RCPCH
Royal College of Paediatrics and Child Health
Leading the way in Children's Health

SPIN Module curriculum in

Paediatric High Dependency Care

SPIN Version 3.0
Approved for use from 1 May 2022

This document outlines the curriculum and assessment strategy to be used by clinicians completing the RCPCH SPIN module in Paediatric High Dependency Care.

This is Version 3.0. As the document is updated, version numbers will be changed, and content changes noted in the table below.

Version number	Date issued	Summary of changes
2.0	5 April 2019	Full redevelopment of curriculum content, moving from competency to Learning Outcomes based. Updated guidance on placement requirements and assessments.
3.0	1 May 2022	Fully revised Learning outcomes/Key capabilities and the addition of Illustrations, Updated assessment blueprint.

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Section 1

Introduction and purpose

Introduction to SPIN modules

Special Interest (SPIN) modules are the additional training/experience a paediatrician completes so that they can be the local lead and part of the clinical network providing for children who need specialist paediatric care. They are designed to meet a specific service need, with possible roles suitable for those who have completed a SPIN module identified within the SPIN purpose statement.

Trainees and Consultants will be able to seek training in an area of special interest or in aspect(s) of sub-specialty care. This will involve training, assessment and supervised care. It will vary in breadth and depth, depending upon the specific SPIN syllabus. The SPIN can be completed before or after CCT. It should usually be feasible to complete the SPIN in no more than 12 months full time training, although the High Dependency Care SPIN may take up to 24 months full time equivalent. SPIN training does not have to be completed within one placement or over one continuous period. The assessment of whether the clinician has attained the required learning outcomes will only examine evidence relating to a maximum of five calendar years prior to submission.

Please note that SPIN Modules are:

- NOT a route to GMC sub-specialty accreditation
- NOT required for GMC accreditation in paediatrics or any of its sub-specialties
- NOT sub-specialty training and not equivalent to sub-specialty training

SPINs are undertaken and assessed within the working environment, under the guidance of a designated Supervisor, recording evidence within the ePortfolio. The RCPCH SPIN Lead, usually the relevant College Specialty Advisory Committee (CSAC), is responsible for reviewing completed portfolios and confirming if the SPIN is to be awarded.

More information regarding SPIN Modules, including how to apply to undertake a SPIN and how to submit evidence against the competences, is contained in the SPIN Module Guidance on the RCPCH SPIN webpages: www.rcpch.ac.uk/spin.

Purpose statement

This purpose statement demonstrates the need for clinicians to undertake a SPIN module in High Dependency Care, and the benefits to and expectations of a clinician undertaking training in this area.

This SPIN module meets the current and future anticipated requirements of the health service, reflecting patient and population needs:

General paediatricians in District General Hospitals are increasingly part of wider clinical networks. By supporting general paediatricians in developing an interest in a specific area of practice, SPIN modules help facilitate more patients being seen by a paediatrician with the expertise to treat certain specific conditions nearer to their home, rather than having to travel to a major paediatric unit.

The report 'High Dependency Care for Children – Time to Move On' was published by the RCPCH in 2014 and contained a number of recommendations to improve the delivery of safe, high quality paediatric critical care outside of Paediatric Intensive Care Units (PICUs). The suggested model involves Level 1, Level 2 and Level 3 (PICUs) Paediatric Critical Care Units which enable the delivery of some aspects of paediatric critical care closer to home. Implementation requires the training of general paediatricians equipped with the skills and experience to safely deliver critical care in Level 1 and Level 2 Critical Care Units.

This SPIN module considers interdependencies across related specialties and disciplines, and has been developed and supported by the relevant key stakeholders:

This SPIN module has been supported by the Paediatric Intensive Care and General Paediatric CSACs. Given that children and young people with a broad range of clinical conditions require high dependency care, those completing this SPIN module will interact with general paediatric and paediatric subspecialty services in addition to surgical and anaesthetic services.

As there are a growing number of children with complex conditions with technology dependence, service provision needs to evolve to meet this changing pathology, and the high dependency units provide a safe environment for this care. Clinicians specialising in high dependency care will provide significant value not only through their clinical skills, but also in developing relationships and improving governance with the local inter-professional and multi-professional network.

The SPIN module supports flexibility and the transferability of learning, and provides a clearly-defined professional role for clinicians who have completed a SPIN. The SPIN module sets out what patients and employers can expect from clinicians who have gained this SPIN:

Following successful completion of this SPIN module and level 3 Paediatric specialty training, the CCT holder will be competent to take up a post as a Consultant General Paediatrician with a special interest in paediatric High Dependency Care. It would be possible to complete this SPIN module post-CCT.

By the end of training, it is expected that clinicians who have completed this SPIN will have a sound understanding of the clinical management of children and young people requiring care within a high dependency setting, including co-ordination of care for children with complex

conditions. The clinician will have developed leadership of resuscitation in critically ill children, expertise in procedural skills, expertise in the management of non-invasive ventilation and the tracheostomy ventilated child and delivery of safety and quality in the paediatric high dependency care environment.

The SPIN training will enable the clinician to develop and/or lead a Paediatric High Dependence Unit within a district general or tertiary unit setting.

To continue their ongoing development following completion of the SPIN, it is recommended that clinicians:

- participate in the activity of their regional Paediatric Critical Care network, where such a network exists
- undertake regular continuing professional development related to critical care to retain the knowledge and skills gained whilst undertaking the SPIN module, including keeping up to date with advances in this area
- undertake regular audit and quality improvement projects allied to delivery of Paediatric High Dependency Care
- gain and/or maintain Instructor status on the Advanced Paediatric Life Support (APLS) or European Paediatric Advanced Life Support (EPALS) courses.

Requirements to undertake this SPIN module

Applicant requirements

This SPIN module is available to General Paediatric Level 3 trainees and all post-CCT paediatricians with an interest in High Dependency Care, who are able to access sufficient training opportunities to meet the requirements of the SPIN curriculum.

