ROYAL PHARMACEUTICAL SOCIETY

CRITICAL CARE

EXPERT PROFESSIONAL PRACTICE CURRICULUM

Professional curriculum to support members with the knowledge, skills, experience and behaviours to advance in their practice

2014

ROYAL PHARMACEUTICAL SOCIETY FACULTY

UKCPA CLINICAL PHARMACY ASSOCIATION

Critical Care Group

Disclaimer

This publication is intended as a guide and may not always include all information relating to its subject matter.

You should interpret all information and advice in light of your own professional knowledge and all relevant pharmacy and healthcare literature and guidelines.

Nothing in this publication constitutes legal advice and cannot be relied upon as such.

Whilst care has been taken to ensure the accuracy of content RPSGB excludes to the fullest extent permissible by law any liability whether in contract, tort or otherwise arising from your reliance on any information or advice.

This curriculum has been produced by RPS Faculty partners to support continued advancement in all areas of pharmacy practice.

During 2014 the Curricula Panel of the RPS Faculty will continue to develop the vision for post graduate development to produce the highest quality pharmacy workforce. The Faculty will continue to work with experts and specialist groups to form new guidance for professional advancement. The layout and themes in these curricula may be subject to change. Reviews of curricula can be expected annually while the Faculty is being set up. Please check that you are using the most up to date version of the curricula on the RPS Faculty website (www.rpharms.com).

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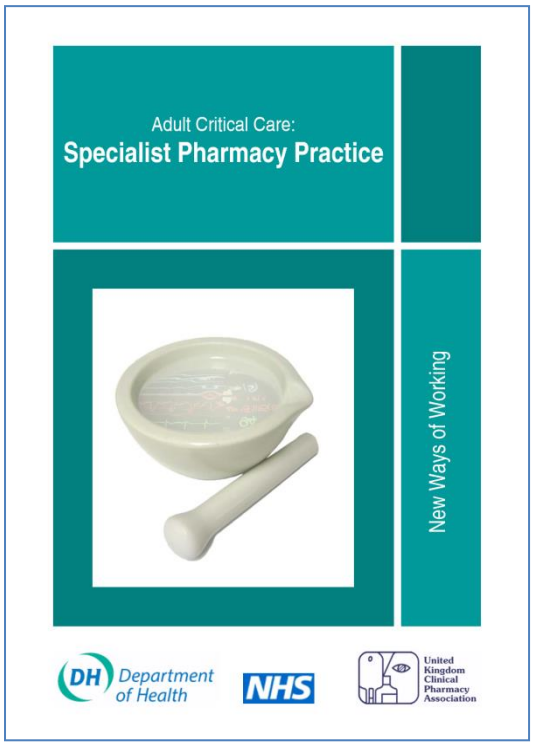

Please Note:

This Professional Curriculum for Advanced Pharmacy Practice in Critical Care utilises the first two competency clusters from Adult Critical Care: Specialist Pharmacy Practice. Examples of practice for the remaining 4 clusters are not listed herein. Users may wish to refer to the parent document for examples of practice in the remaining clusters.

The parent document was comprehensively reviewed by the Department of Health, The Royal College of Anaesthetists, The Intensive Care Society, the British Association of Critical Care Nurses, The Royal College of Nursing, the United Kingdom Clinical Pharmacy Association, the Royal Pharmaceutical Society of Great Britain, Critical Care Networks, Pharmaceutical Advisors and Chief Pharmacists of the NHS.

Acknowledgements

The mapping tables in this document use the Royal Pharmaceutical Society Advanced Pharmacy Framework (APF) which builds on the widely used Advanced to Consultant Level Framework (ACLF) which was developed by the Competency Development and Evaluation Group (CoDEG).

Much of the Useful Websites information has been 'borrowed' from a list circulated by Bianca Levkovich, a critical care pharmacist working at The Alfred, Melbourne, Australia.

We would like to specifically thank and acknowledge Keith Young OBE, whose support since the initiation of the project to describe critical care competencies in 2004 has undoubtedly helped to create a credible and long lasting legacy for critical care pharmacy and beyond.

Within the pharmacy community, the whole suite of competency / syllabus / professional recognition ventures has been supported by dedicated professionals far too numerous to mention here.

We would like to formally acknowledge that these ventures have relied upon their support. We are exceptionally grateful for their generosity in donating their time, energy and wisdom, and by so doing helped greatly in making such ventures a reality.

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The Competency Framework was taken from the first 2 clusters of Annex 2 of Adult Critical Care: Specialist Pharmacy Practice (DH 2005) and has been combined with the Critical Care Syllabus (UKCPA 2009) by staff working for the Professional Curricular Group. The Critical Care Syllabus is itself an expanded form of the knowledge list taken from Annex 3 of Adult Critical Care: Specialist Pharmacy Practice, DH 2005.

The new format Professional Curriculum was then updated.

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Professional Curriculum for Advanced Pharmacy Practice in Critical Care

Pharmaceutical Care of Critical Care

This curriculum provides an overview of the knowledge, skills, experiences and behaviours required to practice at advanced level in Critical Care at three stages: Advanced Stage I, Advanced Stage II and Mastery, in line with the requirements of the APF.

The document is intended to be used by practitioners to support the development of their practice at an advanced level within Critical Care. It encourages practitioners to think critically and to use knowledge in Critical Care supporting informed decision making using knowledge from this and other related therapeutic areas to promote optimal medicines management for patients. The curriculum also encourages the development of skills in informed, critically relevant, effective discussion with other health and social care practitioners, peers and managers, where appropriate, to maximise optimal medicines related care for patients.

It is intended to be as useful to the wider community working within Critical Care as possible from all sectors of care. The syllabus is not intended to cover every aspect of practice and inevitably overlaps with a number of specialities. Users are encouraged to link this syllabus with others in related fields, e.g. cardiology, renal, respiratory (also known as critical adjacencies).

This curriculum will be reviewed annually as to whether any update or changes are required. Every five years there will be an external review including external experts to re-evaluate the curriculum. Feedback is encouraged to ensure that the document is error-free, fit for purpose and accurately reflects the needs of pharmacists working at the specified stages.

Knowledge, Skills, Experience and Behaviours

Practitioners will develop their portfolios linked to the APF (www.rpharms.com). The recommended knowledge, skills, experience and behaviours which practitioners require to demonstrate competence at Advanced Stage I, Advanced Stage II and Mastery stage for the Expert Professional Practice and Collaborative Working Relationships clusters of the APF in an area of advanced practice, are listed here with additional notes and specific examples for working within Critical Care. The APF mapping tables in this document link the recommended knowledge, skills, experience and behaviours with the relevant developmental descriptors. Examples of the recommended knowledge, skills, experience and behaviours are included below. For a comprehensive list see the mapping tables.

Advanced Stage I

- Knows the different uses of fluids.
- Can describe methods of drug delivery in ventilated patients.
- Can provide details of national or international guidelines that include the management of shock states.

Advanced Stage II

- Can outline the current concepts and debates around the management of gastrointestinal dysmotility.
- Can apply renal monitoring variables to ascertain degree of renal failure in complex clinical situations.
- Knows the differences between a broad range of sedative agents used in critically ill patients.

