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EXECUTIVE OFFICERS

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Elizabeth A Ayello
PhD, RN, CWON,
ETN, MAPWCA, FAAN
Faculty, Excelsior College
School of Nursing
209–14 82nd Avenue
Hollis Hills, NY 11427, USA
Email president@wcetn.org

Vice-President
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RN, ETN, UAS Lecturer
Ensemble Hospitalier de la Côte
Chemin du Crêt 2
1110 Morges, Switzerland
Email vicepresident@wcetn.org

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Independent Clinical Nurse Specialist
92 Lasswade Road
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United Kingdom
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RN, BScN, MCISc-WH, CETN(C)
Outpost Nursing: First Nations Communities, Northern Ontario
British Columbia, Canada
Email publications@wcetn.org

Norma N Gill Foundation
Arum Ratna Pratiwi
Head Dept of Nursing Development
Wound Care Coordinator,
Siloam Hospitals Surabaya
Indonesia
Email nngf@wcetn.org

JOURNAL EDITOR

Jenny Prentice
PhD, BN, RN, FAWMA
10 Paterson Road
Henley Brook, WA 6055, Australia
Email editor@wcetn.org

CONGRESS AND MEETING COORDINATOR

Dee Waugh RN, RM, ET
PO Box 44598
Claremont 7735, South Africa
Email congressliaison@wcetn.org
Skype dee.waugh1

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Preserving WCET® history is important. Thank you to WCET® life member Dianne Garde who gifted our association with her entire collection of WCET® newsletters, bulletins and journals. Dianne is moving from her home, which for many years served as the WCET® office. We all wish her much happiness in her new apartment and phase of her life. Dr R Gary Sibbald, WCET® Journal Editorial Board member, generously donated the funds to mail the journals from Mississauga, Canada, to their new home in the USA WCET® central office. While I was in Canada at Dr Sibbald’s expense, I had the opportunity to go thorough the five boxes of documents. While I found it interesting to read some of the early issues of the newsletters, bulletins and journal, I discovered some other fascinating items while going through the materials in those boxes. First, I found a photo which had written on the back of it, first WCET® meeting in Milan, Italy, in 1978 (see Figure 1). Norma is the person in the middle with the white jacket and glasses. Does anyone know who the others are in the photo? If so, please let us know. Also, of interest to me was a WCET® flag and pin with the colours of red and blue (see Figures 2 and 3). Does anyone know the history of these? Why were these colours chosen and when did WCET® change from those colours to the present day aqua and white?

I also recently heard from Norma’s daughter, Sally Thompson. She is also giving WCET® Norma’s collection of WCET® Journals. This is a valuable gift for our association to have in our archives. Sally also told me that another early WCET® leader, Marilyn Spencer, was quite ill. Eventually she told me the sorrowful news that Marilyn had passed away on 17 July 2018. It truly was with much sadness that I emailed all of our members about the passing of this amazing woman. I am grateful to Linda Stricker and Barbara Hocevar from the Cleveland Clinic who provided me with some details about Marilyn’s achievements. Along with Norma and Dr Turnbull, she provided many years of volunteer service to the WCET®.

Marilyn served as the WCET® recording secretary in 1978 and 1980 as well as the Nominations Committee Chairperson in 1982. From 1984 to 1988 she was both Vice-President and By-laws Committee Chairperson. Marilyn served four years as WCET® President from 1988 to 1992.

Marilyn was also well known for her role of educator for 20 years at the Cleveland Clinic. The emails I received from the WCET® members who remembered Marilyn as their teacher or colleague were heartwarming. It was clear from those who took the time to write and acknowledge the influence she had on their personal careers that Marilyn was a superior educator. How wonderful that in her lifetime, she was recognised and inducted into the Cleveland Clinic WOC Nursing Hall of Fame (see Figure 4).

Rest in peace Marilyn and thank you for all you did for the WCET® and nurses throughout the world. I thought one of the best tributes to Marilyn would be to revisit her passion and hopes for the WCET® by reprinting some of her own words. Therefore, I have included her first president message entitled “Do dreams come true?” — printed 30 years ago in August 1988. The I.A.E.T. that Marilyn is referring to in her message is now the Wound Ostomy and Continence Nursing Society (WOCN). Congratulations to WOCN on their 50th anniversary celebration at their conference in Philadelphia, USA. While Marilyn wrote about dreams for the WCET®, she was not just a dreamer but a doer. In her memory, I hope you will be inspired and consider her call to action for the WCET®. For there is much still for the WCET® to accomplish and all members are welcome to participate. For as Edward Kennedy said, “The work goes on, the cause endures, the hope still lives and the dreams shall never die.”

Sincerely,

Elizabeth
Message de la Présidente
L’heure de se souvenir - du passé au futur

Conserver l’histoire du WCET® est important. Merci à Dianne Garde, membre à vie du WCET® dont elle a légué son entière collection de lettres d’informations, de bulletins et de journaux du WCET®. Dianne est en train de déménager de chez elle, lieu qui a servi de bureau du WCET® pendant de nombreuses années. Nous lui souhaitons beaucoup de bonheur dans son nouvel appartement et cette nouvelle étape de vie. Le Dr R. Gary Sibbald, membre du Comité Editorial du Journal du WCET®, a financé l’envoi de ces revues du Mississauga au Canada à l’office central du WCET® aux États Unis d’Amérique qui sera maintenant leur nouvelle résidence. Pendant que j’étais au Canada, aux frais du Dr Sibbald, j’ai eu l’occasion de parcourir cinq boîtes de documents. Alors que je me passionnais à lire quelques-uns de ces premiers numéros de lettres d’information, de bulletin et de journaux, j’ai découvert des éléments encore plus fascinants. Tout d’abord, j’ai trouvé une photographie au dos de laquelle était inscrit : première rencontre du WCET® à Milan, Italie, en 1978 (voir Figure 1). Norma est la personne au milieu, vêtue d’une veste blanche et portant des lunettes. Est-ce que l’un-e d’autre vous sauriez reconnaître les autres personnes qui sont sur cette photo? Si c’est le cas, merci de nous le faire savoir. J’ai ensuite trouvé un drapeau et une broche du WCET® aux couleurs rouge et bleu (voir Figure 2 et 3). Est-ce que l’un-e d’entre vous en connaîtrait l’histoire? Pour quelle raison ces couleurs avaient-elles choisi et quand le WCET® a-t-il décidé de passer de ces couleurs à celles que nous connaissons aujourd’hui, l’aqua et le blanc?


Marilyn a été aussi connue pour son rôle d’enseignante pendant 20 ans à la Clinique de Cleveland. Les courriels que j’ai reçus des membres du WCET® qui l’ont connu comme professeur ou collègue sont à couper le souffle. Ceux qui ont pris le temps d’écrire et de soulever l’influence qu’elle a eu sur leur carrière personnelle, ont clairement démontré que Marilyn était une enseignante de haut niveau. Ce qui a été fantastique, c’est qu’au cours de sa vie elle ait pu être reconnue et inhumée au temple de la renommée des soins infirmiers spécialisés en plaies, stomies et continence de Clinique de Cleveland (voir Figure 4).

Repose en paix Marilyn et merci pour tout ce que tu as fait pour le WCET® ainsi que pour les infirmières à travers le monde. J’ai pensé qu’un de meilleur hommage qu’il pouvait être fait à Marilyn était de se rappeler de sa passion et de ses espoirs pour le WCET® en réimprimant un de ces messages. Par conséquent, j’ai inclus ici son premier édito de Présidente qui s’intitule «Les rêves se réalisent-ils?». Ce message a été écrit il y a 30 ans en arrière, en aout 1988. L’I.A.E.T. auquel Marilyn fait référence dans son message est devenu maintenant la Société des Soins de Plaies, Stomies et Continence (WOCN). Félicitations au WOCN qui a fêté ses 50 ans lors de sa conférence à Philadelphie aux USA. Alors que Marilyn écrivait à propos de ses rêves pour le WCET®, elle n’était pas seulement en train de rêver mais elle était en train d’agir. En sa mémoire, j’espère que vous serez inspirés et tiendrez compte de son appel à agir pour le WCET®. En effet, il reste encore tellement à accomplir pour le WCET® et la participation de chacun de nos membres est la bienvenue. Ainsi, comme le disait Edward Kennedy «Le travail continue, la cause perdure, l’espoir reste vivant et les rêves ne meurent jamais.»

Sincèrement,

Elisabeth

Translated from English to French by Laurent Chabal.
保留WCET®的历史非常重要。感谢WCET®终身会员Dianne Garde，她为我们协会保存了完整的收藏，WCET®通讯，公报和期刊。Dianne正在离开她的家，她服务多年的WCET®办公室。我们均希望她在新公寓的生活愉快。

Dr R Gary Sibbald慷慨地捐赠资金，将加拿大密西沙加的期刊邮寄到美国WCET®办公室的新家。当我在加拿大时，我有机会深入了解此五箱文件。我发现一些早期版本的通讯，公报和期刊很有意思，但当我浏览那些盒子里的物件时，发现了其他一些有趣的东西。首先，我发现了一张照片，背面写着1978年在意大利米兰召开的首次WCET®会议（见图1）。诺玛是在中间，戴起眼镜和穿着白色夹克。有谁认识照片中的其他人？如果知道，请告诉我们。另外，我感兴趣的是WCET®的旗帜和别针均是红色和蓝色的（见图2和图3）。有谁知道这些历史？为什么选择这些颜色，WCET®在何时从那些颜色转变为现在的浅白色？


Marilyn也因其在克利夫兰诊所担任20年的教育工作而闻名。我收到WCET®成员的电子邮件，他们仍记得这位老师或同事的温馨。那些成员均认同Marilyn对自己个人事业的影响及表扬她是一位优秀的老师。她卓越的一生被众人认可，并入选了克利夫兰诊所WOC护理名人堂（见图4）。

安息吧Marilyn，感谢您为WCET®和世界各地的护士所做的一切。我认为对Marilyn最好的致敬之一，就是通过重新印制她在WCET®的梦想和希望。因此，我已经将她于30年前，1988年8月出版的第一个主席信息，题为“梦想成真吗？”收录起来。Marilyn在她的信息中提到的I.A.E.T便是现在的伤口造口及理遗科护理学会（WOCN）。祝贺WOCN在美国费城举行的会议上庆祝成立50周年。Marilyn写了关于对WCET®的梦想，但她不仅是一个梦想家，而是一个实干家。在思念她的同时，我希望你会受到启发，并考虑她所作的呼吁，为WCET®服务。因为WCET®还有很多工作要做，我们欢迎所有成员参加。正如Edward Kennedy所说：“工作继续进行，目标持续，希望依然存在，梦想永远不会灭亡。”

诚挚的，
伊丽莎白

Following surgery which results in an ostomy, Norma Gill Thompson had a dream. That dream was to help others avoid the many technical problems she encountered — problems which delayed her active re-entry into society. That dream became a reality 30 years ago this 1 October, when she joined the colorectal surgical staff at the Cleveland Clinic as an ostomy technician.

It did not bother Norma that she was not a nurse and was without a medical background. She only knew that just as she needed help, there were many other persons in similar need.

And the dream grew — it expanded into a vision of helping others to become technicians. Slowly but surely, the idea of the Cleveland Clinic School of Enterostomal Therapy became a happening. Did the dream stop? No! The technicians needed a form through which to communicate and share learning experiences. This forum became the North American Association for Enterostomal Therapy, now known as the International Association for Enterostomal Therapy (I.A.E.T).

This year the I.A.E.T. celebrates its 20th anniversary.

Figure 1

Do dreams come true?

And the dream grew — the technician stretched her imagination and pursued the professional field — medical and nursing — spreading the notion of a specialised nursing entity. The concept was endorsed, and today one must possess a nursing licence for entry into the field of stomal care nursing.

And the dream grew — why not share this knowledge with the international society? The first international lecture brought enquiries for similar presentations in other countries. Soon requests were received for other countries. Soon requests were received for ostomy care education from the international nurse.
And the dream grew — soon the international nurses developed stomal care education programs. Their numbers increased and they needed a forum through which to reach and teach themselves and others, share cultural customs and concerns, and learn from other stoma care nurses. So the dream of having a council of councils soon became the World Council of Enterostomal Therapists.

Is this the end of Norma’s dream? I have not asked her, but I knew her well enough to say there is no end to her dream. This message is intended to encourage you to dream, and know that dreams can and do become a reality.

The Scandinavian stomal care nurses had a dream of the World Council Congress convening in Sweden. That dream has just become a reality. My gratitude to all of the Scandinavian stomal care nurses for accepting and meeting the challenge, thereby providing a quality educational opportunity for World Council members.

One key benefit of belonging to the World Council is the communication that occurs. Communication is a prime source for growth, development, and the achievement of our goals and dreams. I dream of the day where every person requiring an ostomy will have the services of a stomal care nurse. A day when every country will have their own Stomal Care Nurse Education Program, and a day when every country in the world will be represented in the World Council. And finally, a day when all nurses are free from political constraints and restrictions and are judged by their professional ethics and clinical practice alone.

Dare to dream and share your dream. Remember, dreams do come true.

Marilyn
Editorial

The value of learning from others

Herbert Spencer (1820–1903), a British philosopher and sociologist, once remarked, “The great aim of education is not knowledge but action”.

The content within this issue of the Journal has led me to reflect on the value of learning from others. The actions, learning processes and resultant behavioural changes through clinical and personal experiences, research and education are interlinked themes within the articles presented.

There are many definitions and concepts related to learning. The Oxford Dictionary of English defines learning as, “The acquisition of knowledge or skills through study, experience, or being taught”1. Gross describes learning as, “… the process of acquiring new, or modifying existing, knowledge, behaviors, skills, values, or preferences”2.

Conceptually and in practice these constructs may broadly apply to organisations as well as individuals. The World Council of Entero stomal Therapists® as well as individual enterostomal therapy (ET) or stomal therapy nurses (STNs) have a long and proud history of education and teaching and sharing their knowledge and skills; in particular, to assist patients to regain an optimal health status, achieve independence in managing their ostomies and feel they remain a valued member of society. A similar philosophy is extended between colleagues when the need arises.

Often, however, there are substantial obstacles to overcome that impede teaching/learning, and adaptation processes or the integration of new knowledge or research into clinical practice or higher learning institutions. These barriers may relate to the way an individual learns or their readiness to learn, physiological barriers, language, culture, literacy or in respect to institutions, a lack of willingness to change, lack of resources or political and economic constraints3.

