone disease and rib fractures have been suggested as a negative outcome of manual chest physiotherapy techniques \(^{50,51}\). Dabezies & Warren \(^{50}\) identified 54 rib fractures in 9 infants who were undergoing chest wall
percussion, mainly occurring at 6-8 weeks of life. The infants who demonstrated rib fractures all had high serum alkaline phosphate levels suggesting metabolic bone disease. Manual techniques should not be carried out without careful clinical reasoning in patients with haematological or radiological evidence of metabolic bone disease, or a history of fractures on minimal trauma/handling.

Cardio-Respiratory

Cardiovascular stability during chest physiotherapy and suction has been considered by several authors. Transient desaturations are seen following the suction component of treatment, which are minimised if any saline used is kept to a maximum of 0.25-0.5mls. Bradycardias have also been reported following suction. A recent Cochrane review has concluded that closed suction may maintain physiological stability better than open suction. Open suction can result in longer recovery times, and cardiovascular instability was shown to be greatest in infants who weighed <1000g. Supplemental oxygen delivery without manual bag ventilation seems sufficient to prevent hypoxia during suction although the pressure and/or rate of ventilation may have to be temporarily increased.

Preterm infants are at high risk of pneumothorax and barotrauma. It has long since been accepted practice that MHI is contraindicated in pre-term infants due to the high risk of such pulmonary complications, alongside detrimental effects on cerebral blood flow. The younger the infant is, the less advisable it is to use MHI. The high compliance of the chest wall and low elastic and collagen content of the lung tissue in pre-term infants offers little protection against over-distension. As such, a quarter of infants develop some form of barotrauma, namely CLD, PIE or pneumothorax. Babies with RDS are more at risk of CLD and PIE due to lack of surfactant and those with more compliant lungs are more at risk of pneumothorax. High tidal volume breaths can produce stress fractures of the capillary endothelium, epithelium and basement membrane; causing lung rupture, fluid, protein and blood leakage into lung tissue and inflammatory responses. This effect appears to be magnified where infants are subjected to variations in tidal volume, as would be inevitable with MHI. Maximal peak inspiratory pressures during ventilation have also been associated with increased risk of pneumothorax, therefore unpredictable peak pressures during manual ventilation should be avoided. Most neonatal units now use a ‘neopuff’ infant resuscitator system to safeguard pressures delivered to infants lungs when ventilation is required to be delivered manually in resuscitation situations. No evidence has been found which investigates the use of neopuff during physiotherapy.

iii) Specific Recommendations for Respiratory Physiotherapy Techniques on Preterm Infants

Superiority of treatment techniques

Establishing the clinical benefits of differing physiotherapy techniques is of paramount clinical relevance. Unfortunately, the evidence is again comprised of old studies which do not reflect current treatment regimes, have very small samples, or are abstracts of conference proceedings without sufficient methodological detail. More recently, Wong & Fok compared twice daily physiotherapy utilising the lung squeezing technique to percussion and vibration in a well constructed RCT. The lung squeezing technique was shown to be superior at correcting atelectasis than manual techniques. No other outcomes
such as secretion clearance and gas exchange were considered. Percussion has been suggested to improve oxygenation more than vibrations. This may be due to the ability to easily take preterm infants into their closing volume with vibrations, causing atelectasis. As no other studies have compared differing techniques, further research is required to establish clinical efficacy of different treatments on a variety of long and short term outcome measures. The use of positioning and postural drainage to mobilise secretions in preterm infants is un-researched.

Recommendations for practice

• Chest physiotherapy is indicated in certain cases for improvements in gas exchange, lung mechanics and removal of secretions. The evidence base for this is poor, does not reflect current practice and needs further research.

• “The main role of the physiotherapist is to judge if and when intervention is appropriate.... the maxim that routine treatment is taboo is never more apt than in the NICU.... The approach is to assess, identify any problems, and balance up the benefits and risks of intervention.” Preterm infants should not receive routine physiotherapy treatment.

• Chest physiotherapy should only be carried out in the presence of specific indications:
  • superadded infections with retained secretions unable to be cleared with suction alone and/or resulting in worsening ventilatory parameters;
  • specific radiological evidence of focal collapse/consolidation (not diffuse RDS / PIE / CLD).

• Contraindications for treatment (in addition to any applicable to term infants) include:
  • infants under 1500g in the first 2-4 days of life;
  • osteopenia (clinical history / haematology / radiology);
  • within 24-48 hours of a known IVH.

• Objective measures should be carefully analysed before and after treatment (including longer term carry over) to justify benefits of individual treatments where the evidence base is lacking.

• Treatments not recommended for preterm infants include:
  • MHI without comprehensive justification via clinical reasoning;
  • head down tip.