Resources for Curriculum Development

Useful Websites

- United Kingdom Clinical Pharmacy Association United Kingdom Clinical Pharmacy Association Member Access
- Injectable Medicines Guide (Medusa) Access free through NHS Trusts
- Calculators - eg, Vancomycin Dosing, Aminoglycoside dosing, etc SurgicalCriticalCare.net
- Compatibility of Commonly Used Intravenous Drugs Cayo (Pharmacy Practice News, USA) article includes extensive charts Access free
- Critical Care Drug Manual, Wellington Hospital, New Zealand Intensive Care Unit - this Website states that it has been written by an intensivist and that "All doses have been checked independently by two specialists". Access free
- Critical Care Intravenous Medications Chart, Saint Joseph Health System (USA) Access free
- Critical Care Medicine Tutorials (Neligan, University of Pennsylvania, USA) Access free (Note author's disclaimer)
- Drug Monographs Critical Care Trauma Centre, London Health Sciences Centre (Canada) Access free
- Drug Protocols - Intensive Care Coordination & Monitoring Unit (ICCMU) Department of Health, NSW Government (Australia) Access free
- Drugs and Infusions: in Royal Adelaide Hospital Intensive Care Unit Medical Manual (Australia) [[2012 Part 3, page 66]] Access free
- Emergency Drugs In Anesthesiology And Critical Care Medicine (Department of Anesthesiology and Critical Care, University of Texas, USA) Access free
- IV Medication Guidelines John Dempsey Hospital, University of Connecticut Health Center (USA) Access free
- Reconstitution and Delivery of Critical Care Drugs Appendix IV, Parenteral Drug Therapy Manual (Pharmaceutical Sciences Clinical Services Unit, Vancouver General Hospital, Canada) Access free
- State of Delaware Paramedic Pharmacology Manual (Delaware Office of Emergency Medical Services, USA) Access free
- The Website GlobalRPh.com also lists a range of recommended Websites relating to critical care drug therapy. This site has a HON code; however, professional judgment and an index of suspicion should always be maintained using any secondarily-referred resources.
- To Mix or Not to Mix: Compatibilities of Parenteral Drug Solutions Murney (Australian Prescriber) Access free

Textbooks

- Bongard, F. et al, Current Critical Care Diagnosis and Treatment, 3rd Edition, 2008, McGraw-Hill, USA
- Ed. Baughman, V. L., Anesthesiology and Critical Care Drug Handbook, 10th Edition, 2011, Lexi-Comp, USA
- Ed. Elliott, R., Critical Care Therapeutics, 1999, Pharmaceutical Press, London
- Ed. Evers, A. S., Anesthetic Pharmacology, 2nd Edition, 2011, Cambridge University Press, Cambridge
- Ed. Smith, F. G., Core Topics in Critical Care Medicine, 2010, Cambridge University Press, Cambridge
- Ed. Waldmann, C. S., Soni, N., Rhodes, A., Oxford Desk Reference: Critical Care, 2009, Oxford University Press, Oxford
- Ed. Singer, M. Webb, A. R., Oxford Handbook of Critical Care, 3rd Edition, 2009, Oxford University Press, Oxford
- Leach, R. M. et al, Acute and Critical Care Medicine at a Glance, 2nd Edition, 2009, Wiley, Oxford
- McConachie, Handbook of ICU Therapy, 2nd Edition, 2006, Cambridge University Press, Cambridge
- Nimmo, G. R. & Singer, M., ABC of Intensive Care, 2nd Edition, 2011, Wiley, Oxford

- Paw, H. G. W. & Shulman, R., Handbook of Drugs in Intensive Care: An A to Z Guide, 4th Edition, 2010, Cambridge University Press, Cambridge
- Peck, T. E. & Hill, S., Pharmacology for Anaesthesia and Intensive Care, 3rd Edition, 2008, Cambridge University Press, Cambridge
- Smith, S. et al, Drugs in Anaesthesia and Intensive Care, 4th Edition, 2011, Oxford University Press, Oxford

Examples of Journals to Refer to

- UKCPA National Journal Club is published on www.ukcpa.net monthly and covers a variety of anaesthetic and critical care journals, as well as the BMJ and NEJM
- Intensive Care Medicine
- Critical Care Medicine
- American Journal of Respiratory and Critical Care Medicine
- Anaesthesia
- British Journal of Anaesthesia
- Critical Care

National Guidance

- Ed. Graham-Clarke, E., Minimum Infusion Volumes for Fluid Restricted Critically Ill Patients, 4th Edition, 2012, UKCPA
- Thacker, M., Shulman, R, O'Farrell, B., et al, Antiviral management of influenza A (H1N1) in critical care, 4th Edition, 2011, UKCPA
- Borthwick, M., Bourne, RS., Craig, M., et al, Detection, prevention and treatment of delirium in critically ill patients, 2006, UKCPA

Supporting References and External Resources

- Comprehensive Critical Care. A Review of Adult Critical Care Services. Department of Health, May 2000. http://www.dh.gov.uk/assetRoot/04/08/28/72/04082872.pdf
- AHP and HCS Advisory Group. The role of healthcare professionals in within critical care services Department of Health, June 2002 http://www.ukcpa.org (modernisation website closed down)
- A spoonful of sugar. Medicines management in NHS hospitals, Audit Commission, 2001 http://www.audit-commission.gov.uk/reports/AC-REPORT.asp?CatID=&ProdID=E83C8921-6CEA-4b2c-83E7-F80954A80F85
- Adult critical care: Specialist pharmacy practice 2005. http://www.dh.gov.uk/assetRoot/04/11/40/93/04114093.pdf or UKCPA
- Developing and validating a competency framework for advanced pharmacy practice, Pharmaceutical Journal 2004; 273: 789-792
- Guidance for the development of consultant pharmacists posts. Department of Health, March 2005 http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4107445
- A controlled study of the general level framework: Results of the South of England competency study. Antoniou S, Webb D, McRobbie D, Davies J, Wright J, Quinn J, Bates I. Pharmacy Education 2005: 5; 3-4
- A Competency Framework for Pharmacy Practitioners. Advanced Level (Second Edition) London, Eastern and South East Specialist Pharmacy Services, April 2004

APF Mapping Tables

This following tables list the knowledge, skills, experience and behaviours recommended to demonstrate the APF competencies for the Expert Professional Practice (EPP) and Collaborative Working Relationship (CWR) clusters mapped against the relevant APF developmental descriptors. It is intended primarily to support practitioners to develop their practice, but may be useful for portfolio preparation. All statements relate to the practitioner's area of practice speciality.

The competencies listed for "Advanced Stage I", "Advanced Stage II" and "Mastery" stage are additive, i.e. those at "Advanced Stage II" build on the competencies established in "Advanced Stage I". Practitioners are expected to demonstrate "Advanced Stage I" first before moving on to "Advanced Stage II". Those wishing to demonstrate "Advanced Stage II" will usually be expected to have demonstrated "Advanced Stage I" previously. Those wishing to demonstrate "Mastery" stage will usually be expected to have demonstrated "Advanced Stage II" previously.

A pharmacist starting to specialise in an area of Expert Professional Practice might be expected to be working towards attaining competencies at Advanced Stage I. A practitioner having attained Advanced Stage I in an area of Expert Professional Practice might be expected to be working towards attaining competencies at Advanced Stage II.

At Advanced Stage I practitioners are expected to build on the General Level Framework (see CoDEG's website: www.codeg.org) competencies and (for the relevant developmental descriptors) to demonstrate experience of caring for patients with disorders, pharmaceutical care issues and co-morbidities that are commonly found within Critical Care.

At Advanced Stage II practitioners are expected to build on Advanced Stage I competencies and (for the relevant developmental descriptors) to demonstrate experience of caring for patients with complex co-morbidities or pharmaceutical care issues or those with more specialist conditions within Critical Care.

At Mastery stage practitioners are expected to build on Advanced Stage II competencies and (for the relevant developmental descriptors) to demonstrate experience of caring for patients with complex co-morbidities or pharmaceutical care issues, or those with more specialist conditions within Critical Care.