In recognising the wonderful work undertaken by Marilyn Spencer our President, Dr Elizabeth Ayello, has described Marilyn as a ‘doer’. Clearly, Marilyn was an action- and outcome-driven person who inspired others with her educational abilities and desire to improve ostomates’ lives as well as the professional profile of ET nurses.

Naomi Houston outlines the enormous contribution made by Dr Rupert Turnbull to colorectal surgery, stoma care and ET practice alongside Norma Gill. His commitment to research and education and sharing his knowledge and expertise for the benefit of others, whether health professionals or patients, is well documented.

The learning experiences and research outcomes of the Guyana Project, led by Ostrow and Sibbald et al.4,5, in part inspired Ogbogu and colleagues’ research project. They assessed patients with diabetes in two hospitals in Nigeria for patterns of high-risk foot disease using the standardised 60-second foot screening tool developed during the Guyana Project to guide early intervention and treatment measures to reduce the incidence of foot amputations.

Similarly, Pinto et al. have reflected on prior research on skin tears within the last five years to guide development of a nursing protocol for the prevention, assessment and management of skin tears in a new hospital in the United Arab Emirates.

The overall aim of health clinicians and health educators is to support unwell patients through their medical episode. And, in that journey to assist patients to transition from being invalids and recipients of care to actively participating in self-care, thereby becoming active versus passive learners5.

Actively using ‘tips and hints of the trade’, gained over many years of experience, and by applying simple teaching/learning strategies, Pat Walls was able to assist her patient to regain his self-confidence in managing his urostomy and subsequently restore his self-esteem and achieve a better quality of life.

In their book Essential Stoma Care, authors Jennie Burch and Pat Black lend their collective clinical experience to provide a useful text on basic stoma management. Similarly, the WCET® has a wide range of texts and guides to support clinical practice, for example, the WCET™ Guide to Stoma Site Marking and WCET Ostomy Pocket Guide: Stoma and Peristomal Problem Solving6.

The value of learning from others to substantiate existing or acquire and apply new knowledge or skills that may result in positive organisational or individual behavioural changes within the domains of wound, ostomy and continence care should not be underestimated.
As Benjamin Franklin reflected, “Tell me and I forget, teach me and I may remember, involve me and I learn.”

Regards,

Jenny

REFERENCES


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High-risk diabetic foot among adults with diabetes in Enugu State, Nigeria

Chinenye Juliet Ogbogu*
MSc, IIWCC (Toronto/Za)
Lecturer II, Department of Nursing Sciences, College of Medicine, University of Nigeria, Enugu Campus
Enugu State, Nigeria
chinenye.ogbogu@unn.edu.ng
ORCID ID-0000-0001-5696-1044
*Corresponding author

Hope Chizolum Opara
PhD
Professor of Nursing, Department of Nursing Sciences, College of Medicine, University of Nigeria, Enugu Campus
Enugu State, Nigeria
agnes.anarado@unn.edu.ng

Agnes Nonyem Anarado
PhD
Professor of Nursing, Department of Nursing Sciences, College of Medicine, University of Nigeria, Enugu Campus
Enugu State, Nigeria
agnes.anarado@unn.edu.ng

Wilson Ikpemhi Anetekhai
MBBS
Senior Registrar, Department of Orthopaedics and Traumatology, National Orthopaedic Hospital Enugu, Enugu State, Nigeria
wilanets@yahoo.com

ABSTRACT:
Aim: This study assessed high-risk foot, pattern of risk, proportion of diabetic foot-risk parameters and associations with risk of foot ulceration among respondents.

Methods: A cross-sectional survey was carried out in people with diabetes at teaching hospitals in Enugu state. Stratified random sampling was used to determine the sample size from the institutions based on their patient load and purposive sampling method was used to enlist 314 respondents with diabetes for at least 1 year. The 60-second foot screening tool was used.

Results: Respondents’ mean age was 59.0±11.7; 62.1% were females and 37.9% males. Nearly half (42.7%) had high-risk foot at different levels (2.9% were at level 1 risk, 24.5% were at level 2 risk, while 15.3% were at level 3 risk). The most prevalent risk factors identified were bony deformity (36.6%), fissures (19.1%), active ulcers (15.6%) and ingrown toenail (12.1%). Smoking (p = 0.001) and eye complications (p = 0.034) were associated with risk of foot ulceration.

Conclusion: About 1:2 respondents had at least one risk parameter for foot ulceration. Daily assessment, teaching and risk reduction measures are important to avert foot ulceration and amputation.

INTRODUCTION
Diabetes mellitus (DM) and its complications are a global epidemic affecting about 346 million people. This number is expected to increase to 552 million by 2030 as a result of an ageing population growth, sedentary lifestyles, unhealthy diet and obesity, with more of the increase expected to come from low- and middle-income countries. Nigeria, a country in Africa, has the highest population of people living with DM in Africa, with a diabetic population of more than 1.56 million.

As the population of people diagnosed with DM is expected to increase drastically, so is the diabetic population with foot ulceration. Diabetic foot ulceration (DFU) is a cause of suffering for those with the condition and their loved ones; with high costs of management (direct and indirect costs). The presence of DM increases the risk of a non-traumatic lower limb amputation by 20-fold and it has been estimated that a lower limb is amputated every 20 seconds in the world due to complications of diabetes. Development of a DFU often leads to a lower-limb amputation in 85% of cases. Statistics has shown five years after the first amputation, 50% of the same patients will have a second amputation. Lower limb amputation has been associated with a 50% death rate, posing a worse prognosis than the leading cancers in the world (breast or prostate cancer). In Nigeria, about 10% of the diabetic population has lower limb complications and this incidence is increasing, making DFU the second leading cause of diabetes-related death in Nigeria and accounting for 24% of all diabetes mortality. People with DFU made up almost 12% of the total hospital admissions in southern Nigeria in 2005 and about a quarter of the newly diagnosed diabetics already suffer with foot ulceration.

In view of the rising incidence of DM in Nigeria, the suggestions that Nigerians are the most affected in Africa, and the risk and complications associated with foot ulceration, the researchers deemed it pertinent to identify...
the level of risk imposed on the population by this growing diabetic disease burden as a prelude to initiating any prophylactic and/or therapeutic measures.

Assessing and screening large cohorts of patients with DM for foot disease or those with existing DFU with the aim of decreasing the risk of amputation within busy outpatient department clinics that are often under-resourced is problematic. The researchers, therefore, chose to use a proven high-risk foot detection screening tool: the sixty-second tool to screen people with diabetes for high-risk foot status, which was originally developed for assessing people with diabetes in Guyana. Key components of the tool are foot inspection for visible abnormalities, palpating for evidence of a dorsalis pedis or posterior tibial pulse, and using a monofilament to test for loss of protective sensation (LOPS)\(^9,10\).

This study assessed the high-risk foot, patterns of risk and proportion of diabetic foot-risk parameter, as well as correlations between participants’ characteristics and foot at high risk of ulceration among adult diabetics being managed at two teaching hospital outpatient departments in Enugu State, Nigeria.

**MATERIALS AND METHODS**

**Study design**

The study was of a cross-sectional descriptive design. Referral teaching hospitals in Enugu State (identified as centres A and B), which run specialist diabetic outpatient clinics, were purposively selected for this study because of access to the weekly diabetic clinics held there, the high volume of diabetic patients managed there and the presence of professional diabetic caregivers.

The teaching hospitals were grouped into different centres (strata, that is, ESUTH and UNTH) and thereafter sampling done proportionately according to the number of patients managed at each hospital based on their patient load (using data from each institution: UNTH, ESUTH diabetes database). Thereafter, purposive sampling was used to enlist a combined total of 314 participants from both hospitals.

**Inclusion and exclusion criteria**

To be included as study participants, patients were required to be informed, consenting adults who had to have had diabetes for at least one month. Excluded were adults with diabetes who had amputations of both feet. From the pilot study done at a peripheral hospital in Iwolo, Enugu State, the majority of the patients that presented with an at-risk foot were at least one month from the initial diagnosis. Hence, the arbitrary selection of one month from the time of diagnosis in the inclusion criteria.

**Data collection**

Data collection was done concurrently in the two study sites because they had different clinic days. Patients were screened on the clinic days using the 60-second screening tool by the principal investigator to identify the high-risk foot.

Patient recruitment continued until the full sample size (314 patients) was attained, which took eight weeks. All patients who presented to the hospital within the study period and who met the inclusion criteria were recruited into the study. Nil patients declined to be part of the study because most patients presenting to the outpatient clinics had not had their feet examined before. Patients saw the study as a new innovation to improve DM management and to prevent complications.

Patients were screened on outpatient clinic days using the 60-second screening tool by the principal investigator, who was trained by the authors on how to use this instrument during the International Interdisciplinary Wound Care Course (Toronto/South Africa, 2013–2014 class). In addition, the authors of the tool granted the principal investigator permission to assess participants alone, thereby negating any issues with interrater reliability.

**Study instrument: 60-second screening tool**

The simplified 60-second foot screen tool used had 10 assessment items (previous/active ulcer, amputation, deformity, absent pedal pulses, ingrown toenail, calluses, blisters, fissures and neuropathy) with a positive or negative value. The 60-second screening tool requires a minute to complete, the use of a 10-gm monofilament, and basic clinical knowledge of physical assessment by its users. Based on assessment outcomes, the clinician decides which clinical management strategy (integrated foot care, self-management, patient education, therapeutic footwear, and surgical interventions) to initiate in line with the recommendations of the International Working Group on the Diabetic Foot (IWGDF) cited in Sibbald et al.\(^7\).

**Neuropathy assessment**

Neuropathy was assessed using a 10-g monofilament to test for 10 points on the foot (that is, 9 on the plantar aspect of the first, third and fifth toes, the first, third and fifth metatarsal heads, two sides of the midfoot, and the heel while the tenth point is on the mid-dorsum of the foot). Lack of feeling or loss of protective sensation (4 or more negative responses out of 10) indicates that patient is positive for neuropathy and at risk of ulceration.

The 60-second screening tool has been proven to be an efficacious and reliable instrument for diagnosing patients at risk of DFU and foot abnormalities. Murphy et al.\(^8\) showed that intrarater reliability was 0.96 (right foot) and 0.97 (left foot), an interrater reliability of 0.92 (on right foot) and 0.93 (left foot). In a pilot test carried out at Niger Foundation Hospital Iwolo, Enugu State, Nigeria, the intrarater reliability was 0.97 (right foot) and 0.96 (left foot), and intrrater reliability of 0.91 (right foot) and 0.92 (left foot). Thus, the researchers felt the instrument demonstrated excellent interrater and intrarater reliability.
Statistical analysis
Data collected were entered and analysed using the International Business Machines Statistical Package for Social Sciences (IBM SPSS version 20 Chicago: SPSS Inc). Descriptive statistics were presented as frequencies (percentages) while inferential statistics were tested using Pearson’s product moment correlation statistics for univariate analysis to identify possible associations of DFU. Statistical significance was established as P <0.05.

Ethical considerations
Ethical review and clearance for the study was granted by the Research Ethics Committee of the teaching hospitals.

RESULTS

Characteristics of the participants
There were more females (62.1%) than males (37.9%). The participants were predominately of the Igbo ethnic group (99.7%), with a mean age of 59 ± 11.7 years, age range was 18–79 years with a modal age group of 66–79 years. Predominantly study participants (95.2%) were type II DM, most (73.6%) were being managed on oral hypoglycaemic agents alone. The mean duration of DM since diagnosis was 10.32 years (range 1–29 years); 71.3% had DM for less than or equal to 10 years. Only 12 (3.8%) of the participants smoked and 234 (74.5%) reported a co-morbidity with hypertension [n=161 (68.8%)] the most common co-morbid condition. The majority of the participants [n=190 (60.5%)] had never had their foot examined by a doctor or a nurse or received any foot care education (62.1%) (Table 1).

High-risk diabetic foot
On assessment, 180 (57.3%) participants had a negative screening result for a high-risk foot, meaning no abnormalities were detected, hence they only need to be reassessed yearly or less if any complications develop. One hundred and six (33.8%) participants had LOPS (positive screen) on at least four points of the foot, indicating a high-risk diabetic foot at different levels of risk. Of the 314 study participants, 28 (8.9%) had an active ulcer, meaning this proportion of the population needed prompt treatment to prevent further complications of the disease developing (Figure 1).

Pattern of risk
Of the population studied, 2.9% were at level 1 risk, with the highest risk being neuropathy. Overall, 24.5% of participants were at level 2 risk, with the highest risk in this category being that of deformity [level 2a (16.9%)] and peripheral vascular disease (PVD) with absent pedal pulses [level 2b (7.6%)]. With regard to level 3 risk, 14.96% of participants were deemed to be within this level of risk. The highest risk within the level 3 category was a current active ulcer of the foot [level 3a (8.9%)]. In addition, within the level 3 category [level 3a (6.1%)] had a previous history of ulceration from LOS or PVD. One participant was classified as level 3b with a history of LOPS, PVD and amputation (Table 2).

