

Adult Critical Care: Specialist Pharmacy Practice



New Ways of Working

DH INFORMATION READER BOX

Policy	Estates
HR / Workforce	Performance
Management	IM & T
Planning	Finance
Clinical	Partnership Working

Document Purpose	Best Practice Guidance
ROCR Ref:	Gateway Ref: 5122
Title	Adult Critical Care - Specialist Pharmacy Practice
Author	DH
Publication Date	01 Jul 2005
Target Audience	Directors of Nursing, Directors of HR, Allied Health Professionals, Directors of Pharmacy
Circulation List	NHS Trust CEs, Foundation Trust CEs , Medical Directors
Description	The Document describes guidance on the practice, skills and experience needed by pharmacists wishing to specialise in the adult critical care area.
Cross Ref	N/A
Superseded Docs	N/A
Action Required	N/A
Timing	N/A
Contact Details	Keith Young 11/3 New King's Beam House 22 Upper Ground London SE1 9BW 0207 633 4047
For Recipient's Use	

Amendment History

Version	Date	Comment	By	Approved
1.0	291004	Initial draft for discussion	Keith Young	
1.1	201104	Draft for Discussion	Cath McKenzie	
1.2	161204	Amended	Cath McKenzie	
1.4	190105	Amended	Expert Panel	
1.5	180205	Amended	Cath McKenzie	
1.6	250205	Amended	Mark Borthwick	
1.7	280205	Amended	Rob Shulman	
1.8	040505	Consultation Close Meeting	Keith Young Cath McKenzie Mark Tomlin Mark Borthwick	
1.9	080605	Final Draft	Mark Borthwick	

List of Contributors

This document has been produced by an expert group including key department of health (DH) personnel, specialist critical care pharmacists and senior NHS pharmacists. These were: -

Department of Health

Keith Young (Chair) Emergency Care Strategy Team

John Farrell Office of the Chief Pharmacist

Specialist Critical Care Pharmacists

Catherine McKenzie (Pharmacy lead)	London	catherine.mckenzie@gstt.nhs.uk
Mark Tomlin (Joint pharmacy lead)	Southampton	mark.tomlin@suht.swest.nhs.uk
Mark Borthwick (Editor)	Oxford	mark.borthwick@orh.nhs.uk
Ruth Forrest	Glasgow	ruth.forrest@sgh.scot.nhs.uk
Robert Shulman	London	robert.shulman@uclh.nhs.uk
Mark Craig	London	mark.craig@mayday.nhs.uk
Robin Offord	London	robin.offord@uclh.nhs.uk
Richard Bourne	Sheffield	richard.bourne@sth.nhs.uk
Steve Bowden	Cardiff	steve.bowden@cardiffandvale.wales.nhs.uk
Meera Thacker	London	meera.thacker@royalfree.nhs.uk
Kate Price	London	kate.price@bartsandthelondon.nhs.uk
Sarah Yassin	London	sarah.yassin@gstt.nhs.uk
Julia Oxley	Leicester	julia.oxley@uhl-tr.nhs.uk
John Dade	Leeds	john.dade@leedsth.nhs.uk
Emma Graham-Clarke	Birmingham	emma.graham-clarke@swbh.nhs.uk

Senior NHS Pharmacists

Duncan McRobbie	Principal Clinical Pharmacist, Guy's and St.Thomas' NHS Foundation Trust
David Webb	Director of Clinical Pharmacy, Specialist Pharmacy Services, London, Eastern and South Eastern
Graham Davies	Director of Clinical Studies, University of Brighton
Richard Cattell	Director, South West Medicines Information and Training
Tony West	Chief Pharmacist, Guy's and St. Thomas' NHS Foundation Trust

Table of Contents

1. INTRODUCTION	2
2. PROJECT OBJECTIVES	2
3. SCOPE OF THE PROJECT	4
4. KEY ACTIVITIES	4
5. CONCLUSIONS and SPECIFIC RECOMMENDATIONS	5
6. RISKS	5
7. TIMETABLE	6
8. ANNEXES	6
ANNEX 1: PROPOSED CAREER PATHWAYS IN CRITICAL CARE PHARMACY	7
ANNEX 2: SPECIALIST COMPETENCIES FOR CLINICAL PHARMACY PRACTICE IN CRITICAL CARE	9
1. <i>Expert Professional Practice</i>	10
2. <i>Building Working Relationships</i>	12
3. <i>Leadership</i>	14
4. <i>Management</i>	16
5. <i>Education, Training and Development</i>	19
6. <i>Research and Evaluation</i>	20
ANNEX 3: CORE CLINICAL KNOWLEDGE FOR ADVANCED CRITICAL CARE PHARMACISTS	22
1. <i>Central Nervous System</i>	22
2. <i>Cardiovascular System</i>	22
3. <i>Respiratory System</i>	23
4. <i>Gastro-intestinal System</i>	23
5. <i>Genito-urinary System</i>	24
6. <i>Hepatology</i>	24
7. <i>Haematology</i>	24
8. <i>Infection</i>	24
9. <i>Endocrine</i>	25
10. <i>Miscellaneous</i>	25
ANNEX 4: ISSUES TO BE CONSIDERED BY COMMISSIONERS	26
1. <i>Personnel</i>	26
2. <i>Financial</i>	26
3. <i>Educational</i>	26
4. <i>Time</i>	26
5. <i>Organisational</i>	26
6. <i>Strategic</i>	26
9. CONSULTATION	27
10. REFERENCES	27

1. INTRODUCTION

The purpose of this document is to describe the project to identify new ways of working in critical care pharmacy and to develop a career framework for pharmacists wishing to specialise in the care of critically ill patients. This document provides guidance on good practice, skills and experience relevant to pharmacists who wish to specialise in critical care areas and supports the new and emerging role of pharmacists in critical care.

