



EWMA Education Committee

Module descriptor:
Wound Infection



Latest revision: March 2017



ABOUT THE EWMA EDUCATIONAL DEVELOPMENT PROGRAMME

The Programme is designed to assist students and healthcare professionals who work with patients with wounds and related skin conditions and wish to develop and/or increase their knowledge and skills in order to meet patient needs.

Overall, the Programme aims to:

- Provide students and healthcare professionals with the knowledge and skills to equip them to perform their role in the delivery of optimal wound care.
- Provide contemporary, interdisciplinary, product/brand neutral wound management education that is endorsed by EWMA.
- Provide quality standards against which other organisations can evaluate existing wound management programmes.
- Achieve European acceptance by developing an educational framework that is in line with European Commission educational initiatives in order to disseminate best practice in wound care.

ABOUT THE CURRICULUM DEVELOPMENT PROJECT

The Curriculum Development Project is at the heart of the Educational Development Programme. The aim of the Project is to develop a flexible curriculum, consisting of a number of modules.

All modules are based on a standard template but individually focused on a specific aspect of wound management. Each module is developed by a small group consisting of members of the EWMA Education Committee and/or affiliated wound care key specialists. For an updated list of the currently available modules please visit the education sub page at www.ewma.org.

ABOUT THIS MODULE

The Wound Infection module aims to:

- Broaden participant's knowledge and understanding of the prevention and management of infected wounds.
- Broaden participant's knowledge and understanding of contaminated wounds, colonised wounds, critical colonised wounds and infected wounds.
- Evaluate strategies to promote effective inter-professional collaboration for patients at risk of developing wound infection.
- Enable the learner to identify and practice strategies for the identification and management of wound infections.



MODULE CONTENT

1. Elaborating Body

European Wound Management Association (EWMA)

2. Date of production of module

February 2007

3. Latest review date

March 2017

4. Module intended learning outcomes

This module provides opportunities for health professionals to develop and demonstrate knowledge and understanding, skills and other attributes in the following areas:

A. Intellectual Skills – Knowledge and Understanding

Participants will have knowledge of the:

1. Wound microbiology.
2. Preventing wound infection
3. The dynamic interactions that take place between a host, a potential pathogen and the environment.
4. Well-established clinical signs and symptoms for development of skin and soft tissue infections (SSTI), including silent infection.
5. Different methods of assessment of patients 'at risk' of infection , for example standardised bacterium sampling and wound skin and pain assessment.
6. Microbiological analysis of wounds (e.g. Gram stain, type of bacteria)
7. Treatment of wound infection including wound/skin management, wound cleansing, debridement, use of antimicrobials, systemic antibiotics, dressings selection, nutrition, evaluation and documentation of care, etc.
8. Systemic antibiotic treatment (Indication, route, length of treatment and inappropriate use, resistance or other adverse effects).
9. Antimicrobial treatment (indication, length of treatment and inappropriate use or side effects).
10. Wound biochemical environment and enzymes, e.g. effects of biofilm, , elastases, proteases (e.g. matrix metalloproteases, MMPs) and pH, etc. as a consequence of wound infection
11. Infection control protocols/ principles.
12. Psychosocial impact of wound infection on the individual (Quality of Life), their carers and society.
13. The organisation of interdisciplinary services available for the assessment and management of hospital / community hygiene and wound infections, including adverse events.



14. Health economics in relation to diagnosing and management of wound infection.

B. Practical Skills – Skills and Attributes:

Participants will be able to:

1. Understand the difference between the terms contamination, colonization and infection.
2. Practice aseptic and antiseptic techniques for wound cleansing and management.
3. Identify different methods of microbiological sampling in wounds.
4. Interpret microbiology results in association with clinical information.
5. Understand new technologies for laboratory investigations
6. Understand signalling mechanisms and bacterial synergies and formation of Biofilm
7. Appropriately assess, manage and document severity of the wound infection and sepsis.
8. Assess exudate including volume, discolouration and odour.
9. Appropriately deal with wound fluid delivered by non-healing or infected wounds.
10. Understand the clinical significance of silent infections and osteitis/osteomyelitis e.g. in the diabetic foot.
11. Assess wound pain as an important sign of clinical infection.
12. Understand the principles for systemic and/or topical treatment of infection.
13. Understand the principles of debridement in relation to infection.
14. Monitor and evaluate treatment outcomes.
15. Practice principles for infection control.
16. Evaluate the provision of multidisciplinary services for the assessment and management of patients with infected wounds.
17. Recognise when referral should be made to other members of the team e.g. microbiologist, surgeon.
18. Understand global and individual consequences of resistant bacteria and antibiotic restrictions
19. Demonstrate appropriate documentation skills detailing assessment, prevention and management of wound infection.
20. Demonstrate an ability to communicate with and educate patients and carers pertaining to wound infection prevention and management.

