

Curriculum for training in respiratory paediatrics in the UK

April 2010

Members of the College Specialist Advisory Committee have drawn up this curriculum. It is intended as a guideline for trainees and trainers and is summarised in the RCPCH document Framework of Competencies for Respiratory Paediatrics.

Paediatric Respiratory Medicine- Curriculum for UK Trainees April 2010
CURRICULUM AND COMPETENCY-BASED ASSESSMENT FOR

RESPIRATORY GRID TRAINEES

JANUARY 2010

This is the third draft of the curriculum for Respiratory Grid trainees seeking accreditation in Paediatric Respiratory Medicine in the UK. The modules used in the syllabus are largely related to the European Syllabus (Breathe 2009;5:237-247), and harmonised where possible with the European Paediatric HERMES curriculum

The curriculum in each module is broken down into 'Background' (the knowledge required); Practical skills or competencies, and Evidence needed.

Methods of assessment are specified and include:

MSF Multisource Feedback

CBD Case Based Discussion

Mini-CEX Mini-Clinical Evaluation Exercise

DOPS Directly observed Procedural Skills

SAIL Sheffield Assessment Instrument for Letters

Trainees are already expected to keep a portfolio which documents their training. Since paper portfolios will become large and unwieldy, it is strongly suggested that trainees engage with eportfolios using the ASSET facility. It is also suggested that references are managed using a recognised database eg Reference Manager or EndNote and that guidelines, papers and other learning materials are stored in electronic form where possible.

Each year the trainee should obtain a signed off module assessment form, available from the BPRS website (www.bprs.co.uk) for each module, and bring these forms and their portfolio to an annual review by the CSAC. This should state the current level of progress in each area of the module, and set goals for the following year.

It is hoped that this approach to training will be a grounding for life-long learning and revalidation.

Obligatory modules

A A General competencies and skills

- A1. In-patient Management
- A2. Out-patient management

B Specific competencies and skills

- B1. Lung function measurements in schoolchildren
- B2. Flexible bronchoscopy
- B3. Imaging of the lung
- B4. Aerosol Therapy

C Diagnosis and management of specific disorders

- C1. Allergy and respiratory disorders
- C2. Congenital malformations
- C3. Asthma and the other wheezing disorders of childhood
- C4. Chronic lung disease of prematurity
- C5. Cystic fibrosis
- C6. Acute and chronic infection
- C7 Tuberculosis
- C8 Management of technology dependent children
- C9 Sleep medicine
- C10 Rare and multisystem diseases

D Management and teaching skills

- D1 Management and Leadership
- D2. Teaching
- D3 Evidence-based Medicine

E Research

Areas of knowledge which should be acquired during ST6-8

Rob Primhak, Chair Respiratory CSAC
April 2010

DRAFT
Competencies for accreditation in respiratory paediatrics
UK sub-specialty advisory committee

Obligatory Modules

A General competencies and skills

A1. In-patient Management, including A&E and ambulatory care and respiratory care of children in high dependency units

Resources: Must spend at least 12 months at an accredited centre with at least two respiratory trainers. It is recognised that with shift systems and the need to cover general paediatrics the trainee will have other commitments and training opportunities during this attachment.

Competencies:

Ability to

1. Determine the need for admission when assessing those referred, taking into account psychosocial factors. **CBD**
2. Determine, plan and explain to families the appropriate investigations and treatment. **CBD, Mini-CEX**
3. Recognise and manage severe and/or deteriorating respiratory problems including the need for and implementation of invasive and non-invasive ventilatory support **CBD, Mini-CEX**.
4. Liaise with the multidisciplinary team caring for the patients **MSF**
5. Give discharge advice to families with acute or chronic respiratory problems and arrange follow up as necessary. **MSF, CBD**
6. Communicate with the primary care team about the patient's future management. **Review of randomly selected discharge summaries.**

Evidence

1. Portfolio of at least 50 cases of which 5 should be reflective notes should be available. These should demonstrate evidence based practice eg management of bronchiolitis, pneumonia, acute asthma, stridor, upper airway obstruction, pneumothorax.
2. At least 5 observed episodes of interaction with families – eg on explaining tests, explaining diagnosis / differential or giving discharge advice.
3. Certification of readiness for independent consultant practice

Notes

Some of the evidence in this module will be derived from other modules for specific conditions.

