



EWMA Educational Development Programme

Curriculum Development Project

Education Module

Wound Infection

Latest revision: February 2014



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 contaminated wounds, colonised wounds, critical colonised wounds and infected wounds.
- 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

February 2014

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. The dynamic interactions that take place between a host, a potential pathogen and the environment.
2. Wound microbiology.
3. Standardised bacterium sampling
4. Microbial analysis of wounds.
5. Antibiotic resistance
6. Control of microbiological populations in wounds.
7. Infection control.
8. Psychosocial impact of wound infection on the individual, their carers and society
9. Well-established clinical signs for development of skin and soft tissue infections (SSTI)
10. The organisation of interdisciplinary services available for the assessment and management of hospital hygiene and wound infections.
11. Effects of MMP's, elastases and proteases as a consequence 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 and document clinical signs of wound infection and sepsis.
8. Assess exudate including volume, discolouration and odour.
9. Understand the clinical significance of silent infections and osteitis/osteomyelitis e.g. in the diabetic foot.
10. Assess wound pain as an important sign of clinical infection.
11. Understand the principles for systemic and/or topical treatment of infection.
12. Understand the principles of superficial necrectomy
13. Monitor and evaluate treatment outcomes.
14. Practice principles for infection control.
15. Evaluate the provision of multidisciplinary services for the assessment and management of patients with infected wounds.
16. Recognise when referral should be made to other members of the team e.g. a microbiologist, surgeon.
17. Understand global and individual consequences of resistant bacteria and antibiotic restrictions
18. Appropriately deal with wound fluid delivered by non healing or infected wounds.

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



The economic costs associated with wound infections

Definitions of infection in acute and chronic wounds

B. Wound microbiology

Microbial colonization

Factors predisposing to microbial proliferation

Wound infection

Surgical wound infections

Acute soft tissue infections

Bite wound infections

Burn wound infections

Diabetic foot ulcer infections

Lymphoedema ulcer infections

Leg and pressure ulcer infections

Significance of micro-organisms in wounds

Quantitative microbiology: Significance of microbial numbers

Qualitative microbiology: Significance of specific micro-organisms

C. Microbiological analysis of the wound

Wound-sampling Methods

Wound tissue sampling

Wound fluid sampling

Special sampling methods of biofilm

Specimen transport

Analysis of wound specimens

Gram stain

Culture of wound specimens

Referral documents to laboratory

Reporting/interpretation of microbiological results

D. Control of microbial populations in wounds

Antimicrobial methods of treatment:

Antibiotics

-Acute wounds

-Chronic wounds

-Complementary therapy



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

Antiseptics, antimicrobial dressings, alternative antimicrobial therapies

Hyperbaric oxygen therapy

Non-antimicrobial methods of treatment:

Debridement

- Mechanical

- Surgical

- Autolytic

- Bio-surgical

Pressure reduction/treatment of oedema in infected wounds

- Off-loading

- 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 non healing wounds as a consequence

Defining increased exudate volume, erythema, skin temperature and pain

Documentation of patient- and wound status

G. Pain

The role of onset 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 and general principles for personal hygiene and wound dressing- related aseptic or clean techniques.

Promotion of rigorous infection control practices

Optimal debridement and wound cleansing agents and 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 of infection
Knowledge of well established definitions and scoring systems for classification and grading of wound infection
Understanding of the importance of early detection of SSI by identifying a number of criteria used in combination
Understanding that microbiological assessment alone is not a reliable method for diagnosing wound infection, but that a full holistic assessment of the patient is required
Recognising danger signals e.g. necrotising fasciitis, when infection can be life threatening

B. Local wound assessment

Surrounding skin, pain, erythema, swelling, oedema, blistering
Distinguishing cellulitis from eczema
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
Presence of osseous structures at the wound base

C. Blood supply

Assessment of the local blood supply to the wounded area
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)

Blood pressure, vital signs

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, heavy exudation and pain

Factors affecting compliance with treatment

Effective patient education strategies

Information for family and care teams

Patient-centred management of wound infection

H. Management of wound infection

Criteria for use of systemic antibiotics

Other clinical indicators for use of systemic AIBS e.g. diabetes

Use of systemic antibiotics if sepsis or osteomyelitis cannot be excluded

Topical wound management: Local debridement, local antiseptics

Role of MRSA and its relevance in wound healing

Implementation of strict infection control procedures

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

I. Education

Education of patient and family

Education of primary/secondary care teams

Education of paramedics

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, Cuddigan 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

Journals

Web links

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

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

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