Figure 1: Proportion of diabetic patients at risk of foot ulceration

One-hundred and eighty (57.3%) had a negative screening result for high-risk foot, 106 (33.8%) had a positive screen result for high-risk foot, while 28 (8.9%) already have the disease (diabetic foot ulceration).
Table 1: Demographic characteristics and clinical information n=314

<table>
<thead>
<tr>
<th>Demographic characteristics</th>
<th>Groups</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital</td>
<td>Centre A</td>
<td>202</td>
<td>64.3</td>
</tr>
<tr>
<td></td>
<td>Centre B</td>
<td>112</td>
<td>35.7</td>
</tr>
<tr>
<td>Age</td>
<td>18–25 yrs</td>
<td>01</td>
<td>0.30</td>
</tr>
<tr>
<td></td>
<td>26–35 yrs</td>
<td>11</td>
<td>3.50</td>
</tr>
<tr>
<td></td>
<td>36–45 yrs</td>
<td>28</td>
<td>8.90</td>
</tr>
<tr>
<td></td>
<td>46–55 yrs</td>
<td>81</td>
<td>25.8</td>
</tr>
<tr>
<td></td>
<td>56–65 yrs</td>
<td>95</td>
<td>30.3</td>
</tr>
<tr>
<td></td>
<td>66 yrs and above</td>
<td>98</td>
<td>31.2</td>
</tr>
<tr>
<td></td>
<td>Mean ±SD</td>
<td>59.00 ± 11.71</td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td>Male</td>
<td>119</td>
<td>37.9</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>195</td>
<td>62.1</td>
</tr>
<tr>
<td>Tribe</td>
<td>Igbo</td>
<td>313</td>
<td>99.7</td>
</tr>
<tr>
<td></td>
<td>Hausa</td>
<td>01</td>
<td>0.40</td>
</tr>
<tr>
<td></td>
<td>No formal education</td>
<td>50</td>
<td>15.9</td>
</tr>
<tr>
<td></td>
<td>Primary</td>
<td>127</td>
<td>40.4</td>
</tr>
<tr>
<td></td>
<td>Secondary</td>
<td>69</td>
<td>22.0</td>
</tr>
<tr>
<td></td>
<td>Tertiary education</td>
<td>68</td>
<td>21.7</td>
</tr>
<tr>
<td>Occupation</td>
<td>Unemployed</td>
<td>18</td>
<td>5.70</td>
</tr>
<tr>
<td></td>
<td>Retired</td>
<td>123</td>
<td>39.2</td>
</tr>
<tr>
<td></td>
<td>Self-employed</td>
<td>134</td>
<td>42.7</td>
</tr>
<tr>
<td></td>
<td>Employed (private or govt)</td>
<td>39</td>
<td>12.4</td>
</tr>
<tr>
<td>Do you smoke?</td>
<td>Yes</td>
<td>12</td>
<td>3.80</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>302</td>
<td>96.2</td>
</tr>
<tr>
<td>Have you had any diabetic foot education before?</td>
<td>Yes</td>
<td>119</td>
<td>37.9</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>195</td>
<td>62.1</td>
</tr>
<tr>
<td>Have you had your feet examined by a doctor or nurse?</td>
<td>Yes</td>
<td>124</td>
<td>39.5</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>190</td>
<td>60.5</td>
</tr>
<tr>
<td>Do you have any other medical condition?</td>
<td>Yes</td>
<td>234</td>
<td>74.5</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>80</td>
<td>25.5</td>
</tr>
<tr>
<td>If yes, which one? (n=234)</td>
<td>Hypertension</td>
<td>161</td>
<td>68.8</td>
</tr>
<tr>
<td></td>
<td>Arthritis</td>
<td>30</td>
<td>12.8</td>
</tr>
<tr>
<td></td>
<td>Peptic ulcer</td>
<td>3</td>
<td>1.30</td>
</tr>
<tr>
<td></td>
<td>Eye complication</td>
<td>40</td>
<td>17.1</td>
</tr>
<tr>
<td>Type of diabetes</td>
<td>Type I</td>
<td>10</td>
<td>3.20</td>
</tr>
<tr>
<td></td>
<td>Type II</td>
<td>299</td>
<td>95.2</td>
</tr>
<tr>
<td></td>
<td>Gestational</td>
<td>05</td>
<td>1.60</td>
</tr>
<tr>
<td>Duration of diabetes since diagnosis</td>
<td>&lt;= 1 yr 11 months</td>
<td>21</td>
<td>6.70</td>
</tr>
<tr>
<td></td>
<td>2–10 yrs</td>
<td>203</td>
<td>64.6</td>
</tr>
<tr>
<td></td>
<td>11–20 yrs</td>
<td>69</td>
<td>21.9</td>
</tr>
<tr>
<td></td>
<td>21–30 yrs</td>
<td>15</td>
<td>4.80</td>
</tr>
<tr>
<td></td>
<td>&gt; 30 yrs</td>
<td>06</td>
<td>002</td>
</tr>
<tr>
<td></td>
<td>Mean + SD (years)</td>
<td>10.32+ 87.49</td>
<td></td>
</tr>
</tbody>
</table>

SD = standard deviation
Proportion of diabetic foot-risk parameters

The most prevalent foot high-risk parameters identified in this population were bony deformities (36.6%), which included hammer/claw toes, prominent metatarsal head and hallux valgus deformity. Fissures or linear cracks (19.1%), ingrown toenails (12.1%), calluses (10.2%), previous ulcers (9.6%), absent pedal pulse(s) (7.6%) and blisters (2.5%) accounted for other risk parameters. One participant (0.3%) had a unilateral amputation (Table 3). Active ulceration was present in 49 participants (15.6%). In relation to active ulcers, the authors did not collect any information on PEDIS (perfusion, extension, depth, infection, sensation).

There was a correlation between participants’ characteristics, lifestyle and medical co-morbidities with risk of diabetic foot ulceration.

From the Kruskal Wallis non-parametric test result, the calculated value of 67.564 was obtained for the variable age. Having an asymptotic significance (p-value) of 0.026, which is less than 0.05, a statistically significance difference was observed in the presentation of foot risk based on the age of the participants (mean age of 59.0032) and the participants' highest level of education (p-value=0.000), which is less than 0.05. Hence, age and levels of education attained are more likely to affect the distribution of foot risk. Also, the result with the calculated value of 6.027 infers no statistically significant difference in the presentation of foot risk based on the occupation of the participants p=0.197, which is greater than 0.05. Hence, the distribution of foot risk is the same across the categories of occupation (Tables 5–13).

Table 2: Pattern of risk n=314

<table>
<thead>
<tr>
<th>Assessment findings</th>
<th>Level of risk</th>
<th>Frequency (f)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative screen result (no LOPS, PVD or history of ulcer/amputation)</td>
<td>0</td>
<td>180</td>
<td>57.3%</td>
</tr>
<tr>
<td>Neuropathy (LOPS, no PVD/deformity)</td>
<td>1</td>
<td>09</td>
<td>02.9%</td>
</tr>
<tr>
<td>Deformity (LOPS + deformity)</td>
<td>2a</td>
<td>53</td>
<td>16.9%</td>
</tr>
<tr>
<td>Absent pedal pulses (PVD)</td>
<td>2b</td>
<td>24</td>
<td>07.6%</td>
</tr>
<tr>
<td>History of ulcer (LOPS, PVD)</td>
<td>3a</td>
<td>19</td>
<td>06.1%</td>
</tr>
<tr>
<td>Active ulcer</td>
<td>3a</td>
<td>28</td>
<td>08.9%</td>
</tr>
<tr>
<td>History of amputation (LOPS, PVD + amputation)</td>
<td>3b</td>
<td>1</td>
<td>0.32%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>314</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 3: Proportion of diabetic high-risk foot parameters n=314

<table>
<thead>
<tr>
<th>High-risk parameters</th>
<th>Frequency (f)</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deformity</td>
<td>115</td>
<td>(36.6)</td>
</tr>
<tr>
<td>i Hammer toes</td>
<td>31</td>
<td>(9.9)</td>
</tr>
<tr>
<td>ii Prominent metatarsal head</td>
<td>68</td>
<td>(21.6)</td>
</tr>
<tr>
<td>iii Hallux valgus deformity</td>
<td>16</td>
<td>(05.1)</td>
</tr>
<tr>
<td>Fissures (linear crack)</td>
<td>60</td>
<td>(19.1)</td>
</tr>
<tr>
<td>Active ulcer</td>
<td>49</td>
<td>(15.6)</td>
</tr>
<tr>
<td>Previous ulcer</td>
<td>30</td>
<td>(09.6)</td>
</tr>
<tr>
<td>Previous amputation</td>
<td>01</td>
<td>(0.30)</td>
</tr>
<tr>
<td>Absent pedal pulses</td>
<td>23</td>
<td>(07.3)</td>
</tr>
<tr>
<td>Ingrown toenail</td>
<td>38</td>
<td>(12.1)</td>
</tr>
<tr>
<td>Calluses (thick plantar skin)</td>
<td>32</td>
<td>(10.2)</td>
</tr>
<tr>
<td>Blisters</td>
<td>08</td>
<td>(02.5)</td>
</tr>
</tbody>
</table>

NB: Responses are not exclusive as some patients presented with more than one high-risk parameter. Nine (18.3%) were not aware they had an active ulcer.
Results from the Mann-Whitney test result showed that there is no difference in the presentation of foot risk based on the sex of the participants with the calculated Z value of –0.420. Having an asymptotic significance (p-value) of 0.675, which is greater than 0.05, hence, participants’ gender does not likely affect the risk of developing a high-risk diabetic foot. The result also shows that there is no statistically significant difference between those patients that smoke (Z value of –0.418; p-value=0.676), having received diabetic foot education before (Z value = –1.628; p=0.104) and having other medical conditions [hypertension: (Z value of –0.359; p-value=0.720), arthritis: (Z = –0.792; p-value=0.428), peptic ulcer: (Z = –1.138; p-value=0.255) and retinopathy: (Z = –0.093; p-value=0.926). This means that participants that smoke, those that have had prior diabetic foot education and those with other medical conditions may not affect the risk of developing diabetic foot. However, the results showed that participants who have family members that help them care for their feet (n=85) are less likely to have a foot at high risk of ulceration with the mean of 180.61, while those who do not have family members to assist with foot care (n=229) had a mean rank of 148.92. A Mann-Whitney test revealed that this difference was statistically significant: (U=7768, p=0.004, z=–2.872).

DISCUSSION

Foot complications from DM are one of the main causes of amputation and its subsequent physical and emotional problems. This is a major reason for admission of diabetic patients to the hospital. Assessment of the feet is an important early intervention to identify diabetics with a high-risk foot, to prevent foot complications from occurring and imminent amputation when not properly managed.

In this study, about one out of 10 patients (8.9%) already had an active ulcer and 2.8% of these patients were not aware that they had an ulcer. This finding is very important as this group needs aggressive treatment. These patients require immediate referral to specialists, who will facilitate management of the complications and wound healing processes as well as assisting in preventing further complications, future occurrences of ulceration and overseeing ongoing diabetes education.

Diabetes education should be targeted at the patient and the family member (significant other/caregivers) who will assist in caring for the patients’ feet and prevention of further foot ulceration. Similar findings were reported by Mwandri11; Sibbald et al.7, Dikeukwu et al.12, Nyamu et al.13, Malgrange et al.14, respectively (8%, 9%, 5.1%, 4.6%, 15.8%); while Adejuwon et al.10 reported no active ulcers.

The presence of active ulcers has been shown to be a major contributor to lower leg amputation. As recommended by
the IWGDF, a foot ulcer requires urgent referral to a diabetic foot team or to specialists who deal with the management of diabetic foot complications (cited in Sibbald et al.7).

Also, in our study, about one out of three patients (33.8%) with DM presented with at least a high-risk foot parameter, which included neuropathy, foot deformity, peripheral vascular diseases (absence of pedal pulses), previous and/or active ulcer, and an amputation. This finding is not surprising as 60% of the participants had never had their feet examined by a doctor or a nurse and never received diabetes foot education before. This result supports the assertion of Ogbera et al.15, who documented that about 10% of the diabetic population had lower limb complications and this incidence is increasing after nine years. This calls for proactive diabetes education modules to prevent and reduce foot ulceration and amputation. Further, our study findings in relation to presentation of one or more parameters of the high-risk foot are similar to those of Adejumo et al.10, 29.2%; Mwandri11, 37%; Smanioto et al.16 12.3%, Malgrange et al.14, 21.1%. However, it is far below the findings of Sibbald et al.7, with 48% in Guyana, and Nyamu et al.13, 47.5% in Nairobi and Ogbera et al.15, who also reported a high risk of 41.5% of studied population. These variables in the pathogenesis of DFU constitute high-risk foot status that require urgent referral to a multidisciplinary team for diabetic foot management. Deformities, fissures and active ulcers were the most prevalent foot lesions that were observed in the study population. This is similar to findings of other researchers10,11,12,15. However, Sibbald et al.7 recorded neuropathy, callus and ingrown toe nail as the most prevalent risk factors. Existing guidelines6,7 show that the presence of bony deformity carries a high risk of an associated lower leg amputation. These patients need

Table 6: Highest level of education, Kruskal-Wallis test

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foot risk</td>
<td>314</td>
<td>1.2038</td>
<td>1.27767</td>
<td>.00</td>
<td>8.00</td>
</tr>
<tr>
<td>Highest educational level</td>
<td>314</td>
<td>2.1306</td>
<td>1.11574</td>
<td>1.00</td>
<td>4.00</td>
</tr>
</tbody>
</table>

Test statisticsa,b

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Foot risk</td>
<td>Chi-square</td>
<td>20.309</td>
<td>Df</td>
<td>3</td>
<td>Asymp. Sig.</td>
</tr>
<tr>
<td></td>
<td>a. Kruskal-Wallis test</td>
<td></td>
<td>b. Grouping variable: highest educational level</td>
<td></td>
<td></td>
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</table>

Table 7: Occupation, Kruskal-Wallis test

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foot risk</td>
<td>314</td>
<td>1.2038</td>
<td>1.27767</td>
<td>.00</td>
<td>8.00</td>
</tr>
<tr>
<td>Occupation</td>
<td>314</td>
<td>3.9204</td>
<td>1.20570</td>
<td>1.00</td>
<td>5.00</td>
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</table>

Test statisticsa,b

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Foot risk</td>
<td>Chi-square</td>
<td>6.027</td>
<td>Df</td>
<td>4</td>
<td>Asymp. Sig.</td>
</tr>
<tr>
<td></td>
<td>a. Kruskal-Wallis test</td>
<td></td>
<td>b. Grouping variable: occupation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
a referral to a specialist or diabetic foot clinic, which may not be available in Nigeria. These parameters have been linked to neuropathy and carry a high risk of diabetic foot because of dry skin changes, stiffness and mechanical failure. Nerve damage, in turn, is compounded by walking barefoot, which is a practice encouraged by religious beliefs in rural communities in Nigeria. In Nigeria, walking barefoot and use of inappropriate footwear is a strong risk factor for the high prevalence of diabetes-related foot ulceration. This calls for intensive foot management, knowing that the most common injury leading to ulceration is continuous low-pressure trauma, often from foot deformity, ill-fitting shoes and injuries due to chronic repetitive trauma from walking or day-to-day activities, which often the patient is not aware of. The most common co-morbidity identified was hypertension, which is in keeping with the report of Dikeukwu and Omole.