A2. Out-patient management

Resources Training should be in 2 specialised respiratory outpatient clinics each week seeing both new referrals and follow-up visits. **DOP**

Background

1. Understanding of respiratory symptoms and noises including: snoring, congestion/rattles, stridor, wheeze, grunting and problem coughing

Observed teaching: Topic 2b

Competencies

Ability to:

1. Organise investigations to aid diagnosis or to measure disease severity. **CBD**
2. Interpret investigations appropriately taking into account diagnostic accuracy and clinical context. **CBD**
3. Recommend and institute age related disease-specific treatments. **CBD**
4. Monitor disease progress, taking into account adherence to and side-effects of treatment in follow-up. **CBD**
5. Identify factors, complications and co-existent conditions that make the management of a disorder "difficult" (.e.g asthma) - **CBD**
6. Communicate effectively with primary care and multi-disciplinary team **MSF**
and reflective notes and SAIL letters
7. Identify and manage unrelated conditions where appropriate

Teach the topic and CBD

Evidence

1. At least 20 critiqued clinic letters **SAIL**
2. Documentation of at least 50 Case Based Discussions or reflective notes including at least one of each of the conditions listed below
3. Certification of readiness for independent consultant practice

Specific conditions which should all be represented in the portfolio (see following sections)

1. Asthma (including infant and pre-school wheezing)
2. Problem coughing
3. Cystic Fibrosis
4. Chronic suppurative lung disease (non-CF bronchiectasis)
5. Rarer chronic lung disease (pulmonary haemosiderosis, ILD pulmonary hypertension)
6. Congenital thoracic malformations
7. Neuromuscular disorders
8. Children with immunodeficiencies
9. TB
10. Sleep disordered respiration (OSAS)
11. The child with recurrent lung infections or pulmonary infiltrates

Notes

Some of the evidence in this module will be derived from other modules for specific conditions.

B Specific competencies and skills

B1. Lung function measurements in schoolchildren:

Before making measurements in children trainees should have their own lung function tested to understand what is involved, and should observe a physiologist making measurements in children.. They should then make measurements under the supervision of a lung function technician or clinical physiologist.

Background

Understanding of

1. The underlying developmental physiology - flow-volume curves, measurement of lung volumes, the principles of bronchial lability, and ventilation, perfusion and gas exchange
2. Which test(s) are most likely to be useful in different conditions at different ages.
3. Correct selection and use of available reference data.
4. Knowledge of the diagnostic accuracy of spirometry for common disorders and repeatability and limitations of lung function measurements.
5. Knowledge of requirements for quality control and quality assurance and risk management in a lung function laboratory.
6. Knowledge of maintenance costs and estimates of cost of each test

Observed teaching: Assessment of knowledge (Topics 1a, 2c, 4a)

Laboratory skills

1. Ability to perform, interpret and report on, and recognise technical limitations in:
 - o spirometry (flow-volume curves),
 - o bronchodilator responsiveness,
 - o assessment of fitness to fly.
2. Ability to interpret and report on, and recognise technical limitations in:
 - o Lung Volume measurements
 - o Bronchoprovocation testing (at least one method)
 - o Measurement of diffusion
 - o Body plethysmography

DOPS/MiniCEX

Evidence:

Documentation of satisfactory teaching of knowledge topics

Documentation of satisfactory laboratory skills

Certification of readiness for independent consultant practice

Notes

The trainee should be considered competent when the laboratory technician and educational supervisor consider they are proficient and knowledgeable in laboratory skills, can report studies and can teach basic lung function and physiology to junior doctors. The trainee is not expected to be as proficient as a lung function technician but should know enough to set standards in their own laboratory.

B2. Flexible bronchoscopy

Background

1. Knowledge of the indications, contraindications, risks and complications of bronchoscopy in children and ability to explain these to parents.
CBD/MiniCEX
2. Knowledge of the indications, contraindications, risks and complications of other procedures performed during bronchoscopy including BAL, mucosal and transbronchial biopsies, and bronchography. **Written evidence/portfolio**
3. Knowledge of the indications for rigid bronchoscopy and non-bronchoscopic lavage, including at least one observed procedure of each. **CBD**
4. Knowledge of the maintenance and cleansing of equipment, including risks of cross infection and how to minimise these. **Written evidence/CBD**
5. Basic knowledge of processing techniques used in the laboratories. **Written evidence**
6. Knowledge of correlations between bronchoscopic investigations and clinical diagnosis
Assessment of knowledge Topic 3c, 4c

Clinical skills

1. Ability to perform bronchoscopy, BAL and bronchial brushing, . **DOPS**
2. Ability to interpret results of bronchoscopic investigations **CBD**

Evidence

Portfolio of cases observed and performed

Certified as competent to perform and interpret bronchoscopy independently by supervisor

Notes

The trainee should have performed/assisted in at least 50 bronchoscopies in children (of which at least 25 should have been done by the trainee) and visualised all of the common abnormalities encountered in routine clinical practice.

