

# Surgical Education and Assessment Modules (SEAM) - Post-Operative Care

## Module Overview

<b>Rationale</b>	<p>This module has been designed to introduce you to the Post-Operative Care of the patient, including Rehabilitation and Palliative Care.</p> <p>As a general surgeon you will require an adequate knowledge of the various components of post-operative care, palliative care, and rehabilitation of the surgical patient.</p>	
<b>Learning Objectives</b>	<p>By the end of this module you should be able to:</p> <ol style="list-style-type: none"> <li>1. Apply principles of wound care, including the use of drains</li> <li>2. Recognise the pathogenesis and laboratory aspects of microbial infections related to the practice of surgery in general</li> <li>3. Apply the principles behind the scientific use of antimicrobial agents related to prophylaxis and treatment of surgically related microbial diseases</li> <li>4. Consider a variety of approaches to the management of post-operative pain and other common symptoms including pyrexia</li> <li>5. Evaluate the cause of a patient's fever and initiate appropriate management</li> <li>6. Evaluate the cause of a patient's post-operative confusion and initiate appropriate management</li> <li>7. Predict the likely postoperative rehabilitation outcomes as a function of type of surgery and patient status.</li> <li>8. Prescribe strategies that will optimise rehabilitation outcomes.</li> <li>9. Plan rehabilitation pathways for specific types of surgery.</li> <li>10. Recognise the importance of discharge planning.</li> <li>11. Apply principles and concepts underlying palliative care</li> <li>12. Appreciate emotional and psychological issues for patients with a terminal illness and consider relevant aspects of grief</li> <li>13. Consider your own reactions to dying patients and become more aware of healthy coping and self-care</li> </ol>	
<b>Topics and keywords</b>	<b>Topic</b>	<b>Keywords</b>
	Drains	<i>definition, placement &amp; indications, structure and function, drain choice, complications</i>
	Wound Care	<i>wound classification, healing, dressings, infection, principles of management, strategies to combat SSIs</i>
	Surgical Infections	<i>antibacterial prophylaxis, route and timing of prophylactic antibiotic administration, prophylactic antibiotic choices and regimens, antimicrobial agents and their use in therapy, resistance to antimicrobials, selective usage of antibiotics</i>
	Post-Operative Pain	<i>opioid analgesia, equianalgesic doses, dose intervals, titration of opioids, continuous IV/SC opioid infusions, respiratory depression, epidural analgesia, NSAIDs, other considerations</i>
	Post-Operative Pyrexia	<i>definition of fever, aetiology of fever, relationship of fever to time of procedure, assessment and management of patients with fever</i>