Expert Professional Practice – Expert Skills and Knowledge (Cluster 1.1)

Improving standards of pharmaceutical care for patients.

1.1 EXPERT SKILLS AND KNOWLEDGE	ADVANCED STAGE I	ADVANCED STAGE II	MASTERY
APF competency developmental descriptors	Demonstrates general pharmaceutical skills and knowledge in core areas. In addition for patient focussed roles: Is able to plan, manage, monitor, advise and review general pharmaceutical care programmes for patients in core areas.	Demonstrates in-depth pharmaceutical skills and knowledge in defined area(s). In addition for patient focussed roles: Is able to plan, manage, monitor, advise and review in-depth/complex pharmaceutical care programmes for patients in defined area(s).	Advances the knowledge base in defined area(s). In addition for patient focussed roles: Advances in-depth/complex pharmaceutical care programmes for patients.
Recommended knowledge, skills, experience and behaviours	Application of basic knowledge of cardiovascular and renal level 2 patients. Application of basic understanding of drugs used in critically ill patients including antibiotics, analgesia and sedation. Experience of caring for Level 3 patients.	Application of advanced knowledge of drugs used in level 3 critically ill patients (Annex 3). Carries out teaching regarding treatment of level 2 patients to pharmacy, nursing, medical staff and other allied healthcare professionals (AHPs).	Able to identify knowledge gaps and add new knowledge. Involved in research and leads where appropriate Carried out teaching regarding treatment of level 3 patients to pharmacy, nursing, medical staff and other AHPs. Publications in peer review journals.

Expert Professional Practice – Delivery of Professional Expertise (Cluster 1.2)

Improving standards of pharmaceutical care for patients.

1.2 DELIVERY OF PROFESSIONAL EXPERTISE	ADVANCED STAGE I	ADVANCED STAGE II	MASTERY
APF competency developmental descriptors	Demonstrates accountability for delivering professional expertise and direct service provision as an individual.	Demonstrates accountability for the delivery of professional services and expertise via a team or directly to groups of patients/clients/users.	Demonstrates accountability for the delivery of professional expertise at a defined higher level. May include providing expertise and service delivery nationally or at a strategic level.
Recommended knowledge, skills, experience and behaviours	Demonstrates basic competency in delivering patient care to level 3 patients through a record of reflective practice. Ensure that appropriate patient documentation is maintained for medicines management.	Responsible for delivery of care to defined group of level 2 or 3 patients.	Ensures strategic decisions are made and implemented to maintain the delivery of a patient focussed pharmacy service to critically ill patients.

Expert Professional Practice – Reasoning and Judgement (Cluster 1.3)

Improving standards of pharmaceutical care for patients.

1.3 REASONING AND JUDGEMENT	ADVANCED STAGE I	ADVANCED STAGE II	MASTERY
APF competency developmental descriptors	Demonstrates ability to use skills in a range of routine situations requiring analysis or comparison of a range of options. Recognises priorities when problem-solving and identifies deviations from the normal pattern.	Demonstrates ability to use skills to make decisions in complex situations where there are several factors that require analysis, interpretation and comparison. Demonstrates an ability to see situations holistically.	Demonstrates ability to use skills to manage difficult and dynamic situations. Demonstrates ability to make decisions in the absence of evidence or data or when there is conflicting evidence or data.
Recommended knowledge, skills, experience and behaviours	Basic ability to recognise problems and formulate treatment plans. Monitored ward visits/mentorship. Can perform bedside case presentation. Ability to recommend justifiable courses of action. Demonstrate accurate reasoning. Recognises own limitations. Able to make decisions in a timely manner with limited information. Ability to prioritise problems.	Produces increasingly complex treatment plans. Demonstrates the ability to appraise information, make an informed decision with the evidence available and be able to justify/defend the decision to others.	Act as an external reference of experience.

Expert Professional Practice – Professional Autonomy (Cluster 1.4)

Improving standards of pharmaceutical care for patients.

1.4 PROFESSIONAL AUTONOMY	ADVANCED STAGE I	ADVANCED STAGE II	MASTERY
APF competency developmental descriptors	Is able to follow legal, ethical, professional and organisational policies/procedures and codes of conduct.	Is able to take action based on own interpretation of broad professional policies/procedures where necessary.	Is able to take action based on own interpretation of broad professional policies/procedures where necessary.
Recommended knowledge, skills, experience and behaviours	Demonstrates the ability to follow trust guidance related to the critical care unit.	Develops policies and procedures specifically for the critical care unit. May be involved in the development of supplementary/independent prescribing in critical care.	Responsible for applying national guidelines to the trust e.g. NICE guidance, NPSA. Leads in Trust wide issues related to critically ill patients. Works within trust wide multidisciplinary groups with respect to the pharmacy issues. Involved in the production of network wide (or equivalent) guidelines where appropriate.

Collaborative Working Relationships – Communication (Cluster 2.1)

Is able to communicate, establish and maintain professionally-driven working relationships and gain the co-operation of others.
Including ability to: Persuade; Motivate; Negotiate; Empathise; Provide reassurance; Listen; Influence and Networking skills; Presentation skills.

2.1 COMMUNICATION		ADVANCED STAGE I	ADVANCED STAGE II	MASTERY
APF competency developmental descriptors		Demonstrates use of appropriate communication to gain the co-operation of relevant stakeholders (including patients, senior and peer colleagues, and other professionals where possible). Demonstrates ability to communicate where the content of the discussion is explicitly defined.	Demonstrates use of appropriately selected communication skills to gain co-operation of small groups of relevant stakeholders within the organisation. Demonstrates ability to communicate where the content of the discussion is based on professional opinion.	Demonstrates ability to present complex, sensitive or contentious information to large groups of relevant stakeholders. Demonstrates ability to communicate in a hostile, antagonistic or highly emotive atmosphere.
Recommended knowledge, skills, experience and behaviours	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.

Collaborative Working Relationships – Communication (Cluster 2.1)

Is able to communicate, establish and maintain professionally-driven working relationships and gain the co-operation of others.
Including ability to: Persuade; Motivate; Negotiate; Empathise; Provide reassurance; Listen; Influence and Networking skills; Presentation skills.

2.1 COMMUNICATION		ADVANCED STAGE I	ADVANCED STAGE II	MASTERY
APF competency developmental descriptors		Demonstrates use of appropriate communication to gain the co-operation of relevant stakeholders (including patients, senior and peer colleagues, and other professionals where possible). Demonstrates ability to communicate where the content of the discussion is explicitly defined.	Demonstrates use of appropriately selected communication skills to gain co-operation of small groups of relevant stakeholders within the organisation. Demonstrates ability to communicate where the content of the discussion is based on professional opinion.	Demonstrates ability to present complex, sensitive or contentious information to large groups of relevant stakeholders. Demonstrates ability to communicate in a hostile, antagonistic or highly emotive atmosphere.
Recommended knowledge, skills, experience and behaviours	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.

Collaborative Working Relationships – Communication (Cluster 2.1)

Is able to communicate, establish and maintain professionally-driven working relationships and gain the co-operation of others.
Including ability to: Persuade; Motivate; Negotiate; Empathise; Provide reassurance; Listen; Influence and Networking skills; Presentation skills.