• Risks of treatment should be minimised by:
  • careful monitoring and maintenance of physiological stability;
  • pre-oxygenation with increased ventilator pressures/rate where necessary;
  • when used, saline volume should not exceed 0.5mls;
  • closed suction may be superior;
  • stress responses should be minimised throughout treatment.
• Ensure safety of manual techniques:
  **Percussion:**
  • moderated vigour;\(^{43,45}\)
  • pressure of 0.5cmH\(_2\)O has been suggested;\(^ {47}\)
  • moving only the wrist and fingers may moderate the vigour better than using the elbow as a fulcrum;\(^ {63}\)
  • rate of 3/second;\(^ {47}\)
  • 1-2 minutes treatment length per position;\(^ {47}\)
  • maximum of two positions per treatment;\(^ {47}\)
  • maximum frequency of 4-8hourly;\(^ {47}\)
  • stabilise the infants head during percussion at all times.\(^ {43,45,63}\)

  **Vibrations:**
  • there are no published clinical recommendations available for use in preterm infants;
  • treatment should only be carried out by staff who have completed a thorough training programme.\(^ {25,48,64}\)

**Role Description - Specialist Neonatal Respiratory Physiotherapist**

Due to advances in both neonatal and obstetric care over the past twenty years there is an increasing survival rate of extremely premature infants admitted to NNUs across the United Kingdom. These highly vulnerable infants are at an increased risk of lung damage due to the adverse effects of ventilatory support required to assist their respiration. Chest physiotherapy can be used as a treatment technique to improve ventilation by removing excess tracheobronchial secretions. Chest physiotherapy used on preterm infants is a package of techniques consisting of postural drainage and positioning, active techniques e.g. percussion and vibrations, and suction\(^ {64}\).

Many hospitals provide both physiotherapy and occupational therapy staff to work in the NNU but few have clear guidance for the experience needed or of the services to be provided. In a benchmark published in 2012\(^ {66}\) 48% of level 3 units who responded had a respiratory physiotherapy service. Access to specialist respiratory physiotherapy services is acknowledged in Department of Health (DH) ‘Toolkit for high quality neonatal services’\(^ {15}\) and British Association of Perinatal Medicine ‘Standards for hospitals providing neonatal intensive and high dependency care’\(^ {17}\).

The Parliamentary Health Committee Report on Provision of Maternity Services\(^ {66}\) acknowledged neonatal physiotherapy as an advanced practice sub-speciality area within physiotherapy. Physiotherapists who provide services to preterm infants require a highly complex set of skills for assessment, observation, intervention, evaluation and interpretation of findings for the extremely fragile preterm population in Neonatal Intensive Care Unit (NICU), High Dependency Unit (HDU) Special Care Baby Unit (SCBU) and intermediate care settings. This includes advanced clinical training to manage the rapidly changing physiological and behavioural stability in preterm infants, in collaboration with other members of the multi-disciplinary specialist neonatal team. The skill of the specialist neonatal respiratory physiotherapist is to be able to discern if the infant’s main problem can
be affected by chest physiotherapy techniques. Many variables affect the physiological stability of the infant, and the need for intervention needs to be balanced against the physiological cost, energy expenditure and developmental needs of the infant. The physiotherapist must therefore possess advanced clinical competences to manage vulnerable infants with complex medical, physiological, and behavioural conditions, who may inadvertently be harmed through examination and intervention procedures.

It is recommended that the neonatal respiratory physiotherapist has at least a masters degree, or appropriate professional experience to masters level - Agenda for Change Bands 7 or 8 depending on the level of freedom to act autonomously and the knowledge, skill and experience required for the role. Masters level indicates advanced post-graduate study beyond the bachelor's degree. It recognises heightened expertise in an academic discipline or professional field of study, focusing on specialisation, professionalism, career enhancement and development of the following key attributes:

- appropriate use of evidence and the ability to synthesise and integrate this into practice;
- refinement of critical reasoning and problem-solving skills;
- capacity for innovation within autonomous practice;
- ability to construct personal theoretical frameworks for practice, drawing on the evolving evidence base;
- capacity for leadership;
- ability to be innovative and to initiate change;
- ability to facilitate the learning of others;
- capacity for effective collaboration (within multi-professional and cross-sector teams and through a genuine engagement in patient partnership/user involvement).

The NNU is not an appropriate setting for the entry-level graduate physiotherapist, generalist, or physiotherapy assistant to work independently without adequate supervision, in order to minimise risk to infants who may be potentially unstable.

Sequenced, gradual entry to neonatal care for Band 5/6/7 physiotherapists who already have some paediatric experience is advised with individualised clinical preceptorship, observation and supervision by a clinician experienced in neonatal care (see page 20).