B3. Imaging of the lung

Background

1. Knowledge of the indications of, advantages of and limitations of different imaging methods in respiratory disease. **CBD**
2. Knowledge of the comparative radiation burdens of the different chest imaging procedures. **Written evidence in portfolio**

Clinical skills

1. Ability to interpret chest radiographs, and discuss chest CT scans.
2. Ability to interpret the results of CT and MRI scans of the thorax in the light of the clinical situation
3. Ability to select the appropriate imaging investigation for different clinical scenarios.

Evidence:

Certification of readiness for independent consultant practice

Competence will be certified by a radiology supervisor

Notes

1. The trainee will regularly evaluate radiographs at a respiratory X ray meeting, under supervision of the module leader(s) who will assess competence at interpreting chest radiographs and CT scans of the chest
2. Investigations with which the trainee should be familiar include:
 - CXR
 - Thoracic CT—various modalities
 - Thoracic MRI scan
 - Chest ultrasound
 - Isotope scan

●
B4. Aerosol Therapy

Background

1. Knowledge of the science of aerosol delivery and its limitations in children
2. Knowledge of the differences between dry powder, nebuliser and Metered dose inhaler treatment

Portfolio evidence/observed teaching

Clinical skills

1. Ability effectively to deliver aerosol therapy selecting devices appropriate for different ages and for different purposes. MiniCEX/CBD
2. Able to instruct children, parents, nurses and doctors in the use of inhalers and devices.

DOPS

Evidence: The trainee will be observed in a clinic setting and also in a teaching session giving advice and information. The portfolio will contain copies of scientific papers on drug delivery detailing the science.

Certification of readiness for independent consultant practice

C Diagnosis and management of specific disorders

C1. Allergy and respiratory disorders

The training will focus on children with asthma and allergic disease of the upper airways, but should also include non-respiratory allergic disorders.

Background

Knowledge of

1. Atopic and non-atopic asthma
2. Allergic inflammation
3. The genetics, epidemiology and natural history of allergy
4. The meaning and validity of test positivity
5. Advantages and disadvantages of specific IgE testing compared to skin prick testing.
6. The range of treatments available in allergic disease, and their advantages and disadvantages

Written evidence/observed teaching Topics 4b, 5b

Clinical Skills

1. Ability to undertake skin prick testing and the proper care of allergens
DOPS
2. Ability to take an allergic history and decide when to undertake challenge testing
MiniCEX/CBD/portfolio
3. Ability to select appropriate treatments in eczema and allergic rhinitis
CBD
4. Ability to advise appropriately about allergen avoidance measures
CBD
5. Ability to discuss the role of immunotherapy with families
Observed interaction/MiniCEX
6. Ability to discuss the role of alternative therapies in allergy with families
Observed interaction/MiniCEX

Evidence:

Documentation of observed teaching of knowledge

Documentation of clinical skills as listed above

Certification of readiness for independent consultant practice

C2. Congenital malformations

Background

1. Knowledge of the aetiology and genetics of the congenital malformations of the lung and chest wall
2. Knowledge of the effect of congenital malformations on lung function
3. Knowledge of the principles underlying medical and surgical management

Written evidence/observed teaching Topic 3a.