2.1 COMMUNICATION		ADVANCED STAGE I	ADVANCED STAGE II	MASTERY
APF competency developmental descriptors		Demonstrates use of appropriate communication to gain the co-operation of relevant stakeholders (including patients, senior and peer colleagues, and other professionals where possible). Demonstrates ability to communicate where the content of the discussion is explicitly defined.	Demonstrates use of appropriately selected communication skills to gain co-operation of small groups of relevant stakeholders within the organisation. Demonstrates ability to communicate where the content of the discussion is based on professional opinion.	Demonstrates ability to present complex, sensitive or contentious information to large groups of relevant stakeholders. Demonstrates ability to communicate in a hostile, antagonistic or highly emotive atmosphere.
Recommended knowledge, skills, experience and behaviours	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.	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. Shares expertise with pharmacy and critical care.	Receives requests outside the Trust. Leads multi-disciplinary task forces/service developments.

Syllabus for Advanced Critical Care

This syllabus is a recommended list of the specific elements of pharmaceutical and related care that a practitioner developing towards advanced and consultant level will need to know about and apply in their 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 prescriptive list that has to be adhered to in all cases.

Advanced Stage I

Scope

Entry Point: Diploma in General Practice Pharmacy and Statement of Completion of General Level Framework (e.g. Band 6 (DipGPP)) or appropriate proof of equivalent qualification and practice).

Completion Point: Statement of Completion of Advanced Stage I competencies (including application of knowledge during experience in the defined area of practice).

Description

Whilst working towards Advanced Stage I the aim is for practitioners to develop and deliver competent clinical care with a focus on Critical Care.

The individual works towards becoming competent at delivering a clinical pharmacy service to patients with common disorders in surgery through experience of delivering a service to these patients.

Advanced Stage II

Scope

Entry Point: Statement of Completion of Advanced Stage I competencies with (including application of knowledge during experience in the defined area of practice).

Completion Point: Statement of Completion of Advanced Stage II competencies (including application of advanced knowledge during experience in Critical Care area(s)).

Description

Whilst working towards Advanced Stage II the aim is for practitioners to continue to develop advanced knowledge and skills in order to deliver good quality clinical care to the various groups of Critical Care patients. The practitioner is expected to be an integrated member of the wider multi-professional team and as such works alongside other professionals to achieve the aims of the team, leading where appropriate.

Mastery

Scope

Entry Point: Statement of Completion of Advanced Stage II competencies with (including application of knowledge during experience in the defined area of Critical Care).

Completion Point: Statement of Completion of Mastery stage competencies (including application of advanced knowledge during experience in Critical Care area or areas).

Description

Whilst working towards Mastery stage the aim is for practitioners to continue to develop advanced knowledge and skills in order to deliver good quality clinical care to the various groups of Critical Care. The practitioner is expected to be an integrated member of the wider multi-professional team and as such works alongside other professionals to achieve the aims of the team, leading where appropriate.

The following tables are the syllabus for Critical Care. For illustrative purposes the syllabus has been laid out here in BNF order, with additional categories. Categories have been left blank where there are no syllabus items. A group may decide that another way of ordering the syllabus is more relevant to their expert practice, for example according to the medicines use process or a medicines pathway. The final column of the table shows whether the syllabus item is expected at Advanced Stage I, Advanced Stage II or Mastery stage.

It is acknowledged that practitioners may have already covered some of this syllabus at general level. Practitioners are reminded that a piece of evidence of a specific knowledge should not be resubmitted to achieve the requirements for another award as credit can only be awarded once for each piece of evidence. However, knowledge gained previously could be used in conjunction with experience to develop and demonstrate competency at Advanced Stage I, Advanced Stage II or Mastery level of the APF.

Specialist knowledge is defined here as knowledge that is specific to surgery, and is not generally used outside this area. Generalist knowledge is defined here as common knowledge that may be pertinent to other areas of practice outside Critical Care.

1. Gastrointestinal System
2. Cardiovascular System
3. Respiratory System
4. Central Nervous System
5. Infections
6. Endocrine System
7. Obstetrics, Gynaecology and Urinary-Tract Disorders
8. Malignant Disease and Immunosuppression
9. Nutrition and Blood
10. Musculoskeletal and Joint Diseases
11. Eye
12. Ear, Nose and Oropharynx
13. Skin
14. Immunological Products and Vaccines
15. Anaesthesia
16. Liver Disease
17. Renal Impairment
18. Pregnancy
19. Breast-Feeding
20. Older People
21. Toxicology
22. Parenteral Therapy
23. Palliative and End Of Life Care
24. Clinical Trials
25. Other Issues in Critical Care

1 Gastrointestinal System		
	Specialist or Generalist	Advanced Stage I, Advanced Stage II or Mastery
Can summarise the key risk factors for GI haemorrhage.	G	Adv I
Can summarise the pathophysiological events underlying GI haemorrhage.	G	Adv I
Can describe the pharmacology and pharmacokinetics of treatment options for prevention of GI haemorrhage.	G	Adv I
Can describe the pharmacology and pharmacokinetics of drug treatment options for GI haemorrhage.	G	Adv I
Can describe options for non-drug management of GI haemorrhage.	G	Adv I
Can provide details of national or international guidelines that include the prevention or treatment of GI haemorrhage.	S	Adv I
Can summarise the implications of non-pharmacological management of acute GI haemorrhage.	S	Adv II
Can outline the evidence base, current concepts and debates around the management of GI haemorrhage.	S	Adv II
Can summarise the pathophysiological events leading to ileus states.	G	Adv I
Can summarise the pathophysiological events leading to diarrhoeal states.	G	Adv I
Can describe the pharmacology and pharmacokinetics of treatment options for GI dysmotility.	G	Adv I
Can summarise options for non-drug management of GI dysmotility.	G	Adv I
Can describe the key monitoring parameters for drugs used in the management of GI dysmotility.	G	Adv I
Can summarise the specialist treatment options used for the management of GI dysmotility.	S	Adv II
Can outline the current concepts and debates around the management of GI dysmotility.	S	Adv II
Can summarise the pathophysiological events leading to emesis.	G	Adv I
Can describe the pharmacology and pharmacokinetics of treatment options for emesis.	G	Adv I
Can describe the key monitoring parameters for drugs used in the management of emesis.	G	Adv I

2 Cardiovascular System		
	Specialist or Generalist	Advanced Stage I, Advanced Stage II or Mastery
Can summarise the differences between classes of inotropes and vasopressors used in the management of critically ill patients.	G	Adv I
Can describe the basic pharmacology and pharmacokinetics of inotropes and vasopressors.	G	Adv I
Knows the different uses of inotropes and vasopressors.	S	Adv I
Can describe the key monitoring parameters for the use of inotropes and vasopressors.	G	Adv I
Can provide details of national or international guidelines that include the use of inotropes and vasopressors.	S	Adv I
Can describe the principles of invasive monitoring methods used locally and interpret the specific parameters generated.	S	Adv II
Can summarise the differences between a broad range of inotropes and vasopressors.	S	Adv II
Can describe the pharmacology and pharmacokinetics of a broad range of inotropes and vasopressors.	S	Adv II
Can apply knowledge of different agents and monitoring variables to inform appropriate treatment decisions for inotropes and vasopressors.	S	Adv II
Can outline the evidence base around current concepts and debates around inotropes and vasopressors.	S	Adv II
Can summarise the key differences between different shock states.	G	Adv I