Opportunities for undergraduate physiotherapy students interested in paediatrics to gain clinical observation experiences within the NNU settings is recommended as a preparation and introduction prior to post graduate preceptorship speciality training in neonatal physiotherapy for those interested in this field of work. Students should be closely supervised by an experienced neonatal physiotherapist. Through observational experience the student should be made aware of the unique culture and physical environment of the NNU including intensive care, high dependency and special care equipment as well as the physiological and behavioural fragility of the vulnerable infants. They should be encouraged to observe infants of varying gestational ages, diagnoses and acuity levels, as well as observing clinical decision making, handling and intervention provided by all members of the neonatal team and communication between team members in the NICU, HDU and SCBU.
A specialist neonatal respiratory physiotherapist is a registered physiotherapist who, as a result of postgraduate education and in-depth clinical experience of several years in paediatric, neonatal and intensive care practice, possesses advanced knowledge and clinical reasoning skills. These are necessary to provide specialist physiotherapy services for the holistic care of the preterm infant in the NNU, and has responsibility for the quality of standards of physiotherapy provided. The major roles of the specialist neonatal respiratory physiotherapist include specialist clinical practice, consultation, education and scientific inquiry.
Using this Document

It is not a requirement that every neonatal physiotherapist will achieve expert level in all the dimensions of the framework. Whilst some aspects of the knowledge and skills outlined may need to be developed to the level of understanding of use, it may be that other aspects will need to be developed to the level of awareness only. This will need to be judged according to the particular working context e.g. NICU, HDU or SCBU.

It is intended to be empowering and aspirational. It is primarily a tool to support self assessment and personal development plans, rather than a tool against which performance is judged. The framework can be used:

- as a tool for individual therapists to assess their own competence and identify learning needs, identify existing strengths and weaknesses;
- in the formal appraisal system to assess competence and enable identification and planning of learning needs/personal development plan;
- to recruit and select new staff more effectively;
- to evaluate performance more effectively;
- to identify skill and competency gaps within a service more efficiently;
- to provide more customised training and professional development;
- to plan sufficiently for succession.

Continuing Professional Development (CPD)

This framework focuses on professional, rather than academic accreditation and can be used to enhance life long learning and supervision. It can be used as a self assessment tool for professional development that practitioners can work towards achieving.

Standard 3 ‘Learning and Development’ of the CSP’s Quality Assurance Standards⁸ states that ‘learning and development is integral to physiotherapy practice. The CSP expects its members to actively engage with the two faces of learning and development; as learners through the process of continuing professional development (CPD), and as facilitators of others’ learning and development.’

It goes on to say that ‘active engagement with CPD ensures that CSP members can maintain and develop their competence to practice and continue to work within an evolving scope of practice. CPD is therefore a professional and regulatory requirement.’

It is expected that all members in any setting will develop a personalised plan to meet their learning and development needs and will record and evidence the outcomes of the learning process. This document can be used as a tool to guide, plan, implement and evaluate an individual’s CPD.

Within the NHS it is expected that all staff will have an annual appraisal. The use of this framework to complete competence based appraisal will enable the identification of the knowledge and skills required for individual competences which can then be used to develop a personal development plan.
Quality Assurance

Quality Assurance is important to improving the standard and proficiency of safe, effective practice within the profession. It ensures that at least a minimum standard is maintained and ensures that patients have access to a high quality service wherever they live.

This document supports individual practitioners to participate in quality assurance by:

- enabling individual practitioners to self-assess and recognise their competent performance, plan their continuing professional development, and establish means of quality assurance;
- providing a tool to appraise individual team members to assess whether they are meeting the required standards - it can be used as a tool to identify and assess individual and team development needs, assist in workforce redesign, development and planning requirements;
- a means through which a training programme may be developed and tailored to the CPD needs of individual team members;
- it can also be used as a means of benchmarking training courses and appropriate learning materials and to specify outcomes of these programmes to assess if training and education has been effective.

Service Review and Workforce Planning

Physiotherapy service managers could use the competence frameworks as a model of care to give a clearer insight into the expertise and competence required of a neonatal physiotherapist, and to be able to evidence that the workforce has the relevant competence to ensure consistent delivery of qualitative, safe and effective care.

It may also be useful when developing a business case to promote and sell specialist neonatal physiotherapy services to the Commissioners. It can be used to put together a picture of what the service can deliver in a way that will be meaningful to external audiences.

The framework will support the NHS Knowledge and Skills Framework in providing a guide to the range of knowledge and skills a neonatal physiotherapist needs in order to work at a safe and competent level and to plan development and review of individual work. This document can assist in:

- the analysis of the distribution of competences between roles in a neonatal team and can suggest areas where new roles may be able to deliver the service more effectively;
- it can enable the identification of a range of competences that may be needed in order to deliver a service and where there are gaps or overlaps;
- the document can enable individuals to be clear about their role and responsibilities;
- it can also assist in the analysis of a role in more detail than a KSF role outline and so be useful in writing job specifications, recruitment selection and role design.
The Future – Continuing Education Needs of Neonatal Physiotherapists

Practice Development

Evidence-based clinical practice is essential in the delivery of quality neonatal physiotherapy care and collation and dissemination of this research nation-wide is crucial.