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Topics and keywords	Topic	Keywords
	Post-Operative Confusion and Other Problems	<i>aetiology of confusion, management of the confused patient, gastrointestinal ileus, vomiting, shock, jaundice, haemorrhage</i>
	Rehabilitation	<i>relevance of rehabilitation to surgery, factors influencing rehabilitation outcomes, rehabilitation pathway, discharge planning</i>
	Palliative Care	<i>defining palliative care, principles of symptom control, symptoms, the terminal phase, breaking bad news, management of depression and anxiety, grief and bereavement, cultural issues, ethics, working in an interdisciplinary team, self-care</i>
<b>Recommended Further Reading</b>	Educational material provided within this module is not intended to be complete, and is not a textbook. Trainees are expected to undertake further reading in order to complete the module successfully.	
	<b>Recommended Reading</b>	<b>Learning Objective</b>
	Australian and New Zealand College of Anaesthetists and Faculty of Pain Medicine (2015). <i>Acute Pain Management: Scientific Evidence, 4<sup>th</sup> edition</i> . Melbourne; ANZCA & FPM. <a href="http://fpm.anzca.edu.au/resources/publications">http://fpm.anzca.edu.au/resources/publications</a>	4
	Australian Commission on Safety and Quality in Health Care (2011). <i>Antimicrobial Stewardship in Australian Hospitals</i> . Duguid, M. & Cruickshank M. (Eds). Sydney: Australia <a href="https://www.safetyandquality.gov.au/wp-content/uploads/2011/01/Antimicrobial-stewardship-in-Australian-Hospitals-2011.pdf">https://www.safetyandquality.gov.au/wp-content/uploads/2011/01/Antimicrobial-stewardship-in-Australian-Hospitals-2011.pdf</a>	2, 3
	Baines, M. J. (1997). ABC of palliative care: Nausea, vomiting, and intestinal obstruction. <i>BMJ</i> , 315(7116), 1148-1150. doi:10.1136/bmj.315.7116.1148	11, 12, 13
	Benzon, H. T., Avram, M. J., Green, D. , & Bonow, R. O. (2013). New oral anticoagulants and regional anaesthesia, <i>BJA: British Journal of Anaesthesia</i> , 111(Suppl_1), i96-i113. <a href="https://doi.org/10.1093/bja/aet401">https://doi.org/10.1093/bja/aet401</a>	4
	Bruera E. (1997). ABC of Palliative Care: Anorexia, Cachexia, and Nutrition. <i>BMJ</i> , 315(7117), 1219-1222. doi:10.1136/bmj.315.7117.1219	11, 12, 13
	Clayton, J. M., Hancock, K. M., Butow, P. N., et al. (2007). Clinical practice guidelines for communicating prognosis and end-of-life issues with adults in the advanced stages of a life-limiting illness, and their caregivers. <i>Med J Aust</i> , 186(12 Suppl), S77-108. <a href="https://www.mja.com.au/journal/2007/186/12/clinical-practice-guidelines-communicating-prognosis-and-end-life-issues-adults">https://www.mja.com.au/journal/2007/186/12/clinical-practice-guidelines-communicating-prognosis-and-end-life-issues-adults</a>	11, 12, 13
	Groudine, S. B., et al. (1998). Intravenous lidocaine speeds the return of bowel function, decreases postoperative pain, and shortens hospital stay in patients undergoing radical retropubic prostatectomy. <i>Anesthesia &amp; Analgesia</i> , 86(2), 235-239. <a href="https://journals.lww.com/anesthesia-analgesia/fulltext/1998/02000/Intravenous_Lidocaine_Speeds_the_Return_of_Bowel.3.aspx">https://journals.lww.com/anesthesia-analgesia/fulltext/1998/02000/Intravenous_Lidocaine_Speeds_the_Return_of_Bowel.3.aspx</a>	4

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Recommended Further Reading	Recommended Reading	Learning Objective
	Hall, D. E., et al. (2017). Association of a frailty screening initiative with postoperative survival at 30, 180, and 365 days. <i>JAMA Surgery</i> , 152(3), 233-240. doi:10.1001/jamasurg.2016.4219	7, 8, 9
	Horlocker, T. T. (2011). Regional anaesthesia in the patient receiving antithrombotic and antiplatelet therapy, <i>BJA: British Journal of Anaesthesia</i> , 107(Suppl_1), i96-i106. <a href="https://doi.org/10.1093/bja/aer381">https://doi.org/10.1093/bja/aer381</a>	4
	Huxtable, C. A., Roberts, L. J., Somogyi, A. A., & MacIntyre, P. E. (2011). Acute pain management in opioid-tolerant patients: A growing challenge. <i>Anaesthesia and Intensive Care</i> , 39(5), 804. <a href="https://search-proquest-com.ezproxy.surgeons.org/docview/893425432/fulltext/4FD3D3AD693942B0PQ/1?accountid=44016">https://search-proquest-com.ezproxy.surgeons.org/docview/893425432/fulltext/4FD3D3AD693942B0PQ/1?accountid=44016</a>	4
	Jain, S. K., Stoker, D. L., & Tanwar, R. (2018). <i>Basic Surgical Skills and Techniques, 3<sup>rd</sup> edition</i> . JP Medical Ltd. Chapter 9. ISBN 9789386322814.	1
	Jones, J. G., Sapsford, D. J., & Wheatley, R. G. (1990). Postoperative hypoxaemia: mechanisms and time course. <i>Anaesthesia</i> , 45, 566-573. <a href="https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1365-2044.1990.tb14833.x">https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1365-2044.1990.tb14833.x</a>	4
	Kumar, V., Abbas, A. K., & Aster, J. C. (2017). <i>Robbins basic pathology</i> , [Chapter 3: Inflammation and Repair]. Elsevier.	1
	Liang, M. K., et al. (2018). Modifying risks in ventral hernia patients with prehabilitation: A randomized controlled trial. <i>Annals of Surgery</i> , 268(4), 674-680. doi:10.1097/SLA.0000000000002961	7, 8, 9
	Liu, S. S., Richman, J. M., Thirlby, R. C., & Wu, C. L. (2006). Efficacy of continuous wound catheters delivering local anesthetic for postoperative analgesia: A quantitative and qualitative systematic review of randomized controlled trials. <i>Journal of the American College of Surgeons</i> , 203(6), 914-932. doi:10.1016/j.jamcollsurg.2006.08.007	4
	Marret, E., Rolin, M., Beaussier, M., & Bonnet, F. (2008). Meta-analysis of intravenous lidocaine and postoperative recovery after abdominal surgery. <i>British Journal of Surgery</i> , 95(11), 1331-1338. doi:10.1002/bjs.6375	4
	McCarthy, G. C., Megalla, S. A., & Habib, A. S. (2010). Impact of intravenous lidocaine infusion on postoperative analgesia and recovery from surgery: A systematic review of randomized controlled trials. <i>Drugs</i> , 70(9), 1149-1163. doi:10.2165/10898560-000000000-00000	4
	Moran, J., et al. (2016). The ability of prehabilitation to influence postoperative outcome after intra-abdominal operation: A systematic review and meta-analysis. <i>Surgery: Official Journal of the Society of University Surgeons, Central Surgical Association, and the American Association of Endocrine Surgeons</i> , 160(5), 1189-1201. doi:10.1016/j.surg.2016.05.014	7, 8, 9
	Moskowitz, E. E., Overbey, D. M., Jones, T. S., Jones, E. L., Arcomano, T. R., Moore, J. T., & Robinson, T. N. (2017). Post-operative delirium is associated with increased 5-year mortality. <i>The American Journal of Surgery</i> , 214(6), 1036-1038. doi:10.1016/j.amjsurg.2017.08.034	6