Can summarise the pathophysiological events leading to and resulting from different shock states.	G	Adv I
Can provide details of national or international guidelines that include the management of shock states.	S	Adv I
Can apply knowledge of different agents and monitoring variables to inform appropriate management decisions in shock states.	S	Adv II
Can outline the evidence base around current concepts and debates around shock states.	S	Adv II
Can summarise the key differences between acute and chronic cardiac failure.	G	Adv I
Can summarise the pathophysiological events leading to, and resulting from, acute and chronic cardiac failure.	G	Adv I
Can describe the pharmacology and pharmacokinetics of treatment options for acute and chronic cardiac failure.	G	Adv I
Can describe the key monitoring parameters for the treatment of acute and chronic cardiac failure.	G	Adv I
Can provide details of national or international guidelines that include the management of chronic cardiac failure.	G	Adv I
Can summarise the specialist treatment options used for the management of acute cardiac failure in critical care patients.	S	Adv II
Can apply knowledge of different agents and monitoring variables to inform appropriate treatment decisions for acute cardiac failure.	S	Adv II
Can outline the evidence base around current concepts and debates around acute and chronic cardiac failure.	G	Adv II
Can discuss the implications of non-pharmacological interventions on drug therapy for acute cardiac failure.	S	Adv II
Can summarise the key differences between arrhythmias.	G	Adv I
Can summarise at a basic level the pathophysiological events leading to different arrhythmias.	G	Adv I
Can describe the pharmacology and pharmacokinetics of treatment options for different arrhythmias.	G	Adv I
Can outline indications for adjunctive therapy for certain arrhythmias.	G	Adv I
Can describe the key monitoring parameters for treatment options for different arrhythmias.	G	Adv I
Can summarise the specialist treatment options used for the management of arrhythmias in critical care patients.	S	Adv II
Can apply knowledge of different agents and monitoring variables to inform appropriate treatment decisions for arrhythmias.	S	Adv II
Can summarise the implications of chemical and electrical cardioversion, and temporary pacing.	S	Adv II
Can outline current concepts and debates around the management of arrhythmias.	G	Adv II
Can summarise the key differences between non-ST and ST elevation myocardial infarction.	G	Adv I
Can summarise the pathophysiological events leading to non-ST and ST elevation myocardial infarction.	G	Adv I
Can describe the pharmacology and pharmacokinetics of treatment options for non-ST and ST elevation myocardial infarction.	G	Adv I
Can describe the key monitoring parameters for the treatment of non-ST and ST elevation myocardial infarction.	G	Adv I
Can provide details of national or international guidelines that include the management of non-ST and ST elevation myocardial infarction.	G	Adv I
Can summarise the specialist treatment options used for the management of non-ST and ST elevation myocardial infarction in critical care patients.	S	Adv II
Can apply knowledge of different agents and monitoring variables to inform appropriate treatment decisions for non-ST and ST elevation myocardial infarction.	S	Adv II
Can discuss the implications of non-pharmacological interventions on drug therapy for ST	S	Adv II

elevation myocardial infarction.		
Can summarise the key methods for monitoring of haemostasis.	G	Adv I
Can summarise and interpret the results of different methods for monitoring of haemostasis.	G	Adv I
Can summarise the pathophysiological events underlying common abnormalities of haemostasis.	G	Adv I
Can recognise and manage drug therapy that affects haemostasis.	G	Adv I
Can interpret and apply these results to recognise drugs that are contra-indicated, or should be used with caution.	G	Adv I
Can interpret the probable underlying causes of abnormal haemostasis test results in complex cases.	S	Adv II
Can apply knowledge to correct underlying haemostasis abnormality in routine clinical situations.	S	Adv I
Can apply knowledge to correct underlying haemostasis abnormality in complex clinical situations.	S	Adv II
Can summarise patient, disease and iatrogenic factors influencing thrombotic risk.	G	Adv I
Can summarise the pathophysiological events predisposing patients to thromboembolism.	G	Adv I
Can describe the pharmacology and pharmacokinetics of drug treatment options for the prevention of thromboembolism.	G	Adv I
Can describe non-drug options for the prevention of thromboembolism.	G	Adv I
Can describe and apply specific factors in the critically ill patient which affect management options for prevention of thromboembolism.	S	Adv I
Can provide details of national or international guidelines that include the prevention of thromboembolism.	G	Adv I
Can summarise the pathophysiological events leading to thromboembolism.	G	Adv I
Can describe the pharmacology and pharmacokinetics of drug options for the treatment of thromboembolism.	G	Adv I
Can summaries the possible complications of drug options for the treatment of thromboembolism, including heparin-induced thrombocytopenia.	G	Adv I
Can describe and apply specific factors in the critically ill patient which affect management options for treatment of thromboembolism.	S	Adv I
Can describe the key monitoring parameters of treatment options for patients with thromboembolism.	G	Adv I
Can provide details of national or international guidelines that include the treatment of thromboembolism.	G	Adv I

3 Respiratory System		
	Specialist or Generalist	Advanced Stage I, Advanced Stage II or Mastery
Can summarise the physiology of pulmonary gas exchange.	G	Adv I
Can summarise the key aims and principles of ventilation.	G	Adv I
Can summarise basic modes of non-invasive mechanical ventilation.	G	Adv I
Can summarise basic modes of invasive mechanical ventilation.	S	Adv I
Can summarise the potential complications of invasive mechanical ventilation.	S	Adv I
Can describe methods of drug delivery in ventilated patients.	S	Adv I
Can describe the potential shortcomings of different drug delivery methods in invasive and non-invasive ventilated patients.	S	Adv II
Can discuss the implications of different ventilatory interventions on drug therapy, where appropriate.	S	Adv II
Can summarise the key differences between ALI and ARDS.	S	Adv I
Can describe the pharmacology and pharmacokinetics of treatment options for ALI and ARDS.	S	Adv I
Can describe the key monitoring parameters for the treatment of ALI and ARDS.	S	Adv I
Can summarise the pathophysiological events leading to ALI and ARDS.	S	Adv II
Can summarise the specialist treatment options used for the management of ALI and ARDS.	S	Adv II
Can apply knowledge of different agents and monitoring variables to inform appropriate treatment decisions for the management of ALI and ARDS.	S	Adv II
Can outline the evidence base and current concepts and debates around the management of ALI and ARDS.	S	Adv II
Can summarise the basic pathophysiology of pulmonary hypertension.	S	Adv II
Can summarise the specialist treatment options used for the management of pulmonary hypertension.	S	Adv II
Can describe the pharmacology and pharmacokinetics of treatment options for pulmonary hypertension.	S	Adv II
Can describe the key monitoring parameters for the treatment of pulmonary hypertension.	S	Adv II
Can apply knowledge of different agents and monitoring variables to inform appropriate treatment decisions for pulmonary hypertension.	S	Adv II
Can outline current concepts and debates around the management of ALI and ARDS.	S	Adv II
Can summarise the key differences between the management of acute and chronic of asthma.	G	Adv I
Can summarise the pathophysiological events underlying chronic asthma.	G	Adv I
Can summarise the pathophysiological events leading to acute asthma.	G	Adv I
Can describe the pharmacology and pharmacokinetics of treatment options for management of acute asthma.	G	Adv I
Can describe the key monitoring parameters for the drug used in the management of acute asthma.	G	Adv I
Can provide details of national or international guidelines that include the management of acute and chronic asthma.	G	Adv I
Can summarise the specialist treatment options used for the management of acute asthma.	S	Adv II
Can apply knowledge of different agents and monitoring variables to inform appropriate treatment decisions for acute asthma.	S	Adv II
Can outline current concepts and debates around the management of acute asthma.	G	Adv II