It is recognised throughout that the medical consultant / intensivist working within the multi-disciplinary clinical team has responsibility for the clinical management of patients. However, within the team the pharmacist has a specific responsibility for the safe and appropriate use of medicines.

There are a number of drivers that are coming together to encourage new ways of working by clinicians working in critical care areas. Those most pertinent to pharmacists include: -

- 1.1 Ensuring that that patient's journey is safe when they are most vulnerable.
- 1.2 Ensuring the most effective use of medicines to achieve best patient outcome.
- 1.3 Changes in the way health care is delivered (including clinical governance, and evidence based medicine).
- 1.4 The need to have recognised standards of practice and develop better critical care practice.
- 1.5 Changes in population demographics that alter the demands for healthcare and particularly critical care interventions.
- 1.6 The recognition that medicines and medicines management requires unique clinical expertise.
- 1.7 Innovations in medicines that require expert interpretation and managed new entry of appropriate agents.
- 1.8 A recognition of the increased complexity of medical management including risk management.
- 1.9 An increasing recognition that healthcare professionals need to work in multidisciplinary teams with flexible professional boundaries in order to deliver the healthcare that is demanded.
- 1.10 Changes in the number and availability of medical practitioners (due to changes in terms and conditions arising from the European working time directive and the new consultant contract).
- 1.11 The implementation of *Agenda for Change* and the implications that it has for recognising professional skills and knowledge.
- 1.12 A recognition of the benefits of greater specialisation within traditional professional groups.
- 1.13 The need to improve recruitment and retention in specialist areas and maintain a skilled workforce.

2. PROJECT OBJECTIVES

The primary aim of this work is to improve the outcome of critically ill patients by developing appropriate support for their care. This requires the delivery of high quality pharmacy services. Pharmacists need to be trained within a recognised competency framework for the NHS.

This work will also assist commissioners to identify and purchase high quality pharmaceutical care for critically ill patients and recognise the need for different levels of practice, support in practice and peer review over a defined area that would, ideally be a critical care network (or equivalent).

The Project will deliver this by: -

- 2.1 Helping define professional roles and responsibilities within critical care pharmacy and facilitate a greater sharing of expertise.
- 2.2 Supporting the development of an agreed career path for pharmacists who wish to specialise in the critical care area. This will provide pharmacists with a framework to identify educational training needs and the required skills necessary to practice competently with critically ill patients. (A proposed possible career path is described in Annex 1).
- 2.3 Describing the specialist competencies that are required for critical care pharmacy practice (Annex 2).
- 2.4 Providing a structure for further professional role development and the adoption of new standards of working.
- 2.5 Contributing to the development of a national template for consultant pharmacists.

This Project will support the delivery of the following commitments from the *NHS Improvement Plan* (published 24 June 2004): -

- 2.6 Critical care services need to be available for seriously ill patients and need to be available where needed, when needed.
- 2.7 Effective critical care services need to be in place to ensure that operations are not unnecessarily cancelled and capacity and resources are maximised *so that patients will be admitted for treatment within a maximum of 18 weeks from referral by their GP and that those with urgent conditions will be treated much faster.*
- 2.8 Assisted by the “Care Bundle” approach, the quality of care provided in critical care units will improve and contribute towards the commitment *that in every care setting the quality of care will continue to improve, with the Healthcare Commission providing an independent assurance of standards, and patient safety being a top priority.*
- 2.9 Critical care will, where necessary, support *people with complex long-term conditions* and the work of the new community clinical specialists.
- 2.10 Both general and specialist critical care services will assist with the achievement of *further progress in tackling the biggest killer diseases*. Specialist cardiac critical care units, renal units, neurology units and those supporting surgical care will help maintain falls on death rates from heart disease, stroke, cancer and other conditions.
- 2.11 Critical care staff are already developing ways of working that cross professional and cultural boundaries. They will, wherever appropriate, continue to *encourage more flexible ways that best responds to patient needs.*
- 2.12 To achieve these commitments, the core objective of the Project is to ensure the provision of specialist pharmacy expertise to the critically ill patient.

3. SCOPE OF THE PROJECT

- 3.1 The scope of this work is to map out the skills, training and competency appropriate to the levels of practice in critical care pharmacy.
- 3.2 This skill, training and competence is for every pharmacist who delivers a critical care service ranging from those at smaller organisations who may provide the service for an hour a day to those at the large critical care areas who have a dedicated team of critical care pharmacists.
- 3.3 This project will also consider the specific issues that commissioners, critical care networks and trusts should consider when developing new and enhanced roles in critical care pharmacy (Annex 4).

4. KEY ACTIVITIES

- 4.1 This project will support the development of new ways of working and professional role development by: -
 - 4.1.1 Describing the experience needed by pharmacists supporting the delivery of multidisciplinary clinical service to critically ill patients. (Annex 1).
 - 4.1.2 Providing examples of specialist critical care pharmacy competencies required at different levels (or bands) of practice (Annex 2).
 - 4.1.3 Providing an outline of specialist knowledge required for critical care pharmacy practice (Annex 3.).
 - 4.1.4 Identifying specific issues, including actual or potential barriers (such as legal, cultural, administrative) that pharmacists or other healthcare professionals may have to be overcome when considering new or different ways of working in critical care. (Annex 4.).
- 4.2 Contribute to the Critical Care New Ways of Working Programme (currently with the Modernisation Agency - NW London SHA from April 2005). This embraces three strands of work: -
 - 4.2.1 Aiding the development, testing and implementation of professional role redesign projects across a number of health settings. In particular, the development of the Critical Care Practitioner and Assistant Critical Care Practitioner. There are eight pilot sites around the country at which these new practitioner roles are being tested
 - 4.2.2 Identifying and addressing barriers to effective patient care whether these are cultural, operational or professional. These include areas such as: -
 - ◆ The supply, administering and prescribing of medicines by nurses, pharmacists and other professionals working in critical care.
 - ◆ The development of competency based career framework for practitioners specialising in critical care areas.
 - ◆ Arranging and analysing laboratory or other diagnostic tests by those practitioners with the appropriate skills and competence.