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	National Health and Medical Research Council (NHMRC) (2001). <i>Clinical Practice Guidelines: Management of Early Breast Cancer, 2<sup>nd</sup> edition</i> . Commonwealth of Australia. <a href="https://canceraustralia.gov.au/publications-and-resources/cancer-australia-publications/clinical-practice-guidelines-management-early-breast-cancer-2nd-ed">https://canceraustralia.gov.au/publications-and-resources/cancer-australia-publications/clinical-practice-guidelines-management-early-breast-cancer-2nd-ed</a>	11, 12
	National Health and Medical Research Council (NHMRC) (2004). <i>General Guidelines for Medical Practitioners on Providing Information to Patients</i> . Commonwealth of Australia. <a href="http://apps.who.int/medicinedocs/en/m/abstract/Js21297en/">http://apps.who.int/medicinedocs/en/m/abstract/Js21297en/</a>	11, 12
	National Health and Medical Research Council (NHMRC) (2009). <i>Clinical Practice Guideline: For the Prevention of Venous Thromboembolism in Patients Admitted to Australian Hospitals</i> . Commonwealth of Australia. <a href="https://www.ranzcog.edu.au/RANZCOG_SITE/media/RANZCOG-MEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical-Obstetrics/NHMRC-Prevention-of-Venous-Thromboembolism-in-Patients-admitted-to-Australian-Hospitals.pdf?ext=.pdf">https://www.ranzcog.edu.au/RANZCOG_SITE/media/RANZCOG-MEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical-Obstetrics/NHMRC-Prevention-of-Venous-Thromboembolism-in-Patients-admitted-to-Australian-Hospitals.pdf?ext=.pdf</a>	4, 5, 6
	National Health and Medical Research Council (NHMRC) (2010). <i>Australian Guidelines for the Prevention and Control of Infection in Healthcare</i> . Commonwealth of Australia. <a href="https://nhmrc.gov.au/sites/default/files/documents/attachments/publications/infection-control-guidelines.pdf">https://nhmrc.gov.au/sites/default/files/documents/attachments/publications/infection-control-guidelines.pdf</a>	2, 3
	Parliament of South Australia (1995). <i>Consent to Medical Treatment and Palliative Care Act</i> . <a href="https://www.legislation.sa.gov.au/LZ/C/A/Consent%20to%20Medical%20Treatment%20and%20Palliative%20Care%20Act%201995.aspx">https://www.legislation.sa.gov.au/LZ/C/A/Consent%20to%20Medical%20Treatment%20and%20Palliative%20Care%20Act%201995.aspx</a>	11
	Rigg, J. R., et al. (2002;2008). Epidural anaesthesia and analgesia and outcome of major surgery: A randomised trial. <i>The Lancet</i> , 359(9314), 1276-1282. doi:10.1016/S0140-6736(02)08266-1	4
	Rimbäck, G., Cassuto, J., & Tollesson, P. O. (1990). Treatment of postoperative paralytic ileus by intravenous lidocaine infusion. <i>Anesthesia &amp; Analgesia</i> , 70(4), 414-419. <a href="https://journals.lww.com/anesthesia-analgesia/Abstract/1990/04000/Treatment_of_Postoperative_Paralytic_Ileus_by.12.aspx">https://journals.lww.com/anesthesia-analgesia/Abstract/1990/04000/Treatment_of_Postoperative_Paralytic_Ileus_by.12.aspx</a>	4
	Royal Australasian College of Surgeons, Robert Davies (2013). <i>Fundamental Skills for Surgery, 3rd edition</i> . McGraw-Hill Medical: Melbourne.	1
	Royal College of Surgeons of England (2017). <i>Care of the Critically Ill Surgical Patient (Student Course Manual), 4th edition</i> . ISBN-10: 1904096328. Managing the sick patient (eLearning module).	4, 5
	Schmidt, P. C., Ruchelli, G., Mackey, S. C., & Carroll, I. R. (2013). Perioperative Gabapentinoids: Choice of Agent, Dose, Timing, and Effects on Chronic Postsurgical Pain. <i>Anesthesiology</i> . 119(5), 1215-1221. doi: 10.1097/ALN.0b013e3182a9a896. <a href="http://anesthesiology.pubs.asahq.org/article.aspx?articleid=1918108">http://anesthesiology.pubs.asahq.org/article.aspx?articleid=1918108</a>	4
	South Australian Expert Advisory Group on Antibiotic Resistance (SAAGAR) (2017). <i>Surgical Antimicrobial Prophylaxis Clinical Guideline</i> . Department for Health and Ageing, Government of South Australia. <a href="https://www.sahealth.sa.gov.au">https://www.sahealth.sa.gov.au</a>	2, 3
	Sturm, L. & Cameron, A. L. (2009). Fast-track surgery and enhanced recovery after surgery (ERAS) programs. <i>ASERNIP-S Report No. 74</i> . <a href="https://www.surgeons.org/media/299206/RPT_2009-12-09_Enhanced_Patient_Recovery_Programs.pdf">https://www.surgeons.org/media/299206/RPT_2009-12-09_Enhanced_Patient_Recovery_Programs.pdf</a>	7, 8, 9, 10