The patients were mainly on level 2 (24.5%) and level 3 (15.3%), while 2.9% were on the lowest level of risk (level 1) which is similar to the result of Smanioto et al., who reported level 2 risk as the highest. The classification of risk of diabetic foot ulceration into levels allows the managing team to determine the approach to be taken and the frequency with which the feet of diabetic patients should be examined, so that there is a systematic and periodic monitoring of this population to prevent diabetic foot ulceration and amputation as recommended by the IWGDF, (cited in Sibbald et al.). Patients with higher risk status will require shorter follow-up period for rescreening and follow-up of recommended treatment. This may include the need for diabetes and foot care education, professional care of nails, orthopaedic shoes, orthotics, and restrictions on activities. This approach minimises the risk of ulceration,

Table 8: Smoking status, Mann-Whitney test

<table>
<thead>
<tr>
<th>Do you smoke?</th>
<th>N</th>
<th>Mean rank</th>
<th>Sum of ranks</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>302</td>
<td>157.09</td>
<td>47441.50</td>
</tr>
<tr>
<td>Yes</td>
<td>12</td>
<td>167.79</td>
<td>2013.50</td>
</tr>
<tr>
<td>Total</td>
<td>314</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Test statistics

<table>
<thead>
<tr>
<th>Foot risk</th>
<th>Mann-Whitney U</th>
<th>Wilcoxon W</th>
<th>Z</th>
<th>Asymp. Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>1688.500</td>
<td>47441.500</td>
<td>–.418</td>
<td>.676</td>
</tr>
</tbody>
</table>

Table 9: Family members assist with foot care, Mann-Whitney test

<table>
<thead>
<tr>
<th>Does a family member assist you in caring for your feet?</th>
<th>N</th>
<th>Mean rank</th>
<th>Sum of ranks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>85</td>
<td>180.61</td>
<td>15352.00</td>
</tr>
<tr>
<td>No</td>
<td>229</td>
<td>148.92</td>
<td>34103.00</td>
</tr>
<tr>
<td>Total</td>
<td>314</td>
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<td></td>
</tr>
</tbody>
</table>

Test statistics

<table>
<thead>
<tr>
<th>Foot risk</th>
<th>Mann-Whitney U</th>
<th>Wilcoxon W</th>
<th>Z</th>
<th>Asymp. Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>7768.000</td>
<td>34103.000</td>
<td>–2.872</td>
<td>.004</td>
</tr>
</tbody>
</table>

a. Grouping variable: do you smoke?

a. Grouping variable: does a family member assist you in caring for your feet?
enables analysis of the behaviours of the individual patient and appropriate education and counselling to be proposed; as to the adequacy of treatment according to the progression of the disease.

Findings in this study show that age of the participants, level of education attained and having a family member assist with foot care affects the risk of developing a diabetic foot. This is in line with the findings of Ogbera et al., who documented statistically significant relationship between the educational status and age of their participants. This is very important and shows the importance of integrating the family in patients’ care. There was no significant relationship between smoking and risk of developing a diabetic foot. This is not inconsistent with the literature and report of Dikeukwu and Omole. Viswanathani believes that smoking increases the risk of foot ulceration by reducing blood circulation in the legs and sensation in the feet. This is in keeping with finding of Ogbera et al., who documented no relationship between the sex of respondents, smoking and the risk of diabetic foot ulceration.

This may be because it has been documented that cigarette smoking causes a decrease in cutaneous blood flow, as much as 40% to produce ischaemia and impair wound healing. Smoking a stick of cigarette creates a vasoconstrictive effect up to 90 minutes, while smoking a packet can result in hypoxia that can last an entire day.

In our study, the risk of developing a foot ulcer was the same for the participants with medical conditions and those without any. This is not in line with the
Table 12: Arthritis, Mann-Whitney test

<table>
<thead>
<tr>
<th>Foot risk</th>
<th>N</th>
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<th>Sum of ranks</th>
</tr>
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<tbody>
<tr>
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<td>156.24</td>
<td>44371.50</td>
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<td>Yes</td>
<td>30</td>
<td>169.45</td>
<td>5083.50</td>
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<td>Total</td>
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Test statistics*

<table>
<thead>
<tr>
<th>Foot risk</th>
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<th>Wilcoxon W</th>
<th>Z</th>
<th>Asymp. Sig. (2-tailed)</th>
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<tr>
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<td>~.792</td>
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<td>Yes</td>
<td></td>
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</table>

a. Grouping variable: arthritis

Peptic ulcer, Mann-Whitney test

<table>
<thead>
<tr>
<th>Foot risk</th>
<th>N</th>
<th>Mean rank</th>
<th>Sum of ranks</th>
</tr>
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<tbody>
<tr>
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<td>48812.00</td>
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<tr>
<td>Yes</td>
<td>3</td>
<td>214.33</td>
<td>643.00</td>
</tr>
<tr>
<td>Total</td>
<td>314</td>
<td></td>
<td></td>
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</tbody>
</table>

Test statistics*

<table>
<thead>
<tr>
<th>Foot risk</th>
<th>Mann-Whitney U</th>
<th>Wilcoxon W</th>
<th>Z</th>
<th>Asymp. Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
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</tr>
</tbody>
</table>

a. Grouping variable: peptic ulcer

Table 13: Retinopathy, Mann-Whitney test

<table>
<thead>
<tr>
<th>Foot risk</th>
<th>N</th>
<th>Mean rank</th>
<th>Sum of ranks</th>
</tr>
</thead>
<tbody>
<tr>
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<td>157.67</td>
<td>43202.50</td>
</tr>
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<td>Yes</td>
<td>40</td>
<td>156.31</td>
<td>6252.50</td>
</tr>
<tr>
<td>Total</td>
<td>314</td>
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<td></td>
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</table>

Test statistics*

<table>
<thead>
<tr>
<th>Foot risk</th>
<th>Mann-Whitney U</th>
<th>Wilcoxon W</th>
<th>Z</th>
<th>Asymp. Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
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<td>6252.500</td>
<td>~.093</td>
<td>.926</td>
</tr>
<tr>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Grouping variable: retinopathy
findings of Shahbazian et al., who reported a significant correlation between the patients’ medical characteristics (eye complications) and risk of diabetic foot ulceration. Uncontrolled DM is known to be the leading cause of blindness in adults ≥40 years. DM causes increased pressure inside the eye (glaucoma), swelling of the lens and blurring of vision (cataract) and damages the network of blood vessels that supply the retina (diabetic retinopathy). This, in turn, may lead to impaired vision or loss of vision. When there is loss of vision, the patient may not have a good view of the foot to examine it daily and may not notice any changes in the foot or deterioration in active ulcers, especially when there is no one to help assess their feet.

CONCLUSION
The study found an appreciable number of the participants to be at high risk of diabetic foot at different levels. This should be taken seriously, especially in a developing country like Nigeria, with limited resources to manage ulceration when it ensues. Foot assessment programs by nurses should be mandatory in diabetes clinics to compensate for the lack of podiatric services. Such programs may not only decrease the risk of diabetic foot disease but also the rate of foot amputation.

CONFLICTS OF INTEREST
The authors report no conflict of interest.

ACKNOWLEDGMENTS
The authors are grateful to all the participants; research assistants, Princess and Chibuike; and the staff of the hospitals.

COMPLIANCE WITH ETHICAL STANDARDS
Funding: This study was not funded in any form by any group or organisation.

Conflict of interest: The authors have no conflicts of interest to declare.

Ethical approval: All procedures performed in studies involving human participants/participants were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent: Informed consent was obtained from all participants included in the study.

REFERENCES
Overcoming problems with stoma site placement and improving quality of life after urinary diversion

Patricia Walls
RN, STN
Holy Spirit Northside Private Hospital, Brisbane, Qld, Australia

ABSTRACT
Stoma placement requires careful assessment preoperatively. However, postoperatively, changes in body contours can occur that cause problems with the management of the stoma. Complications after any major surgery can be distressing for a patient and inhibit recovery and rehabilitation, particularly if leakage occurs around a stoma.

The challenge for the stomal therapy nurse (STN) is to provide a patient-centred care approach as well as the implementation of practical stomal therapy ‘tricks of the trade’ when ostomy problems arise to ensure the best possible outcomes for patients.

The following case study involves an elderly patient who underwent a radical cystectomy and creation of an ileal conduit. ‘Tricks of the trade’ used to overcome problems associated with constant leakage from his appliance and his subsequent loss of self-esteem are demonstrated. A simple individualised care plan, including education and self-management techniques, is also outlined.

Keywords: Stoma site, quality of life, individualised care plan, self-management, education.

INTRODUCTION
Bladder cancer is the sixth most common cancer in the world, is more prevalent in people aged over 60, with a significantly higher incidence in men than in women. Bladder cancer can be defined as:

- Urothelial carcinoma, formally known as transitional cell carcinoma, which is the most common form of bladder cancer (80–90%) and originates in the urothelial cells in the bladder wall’s innermost layer.
- Squamous cell carcinoma, which begins in the thin, flat cells that line the bladder.
- Adenocarcinoma, which is relatively uncommon and originates in the mucus-producing cells in the bladder.

Radical cystectomy and creation of an ileal conduit for non-continent urinary diversion remains a commonly performed procedure for treatment of muscle-invasive bladder cancer. The ileal conduit procedure was first described by Zaayer in 1911; however, it was Eugene Bricker who advanced the procedure in 1950 and hence the procedure is often referred to as a Bricker’s ileal conduit. The procedure involves the removal of the bladder and implantation of the ureters into a dissected segment of ileum, which is exteriorised to the abdominal wall for the purpose of excretion of urine. It is usual practice for ureteric stents, which are small-bore drainage tubes, to be inserted into the ureteroenteric anastomoses to prevent urethral anastomotic strictures secondary to post-surgical oedema and obstruction of the urine flow from the kidney. Stents inserted into the left and right ureter are usually identified by colour to assist with assessment of urine flow. Stents slowly extrude when the sutures holding them in place have absorbed or are removed at the request of the surgeon, usually around day 7–10 post-surgery.

In 2014, in Australia, there were 2,748 new cases of bladder cancer diagnosed and in 2015, there were 1,111 deaths related to the condition. Radial cystectomy is associated with high morbidity (50%) and mortality (8%). In Australia, length of hospital stays (LOS) for radical cystectomy ranges between 10 and 20 days, with an average LOS of 14 days. Prolonged LOS (>14 days) is not uncommon. However, hospital LOS globally is decreasing due to demand on acute care services and typically patients are often discharged home within a week of surgery.

Approximately 75–80% of patients post ostomy surgery experience one or more complications, despite improvements in surgical techniques, ostomy appliances and ostomy care before and after surgery. The predominant complications are peristomal skin-related.

STOMA SITING
Stoma site selection is an essential component of preoperative care, which determines successful postoperative outcomes for the patient. The patient must be confident that they can resume a normal lifestyle, secure in the knowledge that activities of daily living will not be interrupted by appliance leakage or odour. STNs are aware that a well-sited stoma is a key factor to successful rehabilitation. It is important that siting of the urostomy stoma be carried out preoperatively by an experienced person such as an STN or clinicians educated in stoma site marking.
Stoma siting involves more than just placing a mark on the abdomen. It involves physical, cognitive, occupational/lifestyle and abdominal assessment to determine the optimum stoma site\(^3,9\). A person's ethnicity and religion and any inherent restrictions also need to be considered\(^11\). The patient should be examined in the supine, sitting and standing positions to ensure the most comfortable and secure site for the appliance\(^9\). Siting considerations include:

- Abdominal scars.
- Contours and clothing (that is, the stoma should not automatically be placed in the middle of an abdominal quadrant or below a low belt line).
- There must be ample flat area around the stoma (5–7 cm) for the pouching system to adhere securely.
- The stoma should be located at the crest of the infraumbilical bulge on the abdomen and within the rectus muscle, where it can be easily seen by the patient\(^9,10,11\).

### DISCHARGE PLANNING

Good physical and psychological health is essential after ostomy surgery and begins with appropriate discharge planning. A comprehensive discharge plan is one that minimises the potential for problems associated with appliance leakage and psychological problems, so that adjustments can be made to ensure quality of life for the patient with a newly made stoma\(^3,9,12\). The support in the home and the patient's physical attributes for managing activities of daily living are central considerations in the development of an effectual and safe discharge plan\(^12,13\). However, as average hospital LOS continues to decrease, the time for establishing patient confidence and independence in stoma management is limited.

In hospital, the patient tends to develop a sense of security, recognising that qualified people are available to assist. Further, the patient is often overwhelmed with the volume of information given.

In preparation for discharge, postoperative education should ensure the patient and/or carer:

1. has the ability to empty and change the appliance independently;
2. can connect a night-time drainage system;
3. knows when to change the appliance;
4. has been instructed in:
   a. normal stoma appearance and function; and
   b. abnormal signs related to the stoma, ileal conduit output (no urine output after six hours) and impaired peristomal skin integrity;
5. is aware of how to obtain ostomy appliances and accessories; and
6. has been provided with information on:
   a. fluid and nutritional needs, for example, 8–10 glasses fluid daily unless contraindicated;
   b. medications and potential effects on ostomy function, for example, medications that change the colour of urine;
   c. returning to usual activities of daily living; and
   d. who to contact if problems arise, such as cloudy offensive urine or peristomal skin issues that do not resolve with usual care\(^3,4,8,14\).

### QUALITY OF LIFE

Following a radical cystectomy, the patient can expect to undergo adaptations in body image and must learn new skills to manage their urinary diversion\(^12,13\). The aim of most surgery is to improve the patient’s health condition and quality of life. However, when the surgery involves the formation of a stoma the adjustment, can be slow or difficult\(^12,13\). Patient education and that of their family plays a major role in facilitating their recovery and rehabilitation and the prevention of stoma problems. Patient confidence and competency in managing their stoma can be enhanced with simple, effective education. However, a poorly sited stoma and associated complications has a significant impact on a person’s ability to manage their stoma confidently and can inhibit appliance security and quality of life\(^3\).

### CASE HISTORY

**Patient overview and presenting complaint**

Mr P, a 70-year-old man, was admitted to hospital in 2017 for a radical cystectomy and the formation of an ileal conduit for cancer of the bladder. Preoperative education and counselling was provided by the STN. This gave the patient and his family the opportunity to express their feelings and concerns related to the surgery. Lifestyle issues were discussed in a manner that gave Mr P a realistic picture of postoperative life with an ostomy. Mr P was able to explain what the surgeon had told him about his surgery. In addition, he was given additional verbal information and printed literature about living with an ileal conduit and was assured that follow-up care post-discharge was available. The optimum site for ileal conduit stoma placement was marked preoperatively on Mr P’s abdomen.