While there is a continual growth in the knowledge and skills of paediatric physiotherapists there still remains a lack of evidence-based literature relating to paediatric and neonatal physiotherapy practice across the United Kingdom. Therefore, many of the practices delivered to paediatric patients remain anecdotal or are being developed through benchmarking with other countries. Collaboration with other disciplines is necessary to provide a strong foundation of knowledge of basic applications to practice.

Many neonatal physiotherapists have taken, or are currently undertaking, a degree or a master’s programme. Physiotherapists who do not wish to undertake these programmes must also have their continuing education needs addressed to be able to enhance and develop the advanced level of knowledge, skills and experience required of neonatal physiotherapists to enable them to deliver appropriate care to the highly vulnerable high risk infants and their families.

Teaching and Learning Strategies for Neonatal Physiotherapists

There is a tremendous need and challenge within paediatrics to develop the advanced practitioner roles of Clinical Specialist and Consultant Practitioner and to determine the appropriate management support structures for them. Continuing education programmes that focus specifically on the care of the preterm infant are essential. The framework can be used to identify training needs, curriculum design and development of specialist training packages.

There is a need to review the neonatal specialist courses provided and to develop advanced practitioner courses in the future. A holistic approach to the assessment and treatment of the neonate is acknowledged as best practice and learning needs of the individual physiotherapist should acknowledge this approach.

Neonatal physiotherapists tend to work very much in isolation within their own paediatric physiotherapy teams. Peer review with other experienced neonatal practitioners nationally is therefore acknowledged as an important factor to be encouraged in the learning experience, and in continuing day to day practice of experienced therapists to maintain standards, improve performance, ensure consistency, safety, and provide credibility.

Suggested Learning Strategies

- Preceptorship (see below)
- Higher education and specialist courses/study days – neonatal specific, profession specific, and intervention specific
- Self-directed learning - reading, e-learning, literature review
• Documented clinical supervision sessions and regular peer review
• Problem based learning
• Specific projects relating to neonatal care
• Reflective diaries
• Assessments and appraisal
• Publications, including posters and presentations
• Audits
• Policy and protocol development
• Membership of advisory groups such as national Newborn and Perinatal Network boards, clinical forums, working parties
• Membership of professional specialist interest groups e.g. APCP Neonatal Group, British Association of Perinatal Medicine
• Research and evidence based reviews

Preceptorship

Preceptorship is now embedded in a range of existing professional regulatory and employment guidelines. It was introduced into the National Health Service (NHS) following the implementation of Project 2000, a scheme, introduced in 1989, that formed the basis for the academic education of all nurses and midwives, an outcome of a review of nurse education.

Examples of current preceptorship projects within the NHS are:

• Nursing and Midwifery Council (NMC) guidance covers areas such as the role of the newly registered nurse and midwife and in the longer term the NMC is considering the introduction of a period of mandatory preceptorship for newly graduated nurses and midwives.

• The College of Occupational Therapists (COT) has provided guidance and support for implementing preceptorship for managers and newly registered occupational therapists.

Preceptorship has been described as an individualised period of support under guidance of an experienced clinical practitioner. This attempts to ease transition into professional practice. Preceptorship will support the policy drive to place ‘quality at the heart of everything we do in healthcare’.

The aim of preceptorship is to enhance the competence and confidence of the newly registered practitioners, those returning from work after a period of non working or practitioners entering a new field of work within their profession as autonomous professionals. This will enable continuation of their professional development and life long learning, building their confidence and further developing competence to practise.

A gradual entry into neonatal respiratory care is strongly advised. Several years prior experience in adult and/or paediatric respiratory care is essential. Treatment skills are best acquired with less vulnerable children before working with infants who are acutely or critically ill. For physiotherapists without prior neonatal experience direct observation and
clinical preceptorship with an experienced clinician in the NNU should precede independent assessment and treatment intervention. Before attempting to examine or intervene with infants and parents in the NNU it is recommended that the physiotherapist has clinical experience of the assessment and intervention of infants born at full term and older medically fragile children requiring respiratory equipment and cardio-respiratory monitoring instrumentation in the Paediatric Intensive Care Unit (PICU), paediatric wards, and newborn care settings. These children are less vulnerable than the extremely unstable infants born preterm.

Other suggestions for preceptorship training could include:
- participating in quality assurance or applied research studies;
- assisting with data collection;
- providing education on respiratory techniques to individuals or groups;
- reflective practice with peers and/or mentor.

Spending time with other disciplines within the neonatal team to learn about their roles and practice, observing nursing, medical care and respiratory therapy for fragile infants with complex medical conditions are additional valuable components in preceptorship training, as are attending Grand Rounds on the NNU.