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	Sun, Y., Li, T., Wang, N., Yun, Y., & Gan, T. J. (2012). Perioperative systemic lidocaine for postoperative analgesia and recovery after abdominal surgery: A meta-analysis of randomized controlled trials. <i>Diseases of the Colon &amp; Rectum</i> , 55(11), 1183-1194. doi:10.1097/DCR.0b013e318259bcd8	4
	Taylor, A. & Box, M (1999). <i>Multicultural Palliative Care Guidelines</i> . Palliative Care Australia. <a href="https://palliativecare.org.au/understanding-palliative-care-parent-menu/what-is-palliative-care/multicultural-palliative-care-guidelines">https://palliativecare.org.au/understanding-palliative-care-parent-menu/what-is-palliative-care/multicultural-palliative-care-guidelines</a>	11, 12, 13
	Therapeutic Guidelines Limited (TGL) (2014). <i>Antibiotic version 15</i> . <a href="http://www.tg.org.au/index.php?sectionid=41">http://www.tg.org.au/index.php?sectionid=41</a>	2, 3
	Tiippana, E. M., Hamunen, K., Kontinen, V. K., & Kalso, E. (2007). Do surgical patients benefit from perioperative gabapentin/pregabalin? A systematic review of efficacy and safety. <i>Anesth Analg</i> . 104(6), 1545-56	4
	Townsend, C. M., Beauchamp, R. D., Evers, B. M., & Mattox, K. L. (2016). <i>Sabiston textbook of surgery: The biological basis of modern surgical practice, 20<sup>th</sup> edition</i> , [Chapter 6: Wound Healing]. US: Elsevier.	1
	Zeppetella, G. (2012). <i>Palliative care in clinical practice</i> . London: Springer Verlag London Limited. doi:10.1007/978-1-4471-2843-4	11, 12, 13
<b>Prerequisites</b>	N/A	
<b>How this module will be assessed</b>	The e-learning module comprises learning activities and opportunities for Formative Assessment, with feedback. The Summative Assessment comprises twenty (20) Type A, Type X, and Type R multiple choice questions.	