**Interventions and ostomy management plan**

Mr P’s postoperative recovery was uneventful, and his ureteric stents were removed on day 10 (Figure 1). He was discharged on day 12, stating at the time he felt confident with self-management of his ileal conduit.
A follow-up appointment was made for Mr P to be reviewed as an outpatient the following week. The attending STN at the time was concerned as there was a ‘gully’ appearing on the lateral side of his stoma, which required a convex appliance and a belt to aid security (Figure 2). A Hollister CeraPlus™ convex base plate and a urostomy pouch was determined to be the optimum appliance prior to discharge.

At the follow-up visit, Mr P was distressed as he reported the pouch had leaked every day and he had lost his self-confidence in his ability to manage his stoma and his self-esteem had plummeted. On examination, it was noted that his abdominal contours had changed markedly since his surgery and discharge. A significant crease had developed in the medial parastomal region and this was where the leak was occurring (Figure 3).

However, he was still happy to continue with the two-piece convex appliance, so a hydrocolloid seal was added. A Welland hydrocolloid barrier extender was also added. This ultra-thin and highly conformable wing was applied medially to give added security. This ensured added reassurance and confidence for the patient and a belt ensured a snug fit (Figure 4). It should be noted that instructions were given to Mr P not to wear the belt too tight because added skin trauma could occur at the belt loop sites. An appointment was made to review Mr P in one week.

At the second review visit, it was noted that the base plate was lifting and leaking medially (Figure 5). The CeraPlus™ skin barrier infused with ceramide was observed to have maintained healthy peristomal skin and protected the skin’s natural moisture barrier. However, the patient’s confidence in the two-piece system had become a problem and it was decided to try a one-piece appliance. Unfortunately, at this time the Hollister one-piece urostomy pouch infused with the CeraPlus™ skin barrier was not available.

Therefore, a new stoma management plan was put in place. The patient agreed to try the Hollister one-piece pre-cut convex urostomy pouch. Simple, basic, step-by-step information was given for changing the appliance every second day. He was instructed to prepare all his equipment prior to changing his appliance and was provided with written, simple three-step instructions for the appliance change procedure (Figure 6).

**THREE-STEP PLAN**

1. At a basin wash the stoma and dry the surrounding skin well.
2. Remove the middle backing paper on the appliance. On the side backing paper turn the top corners down.
3. Then hold the abdominal contours up with one hand and position the one-piece pouch. Hold in place for a few minutes to facilitate adherence with warming and apply a belt.
Mr P found this simple approach worked well while standing in front of a mirror. Previously, he was changing the appliance while showering, but this had become overwhelming so the three-step plan worked better in this case.

Mr P returned the following week a very happy and contented man. The appliance was adhering well, and he had experienced no leakage during the preceding week (Figure 7). The peristomal skin was observed to be intact and healthy (Figure 8).

**DISCUSSION**

Preventing or minimising ostomy complications is a critical factor for the person with an ostomy in the post-surgery rehabilitation phase. The fewer complications experienced have a direct and positive impact on the person’s physical and psychosocial wellbeing. Self-management of the ostomy is more likely to be achieved within a shorter period and hospital readmissions are averted.

There are multiple causes leading to ostomy and peristomal complications, including but not limited to: placement and construction of the stoma; abdominal ‘geography’ in terms of creases, folds, scarring and muscle tone; moisture-associated skin damage from effluent and mechanical trauma from appliances or accessories.

Leakage of effluent (in this case urine) is known to have a detrimental effect on the skin, leading to irritation, denuding of the skin, reduced skin adhesion, moist desquamation and the potential for skin sensitivities or infection. Alone or in combination, these factors lead to reduced product wear time, increased frequency of appliance changes and impaired quality of life. It is essential, therefore, to intervene early and initiate clinical stomal therapy nursing interventions to ensure long-term debilitating complications are avoided.

This case study discusses the effects of a change in the patient’s abdominal contours in the medial parastomal region, leading to leakage of urine from the appliance. To prevent further leakage, preserve peristomal skin integrity and restore the patient’s level of self-confidence, care strategies were changed regarding the clinical management of the stoma, peristomal skin and patient self-education.

To manage the change in abdominal contours, the decision was made to use a convex appliance initially, with the later additions of a hydrocolloid seal and hydrocolloid barrier extender for extra security. Convexity is defined as the outward curving of a faceplate that begins at the aperture of the faceplate and extends outward. It may be categorised as shallow, medium or deep. Convexity appliances may be the product of choice when pouching problematic stomas.

An integrated convexity on the skin surface will improve the peristomal seal by increasing the depth of the faceplate to conform to the peristomal skin contours.

Hydrocolloid seals or barriers are designed to fill in or caulk uneven skin contours near the stoma, to create a flatter surface and help prevent effluent from getting under the ostomy barrier and they are designed to improve the fit of a pouching system. A correctly fitting hydrocolloid barrier provides freedom from worry about accidental detachment and stomal leakage, while minimising the potential for skin irritation.

Ceramide-infused skin barriers are reported to decrease transepidermal water loss within impaired skin by protecting the skin’s natural moisture barrier and facilitate adhesion, thereby maintaining peristomal skin integrity.

Patient education is a cornerstone strategy to successful rehabilitation. Lack of understanding about the management of the stoma, appliance selection, peristomal skin care and self-management can adversely prolong rehabilitation processes. The use of simple strategies such as education checklists and simple instructions on how to apply an appliance plus other education materials are known to reduce the effect of complications, reduce the potential for readmission and improve self-esteem.
CONCLUSION

This case study highlighted how simple ‘tricks of the trade’ can overcome a patient’s anxiety and resolve clinical problems associated with the management of the stoma and peristomal skin due to a change in body contours after surgery.

The continuing search for excellence and, at times, innovation in stomal therapy skills, involves all who participate in the care of the patient, beginning with preoperative counselling, choosing the optimum site for the stoma, building trust and rapport with the patient and ensuring continued follow-up care is available.

It is important to remember that although the optimum site for the stoma is marked preoperatively it is only in the postoperative period with changes in body contours that problems can and do arise. The CeraPlus™ two-piece appliance used initially maintained healthy peristomal skin and this continued when the one-piece convex appliance was used. Accessories such as barrier rings and paste were no longer required with the one-piece convexity appliance, which simplified stoma management. The simple three-step individualised care plan and self-management education strategies were key in supporting this patient to re-establish his independence, ensuring a positive outcome.

ACKNOWLEDGEMENTS

My thanks to Mr P for permission to write this case study and for consent to publish the photographs.

My thanks to Hollister for financial assistance. This case study secured an AASTN Scholarship to attend the WCET Congress in Kuala Lumpur in 2018.

Special thanks to Professor Keryln Carville, my friend and mentor for her guidance, help and encouragement with this case study.

Extra special thanks to Dr Jenny Prentice for her editorial suggestions and supervision in preparing and formatting content of the case study from an oral presentation to a journal article.

Treatment and appliance selection are based on my best assessment outcome and clinical judgement.

REFERENCES

“Patient First”: The developmental process of creating a consistent protocol for skin tears in a new hospital

Joana Pinto
RN, BSN, IIWCC — UAE
Cleveland Clinic Abu Dhabi
United Arab Emirates

INTRODUCTION
As an urgent necessity to standardise the care of skin tears, this study describes the process to support a wound care team, create a skin tear management protocol and ensure adequate resources are made available in order to fill these needs. The aims were to develop and implement a protocol based on international best practice and evidence by:

• Enabling health care professionals with the provision of a tool that supports and guides them to perform a careful clinical assessment of the patient’s wound, their clinical condition, co-morbidities, personal circumstances with preferences and rationalising the choice of dressings.

• Providing health care professionals with the support of the multidisciplinary team in the construction of a treatment plan according to best international evidence, in order to provide clinical excellence that puts patients first.

• Empowering health care professionals to choose the most appropriate dressing for skin tear wounds, safeguarding the knowledge of the safety, clinical and cost-effectiveness of a range of dressings with a patient- and family-centred approach.

BACKGROUND
Skin tears are a problem that affects most of the hospitals clinical units. The current information available to practitioners in our setting was not up to date in relation to the treatment and prevention of skin tears. The lack of a hospital-based guideline in this setting, associated with the different backgrounds and practices present in the workforce, leads to different practices applied. The differences in wound care practices leads to inconsistencies in the standardisation of the wound care, jeopardising the wound healing outcomes. Uniformity in caring for skin tears was a need identified that required the development of a protocol based on international best practice to guide consistent treatment in our setting. Sibbald and colleagues recommend that the implementation of guidelines is central to quality improvement, patient safety and potential health care-system change.

A skin tear is defined as a wound that is caused by shearing forces, friction, trauma, moisture build-up or a combination of those, that results in separation of skin layers, as depicted in Box 1. The risk of skin tears increases with age and is more prevalent in women above the age of 75. It is more common in those with previous skin tears, dry and fragile skin, poor nutrition and hydration, cognitive impairment, medication (steroids), and decrease of sensation and mobility with neuropathy. The idiopathic component of skin tears is not to be underestimated and may result in adding on current device-related, hospital-acquired skin injury incidence rates.

PROCESS

Needs assessment
In order to understand the needs of the facility, the collection of baseline data on skin tear prevalence, patient age, department rates and root causes serves a valuable purpose to bring the potential educational needs of health care professionals in line with the needs of patients in clinical practice. Barriers may prevent this data collection and those may include logistical, administrative or other specific challenges related to a particular work setting. Once those barriers are overcome, this continuously accumulated data will serve as a benchmark of protocol efficiency and effectiveness.

In addition, Baranoski and Brenczewski state that a learning needs assessment of health care professionals with regard to implementation of a new policy or guidelines is the first step to guarantee a successful educational intervention with uptake into practice. This assessment determines the expected outcomes and allows the learning experience to be tailor-made to the identified needs of the learners.

Box 1: The International Skin Tear Advisory Panel (ISTAP) classification of skin tears

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>no skin loss</td>
</tr>
<tr>
<td>2</td>
<td>partial flap loss</td>
</tr>
<tr>
<td>3</td>
<td>total flap loss</td>
</tr>
</tbody>
</table>
That is followed by planning the learning content around those needs, implementing the learning intervention and re-evaluating the uptake and residual needs afterwards.

The motivation behind this particular study was when the author observed the lack of a consistent documentation system with regard to skin tears in our setting. Extensive searches for an existing guideline in the hospital system yielded no results. Skin tear injuries would be documented inconsistently under different classifications that ranged from lacerations to abrasions, leading to inaccuracies in the data available on the hospital documentation system.

**Focus group discussion**

The main trigger for this study was the high number of wound and stoma care team (WSCT) consultations present in the system as referrals specifically for skin tears. A meeting was arranged between the WSCT and a team of hospital stakeholders to discuss the importance of the development of a skin tears protocol to ensure internationally aligned safe skin practices throughout the facility. In discussion with the WSCT, their observation was that forceful removal of dressings by persons other than the wound care team, was one of the most common causes for skin tears. Areas with the highest incidence were also identified in this focus group to ensure that focused attention on preventative actions are prioritised for those areas.

This focus group meeting created the impetus for the creation of a standardised skin tear management protocol with agreement that it is to be supported by structured education for all health care professionals in this setting. That would assist caregivers to implement behaviour to meet the set organisation goal — *Patient First*. As skin tears directly impact a patient, this process was prioritised.

**Incidence reporting**

The reporting system of the hospital includes wounds such as skin tears as an incident. We screened all the incidents reported with the keyword “skin tears”. The identified yield was 50 events of skin tears between 1 January 2017 and 1 December 2017. Despite this being a high number, the team of stakeholders believed the number to be underestimated. Using all the information available, the need for a skin tear protocol was clear and the identifications were based on review of the literature, stakeholders’ experience, the number of consultations that are received in the WSCT and incident report events.

**Review of the literature**

The longest part of the protocol development was the review of the literature as the aim was to collect the most accurate and best evidence practice of the identification and treatment of skin tears. The ability to connect with existing protocols and translate these to this specific work setting was one of the ideas that we agreed upon in a brainstorm meeting to ensure that international best practice is incorporated in the protocol.

Included literature was based on articles within the last five years on the topic of skin tears. That led to 34 documents analysed in depth to identify those with the highest levels of evidence, of which 19 articles were excluded. The remaining 13 articles were included for in-depth review and can be seen in Box 2. Those papers were included to generate a set of graded recommendations for practice, as advised by Woodbury. Existings protocols in the hospital were reviewed as well in order to maximise protocol uptake, while also promoting the best wound healing plan for skin tear management with clearly defined scales to use as assessment and classification.

**Protocol development**

After reviewing the literature and the protocol created based on the aforementioned steps, it was taken through the process of approval. The approval for the content was carried out by the wound care team and then submitted to the stakeholders within the hospital. Since the protocol will have direct impact on practice and quality improvement, the author will further need to present the protocol to the Skin and Tissue Viability sub-council, Practice Council and Quality and Safety Council of the hospital. Some extracts of the document are present to demonstrate how this structured process has led to policy creation (Boxes 3, 4 and 5).

**Planned educational intervention**

Integrating new knowledge into practice is a challenge in the adult learning process. Educational sessions need to be structured to provide optimal independence to the caregivers. That includes recognising preventative actions as well as signs and symptoms when skin tears have occurred, to guide treatment choices accurately for rapid healing and prevention of deterioration further along the wound process. This includes a process where health care professionals have to reflect on their actions with regard to patient care.

The current process followed in this hospital setting is still qualitative as formal education cannot commence until all the protocol approvals have been attained. This pre-emptive educational experience includes stimulation of peers to actively reflect about the causes of skin tears and enter into discussion with the author being a skin resource person. Discussion involves identifying actions that, if it was implemented previously, could have prevented the skin break occurrence. This has the elements of a “hindsight is 20:20 vision” approach, as described in the Shon theory of adult learning.

Taking advantage of this unique learning opportunity, the author is striving to bring innovation into everyday practices. By surprising the caregivers with these questions, the professionals, after a qualitative reflection about their practice, are able to acknowledge learning after reflection on action, completing a valuable learning cycle.
Box 2: Key references used in the development of the skin tear protocol for our setting (Pinto J)


Box 3: Extract from the created skin tear protocol on managing type 1 skin tears (Pinto J)

Type 1 skin tears — No skin loss (linear or flap tear can be repositioned to cover the entire wound bed)
— Heal by primary intention
1. Clean the skin tear.
2. Preserve the skin flap.
3. Approximate the skin flap wound edges to their normal anatomical position without applying tension to the flap:
   Approximate using either a moistened, sterile, cotton-tipped applicator or a sterile gloved hand or moistened sterile gauze.
   Apply Steri-Strips™ if periwound is intact.
   Apply primary non-adherent dressing and secondary dressing (for example, foam/roll gauze).
   Mark on the dressing the direction in which it should be removed.