Trainees who are interested in undertaking this SPIN module should approach their Training Programme Director in the first instance to confirm if the necessary posts would be available and request support in undertaking this extra training. SPIN applicants are required to demonstrate that they have support of their Training Programme Director and have an appropriate Educational and Clinical Supervisor in place.

Consultants interested in undertaking a SPIN module should discuss this with their employer in the first instance. The local Head of School or College Tutor may be able to offer further advice. Post-CCT SPIN applications must be signed by a Trust figure, who has the authority to approve job plans such as a medical director or clinical director. This signatory is required to demonstrate that the applicant is suitable, that the faculty are prepared to provide the training, that a suitable Supervisor will be in place, and that the programme will enable the applicant to receive the required experience.

Applicants with relevant recent experience may use some retrospective evidence towards their SPIN module in some cases. Please see the applicant guidance at www.rcpch.ac.uk/spin for more details on how to apply to undertake a SPIN module.

Training duration

SPIN training may be feasible within 12 months for full time clinicians, or pro-rata for Less Than Full Time (LTFT) clinicians. It is expected that to achieve the necessary learning outcomes, a clinician will need to train in the following clinical settings within a suitable training centre:

- **Paediatric Intensive Care Unit:** minimum 6 months (full time equivalent) to include approximately 1 month of paediatric anaesthetics, as a single placement or individual days.
- **Paediatric High Dependency Care:** minimum 6 months (whole time equivalent) ideally within a busy DGH HDU, but may also be within a variety of paediatric (not neonatal) settings e.g. mixed PICU/HDU, nephrology, respiratory, oncology with patients who require high dependency care etc.

Clinicians who have not completed these placements may require up to an additional 12 months of training experience.

A suitable training centre is one which is currently approved for higher specialist training (see sub-specialist training section of the RCPCH website for more detail).

Out of Programme (OOP) training

Trainees should not need to take out of programme (OOP) training to complete a SPIN module. Undertaking a SPIN will NOT be considered as a basis for OOP experience application except in exceptional circumstances and where both deaneries/LETBs agree and approve the SPIN module programme. These exceptional circumstances include applications from trainees where approved training in a particular special interest is not available in their current deanery/ LETB. Permitting OOP for these exceptional circumstances provides a positive contribution to workforce planning in regions where limited approved SPIN modules are available. For example, smaller sub-specialties such as Nephrology or Immunology & Infectious Diseases (IID) may only be available in a limited number of deaneries/LETBs. In order for applications utilising OOP to be considered by the RCPCH, both deaneries/LETBs must agree and approve the SPIN module programme and provide clear justification as to why the module could not be completed in the trainee's current deanery/LETB.

Post requirements

When applying to undertake a SPIN module, applicants must demonstrate that they will be able to access the necessary learning opportunities and placements, and an appropriate Educational and Clinical Supervisor is available to support the clinician. Additional requirements for delivering this SPIN module are provided in the checklist in Appendix B. This addresses any specific requirements; for example, the human or physical resource experiences the trainee will need to be able to access in order for the curriculum to be delivered successfully. Please contact the SPIN Lead (usually the relevant CSAC) if further guidance is required.

Meeting GMC training requirements

All training must comply with the GMC requirements presented in *Promoting excellence: standards for medical education and training* (2017). This stipulates that all training must comply with the following ten standards:

Theme 1: Learning environment and culture

S1.1 The learning environment is safe for patients and supportive for learners and educators. The culture is caring, compassionate and provides a good standard of care and experience for patients, carers and families.

S1.2 The learning environment and organisational culture value and support education and training, so that learners are able to demonstrate what is expected in Good Medical Practice and to achieve the learning outcomes required by their curriculum.

Theme 2: Educational governance and leadership

S2.1 The educational governance system continuously improves the quality and outcomes of education and training by measuring performance against the standards, demonstrating accountability and responding when standards are not being met.

S2.2 The educational and clinical governance systems are integrated, allowing organisations to address concerns about patient safety, the standard of care, and the standard of education and training.

S2.3 The educational governance system makes sure that education and training is fair and is based on the principles of equality and diversity.

Theme 3: Supporting learners

S3.1 Learners receive educational and pastoral support to be able to demonstrate what is expected in Good Medical Practice, and to achieve the learning outcomes required by their curriculum.

Theme 4: Supporting educators

S4.1 Educators are selected, inducted, trained and appraised to reflect their education and training responsibilities.
S4.2 Educators receive the support, resources and time to meet their education and training responsibilities.

Theme 5: Developing and implementing curricula and assessments

S5.1 Medical school curricula and assessments are developed and implemented so that medical students are able to achieve the learning outcomes required for graduates.
S5.2 Postgraduate curricula and assessments are implemented so that doctors in training are able to demonstrate what is expected in Good Medical Practice, and to achieve the learning outcomes required by their curriculum.

It is the responsibility of each Deanery/Local Education Training Board (LETB) to ensure compliance with these standards for paediatric training, and to notify the RCPCH if further support is required in achieving this. Training delivery must also comply with the requirements of the Conference of Postgraduate Medical Deans' (COPMeD), *The Gold Guide: a reference guide for postgraduate specialty training in the UK* (8th ed.).

Ensuring fairness and supporting diversity

The RCPCH has a duty under the Equality Act 2010 to ensure that its curriculum and assessments do not discriminate on the grounds of age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion and belief, sex or sexual orientation.

Care has been taken when authoring the SPIN Module curricula to ensure as far as is reasonable and practicable that the requirements for those undertaking the module do not unnecessarily discriminate against any person on the basis of these characteristics, in line with the requirements of the Act.