Preceptorship could also be accessed through local children’s services, tertiary centres, through the APCP Neonatal Group, respiratory care special interest groups and specialised training modules for experienced paediatric therapists.

**APCP Courses**

The APCP Neonatal Group currently run the following course:
- Role of the Therapist in Neonatal Care
Knowledge Base for Neonatal Respiratory Physiotherapists

Foundation Sciences
- Genetics
- Embryology
- Developmental anatomy and physiology including lung development
- Respiratory pathophysiology of the newborn
- Neuroanatomy/neurophysiology of the newborn
- Scientific enquiry
- Management science
- Knowledge of highly technical intensive care environment and equipment
- Knowledge of neonatal ventilation strategies
- Knowledge of existing evidence base surrounding neonatal respiratory physiotherapy
- Understanding of physiological parameters for neonates

Behavioural Sciences
- Infant neurobehavioural organisation
- Behavioural and physiological cues
- Grief and bereavement process
- Counselling skill
- Medical/legal issues and ethics

Clinical Sciences
- Knowledge of normal growth and development of the term and preterm infant
- Atypical foetal, newborn and infant development
- Knowledge of medical and surgical management of the preterm infant
- Cardiovascular and pulmonary assessment and treatment
- Appropriateness of physiotherapy intervention for preterm infants
- Infection control
- Understanding of microbiology

Other Required Skills
- A holistic approach to assessment and treatment of the neonate in the NNU
- Work collaboratively with a wide range of professionals and family as a member of the neonatal team
- Work within a medical and developmental framework
- Show flexibility
- Show excellent communication skills
- Leadership skills to become a catalyst for change
- Foster respect and autonomy
- Teaching skills
- Ability to empower
- Cultural competency
Respiratory Competences for Physiotherapists Providing Interventions for Preterm Infants

1) Screening

Role 1: Screen infants in NNU to determine the need for physiotherapy services based on referral or diagnostic criteria

Clinical proficiencies

1.1 Identify and interpret perinatal and medical history and current infant status from the medical notes and by communicating with medical and nursing staff.

1.2 Recognise signs of changing respiratory status and potential indications and contraindications for chest physiotherapy.

1.3 Identify infants for referral to physiotherapy eg. through participation in NNU medical ward rounds.

Knowledge areas

1.a NNU medical terminology and abbreviations.

1.b Epidemiology and pathophysiology of prenatal, perinatal and post natal diagnoses on respiratory status.

1.c Normal pre and post natal lung development.

1.d Aetiology and pathophysiology of common medical and respiratory conditions affecting neonates.

1.e Indications for and effects of general medical procedures in preterm infants.

1.f Indications for and effects of respiratory management strategies in preterm infants.

1.g Indications, contraindications and precautions to chest physiotherapy techniques.

1.h Knowledge of risks associated with chest physiotherapy.

1.i Effects of the NNU environment on the infant.
2) Examination and Evaluation

Role 2: Examine infants and interpret findings

Clinical proficiencies

2.1 Recognise signs of secretion retention, atelectasis, hyperinflation or lobar collapse due to mucous plugging by identifying and interpreting information from:
   - medical and nursing staff;
   - medical notes and nursing charts;
   - chest X rays;
   - monitors and ventilator settings;
   - blood and biochemistry result;
   - observation.

2.2 Evaluate and interpret the information and identify need for clinical examination.

2.3 Identify and interpret infant behavioural cues based on nursing assessment and observation of the infant.

2.4 Determine a safe and effective approach to start the assessment and intervention, balancing the need for intervention with the physiological cost to the infant of handling.

2.5 Locate all leads, lines and respiratory tubing from the infant to medical equipment and explain the general function of each attached equipment unit.

2.6 Demonstrate appropriate handling of infants with increasingly complex medical needs on physiological monitors, respiratory equipment, infusion or parental feeding lines and other medical support devices.

2.7 Analyse and modify the physical environment using environmental support measures (eg positioning aids, light and sound control measures) and individualised caregiving strategies to optimise neurobehavioural responses of infants during examination and treatment.

2.8 Select and carry out clinical examinations and evaluations appropriate for the infant’s gestational age and physiological stability determining the indications for, contraindications and precautions to chest physiotherapy treatment.

2.9 Using advanced clinical reasoning and decision making skills from the examination identify the physiotherapy problem, measurable treatment goal and select the most appropriate chest physiotherapy technique(s), modifying those techniques to be appropriate for preterm infants.
Knowledge areas

2.a Acceptable range of physiological parameters based on acuity levels and ages of infants.

2.b Framework and principles of developmental care for preterm infants.

2.c Neurobehavioural cues demonstrating homeostasis, self regulation and calming as well as cues indicating stress and overstimulation.

2.d General function of all medical equipment, lines and leads attached to infant.

2.e Function modes and clinical applications of respiratory support.