The formal educational sessions will be given to the clinical instructors (CI), unit-based educators (UBE) and skin care resources nurses (SCRN) in a train the trainer approach. This will facilitate single-unit learning simultaneously throughout the hospital and is the most appropriate with regard to human resource utilisation within a shift-work model. The SCRNs are bedside nurses who have demonstrated an interest in being the link to the wound care team and went through a process of learning, which involves attending monthly workshops with the wound care team. Skin care resources nurses will be essential in the implementation of the skin tears protocol, since they are a key element in each department and provide a bottom-up learning opportunity as opposed to a top-down approach normally used. This design was described by Sibbald et al., stating that health care professionals who have their learning needs met in their practice add value on integrating and applying new information to the bedside.

CONCLUSION

The need for a skin tear protocol was identified and the process took into consideration the inclusion of the most relevant evidence-based practice approaches that is validated and translated to different cultural settings and translate that validated knowledge into addressing the skin safety needs of our setting. The design of the protocol was considered by the stakeholders to be developed in such a way that it is simple and easy to use. The simplicity in the design of the protocol is essential for optimal practice uptake into practice, providing easy recognition of the skin tear type and treatment required. The other outcome of this skin tear protocol was the provision of a guide to practice with regard
Type 2 skin tears — Partial flap loss (when the flap is repositioned on the wound bed, not all of the wound bed is covered) — Heal by secondary intention.

1. Clean the skin tear.
2. Preserve remain skin flap — the skin tear edges cannot be completely approximated.
3. Approximate what skin flap is present and wound edges to their normal anatomical position without applying tension to the flap:
   - Approximate using either a moistened, sterile, cotton-tipped applicator or a sterile gloved hand or moistened sterile gauze.
   - Apply primary non-adherent dressing and secondary dressing (for example, foam/roll gauze).
   - Mark on the dressing the direction in which it should be removed and date.
   - Do not use Steri-Strips™ to secure the flap for type 2 skin tears.

Type 3 skin tears — Full flap loss (no skin flap) — Heal by secondary intention

1. Clean the skin tear.
2. Control bleeding.
3. Apply primary non-adherent dressing and secondary dressing (for example, foam/roll gauze):
   - Protect the periwound skin.
   - Manage the exudate without macerating the periwound skin.
   - If frequent dressing changes are required then ensure minimal disturbance to the skin tear — apply a contact layer over the skin tear and then apply a cover dressing (gauze wrap and an appropriately sized cotton tubular bandage, tubular sleeve or tubular netting bandage).
   - Avoid use of tape — if needed, use tape removal and paper tape.
   - Mark on the dressing the direction in which it should be removed and add the date of application.

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ABSTRACT

Formation of an abdominal stoma is a relatively straightforward procedure in contemporary medical practice. Minimal complications result and patients are able to return to a comparatively normal life. Yesterday was different. Between the days of Hippocrates (400 BCE) right up until the middle of the 20th century, intestinal surgery, especially of the small bowel, resulted in poor survival outcomes.

Between 1950 and 1970, key milestones were made surgically and also in the area of enterostomal therapy. Norma Gill, the lady known as the "mother of enterostomal therapy" plays a key part and so does her surgeon, Rupert Turnbull Jr. However, little is known about Rupert Turnbull. Who is this man and why is he so significant? This paper briefly explores Rupert Turnbull's life and why he is so significant to the enterostomal profession.

Keywords: Turnbull, Norma Gill, history, significance, surgery, 1950.

INTRODUCTION

It is now six decades since enterostomal therapy first took its roots in medicine. Norma Gill's operation for ulcerative colitis was in 1954. The operation transformed Norma's life from a life of misery to one dedicated to helping others. Her dedication did not go unnoticed. Turnbull could foresee Gill was just what he needed to rehabilitate his patients and hence in 1958, Gill was paid as Turnbull's first "ostomy technician". Together they were a dynamic duo: ostomates were being cared for pre- and post-surgery; patients were sited for the best stoma location; appliances were being continually improved as both Turnbull and Gill would meet manufacturers to discuss ostomy needs and pouch designs; they set up an enterostomal therapist training school in Cleveland (still in operation, it is called the RB Turnbull Jr School of WOC Nursing); created a voice for ostomates called the United Ostomy Association and initiated the first professional group for enterostomal therapists, the American Association of Enterostomal Therapy. This later progressed to the World Council of Enterostomal Therapists® and the Wound, Ostomy Conti nence Society®. Together they were unstoppable. A lot of Gill's story is known and covered well in the history of the enterostomal profession, but little is known about Turnbull.

RUPERT TURNBULL'S EARLY YEARS

Rupert Turnbull, or Rupe as he was affectionately known, was born in Pasadena, California in 1913 and died holidaying in Hawaii in 1981 at the age of 68. His father was Rupert Senior, a Supreme Court judge and his mother was Irene Archibald. After graduating from Momosa High school, he undertook an undergraduate degree at Pomona College, Claremont. This enabled him to study at the highly respected McGill University, Montreal, Canada in 1936. Halfway through his degree he married "Dougie" Fisher, a theatre nurse for the world-renowned neurosurgeon, Wilder Penfold, in 1940, at the age of 27, Turnbull graduated second in his year. To pay off his medical debts, he enlisted in the US Public Health Service internship at South Pacific Hospital, San Francisco, and then obtained a job in Panama Canal Zone, 'Gorgas' Hospital from 1941 to 1943.

With World War Two escalating in intensity and being fearful of his career being 'frozen' in Panama, he volunteered to join the US Navy Medical Corps. He anticipated involvement in invasion operations; however, when his superiors noted his training in tropical diseases, an interest he picked up in Panama, he was sidelined to San Diego's Naval Hospital to teach medical officers how to protect themselves and the marines against tropical diseases. As the war progressed, Rupe soon rose in superiority, both as a doctor and as a lieutenant commander in the Navy. He worked as field
surgeon in the First Marine Division South Pacific, Okinawa and later as a hospital commander at Tien-Tsin, China\textsuperscript{9,13}.

At the end of the war, Turnbull had intentions to pursue a career in neurosurgery; however, it was his friend George Crile Jr, nicknamed Barney, who convinced him otherwise\textsuperscript{12,13}. He said, “You don’t want to do that Rupe. Nothing will ever happen in neurosurgery. None of the people get well and they all lose their personality”\textsuperscript{9}. Barney convinced him to complete his medical training at the Cleveland Clinic: a clinic known to be incredibly innovative. For instance, Barney’s father (a surgeon and one of the four Clinic founders) was the world’s first to give a human blood transfusion\textsuperscript{14,15}.

Rupert came and worked for the Chief of Surgery, Dr Tom Jones as his fellow and first assistant from 1946 to 1949 (Jones replaced Crile senior when he died in 1943)\textsuperscript{12,16}. Jones was an accomplished surgeon. He was known for his colonic cancer resections and was a really hard taskmaster. Throughout the three years Turnbull was with him, Turnbull only did one of the hundreds of colonic operations. Despite having limited experience personally, Turnbull knew the operation backwards. Hence when Jones collapsed and unexpectedly died, Turnbull stepped in. He was confident and skilled. The following year, Turnbull performed almost 100 operations with the same low mortality rate as the master\textsuperscript{8,16}. The year was 1950 and it was from this time on Turnbull’s career ‘took-off’ and so did advances in colorectal surgery and in the field of enterostomal therapy — a name he coined\textsuperscript{15,16}.

As a person, Turnbull was described as a striking figure, tall, dignified and handsome\textsuperscript{14}. He was a devoted family man who had a quiet, yet deep Christian faith\textsuperscript{13}. He was unassuming, approachable and success never spoilt him. He was widely acknowledged by his peers; published over 185 scientific articles; received many distinctions; was a world authority acknowledged by his peers; published over 185 scientific articles; received many distinctions; was a world authority on inflammatory bowel diseases and his contribution to the colorectal disease field was enormous\textsuperscript{13,14}.

**WHAT WAS HAPPENING IN SURGERY PRIOR TO 1950?**

To fully appreciate Turnbull’s input and the significance of the 1950s, it is important to understand the preceding years. In the early 19th century, surgery was a risky business. Patients would die of infections and there was little or no anaesthesia\textsuperscript{17}. Physicians pondered on why infections occurred. Did they occur spontaneously, like maggots from meat, or did they occur as a result of an imbalance of body fluids such as phlegm, bile or blood\textsuperscript{18,20}?

They also pondered on how diseases such as cholera, tuberculosis, cholymdia and the Black Death spread. Was it because of breathing in bad air\textsuperscript{21,22}? Was it magic or was it because of one nation trying to poison another, as was the case when 25 million Jews were killed in 14th century AD when it was believed they caused the Black Death by poisoning the water supplies\textsuperscript{23-25}?

The mid-19th century was different: there was a medical revolution\textsuperscript{26,27}. Microscopes with increasingly powerful lenses were developed; germs were found to be the cause and spread of disease; vaccinations were introduced, antibiotics were made; blood transfusions were given; antiseptics were applied; hand washing was seen as important and anaesthetics were developed that made operations possible\textsuperscript{27,28,29,30}. Despite all these advances, intestinal surgery was still problematic. Physicians were in a quandary. They knew patients could survive bowel injuries. They knew in the late-18th century soldiers who had exposed injured bowels survived with the bowel naturally adhering to the skin surface\textsuperscript{31,32}. However, if surgeons tried to operate on the bowel, problems occurred. Issues related to difficulties re-joining the bowel, blood loss, urogenital dysfunction and infections\textsuperscript{33}. Colostomy operations were more likely to be successful, such as Hartman’s procedure and abdominal perineal resection, but ileostomy operations were unpopular\textsuperscript{28,31,33}. Generally ileostomies were crudely formed, developed significant skin complications (faecal leakage) and mortality rates were high\textsuperscript{34,35}. This more or less leads us to 1950. So, how did Turnbull turn the intestinal stoma from a dreaded last-resort procedure to today’s well-accepted option of treating colorectal disorders?\textsuperscript{12}

**TURNBULL’S IMPACT ON SURGERY**

In the area of colorectal disease, he naturally was able to see ‘outside the box’. For instance, he questioned the custom of allowing spontaneous stoma maturation where postoperatively the exposed, unopened loop of colon was left for two to three days prior to opening at the bedside. He felt this process was needless and emotionally traumatic\textsuperscript{36}. He and Crile advocated the procedure occur at the same time as surgery\textsuperscript{8,13,36}. He also questioned the customary abdominal perineal resection of letting the wound heal by secondary intention. He and Crile advocated sewing the wound up and applying a drain\textsuperscript{27}. It was such a simple procedure, yet in the 1950s it was revolutionary due to the significant fear of infection. In the 1950s, along with Crile, Turnbull identified the major cause of mortality and morbidity after ileostomy creation was obstruction from serosal inflammation that reacted to effluent by becoming inflamed, scarred and then
contracted. He and Crile proposed a mucosal graft, which like Dr Bryan Brooke’s everted stoma (for the same reasons), transformed patient outcomes.

In the ‘toxic megacolon’ phase in nonspecific ulcerative colitis, Turnbull devised a technique that remarkably reduced mortality in patients. Prior to 1950, removal of the friable colon was forbidden as it was thought the dilated fragile colon would rupture and cause fatal faecal sepsis. The technique Turnbull devised avoided a colectomy. It was a minimally invasive procedure, which involved diverting the faecal flow via an ileostomy and creating a decompression colostomy: essentially a ‘blow-hole’ to relieve dilation and avoid serious complications. Later when the patient was in better health status, the bowel could be re-joined.

Turnbull was also a keen observer. When cleaning the desk of Tom Jones, he accidently knocked over a bottle of Karaya dental powder. The powder stuck to the desk and to his hands; so much so, he had difficulty removing the substance. He then processed his observation and thought such a product could be used to protect peristomal skin from faecal effluent. Hence the creation of the earlier Karaya wafer and paste.

Other than a brilliant mind, Turnbull had two other traits that helped him stand out from the crowd: his incredible spirit and his heart of compassion. In relation to his spirit, he was able to respect his peers as equals and acknowledged that in contingent matters there’s always a legitimate difference of opinion. Hence, when discussing different points of view, he would not be sarcastic, angry or discourteous. He respected honesty and, like James P Shannon’s article ‘The Traditions of a Respectful argument’, which he particularly liked to quote, he believed all men are men of integrity until proven otherwise.

This trait was clearly evident in his work. When Brooke in the UK was found to have created a much simpler means of creating a spouted stoma before Turnbull and Crile’s ‘mucosal graft’, he was quick to write and congratulate him. In general, Turnbull would go out of his way to give credit to others where credit was due. He was approachable and welcomed ideas and observations. For instance, it was the pathologist Edwin Fisher in 1955 who made comment to Turnbull that he found cancer cells in the portal venous circulation after the operation where colonic cancer was removed. This led Turnbull to advocate an operation where the tumour is isolated prior to the tumour removal: a “no-touch technique” that saved many lives. For this life-changing procedure, Turnbull gave credit to Fisher. He also gave credit to Peyton Barnes who first stated the principle of “no-touch” prior to Turnbull giving its well-known extensive recognition. Another example of him giving praise to another is in the area of stoma products. He was delighted to hear of Elinor Kyte’s experience with Orahesive. Kyte was an Australian stoma nurse who worked with Sir Edward Hughes in Victoria. Kyte observed the incredible effect Orahesive made to damaged peristomal skin. Turnbull gave voice to her discovery and from here, the product Stomahesive was born.

The third trait that made Turnbull stand out from others was his heart. He really cared about the patient’s journey: was thoughtful, gracious and compassionate. That is why in the early days, prior to his employment of Gill, he would give patients his personal telephone number if they experienced stomal problems. His passion to help others naturally led to his passion for teaching. Doctors from across the globe would attend his theatres in droves. He would speak nationally and internationally, commanding huge audiences. His presentations were always concise and delivered a strong message.