The RCPCH seeks to address issues of equality, diversity and fairness during the development of a SPIN curriculum in a range of ways, including:

- Curriculum content to be authored, implemented and reviewed by a diverse range of individuals. Equality and diversity data is gathered regularly for clinicians involved in the work of the RCPCH Education and Training division.
- Undertaking careful consideration of the Learning Outcomes and Key Capabilities to ensure that there is a clear rationale for any mandatory content, and thus there are no unnecessary barriers to access or achievement. Beyond these mandatory requirements, the assessment tools can be deployed in a more flexible and tailored manner, meeting the requirements of the individual clinician.
- All draft SPIN curricula to be reviewed specifically against the protected characteristics prior to sign-off, identifying any possible barriers and ensuring these are appropriately addressed.
- All SPINs are approved for use by the RCPCH Training and Quality Board (TQB). As the body responsible for production of the Annual Specialty Report, and receiving summary reports on the National Training Survey from Heads of Schools and other sources, the Committee is well placed to ensure the curriculum meets the needs and addresses any existing concerns of the trainee population.
- All SPIN curriculum documents will be published in font type and size that is appropriate for a wide range of audiences, and optimised for readability. Information regarding the curriculum will be made available through a wide range of media, acknowledging differing learning styles.

The RCPCH is committed to gathering regular feedback from users of its SPIN modules, identifying any areas of bias or discrimination.

Please contact the RCPCH Quality and Standards Manager (**qualityandstandards@rcpch.ac.uk**) if you have any concerns regarding equality and diversity in relation to this SPIN Module curriculum.

Quality assurance and continual improvement

Ensuring quality in delivery

A robust quality assurance and improvement framework is required to support an effective curriculum and assessment strategy. The purpose of this is to promote the improving quality of the training experience, and to ensure that the curriculum content, delivery, assessment and implementation is monitored and reviewed in a planned, systematic and appropriate manner.

The RCPCH quality infrastructure for training and assessment is based on the Plan, Do, Check, Act (PDCA) cycle, introduced by Deming. In the context of the Programme of Assessment, this means planning for effective assessment processes, executing those processes, review and evaluation including data analysis and multi-source feedback, and finally implementing any required changes.

The framework to support this curriculum will comprise a number of quality improvement tools and processes that impact on the overarching aspects of assessment. These will include:

1. **Effective selection mechanisms**. The SPIN application process ensures clinicians will have the necessary capacity, supervision, and access to the breadth and depth of experience needed to meet the requirements of the SPIN module.
2. **Gathering and responding to feedback**. RCPCH gathers feedback in a structured way from SPIN module completers, and uses this and feedback from employers to support the regular review of SPIN modules.
3. **Review of attainment and evidence**. CSACs (or another designated SPIN Lead) review all completed SPIN portfolios prior to sign-off, ensuring consistency.
4. **Quality assurance of assessments**. This takes a variety of forms during the development, delivery and monitoring of assessment tools, as outlined in the RCPCH Progress Assessment Strategy.
5. **Quality of assessors and supervisors**. All SPIN applicants are required to have a suitable Educational Supervisor to support their SPIN training. RCPCH supports this through the Educational Supervisor course and a variety of guidance and resources available on the College website.
6. **Scheduled reviews**. All SPINs are subject to review every three years, although they may be updated more regularly where required.

By applying the framework processes outlined above, the College will ensure that SPIN Modules are monitored and reviewed in a structured, planned and risk-based manner.

SPIN governance

The RCPCH's Training Quality Board (TQB) has overall responsibility for the RCPCH SPIN curricula, working closely with the SPIN Lead. The TQB will monitor the performance of the SPIN through the relevant CSAC/SPIN Lead, and receive scheduled reviews of feedback from SPIN users.

SPIN module review and revision

SPINs are reviewed every three years to ensure they remain fit for purpose, meeting the intended service need. Reviews are led by the SPIN Lead (usually the relevant RCPCH CSAC), who will report to the TQB requesting any changes required. Where necessary, a SPIN module can be updated before the three-year review is due, for example to reflect changes in guidelines.

Updated SPIN curricula will be published, making clear using the version tracking table at the front of each document what amendments have been made on each occasion. Where this amendment relates to a Key (mandatory) Capability, the TQB will issue guidance for clinicians currently undertaking the SPIN module, noting any implications of the amendment and whether they are required to meet the new criteria. Amendments will only be made where a clear rationale exists for doing so, and every effort will be made to minimise any negative impact on the clinician.

Section 2

Paediatric High Dependency Care

How to use the RCPCH SPIN curriculum

This curriculum provides a framework for training, articulating the standards required to achieve the SPIN module and progress as indicated within the purpose statement. The curriculum ensures the quality and consistency of training and assessment, and encourages the pursuit of excellence in all aspects of clinical and wider practice. It must be referred to throughout training, as the clinician records evidence demonstrating their developing skills and knowledge.

The curriculum should be used to help design training programmes locally that ensure all SPIN clinicians can develop the necessary skills and knowledge, in a variety of settings and situations. The curriculum is designed to ensure it can be applied in a flexible manner, meeting service needs as well as supporting each clinician's own tailored Learning and Development Plan.

The curriculum comprises a number of Learning Outcomes which specify the standard that clinicians must demonstrate to attain this SPIN module. Trainees are encouraged to consider innovative ways of demonstrating how they have met the Learning Outcome.

Clinicians are strongly encouraged to record evidence against the Learning Outcomes throughout their SPIN training, including engaging in active reflective practice to support their own development. Their SPIN supervisor will review whether they are on target to achieve or has achieved the Learning Outcome(s), and will suggest specific areas of focus to ensure that they achieve the Learning Outcome(s) by the end of their SPIN module training period. The Illustrations may be a useful prompt for this.

Components of the SPIN curriculum

The **Learning Outcomes** are the outcomes which the clinician must demonstrate they have met to be awarded this SPIN module. Progress towards achievement of the Learning Outcomes is reviewed at regular meetings with the designated supervisor. Learning Outcomes are mapped to the GMC's Generic Professional Capabilities framework.