- 4.2.3 The development of a competency framework for critical care teams. The NWW Programme has commissioned work to develop a competency structure that will identify those competencies that should be available within critical care teams irrespective of the clinician possessing the competency. It will also help to place competencies within the NHS Career Framework for *Agenda for Change* purposes. It will bring together those competencies that are most appropriate for delivering critical care services and will describe the competencies required to deliver care to patients rather than the practitioners necessarily holding these competencies. (Specialist competencies for pharmacists are described in Annex 2)
- 4.3 Contribute to the work of the Consultant Pharmacist Steering Group within the DH by providing an example of the specialist competencies required by an advanced pharmacy practitioner (Annex 2).
- 4.4 Produce a recommended career framework for pharmacists working within critical care areas for consideration by the DH Consultant Pharmacist Steering Group, the Pharmacy Professional bodies, Strategic Health Authorities (Workforce Directorates WDD), the Intensive Care Society and any other professional bodies in critical care (Annex 1.).

5. CONCLUSIONS and SPECIFIC RECOMMENDATIONS

- 5.1 The delivery of critical care services is configured in a variety of different ways that include very diverse locations and sizes. The project group recognises that not every critical care service could support a whole time equivalent specialist critical care pharmacist. The critical care pharmacy service should be adapted to meet local needs and it is not the intention of this document to specify those needs.
- 5.2 The project group does however recommend that junior pharmacists who regularly provide a service to critical care areas must have access to a specialist critical care pharmacist. This may be within the Trust, or externally (e.g. within a critical care network or equivalent).
- 5.3 Furthermore, It is a specific recommendation of this expert group that pharmacists caring for critically ill patients should have foundation level competencies as a minimum standard. It is also recognised that larger critical care units dealing with a wide range of complex patients will require the highest level of critical care pharmacy support.
- 5.4 It is the responsibility of the chief pharmacist to ensure that the pharmacist(s) supporting critical care on a regular basis have the appropriate competencies and it is envisaged that's this NWW document will support that process.

6. RISKS

- 6.1 Lack of agreement within the pharmacy profession, other health care professions and with the DH Consultant Pharmacist Steering Group over the proposed career criteria, competencies and structure.
- 6.2 Change of key personnel and lack of availability of training and supporting pharmacists to deliver the knowledge and skills framework.

7. TIMETABLE

- 24 November 2004 - Consultation Meeting
- 19 January 2005 - Review Meeting
- 31 March 2005 - Report.

8. ANNEXES

Annex 1 - Proposed Career Pathways in Critical Care

Annex 2 - Specialist competencies (examples) for Critical Care Pharmacy Practitioners

Annex 3 - Specialist Knowledge for Critical Care Pharmacy Practice

Annex 4 - Potential or Theoretical Barriers to Implementation

Annex 1: Proposed Career Pathways in Critical Care Pharmacy

The following is a proposed framework and is intended to be used as a guide, not as an exhaustive or proscriptive list to be scrupulously adhered to.

	Pre-registration Pharmacist	Clinical Pharmacist Or Post-registration Pharmacist	Specialist Clinical Pharmacist (Foundation)	Advanced Clinical Pharmacist (Excellence)	Consultant Pharmacist (Mastery)
Core duties, responsibilities or experience expected of the postholder	To gain broad based experience across various sectors of pharmacy (Hospital, Community, Industry)	Basic Clinical Service to a variety of specialities, including general medicine and surgery Broad experience in hospital pharmacy disciplines including aseptics, dispensary and medicines information	Able to provide a clinical service to: - General surgery (Level 0 and 1 patients) General medicine (Level 0 and 1 patients) Patients with renal failure and cardiac disease (including level 2 patients) Patients with liver disease (including level 1 patients) Participation In the care of level 3 patients Service development Clinical audit	Involved in the clinical management of level 3 patients Contributes to medicines management in multiple organ failure Demonstrable lead role in protocol and guideline development Managed entry of new drugs Demonstrates multi-professional working Drug expenditure analysis Leads clinical audit of drug use Risk management Engaged in education and training Undertakes research and development	Leads on medicines management in critical care Accountable for development, implementation, & evaluation of clinical pharmacy service to level 3 patients Accountable for job development and implementation Strategic lead for pharmacy service (over a network or equivalent) Accountable for safe drug use in critically ill patients Risk management lead Undertakes own research and development Published in peer reviewed journal

(Table continues)

Annex 1: Proposed Career Pathways in Critical Care Pharmacy (Continued)