Rupert Turnbull had a brilliant mind. In fact, some would go so far as describing his genius to that of a Renaissance man: a term used to describe folk who could succeed in many realms of life, like the famous artist Leonardo da Vinci who was also a sculptor, inventor, mathematician, a military engineer, a draftsman and a scientist. Turnbull’s early life showed similarities to da Vinci’s. His curious mind and keen intellect enabled him to excel. For instance, he was a gifted pianist, expert fencer, diver, horse rider, amateur botanist and champion swimmer. Even in races such as the 100-metre sprint, he excelled and he competed in the Olympic trials. Likewise in 1932, along with his sister and brother, he represented the USA in the Italian hydroplane races, winning every race. It also explains why he quickly became so learned in tropical diseases whilst working in Panama.
CONCLUSION

So, in summary, Rupert Turnbull was the visual ‘spearhead’ that changed colorectal surgery from a dreaded last-report procedure to today’s well-accepted treatment option for colonic disorders. His success lay in his communication. With a brilliant mind, surgical skills that challenged the status quo, a heart of compassion and spirit of seeing people as equals, he moved surgery forward. He created new surgical techniques and shared his knowledge locally, nationally and internationally. Often this would take shape through lectures and scientific journals.

Change was not just related to surgery. He understood the impact of a surgical stoma on a patient’s life and harnessed enterostomal therapists, like Normal Gill, to provide rehabilitation. He also set up education for enterostomal therapists, gave a voice to ostomates through the United Ostomy Association and helped set up today’s professional body, the World Council of Enterostomal Therapists® and the Wound Ostomy Continence Nurse Society. Thus, the podium for the “Mother of enterostomal therapy” Norma Gill, needs to be shared. Rupert Turnbull, the “Father of enterostomal therapy”, is a legend!

AUTHOR’S DECLARATION

I certify that I have no conflict of interest in the writing of this article.

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Professor Sue Clark, St Mark’s Hospital, London

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Norma N Gill Foundation

The aim of the Norma N Gill Foundation is to facilitate education in enterostomal therapy (ET) nursing worldwide. This aim can only be realised with the support of our members and colleagues in industry.

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Delegates at the WCET™ Congress, in Kuala Lumpur in April, were treated to a very successful scientific programme with diverse, stimulating and high-quality content.

For the benefit of the many members who were unable to attend, here is a sample of what was presented by speakers from around the world.

**INTESTINAL STOMAS — LESSONS LEARNT FROM THE YESTERYEARS**

Dato’ Dr Mesheshinder Singh
Consultant General and Colorectal Surgeon, President, Malaysian Society of Colorectal Surgeons (MSCRS), Malaysia

Enterostomal care is an indispensable part of gastrointestinal surgical management. Its importance had been recognised almost a century ago. The earliest stomas were actually fistulas that developed spontaneously following bowel perforation. The various challenges encountered by healthcare providers including the high morbidities were learning tools that only made its stand more pragmatic.

The evolution of enterostomal therapy in Malaysia and its need for constant advancement continues to date. The association between the enterostomal society with various other healthcare providers and the medical industry is the most desirable way to the future.

In the surgical context, advancement in operating techniques aided by better understanding about cancer growth and the biology of diseases like IBD have brought about changes in treatment policies. Introduction of innovative tools, like the stapling and thermal devices have shortened the operating times. Minimally invasive surgical techniques have also revolutionised colorectal surgery in the past two decades. Technical advances like restorative rectal surgery and sphincter saving procedures have reduced the need for permanent stomas at the expense of diversion ileostomies. Use of colonic stents and single staged surgical resections for left-sided colonic obstructions have also brought about significant changes in the enterostomal world.

**A LIFE-CRIPPLING STOMA IN AN ADOLESCENT BOY WITH CYCLICAL NEUTROPENIA?**

Prof Dr Yik Yee Ian
Head of Pediatric Surgery, Dept of Surgery, UMMC (Malaysia)

This is the story of an unfortunate 14-year-old boy who presented a week before Christmas in 2014. JGWH was diagnosed with cyclical neutropenia since the age of 2 years old. He is closely monitored by the paediatrician. He had had occasional minor infections with good response to oral antibiotics. In 2009, he was admitted to the paediatric intensive care unit (PICU) for 3 weeks, with neutropenic enterocolitis and responded to broad-spectrum antibiotics. He remained well after that with no septicemic episodes.

On 18 December 2014, he presented with neutropenic septic shock, confirmed by computed tomography (CT) scan with enterocolitis and deteriorated rapidly. He underwent urgent laparotomy, had resection of gangrenous bowel with stoma formation. His postoperative course was extremely “stormy”, required multiple inotropes support, intra-aortic balloon pump, haemodialysis and elective amputations of his 4 limbs, to keep him alive. He had prolonged recuperation and was discharged home after 143 days of hospitalisation.

Though this boy has a life-crippling event that has transformed his life forever, he survived and is currently doing well, both academically and socially in Australia, with strong family support. This family has gone through this extremely difficult period with strong belief and trust in the medical health care teams and the emotional and psychological support provided were of utmost importance, both for the parents and the child. This case illustrates that with strong will and determination of the child, consolidated by strong family support, JGWH is destined to live his life to the fullest.

JGWH may be physically disabled, but he is determined to succeed in his life. The stoma formed may not be as crippling, after all! A cohesive, supportive and dedicated multidisciplinary team management plays an important role to achieve the best outcome for this child. As clinicians, we may not be able to save all lives but we should not take away the hope of a child to live on and hope of the family for the child to live on!

**CHALLENGING STOMA SITE SELECTION**

Susan Stelton
MSN, RN, ACNS-BC, CWOCN, WCET President (USA)

**Aim:** The aim of this presentation is to explore stoma site marking when the abdominal contours or situations exist that make site selection and marking more difficult.
Stoma site selection must correlate with planned surgical procedures, placing the stoma within the rectus muscle. Optimal stoma sites are not in the beltline, close to a scar from previous surgery or under a skin fold. It is critical that the patient can see the stoma and reach it to perform care.

Challenges in stoma site selection include: abdomens with sagging, wrinkled skin, multiple folds, several scars, extreme obesity causing a non-palpable rectus muscle and distention from bowel obstruction. Additional challenges are encountered when choosing sites for patients who are have scoliosis, wear a brace, require special clothing or equipment about the abdomen or are wheelchair-bound. Considerations for patients with strict requirements for religious observance must be made.

Conclusions: Stoma site marking is an important aspect of preoperative care, even when conditions are present that make site selection more difficult.

**MY LIFE**

Mireille Hamson
Lotus Healthcare, United Kingdom

**My life:** What is a typical day for people living with a stoma? How does it affect their everyday lives? These questions are not always easy to answer and the responses can vary considerably, depending on a myriad of variables such as personalities, lifestyle and environment and many other social situations that we all face throughout daily life. This day in the life study was able to give us an insight into what is really happening and helped us gain a more detailed understanding of what experiences an individual living with a stoma encounters. The study unearths how a stoma can impact on an individual’s physical, psychological and social wellbeing, demonstrating how they adapted to new challenges and environment.

**Aims:** The purpose of this small research study was to identify any concurrent themes that occur with people living with a stoma and how having a stoma can impact on their everyday life.

**Method:** Semi-structured interviews with 12 individuals living with a stoma.

**Conclusion:** This small research study identified some concurrent themes people living with a stoma experience and highlights how investing time discussing day-to-day aspects with patients enriches our knowledge as stoma care nurses thus improving care for our patients.

**A QUALITATIVE STUDY OF HOW ADULT PATIENTS EXPERIENCE HOSPITALISATION WITH THE CONSTRUCTION OF AN ACUTE OSTOMY**

Per Herlufsen
Stoma Care Clinic, Department of Gastroenterology Hvidovre University Hospital, Denmark

**Aim:** The aim of this study was to investigate how adults experienced hospitalisation in connection with the construction of an acute ostomy. The phenomenon is rarely described in the scientific literature.

**Method:** Six informants were interviewed and the transcriptions of these interviews were analysed using “Reflective Lifeworld Research”.

**Results:** The informants experienced a number of challenges due to their hospitalisation and consequent acute ostomy. The unexpected body changes due to the stoma had a dramatic effect on the informants. This resulted in a vulnerability, which was particularly noticeable in the relationship with the caregiver, where the informants experienced a lack of support and attentiveness. The informants perceived an absence of continuity when collaborating with the staff, which in turn influenced the information process and confidentiality.

**Conclusion:** The findings of this study suggest that an increased awareness among the nursing staff should be based on what the individual person with an acute ostomy feels is important. This awareness may have important implications for the experiences in connection with the new life situation.

**DEPRESSION AND RESILIENCE IN OSTOMATES OF INFLAMMATORY BOWEL DISEASE**

Hwang Ji Hyeon & Yu Chang Sik
Asan Medical Center, South Korea

**Aims:** The purpose of this study was to describe the degree of depression and resilience in ostomates of inflammatory bowel disease and to identify relationship of depression and resilience.

**Methods:** The data had been collected from November to December 2012. The participants were 90 ostomates with inflammatory bowel disease (24 ostomates with ulcerative colitis, 66 ostomates with Crohn’s disease) recruited conveniently from one metropolitan hospital located in Seoul, South Korea. The collected data were analysed using SPSS 18.0 for Windows program. Data were analysed using Descriptive statistics, Chi-square test, T-test, Analysis of Variances (ANOVA), Mann-Whitney test, Kruskal-Wallis test, Pearson and Spearman correlation coefficient analyses.

**Results:** Depression of Crohn’s disease ostomates was correlated with marital status (t=2.27, p=.027), economic
status (F=3.98, p=.012), sleep disorder (t=4.73, p<.001), sleep time (t=2.11, p=.039). Resilience of Crohn’s disease ostomates was correlated religion (t=2.47, p=.016), marital status (t= -3.61, p=.001), economic status (F=4.06, p=.011), sleep disorder (t=−3.11, p=.003). A negative relationship was found between depression and resilience of ulcerative colitis ostomates (r=−.668, p<.001) and Crohn’s disease ostomates (r=−.604, p<.001).

Conclusion: The study results suggest that a tailored nursing care program should be developed based on the general characteristics and disease-related characteristics of ulcerative colitis ostomates and Crohn’s disease ostomates to provide to promote health status and overcome their disease settings.

ACTUAL CONDITIONS AND ENVIRONMENTAL FACTORS OF SEXUALITY AMONG IBD PATIENTS IN JAPAN
Yoshiko Miki1, Atsuko Maekawa2 & Naohiro Hohashi3
1. Kagawa Prefectural University of Health Sciences, Japan
2. Nagoya University Graduate School of Medicine, Japan
3. Graduate School of Health Sciences, Kobe University, Japan

Aim: To clarify the actual conditions of and environmental factors affecting sexuality in patients with inflammatory bowel disease (IBD).

Methods: Participants completed a self-administered questionnaire survey. Actual conditions included frequency of sexual activity and sexuality satisfaction index (SEXSI-IBD). The SEXSI-IBD is comprised of five factors with scores ranging from 0 to 4. A higher score indicates a higher satisfaction level. Environmental factors included four questions. This study was approved by the institutional review board of the university.

Results: One hundred and ninety-five subjects were analysed (48.2% males, 51.8% females; average age: 46.8 years). Stomas were present in 30.8% of the cases. A majority (59.4%) responded that they engaged in sex at least once a year. The overall average score on the SEXSI-IBD was 2.3. Among the respective factors, the score on "importance of skin ship" was 2.8; on "daily interaction," 2.6; on "sexual communication," 1.7; on "sexual difficulty," 1.7; and on "sexual interest," 2.4. Among the environmental factors, "subject is tolerant towards sexual activity" scored 44.1%; "health and medical care workers who can consult concerning sex are available," 32.6%; "subject feels able to consult with a health or medical care worker concerning sex," 8.2%; and "subject believes that people with disease or disability may engage in sexual activity" was 63.9%.

Conclusions: Whereas about half of the IBD patients voiced satisfaction with daily interactions, the other half engaged in no sexual activity and their sexual satisfaction was low. Low recognition of the role played by health and medical care workers as consultants became clear.

FLUID MANAGEMENT OF RENAL IMPAIRMENT CAUSED BY HIGH-OUTPUT STOMA: A CASE REPORT
Yao Hu1 & Mei-chun Zheng2
1. School of Nursing, Sun Yat-sen University, China
2. Sun Yat-sen University Cancer Center, China

Introduction: A number of patients with ileostomy will have a high output stoma not only in the early postoperative period but also after discharge. This may cause dehydration or even renal impairment because of fluid depletion. In this case report, we illustrate the fluid management of a patient with renal impairment caused by a high-output ileostomy.

Case presentation: A 56-year-old lady, who had undergone low anterior resection with a defunctioning loop ileostomy created, was readmitted after 6 days of discharge due to renal insufficiency. She had a bad appetite and only drank soup and ENSURE for each meal, which would be excreted in 5–10 minutes. The total stoma output was about 1500 ml per day, which forced her to empty the bag every 2 hours and change the pouch system 1–2 days because of leakage. Laboratory results showed elevated BUN and SCr.

The management started from an electrolyte solution supplement to avoid further fluid depletion, together with food which can thicken the stool to decrease the output. After a detailed education of adequate liquid complement based on the self-monitor of intake and output and using the appropriate pouch system to collect the effluent, the patient was relieved from the burden of changing bags frequently as well as the peristomal skin problem. The laboratory results were back to normal several days later.

Conclusions: The fluid supplement and intake/output monitor are important to patients with high-output stoma.

ASSESSMENT FOR OSTOMY PATIENTS USING THE LSD-SCORE
Werner Droste
Seminare & Beratung, Germany

Background: Peristomal skin lesions are frequent complications of ostomy; however, a classification system is useful to justify the impact on ostomates’ quality of life.

Aim: An interdisciplinary German expert panel (GESS) developed an innovative, semi-quantitative classification system for peristomal skin lesions for further stratification of ostomy therapy. This score is based on criteria which can be assessed by stoma therapists and treating physicians. This presentation shows the implementation process of the LSD-score system and the different challenges.

Results: The new peristomal skin lesion score (LSD-score) grades peristomal problems, describes pathologies of the ostomy and the peristomal region. The LSD score is the basis for a management algorithm. The challenges for implementation and validation of this score system are part of this presentation.
Conclusion: The LSD score is comprehensive, standardised and holistic. Its straightforward use by health professionals can improve the consistency of the description of skin lesions and enhance the quality of ostomy therapy.