4 Central Nervous System		
	Specialist or Generalist	Advanced Stage I, Advanced Stage II or Mastery
Can summarise the differences between classes of different analgesic agents in a level 2 (or below) patient.	G	Adv I
Can summarise the differences between classes of different analgesic agents in a level 3 patient.	S	Adv I
Can describe the basic pharmacology and pharmacokinetics of analgesic agents in a level 2 (or below) patient.	G	Adv I
Can describe the basic pharmacology and pharmacokinetics of analgesic agents in a level 3 patient.	S	Adv I
Knows the different uses of analgesic agents.	S	Adv I
Can describe the key monitoring parameters for the use of analgesic agents in a level 2 (or below) patient.	G	Adv I
Can describe the key monitoring parameters for the use of analgesic agents in a level 3 patient.	S	Adv I
Can provide details of national or international guidelines that include the use of analgesic agents in a level 3 patient.	S	Adv I
Knows the differences between a broad range of analgesic agents used in critically ill patients.	S	Adv II
Knows the pharmacology and pharmacokinetics of a broad range of analgesic agents used in critically ill patients.	S	Adv II
Know the different uses of a broad range of analgesic agents.	S	Adv II
Can outline different methods of delivery of a broad range of different analgesic agents.	S	Adv II
Can describe and critique different monitoring parameters for the use of analgesic agents in critically ill patients.	S	Adv II
Can describe indirect factors contributing to pain.	S	Adv II
Can outline management options for indirect factors contributing to pain.	S	Adv II
Can outline the current concepts around pain management.	S	Adv II
Can summarise the key differences between different agents used for the management of acute seizures in a level 2 (or below) patient.	G	Adv I
Can summarise the key differences between different agents used for the management of acute seizures in a level 3 patient.	S	Adv I
Can describe the basic pharmacology and pharmacokinetics of agents used for the management of acute seizures in a level 2 (or below) patient.	G	Adv I
Can describe the basic pharmacology and pharmacokinetics of agents used for the management of acute seizures in a level 3 patient.	S	Adv I
Can describe the key monitoring parameters for the use of agents used for the management of acute seizures in a level 2 (or below) patient.	G	Adv I
Can describe the key monitoring parameters for the use of agents used for the management of acute seizures in a level 3 patient.	S	Adv I
Can provide details of national or international guidelines that include the use of agents used for the management of acute seizures in a level 3 patient.	S	Adv I
Can summarise the differences between a broad range of agents used for the management of acute seizures in critically ill patients.	S	Adv II
Can describe the pharmacology and pharmacokinetics of a broad range of agents used for the management of acute seizures.	S	Adv II
Can apply advanced pharmacokinetic principles in complex acute seizure patients to inform dosage decisions.	S	Adv II
Can describe monitoring parameters for the use of a broad range of agents used for the management of acute seizures.	S	Adv II
Can identify drugs that may affect the seizure threshold and recommend appropriate actions.	S	Adv II

Can outline the current concepts around management of acute seizures.	S	Adv II
Can summarise the agents used for the management of delirium.	G	Adv I
Can describe the basic pharmacology and pharmacokinetics of agents used for the management of delirium.	G	Adv I
Can describe the key monitoring parameters for the use of agents used for the management of delirium.	G	Adv I
Provide details of national or international guidelines that include the use of agents used for the management of delirium.	S	Adv I
Can summarise the key differences between different agents used for the management of delirium in a level 2 (or below) patient.	G	Adv I
Can summarise the key differences between different agents used for the management of delirium in a level 3 patient.	S	Adv I
Can differentiate delirium from other forms of mental illness in critically ill patients.	S	Adv II
Can summarise the differences between a broad range of agents used for the management of delirium.	S	Adv II
Know the different uses of a agents used for the management of delirium.	S	Adv II
Can describe the pharmacology and pharmacokinetics of a broad range of agents used for the management of delirium.	S	Adv II
Can describe monitoring parameters for the use of a broad range of agents used for the management of delirium.	S	Adv II
Can outline the current concepts around management of delirium.	S	Adv II
Knows the key differences between different agents used for mental health in the critically ill patient.	S	Adv I
Knows the basic pharmacology and pharmacokinetics of mental health agents in the critically ill patient.	S	Adv I
Can describe non-drug options for optimisation of mental health in the critically ill patient.	S	Adv I
Know the different uses of agents for mental health in the critically ill patient.	S	Adv I
Can describe the key monitoring parameters for the use of mental health agents in the critically ill patient.	S	Adv I
Can describe the basic pathophysiology and treatment options for Guillain Barré disease.	S	Adv II
Can advise on management of therapies for Parkinsons Disease, including conversion to alternative treatment modalities/ routes such as rotigotine patches and / or apomorphine if required.	S	Adv I

5 Infections		
	Specialist or Generalist	Advanced Stage I, Advanced Stage II or Mastery
Can summarise the basic pathophysiological events underlying and leading to infection.	G	Adv I
Can describe the concept of SIRS, sepsis, severe sepsis and septic shock.	S	Adv I
Can outline common sources of infection for different body systems.	G	Adv I
Can describe the pharmacology and pharmacokinetics of anti-infective agents.	G	Adv I
Can outline the place in therapy of supportive agents for sepsis (for example, steroids).	S	Adv I
Can summarise the key evidence base regarding the use of supportive agents for sepsis.	S	Adv I
Can outline specific local strategies for optimisation of anti-infective therapy in critically ill patients (for example, aminoglycosides, vancomycin).	S	Adv I
Can outline monitoring parameters for anti-infective therapies.	G	Adv I
Can summarise factors that lead to the development of resistance.	G	Adv I
Can describe the strategies for prevention and management of healthcare associated and cross-infection.	G	Adv I
Can describe the strategies for preventing ventilator-associated pneumonia.	S	Adv I
Can summarise the spectrum of activity of common anti-infective agents.	G	Adv I
Can describe infection reduction strategies, such as selective decontamination of the digestive tract (SDD), oral decontamination, and total skin decontamination, along with their underlying principles, where used.	S	Adv I
Can provide details of national or international guidelines that include the management of infection.	G	Adv I
Can provide details of national or international guidelines that include the management of infection in the critically ill patient.	S	Adv I
Can outline the treatment options for influenza, including unlicensed preparations.	S	Adv II

6 Endocrine System		
	Specialist or Generalist	Advanced Stage I, Advanced Stage II or Mastery
Can summarise the pathophysiological events leading to acute diabetic emergencies.	G	Adv I
Can recognise and manage drug therapy and other factors that affect blood glucose control in critically ill patients.	S	Adv I
Can summarise strategies for the management of acute diabetic emergencies.	G	Adv I
Can describe the key monitoring parameters for patients with acute diabetic emergencies.	G	Adv I
Can summarise local strategies for the use of glycaemic control in critically ill patients (including 'tight control' if practiced).	S	Adv I
Can describe the key monitoring parameters for patients on glycaemic control regimens.	S	Adv I
Can interpret criteria to identify patients suitable for glycaemic control.	S	Adv I
Can summarise the key evidence base regarding tight glycaemic control.	S	Adv II
Can summarise local strategies for the use of glycaemic control in critically ill patients (including 'tight control' if practiced).	S	Adv I
Can differentiate the pharmacological properties of different corticosteroids.	G	Adv I
Can describe the various uses of corticosteroids in the critically ill.	S	Adv I
Can describe the key monitoring parameters for corticosteroids in the critically ill.	S	Adv I
Can recognise adverse effects of corticosteroids.	G	Adv I
Can describe options to minimise the adverse effects of corticosteroids in the critically ill.	S	Adv I
Can provide details of national or international guidelines that include the use of steroids in critically ill patients.	S	Adv I

7 Obstetrics, Gynaecology and Urinary-Tract Disorders		
	Specialist or Generalist	Advanced Stage I, Advanced Stage II or Mastery
Can outline HELLP syndrome and management.	S	Adv II
Can describe the treatments for post-partum haemorrhage.	S	Adv II
Can describe the treatments for pre-eclampsia.	S	Adv II