	Pre-registration Pharmacist	Clinical Pharmacist Or Post-registration Pharmacist	Specialist Clinical Pharmacist (Foundation)	Advanced Clinical Pharmacist (Excellence)	Consultant Pharmacist (Mastery)
Additional experiences that augment critical care pharmacy practice	Hospital Pharmacy Placement	On-call or out of hours experience	Infectious diseases management Pain management Malignant disease management	Network (or equivalent) participation	Recognised peer reviewer
Gateway 1	Masters in Pharmacy	Assessed as competent to provide clinical service (general level)	Assessed as competent to provide clinical service to all Level 0 and 1 patients (general)	Assessed as competent to provide clinical service to all levels 0 to 3	Peer reviewed (by specialist group externally to the organisation) as meeting minimum consultant pharmacist criteria
Gateway 2	Assessed as competent in all pharmacy sections Registration as pharmacist	Assessed as competent in all areas of hospital pharmacy (general level) Completion of the ASCP Stage II vocational training scheme (Scotland only)	Assessed as competent to provide clinical service to all 2 areas and familiar with all levels (Level 0 - 3)	Assessed as competent to provide advanced level clinical service to all critical care patients	

Annex 2: Specialist Competencies for Clinical Pharmacy Practice in Critical Care

This competency framework is based on the Advanced Practitioner Framework produced by London, Eastern and South East Specialist Pharmacy Services Competency Group.

The competencies listed for “Excellence” and “Mastery” are additive, i.e. they build on the competencies established in the previous band.

A Specialist Clinical Pharmacist in Critical Care must have attained competencies at Foundation level.

An Advanced Clinical Pharmacist in Critical Care must have attained competencies at Excellence level.

A Consultant Pharmacist in Critical Care must have attained the majority of Mastery level competencies in “Expert Professional Practice”, “Building Working Relationships” and “Leadership”, and also have attained competencies to at least Excellence level in “Management”, “Education Training and Development” and “Research and Evaluation”.

It is envisaged that all institutions that provide critical care services will support critical care pharmacists to meet the competencies that have been identified as relevant to both the institution and to the critical care service.

It is important to note that these are examples and as such are not intended to be either proscriptive, or exhaustive.

1. Expert Professional Practice

These are examples of Knowledge and Skills Competencies for Practice in Critical Care. Their purpose is to be used as an outline intended to guide practice rather than to be a proscriptive list that has to be adhered to in all cases.

Competency	Foundation	Excellence	Mastery
Expert Skills and Knowledge	<p>Application of basic knowledge of cardiovascular and renal level 2 patients</p> <p>Application of basic understanding of drugs used in critically ill patients including antibiotics, analgesia and sedation</p> <p>Experience of caring for Level 3 patients</p>	<p>Application of advanced knowledge of drugs used in level 3 critically ill patients (Annex 3.)</p> <p>Carries out teaching regarding treatment of level 2 patients to pharmacy, nursing, medical staff and other allied healthcare professionals (AHPs)</p>	<p>Able to identify knowledge gaps and add new knowledge</p> <p>Involved in research and leads where appropriate</p> <p>Carried out teaching regarding treatment of level 3 patients to pharmacy, nursing, medical staff and other AHPs</p> <p>Publications in peer review journals</p>
Patient care Responsibilities	<p>Demonstrates basic competency in delivering patient care to level 3 patients through a record of reflective practice</p> <p>Ensure that appropriate patient documentation is maintained for medicines management</p>	<p>Responsible for delivery of care to defined group of level 2 or 3 patients</p>	<p>Ensures strategic decisions are made and implemented to maintain the delivery of a patient focussed pharmacy service to critically ill patients</p>

(1. Expert professional Practice continued)

Competency	Foundation	Excellence	Mastery
Reasoning and Judgement	<p>Basic ability to recognise problems and formulate treatment plans</p> <p>Monitored ward visits/mentorship</p> <p>Can perform bedside case presentation</p> <p>Ability to recommend justifiable courses of action</p> <p>Demonstrate accurate reasoning</p> <p>Recognises own limitations</p> <p>Able to make decisions in a timely manner with limited information</p> <p>Ability to prioritise problems</p>	<p>Produces increasingly complex treatment plans</p> <p>Demonstrates the ability to appraise information, make an informed decision with the evidence available and be able to justify/defend the decision to others</p>	<p>Act as an external reference of experience</p>
Professional autonomy	<p>Demonstrates the ability to follow trust guidance related to the critical care unit</p>	<p>Develops policies and procedures specifically for the critical care unit</p> <p>May be involved in the development of supplementary / independent prescribing in critical care</p>	<p>Responsible for applying national guidelines to the trust e.g. NICE guidance, NPSA</p> <p>Leads in Trust wide issues related to critically ill patients</p> <p>Works within trust wide multidisciplinary groups with respect to the pharmacy issues</p> <p>Involved in the production of network wide (or equivalent) guidelines where appropriate</p>

2. Building Working Relationships

These are examples of Knowledge and Skills Competencies for Practice in Critical Care. Their purpose is to be used as an outline intended to guide practice rather than to be a proscriptive list that has to be adhered to in all cases.

Competency	Foundation	Excellence	Mastery
Communication Skills -Persuade	Ability to persuade others about individual episodes of care	Ability to persuade or influence the critical care team / pharmacy team with regard to complex cases, organisational change, research, guidelines and protocols	Ability to persuade or influence the clinical pharmacy team, organisational development strategy and course of action in extremely complex cases
-Motivate	Demonstrates self motivation	Motivates pharmacy clinical team (e.g. to follow a guideline, collect data, etc)	Motivates multidisciplinary critical care and pharmacy team (over a network or equivalent)
-Negotiate	Negotiates issues around an individual case	Negotiates issues between critical care and pharmacy such as prioritisation of emergency medicines supply	Negotiates issues on a Trust-wide, network (or equivalent) or (inter) national basis
-Empathise / Provide reassurance	To critically ill patients/next of kin in difficult settings Learning this in difficult situations	To junior staff and multidisciplinary team colleagues	To critical care staff over network (or equivalent). Trains pharmacy staff in this skill
-Listen	Listens to patients, their next of kin, visitors and the multidisciplinary team (MDT)	Is aware of all forms of communication in critically ill patients	Trains pharmacy staff in this skill
-Networking skills	Member of United Kingdom Clinical Pharmacy Association (UKCPA) or other local/national associations that provide appropriate level of clinical support	Participating Member of UKCPA Critical Care Pharmacist Group (CCPG) Participates in local network (or equivalent), member of critical care delivery group where appropriate	Participates / leads (inter) national networks of critical care Member of UKCPA CCPG Expert Panel