Clinical skills

1. Ability to diagnose and all the major congenital upper and lower respiratory tract abnormalities (see list below).
CBD/Portfolio with reflective summaries
2. Ability to select appropriate diagnostic techniques including CT, angiography and bronchoscopy and the principles of microlaryngoscopy. CBD

Evidence

1. CBD or Reflective case notes on each of the conditions below
2. Demonstrate competence in the initial assessment and follow up of the major congenital abnormalities to the satisfaction of his/her supervisor
3. Certification of readiness for independent consultant practice

Notes

The trainee should have been involved in the care of at least one of each of the conditions listed below:

- Pierre Robin sequence
- Laryngomalacia
- Vascular ring
- Congenital diaphragmatic hernia
- Tracheo-oesophageal fistula
- Congenital lobar emphysema
- Pulmonary sequestration
- Congenital cystic adenomatoid malformation

•
C3. Asthma and the other wheezing disorders of childhood

Background

1. Understanding of the complexity of the asthma syndrome including the difference between allergic and non-allergic asthma and the various types of recurrent wheezing in preschool children.
2. Knowledge about the changing patterns of recurrent wheeze and asthma across children of different ages.
3. Knowledge about the pathophysiology of asthma, chronic airway inflammation, airway hyperresponsiveness and airway remodelling.
4. Knowledge of controversies on allergen avoidance measures.
5. Knowledge of the interaction of physical activity, sports and asthma.
6. Understanding of gene-environment interactions, including the role of viral infections and their effect on the airways.
7. Knowledge of the influence of passive smoking and air pollution on respiratory morbidity.
8. Knowledge of the pharmacology of both common and unusual asthma medication
CBD and Observed teaching Topics 3c, 4b, 5a

Clinical skills

1. Ability to recognize clinical features which suggest an alternative diagnosis. **CBD**
2. Ability to lead the management of infants and older children with acute wheezing disorders, including bronchiolitis and acute severe asthma **CBD**
3. Ability to manage chronic infant wheezing and asthma in a clinic setting
Mini-CEX/CBD
4. Ability to evaluate difficult asthma, arrange investigations and understand potential further treatments.
Mini-CEX/CBD
5. To know the evidence basis for asthma treatments at different ages
Written evidence in portfolio

Evidence

1. See Module 2
2. Documentation of all items listed above
3. Certification of readiness for independent consultant practice

C4. Chronic Lung Disease (CLD) of Prematurity

Background

Knowledge of

1. The aetiology and pathogenesis of CLD.
2. Definitions of CLD including 'old' and 'new' BPD
3. Co-morbidities affecting the outcome of CLD, and their management
4. Current strategies and therapies used in Neonatal intensive Care Units to try and prevent CLD occurring and the evidence base underpinning this.

Written evidence in portfolio/observed teaching Topic 2

Clinical skills

1. Ability to manage the respiratory and nutritional care of babies with CLD. This should include managing the discharge and home care planning process (including ventilatory support, home oxygen therapy, pharmacological treatments and outpatient monitoring of progress) and follow-up. Mini-CEX/CBD
2. Ability to recognise and appropriately manage cases where normal resolution is slowed by co-morbidities. Mini-CEX/CBD

Evidence

1. Observed teaching of knowledge topics to peer audience at SpRs/Consultant level.
2. The trainee should be considered competent when the accredited supervisor considers that the trainee is competent to manage babies with CLD unsupervised. (Supervisor may be a neonatologist or respiratory paediatrician).

Notes

The trainee should have visited at least two homes of children on oxygen therapy.

C5. Cystic fibrosis

Training will be in a Regional Cystic Fibrosis Centre with a minimum of 50 patients. Must spend at least 12 months with a major input into CF unit.

Background

1. Knowledge of the genetics and pathophysiology of CF
2. Understanding of the diagnostic accuracy of tests for CF
3. Knowledge of the pathogenesis of long-term complications and strategies to prevent or delay them.
4. Knowledge of the pharmacology and side-effects of drugs used in CF
5. Knowledge of respiratory pathogens in CF and their management
6. Understanding of cross infection risks in CF, and how to minimize them.
7. Understanding of the cost of care in CF
8. Knowledge of current physiotherapy techniques in CF

Observed teaching Topics, 3c, 4b, 6a and b, 7 and written evidence in portfolio

Clinical Skills

Ability to

1. Counsel parents where a diagnosis of CF is suspected or confirmed before or after delivery..
2. Initiate treatment plan for a child who is newly diagnosed.
3. Complete annual comprehensive assessment.
4. Assess and manage a child with a respiratory exacerbation.
5. Select appropriate imaging investigations for children with CF.
6. Initiate discussion re:transplant
7. Deliver palliative care (this experience may be gained in conditions other than CF).
8. Manage psychosocial issues and specifically issues affecting teenagers.
9. Manage needle phobia.
10. Discuss risks/benefits of long term venous access devices, and manage one type of device.
11. Insert percutaneous intravenous central lines.
12. Assess and treat CF related bowel obstruction, liver disease, diabetes mellitus and bone disease.