2.f Equipment, humidifiers, suction equipment, resuscitation equipment.

2.g Effect of medical and surgical conditions on the respiratory status of preterm infants.

2.h Management precautions for preterm infants with postoperative medical conditions, cardiac and respiratory disorders and septic conditions.

2.i Development of neuromuscular, musculoskeletal, integumentary, sensory, cardiovascular, pulmonary and other physiological systems of the foetus.

2.j Epidemiology and embryology of foetal malformations, deformations and consequences of exposure to maternal infection, substance misuse and inadequate nutrition.

2.k Interaction between environmental factors and infant neurobehaviour.

2.l Respiratory disease of the preterm and newborn infant.

2.m Infection control procedures, clean and aseptic techniques.

2.n Components of chest physiotherapy assessment: observation, auscultation and palpation.

2.o Indications, contraindications and precautions to chest physiotherapy techniques.

2.p Problem solving approaches to clinical reasoning and goal setting.
3) Implementing and evaluating a chest physiotherapy plan

**Role 3: Implement and evaluate chest physiotherapy treatment plan in collaboration with neonatal team**

**Clinical proficiencies**

3.1 Determine frequency, intensity and either direct or consultative methods for implementing chest physiotherapy plan.

3.2 Provide physiotherapeutic rationales for interventions utilising current specialist knowledge and best practice in neonatal respiratory care.

3.3 Explain and discuss chest physiotherapy plan with family.

3.4 Work collaboratively with members of multidisciplinary team to implement treatment plan.

3.5 Apply appropriate hand placement, support and adjustments during handling of preterm infants.

3.6 Carry out chest physiotherapy techniques modifying them to be appropriate to the gestational age and respiratory status of the infant and matched to the physiological, motor and state regulation strengths and vulnerabilities of the infant - these strategies include:
   - positioning;
   - modified postural drainage;
   - chest percussion;
   - chest vibrations;
   - suction.

3.7 Saline instillation.

3.8 During chest physiotherapy treatment to read, interpret and respond to infant’s behavioural cues.

3.9 Collect data, monitor progress, evaluate effectiveness and modify chest physiotherapy plan and goals accordingly to accommodate changes in the infant’s respiratory status, stopping treatment when the problem is resolved.

3.10 Act as a resource to nursing staff, medical staff, therapy staff and families for unit-wide implementation of evidence based chest physiotherapy strategies.

3.11 Utilise a reflective, critical thinking and problem solving approach to the respiratory care of the preterm infant that is evidence based, promotes clinical decision making and enables the development of clinical protocols.
Knowledge areas

3.a How to perform chest physiotherapy techniques for secretion clearance, improving ventilation perfusion ratios, managing hyperinflation and atelectasis.

3.b Knowledge of suction equipment, choice of suction catheter and depth of suctioning according to unit or network guidance.

3.c How to perform suction safely and effectively.

3.d Knowledge of resuscitation techniques.

3.e Evidence base for chest physiotherapy and suctioning techniques.

3.f Framework and principles of developmental care for preterm infants.

3.g Role of members of multidisciplinary team members.

3.h Communication styles and strategies.

4) Consult and collaborate with health professionals, families, professional organisations or agencies

Role 4: Act as a member of the multidisciplinary team, collaborating with other professionals, families and agencies

Clinical proficiencies

4.1 Consult with relevant members of the interdisciplinary team to ensure effective outcomes.

4.2 Assess needs and expected outcomes of consultation.

4.3 Formulate goals, criteria and timelines, and select consultation models in collaboration with clients.

4.4 Identify internal and external procedural and regulatory guidelines as well as key stakeholders.

4.5 Collaborate in identifying and analysing problems and in developing benchmark objectives and action plans to achieve outcomes.

4.6 Analyse and interpret change processes (individual styles and rates of change).

4.7 Evaluate outcome and recommend revision of action plans.
4.8 Identify opportunities for potential referrals, collaboration, and resource sharing among other disciplines or services.

Knowledge areas

4.a Needs assessment process.
4.b Consultation models.
4.c Clinical reasoning processes.
4.4 Organisational change processes: catalysts and patterns of innovation and change.
4.5 Communication and leadership styles.
4.6 Community and multidisciplinary resources.

5) Scientific inquiry

Role 5.1: Incorporate evidence-based literature into neonatal practice

Clinical proficiencies

5.1.1 Review and critically appraise neonatal medicine, neonatal nursing and paediatric physiotherapy literature and incorporate findings into practice where appropriate.
5.1.2 Identify mechanisms to effectively disseminate selected current research related to neonatal physiotherapy to NNU staff and families.
5.1.3 Apply research and evidence-based practice literature into caregiving plans and interventions.
5.1.4 Utilise current evidence to challenge existing clinical practice and in the development of clinical protocols.

