RCSI Leading the world to better health

Wound Care– Complex Surgical Wounds– Prevention and Management

Professor Zena Moore

PhD, MSc (Leadership in Health Professionals Education), MSc (Wound Healing & Tissue Repair), FFNMRCSI, PG Dip, Dip First Line Management, RGN

Professor of Nursing, Head of the School of Nursing & Midwifery , RCSI.
Director of the SWaT Research Centre, RCSI.

Adjunct Professor, Faculty of Medicine, Nursing and Health Sciences, Monash University, Melbourne, Australia,
Professor Department of Public Health, Faculty of Medicine and Health Sciences, Ghent University,
Honorary Professor, Lida Institute, Shanghai, China,
Senior Tutor, University of Wales.

Surgical Wounds

- **The incidence density of in-hospital SSIs per 1000 post-operative patient-days varied from 0.2 to 5.7 depending on the type of surgical procedure[1]**
- **SSI following CS is a common cause of morbidity with reported rates of 3–15%[2]**
- **Mean length of extended hospital stay attributable to SSIs is 9.8 days, at an average cost per day of €325[3]**
- **Healthcare costs for those with SSI are almost twice than for those without an SSI[3]**
- **Within the EU an estimated €5.5 billion is being spent annually on the management SSIs[3]**

1. European Centre for Disease Prevention and Control. Annual Epidemiological Report 2016 – Surgical site infections. [Internet]. Stockholm: ECDC; 2016 [cited 28th May 2019).
2. Saeed, Khalid B M et al. "Incidence of surgical site infection following caesarean section: a systematic review and meta-analysis protocol." BMJ open vol. 7,1 e013037. 11 Jan. 2017, doi:10.1136/bmjopen-2016-013037
3. Weber, W.P., et al., Economic burden of surgical site infections at a European university hospital. Infection Control and Hospital Epidemiology 2008. 29(7): p. 623-29

Why be concerned?

- **Patients with SSIs have substantially greater physical limitations than those without an SSI and a significantly reduced health-related quality of life[1]**
- **SSI's are an independent predictor of mortality, particularly among the elderly where there is a 4 fold increased risk of death among older persons with SSI when compared to matched counterparts[2]**
- **Those with a SSI are at 2-11 times higher risk of death compared with surgical patients without a SSI[2]**
- **38%-77% of deaths in those with SSI patients are directly related to infection[2]**

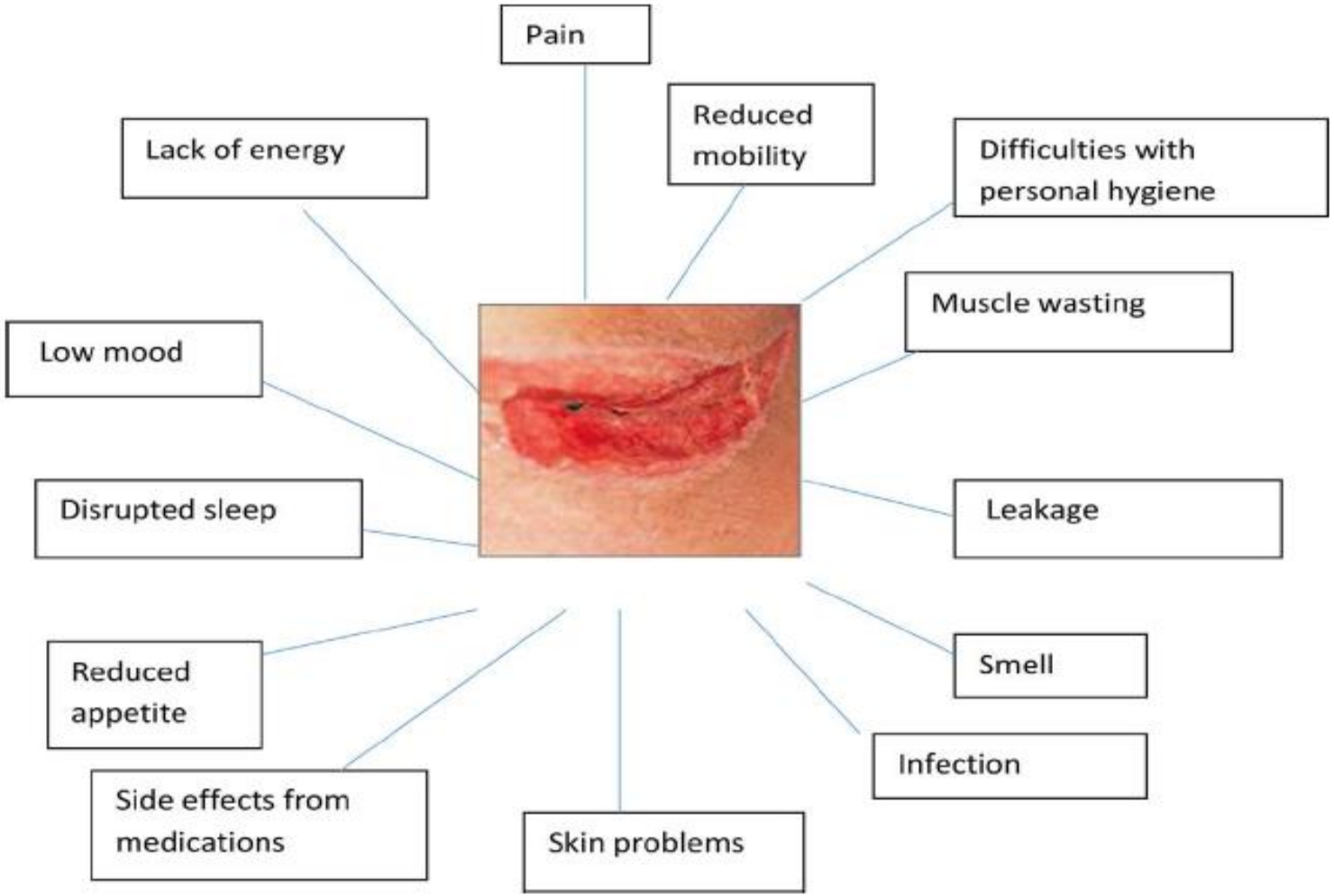
1. Whitehouse, J.D., et al., The impact of surgical-site infections following orthopedic surgery at a community hospital and a university hospital: adverse quality of life, excess length of stay, and extra cost. Infection Control Hospital Epidemiology, 2002. 23(4): p. 183-9.
2. Kaye, K.S., et al., The impact of surgical site infection on older operative patients. Journal of the American Geriatrics Society, 2009. 57(1): p. 46-54.