All assessed by Mini-CEX, CBD and written evidence in portfolio

Evidence:

Portfolio with reflective notes and copies of clinic notes and inpatient assessments to cover the above competencies.

MSF from CF team,

Observed teaching of knowledge based topics.

Certification of readiness for independent consultant practice

Notes

The trainee should have been involved in handover clinics with Adult Physicians.

C6. Acute and chronic infection

Background

1. Understanding of the epidemiology of common respiratory infections, including TB
2. Knowledge of methods of microbiological diagnosis and the range of pathogens causing respiratory illness in children
3. Knowledge of the pharmacology of antibiotic and antiviral therapy used for respiratory infections in children
4. Understanding of methods of transmission of respiratory illness and the risks and prevention of cross-infection

Observed teaching Topics 4c, 5c, 6
Written evidence in portfolio

Clinical Skills

Ability to diagnose and manage common respiratory infections including:

1. upper respiratory tract respiratory infections
2. croup
3. viral bronchiolitis
4. all forms of pneumonitis, including lung abscess
5. empyema
6. bronchiectasis
7. the diagnosis and management of respiratory infections in high risk situations especially the child with CF and the immunosuppressed child risk

All assessed by CBD/mini-CEX

Practical skills

1. Performing naso-pharyngeal aspirate and washings DOPS
2. Taking a cough swab and a pernasal swab DOPS
3. Performing a diagnostic pleural tap and/or inserting a chest drain DOPS
4. Non-bronchoscopic bronchoalveolar lavage DOPS

Evidence

Documentation of all competencies as above

Documentation of satisfactory management of at least one of each of the conditions listed above

Certification of readiness for independent consultant practice

C7 Tuberculosis

Background

1. Understanding of the epidemiology of TB
2. Understanding of the differences between primary and post-primary TB and their infectivity
3. Understand of the development of tuberculin sensitivity
4. Understanding of the limitations of current diagnostic methods
5. Knowledge of relevant diagnostic strategies and recommended current management

Observed teaching Topics 4b, 5c, 6a, 7c

Clinical skills

1. Ability to perform and interpret tuberculin skin testing **DOPS**
2. Ability to perform BCG vaccination **DOPS**
3. Ability to lead the IP and OP management of children with TB infection and disease
DOP/miniCEX

Evidence:

1. Documentation of satisfactory performance 10 Tuberculin skin tests – confirmed by practitioner involved in regularly performing skin tests
2. Documentation of satisfactory administration of 5 BCG vaccinations – confirmed by practitioner regularly performing BCG
3. Management of 5 cases of latent TB and 2 cases of paediatric tuberculosis confirmed in portfolio of cases by clinic documentation
4. Certification of readiness for independent consultant practice

Note:

Practical experience of contact tracing in children exposed to tuberculosis should be gained by spending time with a TB liaison nurse

C8 Management of technology dependent children

For this module, the trainee should be in a paediatric respiratory centre that is regularly involved in the initiation and review of chronic ventilatory children requiring chronic ventilatory support.

Background

1. Understanding of the pathophysiology of chronic respiratory failure in children.
 2. Knowledge of the developmental changes in respiratory physiology and understanding of how these impact on vulnerability to chronic respiratory failure during childhood.
 3. Knowledge of the methods used in the diagnosis and monitoring of ventilation in children, and their limitations.
 4. Understanding of the principles and working of the commonly used ventilatory modalities including CPAP, BiPAP, and pressure and volume support
 5. Knowledge of the interfaces used in non-invasive ventilation in children
 6. Understanding of the place of long term oxygen therapy in children with chronic respiratory failure
 7. Knowledge of principles and practice of tracheostomy care in children
 8. Knowledge of current physiotherapy techniques in children with neuromuscular disease
- Written evidence in portfolio/observed teaching Topic 2a /demonstration of understanding

Clinical skills

1. Ability to diagnose, assess and manage children with chronic respiratory failure including specifically children with:
 - neuromuscular disorders
 - ventilatory control disorders
 - severe chronic lung disease
 - severe obstructive sleep apnoea and/or craniofacial anomalies unresponsive to adenotonsillectomy **Mini-CEX/CBD**
2. Ability to initiate and manage long-term ventilatory support in children including the choice and set up of equipment, discharge planning, and follow-up and troubleshooting **Mini-CEX/CBD**
3. Ability to prescribe and supervise domiciliary long term oxygen therapy in children. **Mini-CEX/CBD**
4. Ability to replace a tracheostomy tube in an emergency. **DOPS**