(2. Building Working Relationships continued)

Competency	Foundation	Excellence	Mastery
-Presentation skills	Presents to pharmacy and the multidisciplinary team (MDT) Communication is always clear, precise and appropriate	Presents to senior MDT including consultant level	Presents at senior Trust level, regional and (inter) national forums
Teamwork	Works as part of clinical pharmacy team	Shares expertise with pharmacy and critical care. Recognition of expertise by the multidisciplinary team	Shares expertise with the wider critical care community Recognition of expertise by wider critical care community
Consultation	Recognises a situation outside competence and refers to supervising pharmacist (appropriate pharmaceutical problems are always appropriately referred.)	Receive requests for advice in specialist field from within Trust Active participation in multi-disciplinary task forces / service developments	Receives requests outside the Trust Leads multi-disciplinary task forces / service developments

3. Leadership

These are examples of Knowledge and Skills Competencies for Practice in Critical Care. Their purpose is to be used as an outline intended to guide practice rather than to be a proscriptive list that has to be adhered to in all cases.

Competency	Foundation	Excellence	Mastery
Strategic Context		<p>Contributes to local critical care strategy group</p> <p>Involved in drawing up documents relating to network (or equivalent)</p>	<p>Lead for pharmacy /AHP /HCS within local critical care network (or equivalent) if appropriate</p> <p>Involved in drawing up national level guidelines or policy (e.g. peer review publication, UKCPA guidelines, editorial comment)</p>
Clinical Governance	<p>Implements changes agreed by local critical care clinical governance group</p> <p>Ensures compliance with local policies</p>	<p>Contributes to local critical care clinical governance group by raising and/or dealing with identified issues</p>	<p>Contributes clinical governance agenda at network (or equivalent) or national level</p>
Vision	<p>Understands and contributes to department and corporate vision</p>	<p>Clear vision of pharmacy service to critical care</p> <p>Co-ordinates pharmacy's activities to meet vision</p>	<p>Participation in national working groups e.g. Comprehensive Critical Care, All Wales Critical Care Development Group</p> <p>Member of UKCPA CCPG expert panel</p>
Innovation	<p>Implements service improvement projects</p>	<p>Draws up and implements service improvement projects</p> <p>Co-ordinates and reports on critical care audit projects</p>	<p>Participation in national working groups e.g. Comprehensive Critical Care, All Wales Critical Care Development Group</p> <p>Co-ordinates and reports on network wide (or equivalent) audit projects</p> <p>Publication in peer reviewed journal</p>

(3. Leadership continued)

Competency	Foundation	Excellence	Mastery
Service development	Meets objectives in light of previous years progress	Participates in planning cycles through local critical care strategy group and/or other departmental groups	Participates in planning cycles through network critical care strategy group / other relevant groups (regional or national) Makes goals relevant to organisation / profession
Motivational	Maintains appropriate portfolio of practice Participate in audits, completes audits Meets appraisal objectives	Completes projects with other members of the critical care / pharmacy team	Completes projects that requires investment of time/effort of individuals at a higher level within Trust, network, professional or governmental organisations

4. Management

These are examples of Knowledge and Skills Competencies for Practice in Critical Care. Their purpose is to be used as an outline intended to guide practice rather than to be a proscriptive list that has to be adhered to in all cases.

Competency	Foundation	Excellence	Mastery
Implementing National Priorities	Can present likely implications of national priorities to pharmacy team	Directs pharmacy teams activities to meet priorities Responsible for meeting priorities at local level	Advise local commissioners on the service specification to purchase Advise on implementation of current priorities for the critically ill Trust wide and network (or equivalent)
Resource Utilisation	Understands necessity for managing own time and conflicting priorities	Demonstrates the ability to deploy pharmacy resources available to a critical care area ensuring effective cover is provided. Such deployment should also demonstrate the mentorship and development of junior staff	Capable of formulating changes to long term strategic plans in order to accommodate short term absences and staff departure / turnover
Standards of Practice	Understands and able to identify existing standards for practice related to critical care Demonstrates ability to work within the standards of practice	Demonstrates ability to produce standards of practice for pharmacy staff working within critical care areas Implements and monitors through audit the standards of practice in place within Trust	Involvement in producing standards of practice for critical care area and also at network and national level Implements and monitors through audit the standards of practice in place

(4. Management continued)