8 Malignant Disease and Immunosuppression		
	Specialist or Generalist	Advanced Stage I, Advanced Stage II or Mastery
Can describe strategies to manage the effects of chemotherapy in the critically ill (eg bone marrow suppression, tumour lysis syndrome).	S	Adv II
Can briefly discuss the role of plasma exchange / intravenous human immunoglobulins/ immunosuppressive medications to manage inflammatory emergencies within the critically ill.	S	Adv II
Can manage a broad range of pharmacological immunosuppression agents used within the critically ill (eg for vasculitis, fibrosis, etc).	S	Adv II

9 Nutrition and Blood		
	Specialist or Generalist	Advanced Stage I, Advanced Stage II or Mastery
Can summarise the key risks and benefits of enteral and parenteral feeding options.	G	Adv I
Can describe different routes for providing enteral nutrition.	G	Adv I
Can describe the implications of different routes of enteral administration on drug absorption.	G	Adv I
Can summarise the implications of different disease states on the constitution of nutritional support.	G	Adv I
Can describe the key elements of enteral and parenteral feeding regimens.	G	Adv I
Can provide details of national or international guidelines that include nutritional recommendations.	G	Adv I
Can summarise the specialist options used for within nutritional regimens for critically ill patients.	S	Adv II
Can describe the potential complications of enteral and parenteral feeding regimens.	S	Adv II
Can outline the evidence base, current concepts and debates around enteral and parenteral feeding options.	S	Adv II
Can summarise the differences and properties of the various classes of fluids.	G	Adv I
Can describe the key monitoring parameters for the use of fluids.	G	Adv I
Can provide details of national or international guidelines that include the use of fluids.	S	Adv I
Can summarise the differences between a broad range of different fluids.	S	Adv II
Can apply monitoring variables and knowledge of different fluids to inform decisions on appropriate fluid management.	S	Adv II
Can summarise the metabolic consequences of the use of different fluid types.	S	Adv II
Can outline the evidence base around current concepts and debates in fluid management.	S	Adv II
Can outline fluid management in burns patients.	S	Adv II

10 Musculoskeletal and Joint Diseases		
	Specialist or Generalist	Advanced Stage I, Advanced Stage II or Mastery
Understands the effects of pharmacological therapies on muscle function in the critically ill.	S	Adv II

11 Eye		
	Specialist or Generalist	Advanced Stage I, Advanced Stage II or Mastery
Can give advice on basic eye care for critically patients.	G	Adv I

12 Ear, Nose and Oropharynx		
	Specialist or Generalist	Advanced Stage I, Advanced Stage II or Mastery
Can describe methods to prevent ventilator associated pneumonias.	G	Adv I

13 Skin		
	Specialist or Generalist	Advanced Stage I, Advanced Stage II or Mastery
Can summarise the drug cause for dermatological emergencies that may require critical care.	G	Adv II
Understands the processes of wound healing.	G	Adv II

14 Immunological Products and Vaccines		
	Specialist or Generalist	Advanced Stage I, Advanced Stage II or Mastery
Can provide details of national or international guidelines that include the use of immunoglobulin.	G	Adv II
Can advise on vaccination and antibiotic prophylaxis for splenectomy patients.	G	Adv I
Can advise on the use of products to prevent tetanus in trauma patients.	G	Adv I

15 Anaesthesia		
	Specialist or Generalist	Advanced Stage I, Advanced Stage II or Mastery
Knows the differences between classes of commonly used sedative agents used in the management of a level 2 (or below) patient.	G	Adv I
Knows the differences between classes of commonly used sedative agents used in the management of a level 3 patient.	S	Adv I
Knows the basic pharmacology and pharmacokinetics of sedative agents in a level 2 (or below) patient.	G	Adv I
Can describe the basic pharmacology and pharmacokinetics of sedative agents in a level 3 patient.	S	Adv I
Knows the common uses of sedative agents in critically ill patients.	S	Adv I
Can describe the key monitoring parameters for the use of sedative agents in a level 2 (or below) patient.	G	Adv I
Can describe the key monitoring parameters for the use of sedative agents in a level 3 patient.	S	Adv I
Can provide details of national or international guidelines that include the use of sedative agents in a level 3 patient.	S	Adv I
Knows the differences between a broad range of sedative agents used in critically ill patients.	S	Adv II
Knows the pharmacology and pharmacokinetics of a broad range of sedative agents used in critically ill patients.	S	Adv II
Know the different uses of a broad range of sedative agents.	S	Adv II
Can describe and critique different monitoring parameters for the use of sedative agents in critically ill patients.	S	Adv II
Can outline the evidence base around current concepts and debates in sedation.	S	Adv II
Knows the key differences between different neuromuscular blocking agents.	S	Adv I
Can describe the basic pharmacology and pharmacokinetics of neuromuscular blocking agents.	S	Adv I
Knows the different uses of neuromuscular blocking agents.	S	Adv I
Can describe the key monitoring parameters for the use of neuromuscular blocking agents.	S	Adv I
Can provide details of national or international guidelines that include the use of neuromuscular blocking agents.	S	Adv I

Knows the differences between a broad range of neuromuscular blocking agents used in critically ill patients.	S	Adv II
Knows the pharmacology and pharmacokinetics of a broad range of neuromuscular blocking agents used in critically ill patients.	S	Adv II
Know the different uses of a broad range of neuromuscular blocking agents.	S	Adv II
Can describe and critique different monitoring parameters for the use of neuromuscular blocking agents in critically ill patients.	S	Adv II
Can outline the current concepts around paralysis.	S	Adv II

16 Liver Disease		
	Specialist or Generalist	Advanced Stage I, Advanced Stage II or Mastery
Can summarise the basics of hepatic physiology.	G	Adv I
Can summarise the key methods for monitoring of hepatic function.	G	Adv I
Can interpret the results of different methods for monitoring of hepatic function.	G	Adv I
Can interpret possible underlying causes of abnormal hepatic function results.	G	Adv I
Can interpret and apply these results to inform appropriate drug dosing decisions.	G	Adv I
Can apply advanced pharmacokinetic principles in complex hepatic failure patients to inform dosage decisions.	S	Adv II
Can interpret the likely underlying causes of abnormal hepatic function results.	G	Adv II
Can summarise the key differences between acute and chronic hepatic failure.	G	Adv I
Can summarise the basic pathophysiological events leading to acute and chronic hepatic failure.	G	Adv I
Can recognise and manage drug therapy that affects hepatic function.	G	Adv I
Can describe options for the prevention of fulminant hepatic failure in high risk patients.	S	Adv I
Can describe options for the management of fulminant hepatic failure.	S	Adv I
Can summarise the implications and management of concurrent renal and hepatic failure.	S	Adv I
Can describe the key monitoring parameters for patients with fulminant hepatic failure.	S	Adv I