Why be concerned?

- **Surgical wounds healing by secondary intention can have a devastating effect on patients, both physical and psychosocial.**
- **Repercussions for patients' family members can also be extremely detrimental, including financial pressures.**
- **Health care professionals involved in the care of patients with these wounds face multiple, complex challenges, compounded by the limited evidence base regarding cost-effectiveness of different treatment regimens for these types of wounds.**

MCCAUGHAN, D., SHEARD, L., CULLUM, N., DUMVILLE, J. & CHETTER, I. 2018. Patients' perceptions and experiences of living with a surgical wound healing by secondary intention: A qualitative study. *Int J Nurs Stud,* 77, 29-38

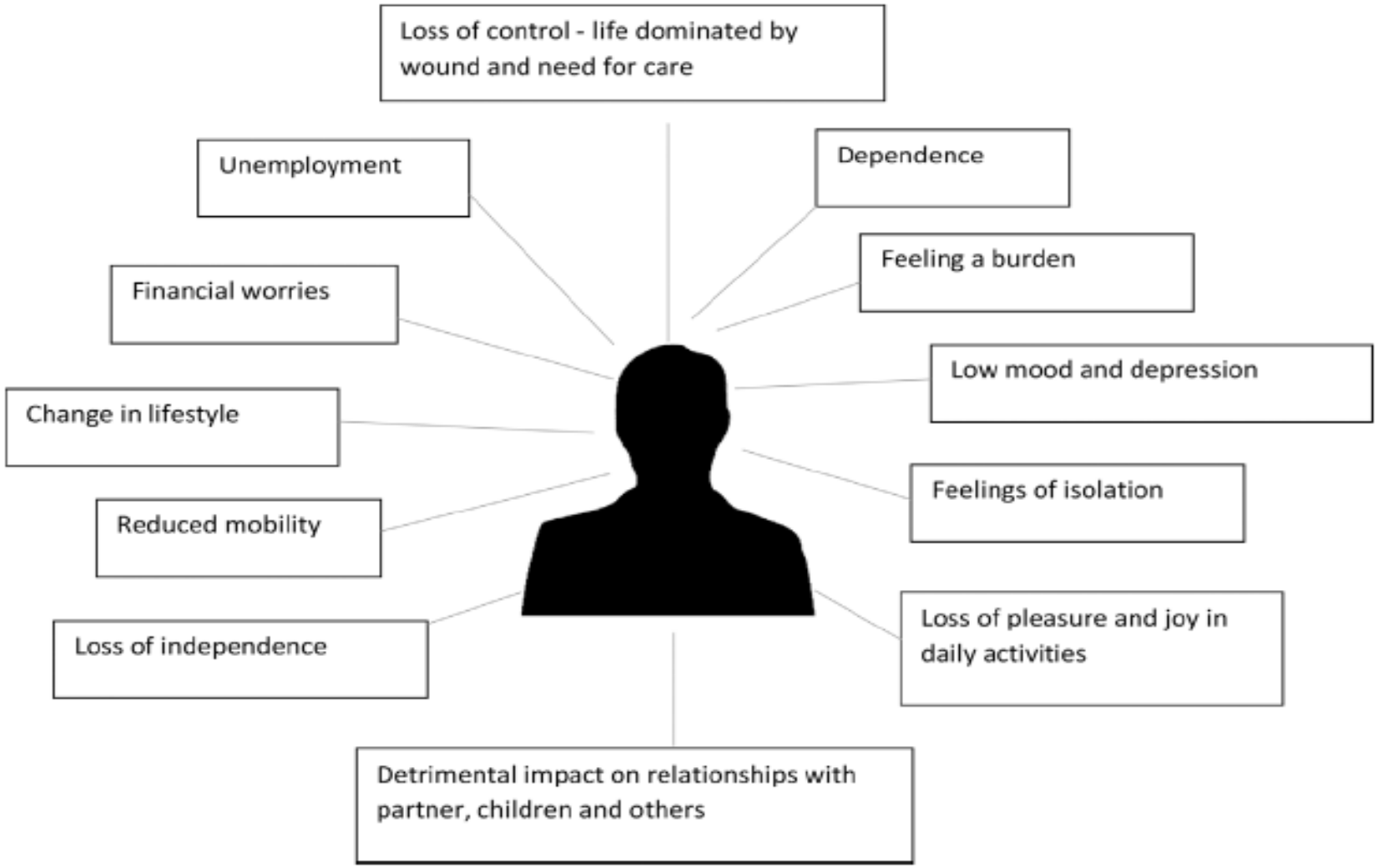
Wound related factors affecting daily life.