5. Teaching/learning methods & strategies

Acquisition of 4.A & 4.B (see above) is through a combination of lectures, small group workshops and learning in practice throughout the module. There is also the possibility of using e-learning in combination with traditional learning methods. Throughout, the learner is encouraged to undertake independent study both to supplement and consolidate what is being taught and to broaden individual knowledge and understanding of the subject.



6. Assessment methods

Assessment methods will need to vary for each professional group. Understanding will be assessed in a variety of ways i.e. open discussion, formal written exercises, case studies, practice work-books.

Throughout, the learner is expected to consolidate the development of practical skills / management skills in the clinical setting.

7. Unit content

INTELLECTUAL SKILLS

A. Overview / epidemiology

The prevalence and incidence of wound infections, e.g. surgical site infections

The economic costs associated with wound infections

Definitions of infection in acute and chronic wounds

B. Wound microbiology

Factors predisposing to microbial proliferation

Wound infection

Significance of micro-organisms in wounds

C. Microbiological analysis of the wound

Wound-sampling methods (e.g. tissue, fluids), and transport and analysis of wound specimen

Culture of wound specimen

Referral documents to laboratory

Reporting/interpretation of microbiological results

D. Control of microbial populations in wounds

Antimicrobial methods of treatment:

Systemic antibiotics

Acute wounds

Chronic wounds

Complementary therapy

- Role of microbiology laboratory in guiding systemic antibiotic treatment in wound management

Antiseptics, antimicrobial dressings, alternative antimicrobial therapies

Hyperbaric oxygen therapy

Non-antimicrobial methods of treatment:

Debridement (e.g. Mechanical, Surgical, Autolytic, Larval)

Pressure reduction/treatment of oedema in infected wounds

Off-loading



Topical negative therapy pressure (TNP) wound closure

Role of immuno-suppressants

Wound fluid control

- diminish the negative effects of proteases in the wound/

E. Anatomy

Skin and associated structures

Structure of dermal vascular system blood supply

Function of immune defence mechanisms in preventing infection

F. Assessment

Assessment of clinical signs of wound infection or bacterial overload with wounds as a consequence

Defining increased exudate volume, erythema, skin temperature, pain, haematology, biochemistry and other local and systemic symptoms

Documentation of patient- and wound status

G. Pain

The role of pain as an indicator of infection

H. Prevention

Identification of risk factors; general, patient-related and local tissue- and wound related

Infection control: Principles for hand hygiene/barrier care and general principles for personal hygiene and wound dressing- related aseptic or clean techniques.

Promotion of rigorous infection control practices

Optimal wound cleansing agents and debridement methods

Remove foreign bodies from the wound

Strengthen the immune-defense system of the patient

Optimize the blood supply to the wounded area

Optimize the oedema management of the wound area

The potential role of topical antiseptics

The potential role of antiseptic sutures

PRACTICAL SKILLS

A. Assessment

General assessment process e.g. definition of early clinical signs and severity of infection



Understanding of the importance of early detection of infection , for example recognising danger signals e.g. necrotising fasciitis, when infection can be life threatening

B. Local wound assessment

The use of guidelines and evidence-based practice to treat wound infection

Assessment of wound bed, surrounding skin including the problems of undermining and sinus formation, Surrounding skin, pain, erythema, swelling, oedema, blistering, changes in exudate volume, density, lymphorrhoea, colour and odour, erythema, oedema, pain and temperature, presence of foreign bodies such as sutures, necrosis and fibrin in the wound, presence of sinuses and fistulae in the wound and presence of tendon and bone at the wound base

Assessments and treatments of infection and biofilm

Principles of cleansing

Selection of cleansing agents

Debridement and wound bed preparation including surgical debridement, dressings promoting autolytic debridement, use of larvae and topical negative pressure therapy

Dressing selection including product availability relative to local circumstances and different healthcare settings

Advanced wound care products/techniques

Pain management to ensure effective assessment and evaluation of outcomes including the use of analgesia

Evidence base to support complementary wound therapies e.g. aromatherapy

Differential diagnosis of wound infection, for example distinguishing cellulitis from eczema

C. Blood supply

Assessment of the local blood supply to the wounded area

Vital signs

Assessment of the venous and lymphatic resorbtion from the wounded area

D. Nutritional assessment

Nutritional assessment, use of nutritional screening tools, referral to dietician if appropriate

E. Pain assessment

Assessment of pain, use of pain assessment tools, identification of infection-related, procedural, nociceptive, neuropathic or ischemic pain, pain of oedematous compartment syndrome and evaluating outcomes in pain management

F. Investigations

Wound (exudate) sampling (biopsy if applicable)

Blood tests; SR, C-reactive protein (CRP), glucose, etc.