Evidence:

1. Documentation of at least 3 detailed case histories of children which the trainee has been involved in, including
 - The care of a child who is diagnosed as having chronic respiratory failure and is started on long term ventilation
 - A clinical problem in a child on long term ventilation
 - A child who requires to be established on long term oxygen therapy
2. Certification of readiness for independent consultant practice

C9 Sleep medicine in children

Background

1. Understanding of the physiology of sleep at different ages, sleep stages, their effects on cardiorespiratory status and changes with age.
2. Knowledge of the clinical conditions which disturb sleep and in particular those which result in airway obstruction and central apnoea
3. Knowledge of which medical conditions are likely to give the different clinical pictures
4. Understanding of the advantages and disadvantages of polysomnography, cardiopulmonary studies and oxygen recordings.

Observed teaching: Topic 2c. Written evidence in portfolio

Clinical skills

Ability to

1. Take a sleep history MinCEX/CBD
2. Set up a cardiopulmonary sleep study DOPS
3. Score respiratory events DOPS
4. Interpret and report cardiopulmonary studies and overnight oximetries DOPS
5. Assess clinical status for intervention DOPS/CBD

Evidence

1. Documentation of
 - At least 10 sleep histories
 - At least 5 sleep studies undertaken by the trainee (including measures of airflow, effort, oximetry, ECG, capnography and movement), to include description of set up, results, scoring and reporting. These studies may be supervised
2. Certification of readiness for independent consultant practice

C10. Rare and Multisystem Diseases

Background

Knowledge of the pathogenesis, diagnosis and management of:

1. Obliterative bronchiolitis*
2. Primary Ciliary Dyskinesia*
3. Gastro-oesophageal Reflux Lung Disease*
4. Interstitial Lung Disease*
5. Pulmonary vascular disorders including pulmonary hypertension
6. Pulmonary haemorrhage

Written evidence/observed teaching

Clinical Skills

1. Ability to recognize presentations of rare lung diseases with appropriate degree of suspicion **CBD**
2. Ability to perform and interpret an oesophageal pH study **DOPS**
3. Ability to perform a nasal ciliary biopsy **DOPS**
4. Ability to assess the indications for lung biopsy and interpret the report **CBD**

Evidence:

Documentation of the diagnosis and management of at least one case in each asterisked category, ideally from presentation, but at least during follow-up.

Evidence of self-directed learning of conditions where a case has not been seen.

Documentation of clinical skills as listed above

Certification of readiness for independent consultant practice

D Management and teaching skills

D1 Management and Leadership

Tertiary respiratory centres are part of the whole NHS network and as such need to be managed and need to be accountable.

Delivery of health care

The trainee should know

1. The purpose of a business case,
 - a) how to work with managers to develop a business case for development of a tertiary respiratory centre
 - b) the steps through to approval of the business case
2. How to set up care pathways particularly for children with chronic respiratory disease
3. The importance of clinical networks
 - a) Clinical Trial networks.
 - b) Neonatal networks.
 - c) BPSU – respiratory issues

Evidence in portfolio of training and experience in these competencies

Database competences

- a) How to set up a database for specific patient details.
- b) Keeping a personal database of references and learning materials
- c) Understanding and participating in the National CF database.

Evidence in portfolio of training and experience in these competencies

Competencies in relation to audit

The trainee needs to understand how to work with the hospital audit department to develop specific audits relating to respiratory paediatric diseases.

- a) Show development of audit.
- b) Present locally. (At least 1 audit completed and presented per year.)
- c) Involvement in regional/national respiratory audit (e.g. asthma admission)

General competencies

- a) How to manage critical incidents
- b) How to chair meetings
- c) How to resolve conflict
 - a) the handling of complaints,
 - b) difficult patients
 - c) difficult trainees
 - d) trainees in difficulty

D2. Teaching

The trainee should

1. Attend a Teaching the Teacher course
2. Develop competencies to draw up plans for
 - a) Bedside tuition.
 - b) Small group/tutorial discussions.
 - c) More formal lectures.
3. Show how preparation and delivery of the teaching would vary dependent on the audience. (medical student, nurse, post-medical, etc.)
 - a) Ten sessions taught in at least 2 different respiratory modules.
 - b) Teaching in both undergraduate and graduate settings
4. Appraising and assessing junior doctors
5. Case-based discussion
6. Mini-Cex
7. DOPS
8. Open appraisal