The **Key Capabilities** are linked to specific Learning Outcomes, and are mandatory capabilities which must be evidenced by the clinician in their ePortfolio, to meet the Learning Outcome.

The Illustrations are examples of evidence and give the range of clinical contexts that the clinician may use to support their achievement of the Key Capabilities. These are intended to provide a prompt to the clinician and their Supervisor as to how the overall outcomes might be achieved. They are not intended to be exhaustive, and clinicians may produce a broader portfolio or include evidence that demonstrates deeper learning.

The **Assessment Grid** indicates suggested assessment methods, which may be used to demonstrate the Key Capabilities. Clinicians may use differing assessment methods to demonstrate each capability (as indicated in each Assessment Grid), but there must be evidence of having achieved all Key Capabilities.

SPIN Learning Outcomes

This table contains the generic Learning Outcomes required for all clinicians undertaking the RCPCH SPIN in High Dependency Care. Within the curriculum and throughout the syllabi they are mapped to the GMC's Generic Professional Capabilities (GPCs). More information on the GPC framework is available from the GMC website: https://www.gmc-uk.org/education/postgraduate/GPC.asp

Please note, clinicians undertaking a SPIN module will also be required to complete their generic and General Paediatric Level 3 Learning Outcomes in order to gain their Certificate of Completion of Training (CCT). Consultants undertaking a SPIN module will already have demonstrated the required generic skills, knowledge and behaviours prior to having obtained their CCT. This SPIN curriculum only defines the specific Learning Outcomes for the stated focus, purpose and extent of remit stated for this SPIN module, and can not be used to indicate competence in any other aspect of paediatrics.

	SPIN Learning Outcome	GPCs
1	Recognises, assesses and manages children and young people with a range of medical and surgical paediatric conditions requiring high dependency care, including the management of enhanced respiratory support.	2, 5, 7
2	Leads the resuscitation and stabilisation of critically ill children and young people.	2, 5
3	Leads and co-ordinates the clinical management of children and young people with complex and life-limiting conditions requiring long term high dependency care, including those with technology dependence.	1, 2, 5, 7
4	Demonstrates clinical leadership in a variety of settings, liaising with hospital and community specialist teams, effectively managing and coordinating patient flow, staffing, safety and quality in the context of a High Dependency setting.	2, 5, 6, 8, 9
5	Performs high-level technical skills and procedures utilising the appropriate medications and equipment necessary for managing high dependency patients, and troubleshoots appropriately.	3.7

The syllabus supporting these Learning Outcomes is provided on the following pages.

SPIN Learning Outcome 1

Recognises, assesses and manages children and young people with a range of medical and surgical paediatric conditions requiring high dependency care, including the management of enhanced respiratory support.	GPC 2, 5, 7

Key Capabilities

Recognises and assesses acutely unwell children and young people in the Emergency Department, paediatric ward and post-operative environment who require high dependency care and works with the multidisciplinary team (nursing, pharmacy and allied health professionals, and other specialists) to deliver appropriate clinical management.	GPC 2, 7
Leads the high dependency ward round.	GPC 2, 5
Recognises the need for escalation of care beyond that feasible in the high dependency environment and liaises with Anaesthetic, Paediatric Intensive Care and Transport colleagues to facilitate this.	GPC 2, 5
Ensures that handover between the high dependency and other clinical teams is safe and effective.	GPC 2
Establishes, maintains and troubleshoots the management of a child requiring non-invasive respiratory support and the tracheostomy ventilated child.	GPC 2

Illustrations:

A 7 year old child with a known neuromuscular condition is admitted with increased work of breathing after a short febrile illness. The family has already started 5L oxygen via their existing NIV (CPAP) circuit as per their escalation plan. On arrival, the trainee performs an A to E assessment and identifies signs of significant respiratory distress and rising pCO2 on blood gas whilst on their normal NIV settings (SLO 1 KC 1). The trainee escalates for additional senior support, liaises with the long term ventilation team and then increases the child's pressure support (SLO 1 KC 3). Repeat assessment shows improvement in their work of breathing and reduction in pCO2. The trainee discussed with the family, consultant, nursing and HDU team to see if the patient is appropriate for management locally or if transfer to a critical care setting is required.

A 2 month old infant is readmitted on Day 4 of bronchiolitis with increased work of breathing. On initial assessment, the infant has significant respiratory distress and is commenced on high flow respiratory support by the trainee in the Emergency department. Blood gas is normal. The trainee discusses the admission of the patient with the nurse in charge and consultant. The patient is transferred up to paediatric HDU for ongoing care, however shortly after transfer is identified as having brief apnoeas. Respiratory support is escalated to CPAP and, in view of these however the apnoeas continue (SLO 1, KC 5; SLO 5 KC 1). The trainee identifies the need for discussion with the ITU / anaesthetic teams and they proceed to intubation and ventilation in view of ongoing apnoeas on non-invasive ventilation (SLO 1 KC 3).

A 6 year old patient with Trisomy 21 is admitted to HDU after a tonsillectomy for obstructive sleep apnoea. Shortly after admission, the HDU registrar is called to review after stridor is noticed by the nursing staff. The patient has a soft inspiratory stridor, history of a challenging intubation (grade 3 airway) and received IV Dexamethasone intraoperatively. The trainee administers nebulised adrenaline with good effect and requests urgent review by ENT and anaesthetic teams who advise further Dexamethasone and longer period of monitoring on HDU for post extubation stridor (SLO 1 KC 1, 3). Together with the ENT and anaesthetic teams, an escalation plan is documented in the event of deterioration and possible intubation, including preparation of kits and difficult airway protocol. Whilst leading the evening ward round, the trainee ensures this plan is carefully handed over to the on call medical and nursing teams (including nurse in charge) and on call ENT and anaesthetic teams are updated appropriately (SLO 1 KC 2, 4; SLO 4 KC 1).