Competency	Foundation	Excellence	Mastery
Managing Risk	<p>Generates incident reports for breaches of policy/protocol</p> <p>Advises on appropriate course of action within policy/protocol or guidelines and working practices</p>	<p>Writes and implements appropriate policies/ protocols /guidelines /working practices to manage risk for a critical care area. Advises where policy does not exist or is perceived as inadequate for critical care scenario</p> <p>Represents critical care pharmacy team on clinical governance/ risk management committees.</p> <p>Takes follow up action on incident reports</p>	<p>Accountable for drug risk management in critically ill patients, wherever located</p> <p>Apply lessons learnt in critical care to other areas</p>
Managing Performance	<p>Recognises need to achieve set objectives both personal and team. Supports others in achieving objectives. Undertakes relevant CPD</p>	<p>Sets pharmacists objectives in relation to ICU directorate (may be jointly with Clinical and managerial staff from the directorate)</p> <p>Performance appraises junior staff in order to develop competent practitioners</p>	<p>Responsible for interpreting/dealing with medicines management implications from performance targets set at strategic levels such as Trust board /local network (or equivalent)</p> <p>Advises on delivery options.</p> <p>Develops performance objectives for junior pharmacy staff working within critical care.</p> <p>Performance appraises more senior critical care pharmacists</p>
Project Management	<p>Shows understanding of project management principles.</p> <p>Able to carry out simple projects without guidance</p>	<p>Demonstrates ability to manage project work of the team working within critical care</p>	<p>Manage projects related to care of critically ill patients at higher level in Trust or wider area such as a network (or equivalent)</p>

(4. Management continued)

Competency	Foundation	Excellence	Mastery
Managing change	Understands basic principles of change management, describes differences between old and new processes and how transition will occur	Draws up and implements changes in process / policy/ procedure at a local level (critical care unit)	Draws up and implements changes in process / policy/ procedure at a network (or equivalent) or national level
Strategic Planning	Proactively manages data collection to prepare routinely required reports such as drug financial report & clinical governance reports Reviews policies and procedures to agreed schedule	Horizon scans for new therapies or changes to existing therapies with major financial / clinical impacts. Participates in drawing up business cases for submission to Trust / PCT or equivalent	Contributes to planning for local networks (or equivalent). Advises external bodies on pharmaceutical aspects of long term planning (DH, Schools of Pharmacy)
Working Across Boundaries	Takes on new responsibilities / activities that expand the pharmacy service to the critical care unit	Takes on responsibilities / activities that contribute to wider critical care services (e.g. outreach) Undertakes peer review	Opinions / methods of working sought to contribute to or develop other teams / services

5. Education, Training and Development

These are examples of Knowledge and Skills Competencies for Practice in Critical Care. Their purpose is to be used as an outline intended to guide practice rather than to be a proscriptive list that has to be adhered to in all cases.

Competency	Foundation	Excellence	Mastery
Role Model	Role model to junior pharmacists, pharmacy technicians and peers	Role model at a local level Participate in peer review	Role model to Pharmacy/multidisciplinary team (MDT) Instigates peer review to ensure that standards are maintained Recognised as a peer reviewer of clinical practice within pharmacy and within critical care
Mentorship	Mentor for junior pharmacists	Mentors junior critical care pharmacy staff (if available). Mentors rotational staff pre-registration/post graduate tutor Role model for critical care pharmacy specialists	Mentors other MDT team members Mentors other pharmacists over network (or equivalent) or nationally
Conducting education & training Links practice and education	Teaches within Pharmacy and to nurses, AHPs and healthcare scientists (HCS).	Teaches to senior MDT, certificate, diploma MSc courses and UKCPA	Teaches to critical care pharmacists at network (or equivalent) or national level Able to direct educational initiatives
CPD (Continuing Professional Development)	Maintains CPD portfolio and evaluates own learning	Evaluates learning of others	Shapes /contributes to CPD strategy of others
Education Policy		Contributes and deliver course to post grad students	Part of critical care pharmacy faculty. Leads direction of UKCPA Critical Care Pharmacist Group Designs critical care post-graduate courses

6. Research and Evaluation

These are examples of Knowledge and Skills Competencies for Practice in Critical Care. Their purpose is to be used as an outline intended to guide practice rather than to be a proscriptive list that has to be adhered to in all cases.

Competency	Foundation	Excellence	Mastery
Critical Evaluation	Contributes to Local Journal Club (generalist forum) Answers general information enquiries relating to critical care	Contributes to specialist Journal Club (locally, network equivalent or nationally) Presents newly published papers to other members of the critical care team	Peer reviews critical care pharmacists in other Trusts / Organisations Produces critical comments on peer reviewed publications that are published
Identifies Gaps in The Evidence Base	Can give examples of evidence gaps	Draws up appropriate research questions. These may have been utilised by the critical care team to direct research efforts	Can design clinical trials that answer a specific research question
Develops and Evaluates Research Protocols	Can recognise and describe core features of a research protocol	Draws up a research protocol relating to critical care	Supervises production of and reviews protocols produced by other members of the critical care team / network
Creates Evidence	Performs audit and presents results locally	Undertakes audit at network level or wider Undertakes primary research Submits work to peer reviewed national and international conferences	Identifies a research question in clinical practice and follows through to publication in a peer reviewed journal

(6. Research and Evaluation Continued)

Competency	Foundation	Excellence	Mastery
Research Evidence into Practice	Can demonstrate how own practice has changed Performs CPD Maintains/actions personal development plan (PDP)	Member of clinical governance team Writes evidence based guidelines that are implemented within critical care	Member of network (or equivalent) clinical governance team / working parties / service improvement groups Writes or co-writes evidence based guidelines that are implemented within network (or equivalent)/ nationally Interprets research and translates into clinical practice
Supervises Others undertaking research		Supervises Audit projects by multidisciplinary team Supervises data collection by multidisciplinary team for established research projects	Supervises students undertaking post-graduate research
Establishes Research Partnerships	Involved in clinical trials at supply and clinical information level	Involved in clinical trials at planning / implementation level	Member of organising committee for multi-centre research studies

Annex 3: Core Clinical Knowledge for Advanced Critical Care Pharmacists

These are examples of core clinical knowledge required for practice in critical care. These examples are not about non-medical prescribing or administration of medicines, which falls outside the scope of this document. Their purpose is to be used as an outline intended to guide practice rather than to be a proscriptive list that has to be adhered to in all cases.