Evidence in portfolio of training and experience in these competencies

D3 Evidence-based Medicine

The trainee should

1. Know the evidence base for the investigation and management of respiratory diseases.
2. How to access and use different evidence databases eg the Cochrane Database.
3. Keep up-to-date electronic copies of EBG
4. These should be easily accessible and organised

Written evidence in portfolio

E Research

Trainees who do not already have a higher degree are encouraged to take out-of-programme experience in order to undertake research towards this. Rules about the timing of such opportunities, and the availability of such opportunities may change, and the Programme Director, Regional Adviser and Regional Academic Adviser should be consulted when planning such OOP(R)..

The trainee should

1. Attend a basic research course to give competencies on understanding
 - a) The process
 - b) Basic statistics
 - c) Protocol development
 - d) Research governance
2. Demonstrate involvement in research undertaken in training centre.

Portfolio

 - a) Present data at a national or international conference.
 - b) Submission and acceptance by medical journal of original research with trainee as main/first author. (At least two, preferably more papers).

Areas of knowledge that should be acquired during years ST6-8 in PRM

Trainees should demonstrate an understanding of :

1. Respiratory physiology A

The methodology and physiological principles underlying –

- a) Flow-volume curves, measurement of lung volumes, the principles of bronchial lability,
- b) Diffusion (single and multiple breath), plethysmography, lung clearance studies
- c) Infant lung function testing.

2. Respiratory physiology B

- a) Ventilation, perfusion, gas exchange and oxygen transport and how these relate to clinical findings and management
- b) The pathophysiology which explains wheeze, stridor, snoring and airway tone, cough and crackles
- c) The physiology of sleep - the respiratory physiological changes during different sleep stages; developmental changes; methods and usefulness of different measurements in assessing sleep and breathing)

3. Lung development, normal and abnormal histology

- a) Normal and abnormal pre and postnatal development and what affects it.
- b) Histology/pathology of common disorders, such as asthma and CF.
- c) Relation between lung function, bronchoscopy findings, BAL and biopsy findings and radiology findings in asthma and CF.

4. Diagnostic accuracy and repeatability of investigations

- a) Assessment of validity, precision, accuracy and repeatability of investigations
- b) The diagnostic accuracy and repeatability of:
 - i. Blood gas analysis
 - ii. Sweat electrolytes
 - iii. Mantoux testing
 - iv. Total and specific IgE measurements and skin prick testing
- c) The diagnostic accuracy and repeatability of:
 - i. Viral PCR for respiratory viruses
 - ii. Immunofluorescence testing
 - iii. Inter-rater reliability of imaging in common conditions
 - iv. Bronchoscopic lavage findings- tests for aspiration, infection and other diagnoses

5. Epidemiology of respiratory disorders

Within your talk you should show an understanding of: the basic principles of epidemiology - e.g. point and period prevalence vs incidence, confounders,

- a) Epidemiology of acute respiratory infections
- b) Epidemiology of asthma, atopy and allergy
- c) Epidemiology of mycobacterial infections

6. Infectivity of respiratory infections

- a) Different models of infectivity in respiratory disease
- b) Prevention of hospital acquired respiratory infections
- c) Pandemic respiratory threats- eg pandemic influenza, SARS.

7. Therapeutics and therapies

- a) Pharmacology and side-effects of commonly used drugs in respiratory paediatrics
- b) Assessing cost-effectiveness of therapy (with examples)
- c) Maximising concordance with therapy

Assessment

Trainees will be assessed on their ability to teach their peers on each of these topics. This should be done at a regional or national meeting for at least 4 of the seven topics, in the presence of three or more consultant assessors. Trainees will be expected to prepare a talk on each of the three different coloured sub-headings for each topic they have chosen. On the day of presentation they will be asked to present on one of the colours only. Assessments will be summated by the organizer/CSAC chair, and fed back to the trainee and his/her supervisor.

Presentations will be time-limited, and trainees are expected to demonstrate both breadth and depth of understanding in the time available. Inevitably this entails an overview of the breadth of the topic, and highlighting of selected points of interest in more detail.