Knowledge areas

5.1.a Literature searching procedures.
5.1.b Methods for appraising medical literature.
5.1.c Levels of evidence from evidence-based medicine framework.
5.1.d Administrative mechanisms for modifying clinical procedures or protocols on the basis of new research findings.
Role 5.2: Support or participate in research involving infants, parents, or caregivers in neonatal care units

Clinical proficiencies

5.2.1 Create research questions on neonatal topics for clinical researchers.

5.2.2 Review the literature to identify related studies, establish a basis for the research questions and potential measurement methods, and evaluate designs and statistical methods used in similar studies.

5.2.3 Formulate testable hypotheses.

5.2.4 Establish and define independent and dependent variables.

5.2.5 Determine the research design and methods best suited to answer the research question.

5.2.6 Establish reliability in the use of the instruments chosen for data collection.

5.2.7 Analyse and interpret data.

5.2.8 Establish conclusions and clinical implications from the data.

5.2.9 Identify limitations of the study and suggestions for future research.

5.2.10 Disseminate the results of the research.

Knowledge areas

5.2.a Evidence-based practice concepts (principles and evidence hierarchy).

5.2.b Research design and measurement methods.

5.2.c Common statistical tests used in neonatal and paediatric physiotherapy research.

5.2.d Resources for consultation in design, statistical analysis, and funding.

5.2.e Ethical principles and research governance.

5.2.f Procedures for clinical research proposal approval and monitoring.

5.2.g Research reporting mechanisms for presentations and publications.
6) Education and self-learning / professional development

Role 6.1: Communicate, demonstrate, and evaluate neonatal physiotherapy care processes with other NNU professionals and caregivers

Clinical proficiencies

6.1.1 Present or contribute to staff development initiated educational sessions/workshops and conferences.

6.1.2 Explain and promote the specialist role and its value to infants families, the community and the health service.

6.1.3 Identify learner knowledge and skills needs and prepare clinical training that reflects baseline and expected achievement levels.

6.1.4 Establish training objectives and priorities.

6.1.5 Choose teaching methods and format.

6.1.6 Communicate information, demonstrate procedures, arrange practice sessions and repeat demonstrations, and provide feedback with learners on performance.

6.1.7 Evaluate learner performance and teaching effectiveness.

6.1.8 Serve as a role model and preceptor/mentor to colleagues and undergraduate/graduate students.

6.1.9 Participate on committees within and outside the health service and professional organisation e.g. Neonatal and Perinatal Network committees.

6.1.10 Utilise appropriate educational strategies, approaches and materials to enable other professionals in the neonatal team and family to make informed decisions about care.

Knowledge areas

6.1.a Scientific and theoretical bases and procedures in physiotherapy for neonates.

6.1.b Adult learning styles and stages of learning.

6.1.c Educational process to include objectives, methods, sequencing, and evaluation.
Role 6.2: Pursue active commitment to continuous education in practice topics related to neonatology

Clinical proficiencies

6.2.1 Self-assess clinical competencies and knowledge limitations in physiotherapy for neonates.

6.2.2 Participate in relevant professional organisation e.g. APCP Neonatal Group / Associate Membership BAPM.

6.2.3 Maintain a current knowledge of neonatal and child health issues relevant to practise e.g. reading relevant literature, attending conferences, participating in continuing education and/or post graduate studies.

6.2.4 Identify and document performance strengths and areas for improvement.

6.2.5 Consult with neonatal colleagues or mentors if unsure or unfamiliar with care requirements.

6.2.6 Identify learning needs that arise from changes in care guidelines.

6.2.7 Evaluate and select continuing education options to address skill and knowledge deficit areas.

Knowledge areas

6.2.a Self-reflective process.

6.2.b Resources for courses/seminars on neonatal care topics, NNU clinical training opportunities, peer review, and potential mentors with expertise in neonatology.

7) Administration

Role 7.1: Plan and administer a neonatal respiratory physiotherapy programme

Clinical Proficiencies

7.1.1 Develop a mission and philosophy for the neonatal physiotherapy service that is consistent with that of the hospital/neonatal network.

7.1.2 Assess the service needs of the target neonatal population and establish referral criteria.
7.1.3 Select and assign priorities to the physiotherapy procedures for neonates that will be offered.

7.1.4 Identify and acquire physiotherapy resources for serving neonates, including physiotherapists with precepted training, supplies, and time.

7.1.5 Establish financial support and develop or help to develop a neonatal physiotherapy service budget based on current staff resources and forecasted eligible neonatal population.

7.1.6 Develop and implement physiotherapy policies and procedures for neonates including referral mechanism, intensity (frequency and duration), supervision and preceptorship processes, and documentation format and timelines.

7.1.7 Identify ethical and legal standards and incorporate them into neonatal physiotherapy practice.

Knowledge Areas

7.1.a Principles for sequences for developing and administering clinical programmes.