1. Central Nervous System

Understands and applies methods of sedation management

Understands and takes account of the different characteristics of various sedatives in sedation management

Understands and applies methods of pain management and understands the implications for sedation management

Understands and takes account of the different characteristics of various analgesics in pain management

Understands and applies methods of neuromuscular blockade management

Understands and takes account of the different characteristics of various neuromuscular blockers in neuromuscular blockade management

Understands the implications of raised intracranial pressure and methods of drug management

Understands and manages acute therapy for the various forms of epilepsy

Understands and manages acute therapy for delirium

Understands the management options for acute head injury and spinal injury

2. Cardiovascular System

Understands the principles, characteristics and clinical use of intravenous fluids

Understands the differences between crystalloids and colloids

Able to describe differences between the various colloids (e.g. proteins, starches, dextrans)

Understands the effect of administration of fluid (or dehydration states) on various cardiovascular parameters (e.g. venous return, central venous pressure, cardiac output and arterial blood pressure)

Understands the mechanism of action / characteristics of inotropes and how to use them to manipulate the cardiovascular system

Understands the mechanism of action / characteristics of vasopressors and how to use them to manipulate the cardiovascular system

Understands the mechanism of action / characteristics of vasodilators and how to use them to manipulate the cardiovascular system

Understands the available methods for monitoring of cardiovascular function (e.g. arterial blood pressure, cardiac output, cardiac index, mean arterial pressure, systemic vascular resistance)

Understands the pathophysiology and management of the various shock states

Understands the basic pathophysiology and management options for acute and chronic heart failure

Understands the mechanism of action, characteristics and clinical use of heart failure treatments

Understands the basic pathophysiology and management options for the various common arrhythmias

Able to describe the modified Vaughan Williams classification and its use

Understands the role of electrolytes in arrhythmias

Understands the mechanism of action, characteristics and clinical use of antiarrhythmic treatments

Understands the mechanism of action and options for advanced cardiovascular support (e.g. vasopressin, methylthionium chloride, intra-aortic balloon-pump)

Understands the basic pathophysiology and management options for pulmonary oedema

Understands the mechanism of action, characteristics and clinical use of treatments for pulmonary oedema

Understands the basic pathophysiology and management options for myocardial infarction (including angioplasty, coronary angiogram, antiplatelet therapy, use of heparins and National Service Framework guidance on drug treatment of coronary heart disease)

Able to describe the effects of myocardial infarction on cardiac performance

3. Respiratory System

Understands the basics of mechanical ventilation

Understands the weaning process from mechanical ventilation onto non-invasive ventilatory support (Biphasic Positive Airway Pressure, Continuous Positive Airway Pressure)

Understands the implications for drug therapy of the respiratory weaning process (e.g. sedation and analgesia management)

Understands the basic pathophysiology and management options for respiratory diseases (acute asthma, chronic obstructive airways disease, community acquired pneumonia, hospital acquired pneumonia, ventilator associated pneumonia, adult respiratory distress syndrome, acute lung injury and inflammatory lung diseases)

Understands the mechanism of action and characteristics of drugs for the treatment of respiratory diseases (acute asthma, chronic obstructive airways disease, community acquired pneumonia, hospital acquired pneumonia, ventilator associated pneumonia, adult respiratory distress syndrome, acute lung injury and inflammatory lung diseases)

Understands the fundamentals of acid-base balance and the effects of medical therapy to manage acid-base balance (fluids, drugs, ventilation)

Understands the importance of humidification in ventilatory support

Able to describe the mechanism of action, evidence base and use of mucolytics/mucokinetics

Understands the role of the physiotherapist and need for respiratory suctioning

4. Gastro-intestinal System

Understands the basic pathophysiology and risk factors for the development of stress ulceration

Understands the mechanism of action, characteristics and clinical use of treatments for stress ulcer prophylaxis or acute gastrointestinal bleeds

Understands the different options for feeding patients (parenteral and enteral nutrition, percutaneous endoscopically placed jejunostomy, percutaneous endoscopically placed gastrostomy, etc)

Understands indications for different feeding routes and the implications they have for drug administration (absorption mechanisms, sites of absorption, interactions and side effects)

Understands implications of altered anatomy for enteral drug therapy

Understands the basics of parenteral nutrition (carbohydrate, lipid, protein, electrolytes and volume)

Able to identify and manage refeeding syndrome

Understands mechanisms of action, characteristics and clinical use of antiemetics, prokinetics, laxatives and antidiarrhoeals

Understands the role of the dietitian

5. Genito-urinary System

Understands and monitors renal function / dysfunction (acute or chronic)
Understands the mechanism of action, characteristics and use of diuretics (loop diuretics, thiazides, potassium sparing, osmotic, carbonic anhydrase inhibitors)
Able to recognise and manage drug therapy that adversely affects renal function
Understands the basic pathophysiology of the different forms of acute renal failure
Able to describe the management options for acute and chronic renal failure
Able to describe the different forms of renal replacement therapy
Understands the mechanics of haemofiltration (or haemodiafiltration) and the implications this has for anticoagulation, fluid management and choice of replacement fluids
Able to monitor and adjust doses of drugs affected by renal dysfunction, including patients who require haemofiltration (or haemodiafiltration)