17 Renal impairment		
	Specialist or Generalist	Advanced Stage I, Advanced Stage II or Mastery
Can summarise the basics of renal physiology.	G	Adv I
Can summarise the key methods for monitoring of renal function.	G	Adv I
Can interpret the results of different methods for monitoring of renal function.	G	Adv I
Can apply monitoring results to inform appropriate drug dosing decisions.	G	Adv I
Can apply renal monitoring variables to ascertain degree of renal failure in complex clinical situations.	S	Adv II
Can summarise the key differences between acute and chronic renal failure.	G	Adv I
Can summarise the pathophysiological events leading to acute and chronic renal failure.	G	Adv I
Can recognise and manage drug therapy that affects renal function.	G	Adv I
Adv I Can summarise pharmacological strategies for the prevention of acute renal failure in at risk patients.	G	Adv I
Can describe options for the management of acute renal failure.	G	Adv I
Can describe the key monitoring parameters for patient with acute renal failure.	G	Adv I
Can outline current concepts and debates around the prevention of contrast induced nephropathy.	S	Adv II
Can analyse information from a range of sources (and with a paucity of data) to underpin recommendations of appropriate drug dosing in degrees of renal failure.	S	Adv II
Can summarise the indications for renal replacement therapies.	S	Adv I
Can describe the key differences between different methods of renal replacement therapy.	S	Adv I
Can describe the differences between renal replacement fluids.	S	Adv I
Can describe the objectives and monitoring parameters for anticoagulation strategies in patients on RRT.	S	Adv I
Can summarise the possible complications of RRT.	S	Adv I
Can describe the various factors that affect drug removal in different methods of RRT.	S	Adv I
Can apply an understanding of methods of RRT to inform decisions around appropriate drug doses for patients.	S	Adv I
Can demonstrate an understanding of the physiological requirements of renal replacement fluids.	S	Adv II
Can apply knowledge of renal replacement fluids to advice in complex clinical situations.	S	Adv II
Can apply knowledge to advice on anticoagulation strategies in complex patients on RRT.	S	Adv II
Can outline the evidence base around current concepts of methods for renal replacement.	S	Adv II
Can highlight the limitations of published literature on drug dosing in RRT.	S	Adv II

18 Pregnancy (No syllabus items)		
	Specialist or Generalist	Advanced Stage I, Advanced Stage II or Mastery

19 Breastfeeding (No syllabus items)		
	Specialist or Generalist	Advanced Stage I, Advanced Stage II or Mastery

20 Older People (No syllabus items)		
	Specialist or Generalist	Advanced Stage I, Advanced Stage II or Mastery

21 Toxicology		
	Specialist or Generalist	Advanced Stage I, Advanced Stage II or Mastery
Knows the basic pharmacology and pharmacokinetics of naloxone, flumazenil and N-acetylcysteine when used for the management of poisoning.	S	Adv I
Can list information resources where further detailed information can be found on the management of toxicological emergencies.	S	Adv I
Can describe the key monitoring parameters for toxicological emergencies involving paracetamol, salicylates, opioids, benzodiazepines, tricyclics (and other antidepressants), beta-blockers, calcium-channel blockers, cocaine, ecstasy.	S	Adv II
Knows how to manage poisoning by Ethylene Glycol (Antifreeze) and Methanol using agents such as Fomepizole and Ethyl Alcohol. Understands the effects of other concurrent therapy such as Renal Replacement Therapy on such management.	S	Adv II
Understands the role of lipid infusions in toxicological emergencies.	S	Adv II

22 Parenteral Therapy		
	Specialist or Generalist	Advanced Stage I, Advanced Stage II or Mastery
Can describe different options for the intravenous delivery of medicines.	G	Adv I
Can outline the pros and cons of central and peripheral venous catheters.	G	Adv I
Can describe the different factors that determine whether or not a drug may be infused peripherally, or centrally only.	G	Adv I
Can describe the basic properties of injectable medicines and their diluents that influence their compatibility when infused into the same lumen of a central venous catheter.	S	Adv I
Knows the methods for a variety of complex drug calculations.	G	Adv I
Can list information resources where further detailed information on minimum infusion volumes, standard syringe concentrations, intravenous compatibilities, and iv to other administration route dose conversions can be found.	S	Adv I
Can interpret the information found in the above reference sources to make rational decisions in practice.	S	Adv I
Can list the commonly used drugs where the stability of solutions limits the infusion volume in some way, and provide advice on appropriate usage (for example, cyclizine, co-trimoxazole, phenytoin, etc).	S	Adv I
Can outline factors that influence the relative safety of medicines administered by injectable routes.	G	Adv I
Can provide a basic outline of the anatomy of the venous system.	G	Adv II
Can outline the pros and cons of different access sites for central venous catheters.	S	Adv II
Can demonstrate awareness of national safety alerts and legislation relating to parenteral therapy.	S	Adv I

23 Palliative and End of Life Care		
	Specialist or Generalist	Advanced Stage I, Advanced Stage II or Mastery
Can describe the role of syringe drivers in palliative care including the mixing of drugs in syringe drivers.	G	Adv I
Can outline the basic principles of palliative care and management options for symptom control at end of life for morbidities.	G	Adv II
Can convert between opioids taking into account different routes and indications for therapy.	S	Adv II

24 Clinical Trials (no syllabus items)		
Can summarise the principles of consent and assent in relation to recruitment to clinical trials.	G	Adv II

25 Other issues in Surgery		
	Specialist or Generalist	Advanced Stage I, Advanced Stage II or Mastery
Can outline the concept of levels of care for critically ill patients (critical care without walls).	S	Adv I
Can describe the different roles of the multidisciplinary team members encountered in critical care (including outreach services).	S	Adv I
Can outline of the roles and responsibilities of the critical care pharmacist.	S	Adv I
Can effectively retrieve relevant clinical data in the local setting from the available information resources.	S	Adv I
Awareness of published professional standards for the provision of critical care services.	S	Adv II
Can describe the role of national registers and audit systems for critical care (eg ICNARC, SICSAG).	S	Adv II
Can provide a basic outline of how critical care is resourced.	S	Adv II
Can describe the process for the management of high cost drugs in critical care.	S	Adv II
Can describe local case mix relative to national or local network comparators.	S	Adv II
Can outline local and national performance indicators in critical care (CCMDS).	S	Adv II
Can apply knowledge to inform decisions around drug administration in complex situations (e.g NBM, ileus, enteral devices etc).	S	Adv I
Can generically outline the implications of altered drug handling on dosing decisions in the critically ill patient.	S	Adv II
Can generically describe the implications of organ failure on pharmacokinetics in the critically ill patient.	S	Adv II
Can describe the differences between 'end of life' decisions, including 'not for active resuscitation', 'not for treatment escalation' and 'withdrawal of support'.	S	Adv I
Can describe the concept of futility and its application to critical care.	S	Adv I
Can outline the principles of confidentiality and data protection.	G	Adv I
Can summarise the principals of consent and assent in relation to the incompetent (unconscious) patient.	S	Adv II
Can describe basic aspects of the Mental Capacity Act and its application to critically ill patients.	S	Adv II
Can describe the tension that may exist between the wishes of relatives with the best interests of the patient.	S	Adv II
Can list options that underpin decision-making in situation of moral conflict e.g. reconciling cost-containment with best standard of care.	G	Adv II
Can describe the concept of clinical negligence, and the tests in law that underpin	G	Adv II

them (Bolam and Bolitho).		
Can use a 'body systems approach' to present a care plan for a patient.	G	Adv I
Demonstrate an understanding of the implications of 'level of care' on likely morbidity and mortality.	S	Adv II
Can outline the key critical care scoring systems in use e.g. Glasgow Coma Score, APACHE II, SOFA, pain score, TISS.	S	Adv II
Can outline other invasive devices used locally in the management of critically ill patients, and their influence on drug therapy.	S	Adv II
Can summarise the metabolic pathways for maintenance of intracellular pH.	S	Adv I
Can describe the compensatory mechanisms for common acid-base disturbances.	S	Adv I
Can describe the key monitoring parameters for acid-base disturbances.	S	Adv I
Can summarise management options for common acid-base disturbances.	S	Adv I
Can summarise the limitations of drug management options for different acid-base disturbances.	S	Adv II
Can outline current concepts and debates around the management of acid-base disturbances.	S	Adv II
Can manage the conflicting clinical priorities seen in the critically ill.	S	Adv I

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