Local wound oedema



Oxygen supply to tissues

X-ray if osteomyelitis is suspected

MRI if necrotising fasciitis is suspected

G. Psychosocial aspects of care

Impact of infected wounds on the individual, their carers & society including quality of life issues

Control of odour, exudation and pain

Factors affecting compliance with treatment

Patient-centred management of wound infection

H. Management of wound infection

Assessment /presentation - clinical signs/symptoms, silent infection

Superficial infections and cellulitis

Deep infections - surgical drainage

Methods to identify infecting agents - culture and swab techniques, biopsy

Radiological and other investigations – Isotope scans, Magnetic Resonance Scans

Use of topical antiseptics - indications, type and duration of treatment, interaction of agents and observation of side effects

Adjunct therapies and their relevance and practical application

Criteria for use of systemic antibiotics

Other clinical indicators for use of systemic antibiotics, e.g. diabetes

Use of systemic antibiotics if sepsis or osteomyelitis is present

Topical wound management: debridement, removal of biofilm and use of antiseptics

Role of resistant bacteria (e.g. MRSA, VRE) and its relevance in wound healing

Implementation barrier systems of care

Criteria for choosing the right dressing and right products for local treatment

I. Education

Education of patient and family, carers interdisciplinary approach

J. Documentation

Methods of documentation, wound databases, wound/patient assessment tools, care planning



8. Unit specific learning resources

Books

Gottrup F., Apelqvist J., Bjarnsholt T. et al.: EWMA Document: Antimicrobials and Non-healing Wounds – Evidence, Controversies and Suggestions

Carville, K, Cuddingam J, Fletcher J, Fuchs P, Harding K, Ishikawa O, Keast D, Leaper D, Lindholm C, Moodley P, Ricci E, Schultz G, Vasquez J. Wound infection in clinical practice. An international consensus. *Int Wound J.* 2008;5 (suppl3);1-11

EWMA Documents

Apelqvist, J., Willy, C., Fagerdah, A.M. et al. Negative Pressure Wound Therapy – overview, challenges and perspectives. *J Wound Care* 2017; 26: 3, Suppl 3, S1–S113

Franks, P., Barker, J., Collier, M. et al. Management of patients with venous leg ulcer: challenges and current best practice, *J Wound Care*, 25; 6, Suppl, 1–67

Moore, Z., Butcher, G., Corbett, L. Q., et al. AAWC, AWMA, EWMA Position Paper: Managing Wounds as a Team. *J Wound Care* 2014; 23 (5 Suppl.): S1–S38

Strohal, R., Apelqvist, J., Dissemond, J. et al. EWMA Document: Debridement., *J Wound Care.* 2013; 22 (Suppl. 1): S1–S52.

EWMA Position document *Identifying criteria for wound infection*, London MEP Ltd 2005

EWMA Position paper *Management of Wound Infection* London MEP Ltd 2006

Papers

Recommendations for the Management of Biofilm: A Consensus Document T Bianchi et al. *J Wound Care* 25 (6), 305-317. 6 2016.

The Non-Healing Wound

F Pfeffer et al. *MMW Fortschr Med* 146 (44), 45-48. 2004 Oct 28.

A Next-Generation Antimicrobial Wound Dressing: A Real-Life Clinical Evaluation in the UK and Ireland

D Metcalf et al. *J Wound Care* 25 (3), 132-138. 3 2016.

Systematic Reviews of Wound Care Management: (3) Antimicrobial Agents for Chronic Wounds; (4) Diabetic Foot Ulceration

S O'Meara et al. *Health Technol Assess* 4 (21), 1-237.

Current Management of Wound Healing

F Gottrup et al. *G Ital Dermatol Venereol* 144 (3), 217-228. 6 2009.

Methodological Recommendations for Comparative Research on the Treatment of Chronic Wounds

SS Sonnad et al. *J Wound Care* 22 (9), 470-480. 9 2013.



Bowler P. G. Duerden BI, Armstrong DG. *Wound Microbiology and Associated Approaches to Wound Management*. Clinical Microbiology Reviews Apr.2001:244-69

Bacterial impact on wound healing: From contamination to infection, AWMA position document, October 2011

Web links

<http://www.woundinfection-institute.com/>