6. Hepatology

Understands and monitors liver function / dysfunction (acute or chronic)
Understands the effect of drugs on liver function
Understands the effect of different types of liver failure on drug clearance
Understands the stages in alcoholic liver failure and its treatment
Able to describe the treatments for different types of liver failure (lactulose, spironolactone, vitamin K, acetylcysteine, ascites and sodium balance)

7. Haematology

Understands clotting physiology and the effect of drugs upon it
Understands the basic pathophysiology of disseminated intravascular coagulation
Broadly understands the interplay between coagulation and inflammation in sepsis and the role of activated protein C
Understands the role and dosing of heparin, low molecular weight heparins and epoprostenol for different indications
Understands the pathophysiology of thromboembolism and management options for both prophylaxis and treatment

8. Infection

Understands the mechanism of action, characteristics and use of antibacterial agents in the management of bacterial infections (including spectrums of activity)
Understands the mechanism of action, characteristics and use of antiviral agents in the management of viral infections (excluding details of human immunodeficiency virus infection)
Understands the mechanism of action, characteristics and use of antifungal agents in the management of fungal infections
Understands and is able to describe the process of antimicrobial resistance
Understands the theory behind selective decontamination (selective decontamination of the digestive tract, selective parenteral and enteral antibiotic regimen) and details of use
Able to define septic inflammatory response syndrome, sepsis and septic shock
Able to describe local antibiotic prophylaxis for surgical procedures

9. Endocrine

Understands the effects of blood glucose management in non-diabetic patients (e.g. effects on mortality and morbidity) and the impact of other drugs on blood glucose control

Understands the acute treatment of diabetic patients (e.g. diabetic ketoacidosis, hyper-, hypoglycaemia)

Understands the effects of different steroids and can describe their use and side effects

Be able to describe the Tetracosactide (Synacthen) test and use of steroids in sepsis

10. Miscellaneous

Understands and is able to use a “body systems” based approach to analysing pharmaceutical care needs of critically ill patients

Able to link the effects of disparate organ systems together in order to treat the patient holistically

Describes the altered pharmacokinetics in the critically ill and the principles of therapeutic monitoring

Understands the basics of common surgical procedures (coronary artery bypass graft, oesophagectomy, abdominal aortic aneurysm, liver resection, carotid endarterectomy)

Able to demonstrate a high level of understanding of appropriate use of intravenous drugs (bolus to continuous infusion as well as half-lives and administration details)

Able to solve problems of intravenous drug compatibility issues

Able to solve problems of drug administration (including minimum intravenous volumes)

Able to convert intravenous drugs to oral where appropriate (indications, doses and implications)

Understands and describes the principles of Government strategy with respect to critical care

Be able to describe the role of the pharmacist in intensive care, local funding arrangements and drug budget setting process

Annex 4: Issues To Be Considered by Commissioners

The following is a list of issues drawn up by the project group that may influence the implementation of New Ways of Working in Critical Care Pharmacy. Commissioners will need to work with provider Trusts and Critical Care Networks (or equivalent) when developing new and enhanced roles in critical care pharmacy.

1. Personnel

- In short supply to deliver service
- May draw from other specialities, reducing capacity in these areas
- Inadequate number of consultant pharmacists able to lead the critical care pharmacy group
- Competition for finite health care resources from other health care professionals

2. Financial

- Increased specialist pharmacist time in many trusts will require investment
- Formal assessments require investment in personnel and equipment (such as information technology, training packages etc)
- Training packages and programmes will need to be developed and purchased

3. Educational

- No specific national training package or syllabus is presently available in critical care pharmacy
- Lack of recognised accreditation for trainers or trainees
- There are insufficient trainers available

4. Time

- Inadequate time to perform duties in the existing workforce. This may be particularly pertinent in smaller institutions who have pharmacist positions with a number of responsibilities that include the critical care pharmacy service
- Inadequate protected training time
- Inadequate time for assessment

5. Organisational

- The need for a business case to support or justify the role (i.e. provide evidence that adoption of the competency framework or consultant pharmacist positions will bring added value in terms of patient care and outcome)
- Lack of acceptance by multi-professional peers
- Lack of acceptance of role in organisation as a whole
- Lack of representation on appropriate committees

6. Strategic

- Changes in strategy at local (e.g. Trust level) or area (e.g. critical care network) that may alter emphasis
- Changes in DH or government initiatives, vision or direction that may alter emphasis

9. CONSULTATION

The following groups were consulted on this project: -

DH Consultant Pharmacist Steering Group

United Kingdom Clinical Pharmacy Association (UKCPA)

Guild of Healthcare Pharmacists

Royal Pharmaceutical Society of Great Britain

Critical Care Stakeholder Group

Intensive Care Society

British Association of Critical Care Nursing

RCN Critical Care Forum

10. REFERENCES

Comprehensive Critical Care. A Review of Adult Critical Care Services. Department of Health, May 2000

AHP and HCS Advisory Group. The role of healthcare professionals in within critical care services Department of Health, June 2002

The NHS Improvement Plan. Putting people at the heart of public services, Department of Health, June 2004

A spoonful of sugar. Medicines management in NHS hospitals, Audit Commission, 2001

A vision for pharmacy in the new NHS, Department of Health, June 2003

A Competency Framework for Pharmacy Practitioners. Advanced Level (Second Edition) London, Eastern and South East Specialist Pharmacy Services, April 2004

Developing and validating a competency framework for advanced pharmacy practice, Pharmaceutical Journal 2004; 273: 789-792

The impact of critical care pharmacists on enhancing patient outcomes, Intensive Care Medicine 2003; 29: 691-698

Guidance for the development of consultant pharmacists posts. Department of Health, March 2005