A 12 year old young person with known type 1 diabetes presents acutely unwell after a 2 day history of vomiting and diarrhoea. The trainee assesses the patient on arrival and initial blood gas shows parameters consistent with severe DKA. The trainee administers a fluid bolus after recognition of shock and commences fluid resuscitation and subsequently IV insulin infusion as per the DKA protocol (SLO 1 KC 1). A few hours after commencing treatment, the patient's reports a headache and new drowsiness. After reassessment and review of neurological observations, the trainee administers hypertonic saline for suspected early cerebral oedema. Patient become more alert however the headache persists, therefore after discussion with their consultant and PICU team, the trainee arranges appropriate cranial imaging following discussion with radiology to exclude possible venous sinus thrombosis (SLO 1 KC 3).

An 8 year old child with known generalised epilepsy is brought to hospital via ambulance with a prolonged seizure of 40 mins. The trainee has a pre-alert to the Emergency Department and leads the team with role allocation prior to arrival (SLO 1 KC 1). On arrival, the child is still seizing on initial assessment and maintaining their own airway. They received buccal midazolam 5 minutes prior to arrival. Oxygen applied, blood sugar taken and IV access obtained. The trainee proceeds to administer IV Lorazepam as per the APLS algorithm and establishes history and existing medication from the child's parents (SLO 2 KC 1). This terminates the seizure and the child becomes bradypnoeic and starts to snore. The trainee recognises partial airway obstruction and the need for respiratory support, opens the airway, inserts the appropriate oropharyngeal adjunct and commences intermittent positive pressure ventilation via the available bag-valve-mask (SLO 5 KC 1; SLO 5 Mandatory skill)). They liase with anaesthetic / ITU colleagues, who arrive and support the airway with an anaesthetic circuit. The child then wakes up after 10 minutes of ventilation at the point where the anaesthetic team were preparing to intubate. The trainee discussed with the MDT and decided the best management plan is to continue HDU observation for further seizures (SLO 1 KC 3). The trainees updated the family and their consultant and documents their MDT discussion in the notes for handover (SLO 1 KC 4).

SPIN Learning Outcome 2

Leads the resuscitation and stabilisation of critically ill children and young people.	GPC 2, 5

Key Capabilities

Proficient in the leadership and delivery of advanced paediatric life support. Understands and applies the principles of safe transport within a hospital. Understands and applies the principles of inter-hospital transport, including referral, preparation and co-ordination of care of paediatric patients requiring paediatric critical care retrieval.	GPC 2, 5
Leads the resuscitation and stabilisation of critically ill children and young people within a variety of clinical settings, including secondary and tertiary paediatric hospital settings.	GPC 2
Understands and applies the principles of safe transport within a hospital. Understands and applies the principles of inter-hospital transport, including referral, preparation and co-ordination of care of paediatric patients requiring paediatric critical care retrieval.	GPC 2, 5

Illustrations:

An 18 month old is brought in overnight in cardiorespiratory arrest having been found unresponsive in their cot at home. The ambulance crew are delivering CPR on arrival. The trainee takes on the team leadership, assigning roles to the members of the arrest team and leads the resuscitation following the APLS guidance with a structural approach. The trainee assigned a member of staff to be with the family. The management eliminates all reversible causes until the team reaches a consensus that it is futile to continue and the resuscitation is stopped. The trainee discusses the case with their consultant and other members of the team, and conducts all the investigations for a sudden and unexplained death in infancy. After the event, the trainee leads a debrief with the team involved in the case and identifies any reflection and learning points (SLO 2 KC 1; SLO 4 KC 3).

A 4 month old ex 32 weeker presents to A&E with bronchiolitis. He is day 2 of illness. The baby has marked increased work of breathing and low saturations. The trainee has started the baby on high flow nasal cannulae and IV fluids but there is no improvement in his work of breathing (SLO 1 KC 1). His CO2 starts to rise on his capillary blood gas. The trainee, nursing team and consultant decide collaboratively to move him to HDU for a trial of CPAP (SLO 1 KC 3). The trainee discusses the transfer of the patient to the HDU with the nursing team, using a transfer checklist to prepare. The trainee and nursing team transfer the patient using an Ayer's T-piece to provide positive end expiratory pressure (SLO 2 KC 2, 3; SLO 5 Mandatory skill)). On arrival to the HDU, the trainee reassesses the patient and establishes them on CPAP (SLO 1 KC 5).

A child presenting in septic shock has refractory hypotension despite fluid resuscitation. Their initial management is in the Emergency Department. The trainee co-ordinates the care of

the patient with local anaesthetic colleagues (SLO 1 KC 1, 3). Following discussion with their consultant, the trainee refers to the paediatric critical care retrieval team for intensive care advice (including vasopressor support) and retrieval for escalation of care to the regional PICU (SLO 2 KC 3). Whilst awaiting retrieval, the trainee works with the multidisciplinary team to determine the most appropriate location of care and hands over a clear plan of monitoring and parameters that requires escalation (SLO 1 KC 3, 4).

The trainee co-ordinates the referral and management of a 3 year old brought to hospital ventilated with a head injury requiring time critical transfer to a tertiary paediatric neurosurgical centre. Alongside their consultant, they work with anaesthetic colleagues to stabilise and prepare the child for transfer (including preparation of appropriate paperwork and transfer of imaging) (SLO 2 KC 3; SLO 1 KC 4). They liaise with neurosurgical and PICU teams regarding neuroprotective strategies and co-ordinate the appropriate emergency transport using the local ambulance service (SLO 1 KC 3, 4; SLO 4 KC 1).