7.1.b Resource management principles for analysing personnel, cost, and time requirements for neonatal physiotherapy services.

7.1.c Risk management principles and processes.

7.1.d Leadership principles and supervision models.

7.1.e Managed care processes and, if applicable, contract negotiation strategies.

7.1.f CSP Standards of practice and that of HCPC.

Role 7.2: Develop a physiotherapy risk management programme

Clinical Proficiencies

7.2.1 Document standard operating procedures for managing physiological risk during observation, infant examinations, and physiotherapy services in the NNU.

7.2.2 Develop clinical protocols for high risk or unusual procedures (e.g. bronchial alveolar lavage).

7.2.3 Establish procedures for managing inadvertent occurrences of adverse events during provision of physiotherapy services in the NNU.

7.2.4 Delineate procedures for adverse event documentation, follow up plan, and clinical
teaching on analysing and preventing the adverse occurrence.

Knowledge Areas

7.2.a Normal and pathological ranges of physiological values and cardiovascular parameters for term and preterm infants.

7.2.b Physical risk factors and their influence on the physiological stability of neonates.

7.2.c Risk management models and principles.

Role 7.3: Evaluate the effectiveness of a neonatal chest physiotherapy programme

Clinical Proficiencies

7.3.1 Evaluate and monitor quality of care and identify opportunities for practice change through reviews of cases and records with peers.

7.3.2 Analyse effectiveness of interventions on infant.

7.3.3 Participate in ongoing quality assurance/improvement initiatives in the NNU.

7.3.4 Determine the evidence base for examinations and interventions implemented.

7.3.5 Conduct general review of physiotherapy programme with neonatal, medical and nursing managers.

Knowledge Areas

7.3.a Quality assessment/improvement models and methods for application to clinical caseloads and programmes.

7.3.b Programme evaluation principles and methods.

7.3.c Evidence-based practice concepts and principles.

7.3.d Critical inquiry and evidence-based practice processes to evaluate neonatal and respiratory interventions.
Evidence of Competence

Everyone is responsible for developing their own portfolio of evidence to demonstrate that they have reached the defined knowledge, skill and experience to perform their role.

There is a variety of information that you can collect to capture evidence.

These may include:
- records of preceptorship e.g. clinical practice days, reflective practice, shadowing, one to one support from a more experienced practitioner in the field, in person, or remotely/electronically;
- higher education and specialist courses/study days - certificates of course and study day attendance on their own will not show evidence of competence;
- reflections of how you have put the knowledge and skills learned into practice;
- evidence of self-directed learning - reading, e-learning, literature review;
- evidence of clinical supervision sessions;
- observation of practice;
- problem based learning;
- specific projects relating to your specialty;
- recording of critical incidents;
- self appraisal via a reflective diary;
- assessments and appraisal;
- publications, posters and presentations;
- audits;
- teaching packages;
- policy and protocol development;
- evidence of membership of advisory groups such as Neonatal Network Boards; clinical forums and working parties; professional interest groups, e.g. APCP Neonatal Group; and other relevant specialist interest groups, e.g. British Association of Perinatal Medicine;
- research and evidence based reviews.

For further information regarding standards for CPD please see:
http://www.hpc-uk.org/registrants/cpd/
References


3. Nursing and Midwifery Council (2004). Standards of conduct, performance and ethics for nurses and midwives. NMC.


12. Children’s Workforce Development Council (2010). The common core of skills and knowledge. CWDC.


pt1), 440-444.

physiotherapy and porencephalic brain lesions in very preterm infants. *Journal of Paediatric Child 


view from down under. *Archives of Diseases in Childhood, fetal and neonatal edition*, 2002, 86, 
F30.

provided to preterm babies at National Women’s Hospital between April 1993 and December 


outcomes following neonatal chest physiotherapy. *Journal Paediatric Child Health*, 1998, 34(1), 
60-62.


morbidity in preterm infants on respiratory support.


physiotherapy and endotracheal suctioning in preterm infants. *Acta Paediatrica Scandinavica*, 
1985, 74, 525-529.


51. Purohit D, Caldwell C & Levkoff A (1975). Multiple rib fractures due to physiotherapy in a neonate 
with hyaline membrane disease. *American Journal of Diseases of Children*, 1975, 129 (9), 1103-
1104.

52. Shorten DR, Byrne PJ & Jones RL (1991). Infant responses to saline instillations and 
464-469.

neonates maintains better physiologic stability: A randomised trial *Journal of Perinatology*, 2003, 
23, 218-222.


Acknowledgements and Information for Feedback

The APCP Neonatal Group would appreciate your feedback on this competence framework so the document can be updated and amended as necessary.

Please write to: the authors and/or the Chair of the APCP Neonatal Group:

APCP
PO Box 610
Huntingdon
PE29 9FJ
email: va@apcp.org.uk