MCCAUGHAN, D., SHEARD, L., CULLUM, N., DUMVILLE, J. & CHETTER, I. 2018. Patients' perceptions and experiences of living with a surgical wound healing by secondary intention: A qualitative study. *Int J Nurs Stud,* 77, 29-38

RCSI
Leading the world to better health

Psychosocial impact of open surgical wounds



MCCAUGHAN, D., SHEARD, L., CULLUM, N., DUMVILLE, J. & CHETTER, I. 2018. Patients' perceptions and experiences of living with a surgical wound healing by secondary intention: A qualitative study. *Int J Nurs Stud,* 77, 29-38

RCSI
Leading the world to better health

And.....

- **Alarm, shock and disbelief were frequently expressed initial reactions, particularly to “unexpected” surgical wounds healing by secondary intention.**
- **Wound associated factors almost universally had a profound negative impact on daily life, physical and psychosocial functioning, and wellbeing.**
- **Feelings of frustration, powerlessness and guilt were common and debilitating.**
- **Patients’ hopes for healing were often unrealistic, posing challenges for the clinicians caring for them.**
- **Participants expressed dissatisfaction with a perceived lack of continuity and consistency of care in relation to wound management.**

Citation: McCaughan D, Sheard L, Cullum N, Dumville J, Chetter I. Patients' perceptions and experiences of living with a surgical wound healing by secondary intention: A qualitative study. Int J Nurs Stud. 2018;77:29-38.

Physiology of Wound Repair

Wounds Healing by Secondary Intention

Injury – Haemorrhage – Haemostasis

Inflammation – Proliferation

Contraction – Maturation

Healed Wound

DEMIDOVA-RICE, T. N., HAMBLIN, M. R. & HERMAN, I. M. 2012. Acute and Impaired Wound Healing: Pathophysiology and Current Methods for Drug Delivery, Part 1: Normal and Chronic Wounds: Biology, Causes, and Approaches to Care. Advances in skin & wound care, 25, 304-314.

Physiology of Wound Repair

For the purposes of discussion, wound healing is described in stages, however, these stages can overlap, but are distinct in terms of onset from time of injury

DEMIDOVA-RICE, T. N., HAMBLIN, M. R. & HERMAN, I. M. 2012. Acute and Impaired Wound Healing: Pathophysiology and Current Methods for Drug Delivery, Part 1: Normal and Chronic Wounds: Biology, Causes, and Approaches to Care. Advances in skin & wound care, 25, 304-314.

Physiology of Wound Repair

Early inflammation:

- Haemorrhage
- Haemostasis
- Influx of inflammatory cells

DEMIDOVA-RICE, T. N., HAMBLIN, M. R. & HERMAN, I. M. 2012. Acute and Impaired Wound Healing: Pathophysiology and Current Methods for Drug Delivery, Part 1: Normal and Chronic Wounds: Biology, Causes, and Approaches to Care. Advances in skin & wound care, 25, 304-314.