SPIN Learning Outcome 3

Leads and co-ordinates the clinical management of children and young people with complex and life-limiting conditions requiring long term high dependency care, including those with technology dependence.	GPC 1, 2, 5, 7

Key Capabilities

Works with children/young people, their families and carers, and the wider multidisciplinary team to formulate management plans for children/young people with multiple medical problems who require high dependency care.	GPC 1, 2, 7
Leads the discharge planning of children and young people with a complex condition requiring high dependency care.	GPC 1, 5
Understands the role of specific specialist teams involved in the care of paediatric patients in the high dependency care setting, including referral and liaison with palliative care, hospice and organ donation teams.	GPC 1, 2, 5, 7

Illustrations:

A patient with a recently diagnosed life limiting condition has stepped down to their local management of pneumonia in PICU. The child and family have spent 90 days in paediatric intensive care and the child now has a tracheostomy with nocturnal CPAP. The child and family are stable for home discharge with a care package. The trainee participates in the multidisciplinary discharge planning meeting and subsequent discussions with the family, focussing on clear management plans for escalation of treatment in the community and discussions of advance care plans and role of hospice teams (SLO 3 KC 1, 2, 3). The trainee also ensures a written care plan accompanies the patient discharge (SLO 1 KC 4).

A 6 year old with a unknown chromosomal condition was being cared for on HDU with increasing requirement for NIV, deep suctioning and intermittent mask ventilation which was increasing in frequency. This patient already has an advance care plan in place with HDU and NIV as their ceiling of care (not for PICU, ventilation or CPR). Given the patient's deteriorating baseline, the trainee played an active role in multiple discussions with the family, clinical nurse specialist, HDU and hospice care teams around reorientation of care to palliation (SLO 3 KC 1, 2, 3). The trainee led the co-ordination of transfer to a hospice for end of life care, including creating a symptom management plan with the palliative care and hospice teams (SLO 1 KC 4; SLO 2 KC 3).

SPIN Learning Outcome 4

Demonstrates clinical leadership in a variety of settings, liaising with hospital and community specialist teams, effectively managing and coordinating patient flow, staffing, safety and quality in the context of a High Dependency setting.	GPC 2, 5, 6, 8, 9

Key Capabilities

Works as part of the wider multidisciplinary team to ensure that patients are cared for in an appropriate clinical environment, including across wider paediatric critical care networks.	GPC 2, 5
Participates in research, quality improvement and governance processes to improve the safety and quality of care delivered to children in their High Dependency Unit.	GPC 6, 9
Delivers education and training to the multi-professional high dependency team and other members of the inter-professional team.	GPC 8

Illustrations:

The trainee leads paediatric or HDU service, with consultant support, and liaises with senior nursing and managerial colleagues to discuss the HDU bed state, current clinical patient load and acuity, and prioritises and manages patients requiring elective HDU admission (SLO 4 KC 1).

The trainee presents a case at a morbidity and mortality meeting and identifies areas of possible quality improvement or development within the clinical service (SLO 4 KC 3). In response to this, trainee develops a guideline which they present regionally for review at a paediatric critical care operational delivery network meeting (SLO 4 KC 2).

SPIN Learning Outcome 5

Performs high-level technical skills and procedures utilising the appropriate medications and equipment necessary for managing high dependency patients, and troubleshoots appropriately.	GPC 2, 3, 7

Key Capabilities

Develops expertise in airway management, delivery of non-invasive respiratory support and recognition of when to escalate to invasive respiratory support.	GPC 2, 3
Safely manages and troubleshoots patients with tracheostomies.	GPC 3
Develops expertise in practical procedures required for the management of patients in the High Dependency Unit.	GPC 3
Develops knowledge and understanding of all medications and equipment used on the High Dependency Unit.	GPC 3, 7
Understands the indication and gains experience in managing children on single agent vasopressor support safely.	GPC 7
Completes approximately 1 month of paediatric anaesthetics, including airway experience, pain and sedation management. This is a SPIN training requirement and should be included in the required Paediatric Intensive Care Unit post as detailed in placement requirements for HDC SPIN.	GPC 2, 3, 7

Mandatory skills for HDC SPIN: (to be included as separate curriculum items under LO 5 for trainees to link to directly on Kaizen)

- Insertion and management of a central venous catheter (DOPS)
- Insertion and management of a PIC line or long line (DOPS)
- Insertion and management of peripheral and central arterial lines (DOPS)
- Demonstrate the use of an anaesthetic T-piece and bag valve mask ventilation (observed by anaesthetic colleagues) (DOPS)
- Knows the indications for and manages a patient with a chest drain (Mini CEX or DOPS)
- Demonstrates competence in managing an airway, including endotracheal intubation and insertion of airway adjuncts (Mini CEX or DOPS).

Illustrations:

A 5 year old with SMA type 1 is on nocturnal BiPAP. She presents with a history of fever and vomiting with choking evolving into a cough with concerns about aspiration. On arrival she has increased work of breathing with O2 saturations of 90% in air. She is not on respiratory support. She has mildly increased work of breathing with reduced air entry and crackles at the right base. Her capillary blood gas shows mild respiratory acidosis with a CO2 of 8.2. The trainee recognises that her work of breathing is limited by her underlying condition and that she is developing respiratory insufficiency (SLO 1 KC 1). They review her sick-day care plans and commence these BiPAP settings (SLO 5 KC 1, 3, 4). The trainee discusses the case with their consultant, Long Term Ventilation team, the nurse in charge and also informs the anaesthetic team of their admission (SLO 1 KC 3, 5; SLO 3 KC 3). Together they create a clear escalation plan with the family.

The trainee leads a simulation scenario on HDU for a 8 year child with an established tracheostomy who desaturates whilst being treated for pneumonia (SLO 4 KC 3). In the scenario, the patient has a background of a congenital neuromuscular condition and is on CPAP via their tracheostomy. The trainee works collaboratively with nursing staff, applies oxygen and assesses the patient as per the emergency protocol/APLS (SLO 2 KC 1). They attempt to pass a suction catheter and identify that the tracheostomy is blocked. Alongside the nursing staff, they perform an emergency tracheostomy change, removing the blocked tracheostomy with immediate improvement and restart the patient back onto their NIV (SLO 1 KC 5; SLO 5 KC 2).