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## Learning Activities & Formative Assessment

Cognitive level	Learning Objective	Module Topic	Learning Activity	Formative Assessment
<b>Apply</b>	Apply principles of wound care, including the use of drains	Drains	After reading about drains, placement, indications, structure, functions, drain choice, and complications, the learner will select the most appropriate drain system in a patient case scenario.	Learners will be able to identify desirable specifications of the drainage systems, based on indicators learnt in the module.
		Wound Care	After reading about wound classification, wound healing, wound dressings, wound infection, and principles of management, the learner will classify intrinsic and extrinsic factors affecting wound healing, to demonstrate knowledge of principles of wound care.  Learners will be able to identify appropriate dressing types for ongoing wound care, based on indicators learnt in the module.	Learners will be able to identify vitamins and trace elements required for wound healing, based on indicators learnt in the module.
<b>Evaluate</b>	Recognise the pathogenesis and laboratory aspects of microbial infections related to the practice of surgery in general	Surgical Infections	After reading about antibacterial prophylaxis, route and timing of prophylactic antibiotic administration, and antimicrobial agents, the learner will identify indicators for antibiotic use in abdominal surgery, to demonstrate knowledge of the principles behind the scientific use of antimicrobial agents.	Learners will be able to identify factors related to organ/space surgical site infections, based on indicators learnt in the module.
<b>Apply</b>	Apply the principles behind the scientific use of antimicrobial agents related to prophylaxis and treatment of surgically related microbial diseases			
<b>Evaluate</b>	Consider a variety of approaches to the management of post-operative pain and other common symptoms including pyrexia	Post-Operative Pain	After reading about opioid analgesia, side effects, pain scores, epidural analgesia, NSAIDS, neuropathic pain, and other considerations, the learner will identify appropriate use of intravenous Lignocaine, to demonstrate knowledge of the management of post-operative pain.	Learners will be able to assess elements comprising appropriate management of acute post-operative pain, based on indicators learnt in the module.

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## Learning Activities & Formative Assessment

Cognitive level	Learning Objective	Module Topic	Learning Activity	Formative Assessment
<b>Evaluate</b>	Evaluate the cause of a patient's fever and initiate appropriate management	Post-Operative Pyrexia	<p>After reading about assessment, and management of patients with a post-operative fever, the learner will identify timelines for causes of fever, to demonstrate knowledge of when fever is most likely.</p> <p>Learners will be able to assess elements of post-operative pyrexia, based on indicators learnt in the module.</p>	Learners will identify appropriate antibiotics for use in empiric therapy of intra-abdominal sepsis, based on indicators learnt in the module.
<b>Evaluate</b>	Evaluate the cause of a patient's post-operative confusion and initiate appropriate management	Post-Operative Confusion and Other Problems	After reading about aetiology of confusion, management of the confused patient, gastrointestinal ileus, vomiting, shock, jaundice, and haemorrhage, the learner will identify elements and causes to demonstrate knowledge of post-operative confusion.	Learners will identify appropriate investigations for post-operative confusion, based on indicators learnt in the module.
<b>Analyse</b>	Predict the likely postoperative rehabilitation outcomes as a function of type of surgery and patient status.	Rehabilitation	After reading about the relevance of rehabilitation to surgery, rehabilitation pathways, and discharge planning, the learner will identify patients that would benefit from referral to a dedicated rehabilitation centre, to demonstrate knowledge of likely postoperative rehabilitation outcomes.	Learners will assess time to return to normal functioning for a patient case scenario, based on indicators learnt in the module.
<b>Apply</b>	Prescribe strategies that will optimise rehabilitation outcomes.			
<b>Apply</b>	Plan rehabilitation pathways for specific types of surgery.			
<b>Evaluate</b>	Recognise the importance of discharge planning.			

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## Learning Activities & Formative Assessment

Cognitive level	Learning Objective	Module Topic	Learning Activity	Formative Assessment
<b>Apply</b>	Apply principles and concepts underlying palliative care	Palliative Care	<p>After reading about palliative care services, symptom management, psycho-social, spiritual issues, and professional issues, the learner will match symptoms to likely causes of delirium, to demonstrate knowledge of concepts underlying palliative care.</p> <p>Learners will assess the prognosis of a patient with advanced malignancy, based on indicators learnt in the module.</p>	Learners will identify principal mechanisms of action for anti-emetics, based on indicators learnt in the module.
<b>Evaluate</b>	Appreciate emotional and psychological issues for patients with a terminal illness and consider relevant aspects of grief			
<b>Evaluate</b>	Consider your own reactions to dying patients and become more aware of healthy coping and self-care			