Physiology of Wound Repair

Late inflammation:

Cells involved – Neutrophils & Macrophages

- **Phagocytosis**
- **Debridement**
- **Synthesis of growth & regulatory factors**

DEMIDOVA-RICE, T. N., HAMBLIN, M. R. & HERMAN, I. M. 2012. Acute and Impaired Wound Healing: Pathophysiology and Current Methods for Drug Delivery, Part 1: Normal and Chronic Wounds: Biology, Causes, and Approaches to Care. Advances in skin & wound care, 25, 304-314.

Physiology of Wound Repair

Proliferation:

- Granulation tissue production
- Angiogenesis
- Epithelialisation
- Wound Contraction

DEMIDOVA-RICE, T. N., HAMBLIN, M. R. & HERMAN, I. M. 2012. Acute and Impaired Wound Healing: Pathophysiology and Current Methods for Drug Delivery, Part 1: Normal and Chronic Wounds: Biology, Causes, and Approaches to Care. Advances in skin & wound care, 25, 304-314.

Problem of assessment & management

- **Minimal clinical involvement of tissue viability nurses & other specialist nurses**
- **30% of all wounds being managed within the NHS lacked a differential diagnosis**
- **Only 16% of patients with a lower leg ulcer or diabetic foot ulceration underwent a vascular assessment with the Doppler ABPI**
- **Dressing and bandage types were continually switched at successive wound dressing changes, indicating confusion and conflict within the treatment plan**

GUEST, J. F., AYOUB, N., MCILWRAITH, T., UCHEGBU, I., GERRISH, A., WEIDLICH, D., VOWDEN, K. & VOWDEN, P. 2017. Health economic burden that different wound types impose on the UK's National Health Service. *Int Wound J,* 14, 322-330.

Why Assess?

- **Identify the aetiology of wound**
- **Predict problems with healing**
- **Identify status of wound repair**
- **Identify short & long term goals**

Cooper D (2015) Assessment, measurement and evaluation: their pivotal roles in wound healing. In *Acute & Chronic Wounds Nursing Management* (R.A. B ed.). Mosby, St Louis, Missouri, pp. 51-83.

Assessment

What to Assess

- The patient
- The wound
- The environment

Cooper D (2015) Assessment, measurement and evaluation: their pivotal roles in wound healing. In *Acute & Chronic Wounds Nursing Management* (R.A. B ed.). Mosby, St Louis, Missouri, pp. 51-83.

The Wound

- **Type**
- **Location/position**
- **Wound dimensions**
- **Condition of surrounding skin**

Cooper D (2015) Assessment, measurement and evaluation: their pivotal roles in wound healing. In *Acute & Chronic Wounds Nursing Management* (R.A. B ed.). Mosby, St Louis, Missouri, pp. 51-83.

Wound Assessment

- Necrotic tissue characteristics
- Sloughy tissue characteristics
- Granulation tissue characteristics
- Epithelialisation

GAUR, A., SUNKARA, R., RAJ, A. N. J. & CELIK, T. 2015. Efficient wound measurements using RGB and depth images. International Journal of Biomedical Engineering and Technology, 18, 333-358.

Wound Exudate

- **Serous: Clear fluid, no blood**
- **Serosanguineous: Watery pale red**
- **Sanguineous/bloody: Bloody, bright red**
- **Purulent: Thick, cloudy, yellow, tan**

Cooper D (2015) Assessment, measurement and evaluation: their pivotal roles in wound healing. In *Acute & Chronic Wounds Nursing Management* (R.A. B ed.). Mosby, St Louis, Missouri, pp. 51-83.

Infection- Key Points

- **The development of a wound infection is dependent on the pathogenicity and virulence of the micro-organism and the immuno-competency of the host**
- **The host-pathogen interaction does not always lead to disease**
- **Microbiological assessment alone is not a reliable method for diagnosing wound infection.**

F Gottrup, J Apelqvist, T Bjansholt, R Cooper, Z Moore, E J G Peters, S Probst (2013) EWMA Document: Antimicrobials and Non-healing Wounds—Evidence, Controversies and Suggestions *Journal of Wound Care* 22: 5. S1-S92

RCSI Leading the world to better health

Wound Care– Complex Surgical Wounds– Prevention and Management

Professor Zena Moore

PhD, MSc (Leadership in Health Professionals Education), MSc (Wound Healing & Tissue Repair), FFNMRCSI, PG Dip, Dip First Line Management, RGN

Professor of Nursing, Head of the School of Nursing & Midwifery , RCSI.
Director of the SWaT Research Centre, RCSI.

Adjunct Professor, Faculty of Medicine, Nursing and Health Sciences, Monash University, Melbourne, Australia,
Professor Department of Public Health, Faculty of Medicine and Health Sciences, Ghent University,
Honorary Professor, Lida Institute, Shanghai, China,
Senior Tutor, University of Wales.