A 6 year old child with sickle cell disease and needle phobia has presented to A&E after having had a first episode of tonic clonic seizure at home. He has a CT head which shows an area of infarction. Following a discussion with the Haematology Consultant it is decided that he requires an exchange transfusion and he is admitted to HDU for this to take place. The trainee assembles a team (including discussion with the local anaesthetic team) to assist them and gives some ketamine cover to provide sedation whilst they site an arterial line and achieve large bore IV access (SLO 1, KC 3). Following insertion the arterial line trace is not reading although it is bleeding back. The trainee removes the dressing, straightens the line and redresses it. The arterial line is now functioning (SLO 5 Mandatory skill, KC 3).

A 4 year old patient presents to A&E with fever, abdominal pain, warm peripheries and low blood pressure. The A&E team feel that this is PIMS-TS and escalate this to HDU. The trainee reviews the patient in A&E and agrees that this patient has fluid refractory warm shock (SLO 1 KC 1). They ensure adequate IV access and investigations are conducted. The trainee discusses with consultant and nursing team before commencing peripheral strength inotropic support following regional paediatric retrieval team guidelines (SLO 5 KC 5). They ensure clear instructions on monitoring the IV site. The trainee discusses the case with the critical care retrieval service and makes plan to admit the patient to the local HDU whilst awaiting improvement or arrival of the retrieval team, in collaboration with the consultant and nurse in charge (SLO 3, KC 3).

Section 3

Assessment Strategy

How to assess the High Dependency Care SPIN

The assessment strategy for this SPIN module is aligned with the RCPCH Progress Programme of Assessment, utilising a range of different formative and summative assessment tools.

The Programme of Assessment comprises a wide range of assessment tools which must be used in conjunction with the blueprint to develop skills and assess capability. The assessments are knowledge, skills and capability-based, capturing a wide range of evidence which can be integrated to reach a judgement as to the clinician's achievement of the SPIN module learning outcomes. The assessments also provide the opportunity to obtain developmental feedback. Further information on all assessment instruments can be found within the RCPCH Assessment Guide and the RCPCH Progress Assessment Strategy.

The key aspect of the assessment strategy for this SPIN module is the blueprint, on the following page. This grid indicates suggested assessments to support and demonstrate achievement of the Learning Outcomes. Please note, not all assessments are mandated or their use prescribed, and clinicians may use other assessment types from the list within the Programme of Assessment, where they and their supervisors feel this is appropriate.

The mandatory assessments for this SPIN module are:

Directly Observed Procedures (DOPs)

- Central venous catheter (Learning Outcome 5)
- PIC line (Learning Outcome 5)
- Arterial line (Learning Outcome 5)
- Using anaesthetic T-piece (Learning Outcomes 2 and 5)

Paediatric Mini Clinical Evaluation (ePaed MiniCEX)

- Inserting and managing a chest drain (Learning Outcome 5)

Clinical Leadership Assessment Skills (LEADER)

- Managing a high dependency unit (Learning Outcome 4)

Handover Assessment Tool (HAT)

- For a high dependency unit (Learning Outcome 1)

All evidence for the SPIN Module Learning Outcomes, including assessment outcomes, should be recorded within the clinician's ePortfolio.

Assessment blueprint

This table suggests assessment tools which may be used to assess the Key Capabilities for these Learning Outcomes.

This is not an exhaustive list, and clinicians are permitted to use other methods within the RCPCH Assessment Strategy to demonstrate achievement of the Learning Outcome, where they can demonstrate these are suitable.

Key Capabilities	Assessment / Supervised Learning Event suggestions									
	Paediatric Mini Clinical Evaluation (ePaed Mini-CEX)	Paediatric Case-based Discussion (ePaeds CbD)	Directly Observed Procedure / Assessment of Performance (DOP/AoP)	Acute Care Assessment Tool (ACAT)	Discussion of Correspondence (DOC)	Clinical Leadership Assessment Skills (LEADER)	Handover Assessment Tool (HAT)	Paediatric Multi Source Feedback (ePaed MSF)	Paediatric Carers for Children Feedback (Paed CCF)	Other
Recognises and assesses acutely unwell children and young people in the Emergency Department, paediatric ward and post-operative environment who require high dependency care and works with the multidisciplinary team (nursing, pharmacy and allied health professionals, and other specialists) to deliver appropriate clinical management.	✓	✓		✓		✓		✓	✓	
Leads the high dependency ward round.	✓	✓		✓		✓		✓	✓	
Recognises the need for escalation of care beyond that feasible in the high dependency environment and liaises with Anaesthetic, Paediatric Intensive Care and Transport colleagues to facilitate this.	✓	✓					✓	✓		
Ensures that handover between the high dependency and other clinical teams is safe and effective.							✓	✓		
Establishes, maintains and troubleshoots the management of a child requiring non-invasive respiratory support and the tracheostomy ventilated child.	✓	✓		✓						
Proficient in the leadership and delivery of advanced paediatric life support.	✓	✓	✓	✓		✓		✓		
Leads the resuscitation and stabilisation of critically ill children and young people within a variety of clinical settings, including secondary and tertiary paediatric hospital settings.	✓	✓	✓							
Understands and applies the principles of safe transport within a hospital. Understands and applies the principles of inter-hospital transport, including referral, preparation and co-ordination of care of paediatric patients requiring paediatric critical care retrieval.	✓	✓						✓	✓	
Works with children/young people, their families and carers, and the wider multidisciplinary team to formulate management plans for children/young people with multiple medical problems who require high dependency care.		✓				✓		✓	✓	

Key Capabilities	Assessment / Supervised Learning Event suggestions									
	Paediatric Mini Clinical Evaluation (ePaed Mini-CEX)	Paediatric Case-based Discussion (ePaeds CbD)	Directly Observed Procedure / Assessment of Performance (DOP/AoP)	Acute Care Assessment Tool (ACAT)	Discussion of Correspondence (DOC)	Clinical Leadership Assessment Skills (LEADER)	Handover Assessment Tool (HAT)	Paediatric Multi Source Feedback (ePaed MSF)	Paediatric Carers for Children Feedback (Paed CCF)	Other
Leads the discharge planning of children and young people with a complex condition requiring high dependency care.		✓						✓		
Understands the role of specific specialist teams involved in the care of paediatric patients in the high dependency care setting, including referral and liaison with palliative care, hospice and organ donation teams.								✓		✓
Works as part of the wider multidisciplinary team to ensure that patients are cared for in an appropriate clinical environment, including across wider paediatric critical care networks.								✓		✓
Participates in research, quality improvement and governance processes to improve the safety and quality of care delivered to children in their High Dependency Unit.		✓	✓							
Delivers education and training to the multi-professional high dependency team and other members of the inter-professional team.			✓							
Develops expertise in airway management, delivery of non-invasive respiratory support and recognition of when to escalate to invasive respiratory support.		✓								
Safely manages and troubleshoots patients with tracheostomies.			✓	✓						
Develops expertise in practical procedures required for the management of patients in the High Dependency Unit.			✓	✓						
Develops knowledge and understanding of all medications and equipment used on the High Dependency Unit.	✓	✓		✓						
Understands the indication and gains experience in managing children on single agent vasopressor support safely.		✓								
Completes approximately 1 month of paediatric anaesthetics, including airway experience, pain and sedation management. This is a SPIN training requirement and should be included in the required Paediatric Intensive Care Unit post as detailed in placement requirements for HDC SPIN.			✓							

Appendices

Appendix A: Further guidance and resources

Doctors completing this SPIN module may find the following resources useful to support their training. Please note, there is no mandatory requirement to use any or all of these resources, and RCPCH cannot be held responsible for the quality or content of any external materials.

Assessment

RCPCH Assessment web pages	www.rcpch.ac.uk/assessment
RCPCH Assessment Strategy	www.rcpch.ac.uk/progress

Recommended reading

Paediatric Intensive Care (Oxford Specialist Handbooks in Paediatrics). Barry, Morris, Ali (2017), OUP Oxford.

Training events or courses

- Advanced Paediatric Life Support or European Paediatric Advanced Life Support.
- European Society of Paediatric and Neonatal Intensive Care (ESPNIC) Non-invasive ventilation course.
- Paediatric BASIC course.
- Point of care ultrasound course.
- Basic transport course.

For more information

More information regarding SPIN modules, and all current SPIN curricula and supporting forms, can be found at www.rcpch.ac.uk/spin.

For general queries regarding SPIN modules, including eligibility to undertake a SPIN or how to apply, please contact spin@rcpch.ac.uk.

For queries relating to the SPIN curriculum, please contact qualityandstandards@rcpch.ac.uk.

The SPIN Lead is the Chair of the Paediatric Intensive Care CSAC. See the RCPCH website for the contact details of the current SPIN Lead: https://www.rcpch.ac.uk/membership/committees/paediatric-intensive-care-medicine-intercollegiate-sac.

Appendix B: Criteria for SPIN delivery

The following requirements should be met when designing a training programme for clinicians undertaking a SPIN module. Adherence to these criteria will help ensure they will have the necessary support and access to experiences which they will require in order to successfully complete this SPIN module. These criteria are framed against the standards set out in Excellence by Design: standards for post graduate curricula (GMC 2017).

Generic criteria (apply to all SPINs)	SPIN-specific requirements
Purpose	
• Access to regular supervised clinics. • Service specific requirements to enable achievement of the curriculum e.g. Day case facilities, imaging. • Opportunities to work with shared care networks in primary and secondary care. • Opportunities to work with shared care clinical guidelines and protocols. • The learning environment is safe for patients and supportive for learners and educators. The culture is caring, compassionate and provides a good standard of care and experience for patients, carers and families. (Taken from GMC Promoting Excellence).	• At least six months* training post on a Paediatric Intensive Care Unit with a minimum of six beds. To include approximately 1 month of paediatric anaesthetics, as a single placement or individual days. • Placement in Paediatric High Dependency Care setting, ideally within a busy DGH HDU, but may also be within a variety of paediatric (not exclusively neonatal) settings e.g. mixed PICU/HDU, nephrology, respiratory, oncology etc. • The posts are in units which participate in a Paediatric Critical Care Clinical Network. * whole time equivalent
Governance and strategic support	
• The Site must ensure that Supervisors and trainers can effectively deliver the RCPCH Assessment Strategy. • The clinician will be able to participate in leadership and management activities.	• Opportunities to lead clinical management with appropriate supervision.
Programme of learning	
• Specific requirements for structured learning opportunities. • Exposure within the clinical environment will provide sufficient learning opportunities to meet the requirements of the curriculum. • Access to multidisciplinary teams consisting of a minimum of nurses, physiotherapists, occupational therapists. • The post should provide a training experience that enables completion of the clinician's PDP.	• Access to Anaesthetic service to develop airway and pain management skills.

Programme of assessment	
• The site has adequate levels of Educational Supervisors. • Consultants with either General Paediatric or Sub Specialty expertise can be matched to the requirements of the SPIN clinician. It is important that Educational Supervisors can provide supervision and have the required remission to facilitate this, i.e. 1 PA per week per 4 trainees. • Supervision must ensure patient safety. Support for trainers and supervisors must be available within the Trust.	N/A
Quality assurance and improvement	
• The post will allow participation in audits and clinical improvement projects. • The post will allow the clinician to actively engage with the teaching, assessing and appraising of junior staff. • The post will allow opportunities to engage in research activities.	N/A