THE BENEFITS OF NURSE-LED MANAGEMENT OF LARS
Denise Hibbert
King Faisal Specialist Hospital and Research Center, Saudi Arabia

Introduction: Colorectal cancer in Saudi Arabia is the most commonly occurring cancer in males and the third in females, with rectal cancer accounting for around 41%. Despite therapeutic advancements resection of the tumour plus multimodal therapies including radiation are necessary for all but early stage tumours. The sequelae of radiation and surgery with total mesorectal excision (TME), for low rectal cancer, notably disorders of defecation, bladder and sexual dysfunction are known risk factors. Frequency, urgency and incontinence to gas and liquid stool, clustering of bowel movements, fragmentation of stool and incomplete evacuation, termed low anterior resection syndrome (LARS) are reported to affect 50–90% of individuals. These symptoms are underestimated by health care providers and under reported by cancer survivors; leading to ongoing chronicity and a reduced QOL for up to five years after completion of treatment. There is an urgent need for advanced colorectal nurse specialist within MDTs in Saudi Arabia.

Aims: This presentation will discuss LARS and highlight the benefits of nurse-led management for patients and organisations.

Conclusion: Patients with LARS fall through the gap in care in countries where nursing specialisation is limited. Nurses who are knowledgeable about the anatomy, physiology, pharmacology and nutrition related to the gastrointestinal system and pelvic floor are positioned to add management of LARS to their services.

INNOVATIVE TECHNOLOGIES FOR ADVANCED PRESSURE ULCER MANAGEMENT
Hiromi Sanada
Department of Gerontological Nursing/Wound Care Management and Global Nursing Research Center, Graduate School of Medicine, The University of Tokyo, Japan

A pressure ulcer occurs as a result of prolonged pressure and shear that diminish the flow of blood to an area of the body, causing a subsequent reduction in oxygen supply which leads to cell death. Deep tissue injury (DTI) is considered to be a new type of pressure ulcer resulting from deterioration in deeper tissue. Our research team has been focusing on DTI since this type of pressure ulcer remains a big problem, which sometimes progresses to a severe pressure ulcer rapidly and becomes life-threatening, especially in elderly patients. To understand the degree of tissue damage, we established a novel assessment technique using ultrasound with a high-frequency transducer, which can detect structural and functional changes in deeper tissue. Visualisation of deep tissue structure with high-frequency ultrasonography enables clinicians to predict deterioration by assessing for the presence of four ultrasonographic features: unclear layered structure; hypoechoic lesions; discontinuous fascia; and heterogeneous hypoechoic areas. Establishing whether any of these abnormal features are present may aid in predicting prognosis, and would encourage the use of adequate preventative and treatment strategies. To prevent DTI deterioration, intensive pressure redistribution care is indispensable. Our recent innovations include a “Robotic Mattress”. We propose a new adjustment algorithm based on continuously-monitored interface pressure inside the mattress. In this algorithm, the inner air-cell pressure is adjusted to one level higher than the level where the interface pressure values are the lowest to offer optimal mattress hardness without a risk of bottoming-out. Since the inner air-cell pressure can be automatically adjusted according to the sensor input, this support surface is a kind of robotic mattress. These advancements will promote technology-based innovations for pressure ulcer management.

FUNGATING WOUNDS
Mariam Mohd Nasir, AMN
Cert ICW (Hamburg, Germany), GLNI (Geneva, Switzerland), MBA (Mal/UK), BSc (Hons) Mal, WOCNEX (Hong Kong) SCM, SRN, Nursing Consultant/Director, M&T Network Consultancy (Nursing Training), Specialised in Enterostomal Therapy Nursing & Nursing Management

Fungating wounds are malignant wounds as a result of cancerous cells infiltrating the skin and its supporting blood and lymph vessels, causing loss in vascularity, leading to tissue death. The lesion may be a result of a primary cancer or a metastasis to the skin from a local tumour or from a tumour in a distant site. (Christopher O’Brien, of the Palliative Care Program at Saint John Regional Hospital)

The goals of care can shift from healing to a palliative approach, focusing on three core principles. The most important principle is symptom management, followed by wound management and treatment of the underlying tumour if possible and appropriate.

As the cancer grows, it blocks and damages blood vessels, which can deprive the area of oxygen. This causes the skin and underlying tissue to become necrotic. There may also be infection, and areas of the wound may become ulcerated.

Patients often find that they have several symptoms at the same time. The most common symptoms include leakage or discharge, an unpleasant smell, pain, bleeding and itching. The management will be mainly focusing on addressing those symptoms.

Cancer wounds also will cause many feelings, including anxiety, embarrassment and depression for the patients and
their family members. Many people feel isolated and that nothing can be done. Psychological aspect is crucial.

Palliative care is definitely of the utmost importance, including their relatives. Many ways are available to preserve their dignity and quality of life. We need to give some hope to them that the symptoms can be controlled or at least reduced.

The use of modern wound products can help them reduce the distressing symptoms, but we shall not forget basic care is as important as managing the wound and shall not be neglected.

Among all, we need to provide tender loving care, preserve their dignity and care for them with the greatest empathy and understanding and to prepare them for bereavement too.

**ISTAP CLASSIFICATION SYSTEM: CULTURAL ADAPTATION AND VALIDATION — BRAZIL**

Vera Lucia Conceição de Gouveia Santos

Professor Dr Santos speaks about the cultural adaptation and validation of ISTAP Classification System for Brazilian culture. The study has been preceded by Dr LeBlanc’s invitation to do that and by Ethics Committee’s approval. The study is being developed for a Nursing Residence Program conclusion and the supervising student is Cinthia Bandeira Viana da Silva (BSN). Both authors also received the collaboration from MSN Ticiane Campanili, Dr Kimberly LeBlanc and MSN Sharon Baranoski. As other studies conducted by Prof Santos, this is a methodological one based on Beaton et al.’s proposal about cultural adaptation and validation of measurement tools. For cultural adaptation, the study included translation of original ISTAP Classification System to Brazilian Portuguese (by two independent translators, fluent in Portuguese and English); analysis of its translations by an expert committee (composed by five ETNs, also fluent in English); back translations to English (performed by other two independent translators) and respective final evaluation by one of the original instrument’s authors (Dr LeBlanc). These procedures resulted in an adapted version for Brazilians, with its content validity confirmed. At the moment, clinical data are being collected to complete the second phase, that is, validation of the Brazilian adapted version, through analysis of interrater reliability and concurrent criterium validity. For the last validity property, the authors will apply also the Brazilian version of STAR Classification System, created by Carville et al. 2007, besides the ISTAP. Validation procedures are relevant and necessary to make available the final adapted and validated Brazilian version of ISTAP Classification System. A paper about cultural adaptation has been just submitted for publication in a Brazilian journal. After concluding the validation process, a final paper will be also prepared in order to divulge the ISTAP Classification System, promoting another easy and international strategy for common health communication about skin tears.

**PRESSURE INJURIES BY MEDICAL DEVICES: A CLINICAL UPDATE**

Elizabeth A Ayello PhD, RN, CWON, ETN, FAAN & Barbara A Delmore PhD, RN, CWCN, IWCC-NYU

Awareness that medical devices and other objects can cause pressure injuries is an important step in preventing such wounds. The literature reports a wide variety of prevalence rates of pressure injuries from medical devices (MDRPI) which may be due to patient age, acuity, type of device/object and location of the device/object. In 2016, the National Pressure Ulcer Advisory Panel (NPUAP) revised its definition of medical device-related pressure injuries (MDRPI) and mucosal pressure injuries. Since the mucosa does not keratinise, mucosal pressure injuries cannot be staged using the 2014 NPUAP EPUAP PPPIA staging system.

Nurses and all clinicians can benefit from quick summaries of key information on a clinical concept such as MDRPI. These highlights of important information that nurses and other clinicians can bring to the bedside are called “educational enablers”. We have published and will describe in this presentation two such enablers that can be used in clinical practice. They are the SORE™ mnemonic, which was developed to raise awareness of potential sources of these type of pressure injuries, and the DEVICES™ mnemonic for prevention and treatment of MDRPI. Clinical photos will also supplement this presentation.

*This presentation is based on our free open access article in the WCET™ Wound Wise — A series on wound care in collaboration with the World Council of Enterostomal Therapists® published in the American Journal of Nursing as follows: Delmore BA & Ayello EA. Pressure injuries caused by medical devices and other objects: A clinical update. AJN 2017; 117(12):36–45.

It is available at https://journals.lww.com/ajnonline/Fulltext/2017/12000/CE___Pressure_Injuries_Caused_by_Medical_Devices.26.aspx

**SKIN TEAR PREVALENCE, INCIDENCE AND ASSOCIATED RISK FACTORS IN THE LONG-TERM CARE POPULATION**

Kimberly LeBlanc1 & Kevin Woo2

1. KDS Professional Consulting, Canada
2. Queen

**Background:** Skin tears (STs) are among the most prevalent wounds found in long-term care (LTC) settings. Given our aging population, the burden related to STs will further increase. Skin tears are frequently under-recognised and under-treated as they are often misunderstood as expected outcomes of normal skin changes associated with aging. When coupled with age-related co-morbidities, STs may exhibit prolonged healing times leading to complications such as infection. Emerging evidence suggests that pain is a common symptom associated with STs affecting people’s
ability to function and their quality of life. While many factors have been purported to be associated with ST development, there is little evidence to corroborate their roles in ST risks. The primary purpose of this study was to examine risk factors associated with ST development in the Ontario LTC population.

**Methods:** A prospective study design was used to determine the risk factors associated with ST development. Prior to the study, a systematic literature review was conducted to identify previously identified risk factors and inform the study. A total of 380 individuals over the age of 65 years from 4 LTC facilities in Ontario were followed over 4 weeks. The participants were examined for STs at the beginning of the study and at week 4 to determine if STs had occurred and to record the ST type, location, and associated factors.

**Results:** The study demonstrated a ST prevalence of 20.8% and an incidence of 18.9%. History of a previous ST (p = .012) and presence of non-modifiable skin changes (p < .001) were identified as key risk factors associated with ST development and are supported by the literature review. The study also identified two key modifiable risk factors; requiring assistance with activities of daily living (p < .001) and resisting care (p = .001).

**Conclusion:** Our study results provide much-needed Canadian data for benchmarking the burden of STs in the LTC population. By identifying modifiable and non-modifiable risk factors, healthcare professionals can establish prevention programs targeted at reduction of risks for ST development. This study is an important first step towards developing a risk predictor scale for ST development in the LTC population.

**EVIDENCE SUPPORTING THE USE OF LOCAL WOUND CARE RESOURCES**

Emily Haesler1, Robin Watts1 & Kerlyn Carville2,3
1. Curtin University, WA, Australia
2. Silver Chain Group

**Aims:** Almost 80% of the population live in resource-limited environments in which traditional local resources are frequently used in wound care. For many natural wound care interventions, there is limited documentation of the way in which the product is used and evidence of effectiveness. The aim was to summarise the best available evidence on natural wound care interventions.

**Methods:** The Wound Healing and Management Node (WHAM) conducts literature scoping and appraisal on wound care interventions used in resource-limited communities using Joanna Briggs Institute methods. The evidence is summarised, recommendations on use are made, and a practice guide is produced.

**Results:** Wound management using natural interventions uses the same primary principles as when using contemporary products — wound bed preparation via cleansing and debridement, infection/inflammation control and promotion of moisture balance. There is some evidence on effectiveness of papaya, weak acids, turmeric, aloe vera, banana leaf dressings and potato peel dressings to support use of these products in wound care.

**Conclusions:** Most traditional wound dressing products are safe to use but have a limited evidence base. More good quality research is needed on natural wound care products. Evidence summaries and recommended practice sheets assist clinicians to determine when and how to use traditional interventions.

**INTRODUCING A NEW CLASSIFICATION SYSTEM FOR SKIN TEARS: INTERNATIONAL SKIN TEAR ADVISORY PANEL (ISTAP) SKIN TEAR CLASSIFICATION SYSTEM**

Kimberly LeBlanc1, Dawn Christensen1, Karen Campbell2 & Sharon Baranoski3
1. KDS professional Consulting, Canada
2. University of Western Ontario, Canada
3. Wound Care Dynamics, Canada

There is no globally accepted common classification system for skin tears (ST). In response to a survey highlighting a desire among healthcare professionals to have a validated, simple and user-friendly system, ISTAP developed a new classification system based on simplifying and refining earlier systems. The ISTAP system involves 3 ST types (no skin loss, partial skin loss or complete skin loss), making it simple and user-friendly for healthcare professionals.

**Method:**

Phase 1: Development of the classification system based on a scoping literature reviews and expert opinion.

Phase 2: Internal reliability testing among the ISTAP panel members with intra-reliability testing conducted two months after the initial testing.

Phase 3: External reliability testing among 303 healthcare professionals and 24 non-nursing subjects from Canada, USA, Brazil, UK, Ireland, Denmark and China.

**Results:** Results demonstrated a level of agreement sufficient to indicate that the ISTAP ST classification system is reliable and valid. Internal reliability testing demonstrated a substantial level of agreement for the expert panel (Fleiss J = 0.619; 2-month follow-up = 0.653). Intrarater reliability was high (Cohen J = 0.877). Interrater reliability was moderate (Fleiss J = 0.555) for healthcare professionals (n = 303) and fair for non-professionals (Fleiss J = 0.338; n = 24). Results were replicated in a Danish study involving inter-rater reliability testing with 270 healthcare professionals.

The system has been translated (using back translation) into Danish and similar studies are under way in French, Spanish, and Portuguese and Mandarin. The ISTAP panel has acknowledged ongoing research, translation and validation
This study aimed to evaluate correlation between bacterial count against wound healing on diabetic foot ulcers (DFUs). The study was conducted at Kitamura Wound Care clinic, Musgrove Park Hospital, United Kingdom. The study population included 30 DFU patients with new ulcers. The participants were followed up for 4 weeks. The study aimed to explore the impact of a rapid bacteria counting system on wound healing and to estimate the effectiveness of an irrigation pump to promote more effective emptying. The study found significant differences in the bacterial count between baseline versus end study (p = 0.005, t = 3.072; paired sample test). There were significant differences in the area between baseline versus end study (p = 0.000, t = 5.219; paired sample test). There was positive correlation between bacterial count and change of wound area (r = 0.24, n = 90, p = 0.01; Spearman’s rho).

Conclusions: These results indicated that there was a correlation between bacterial count against wound healing on DFU’s in clinical setting. Therefore, a rapid bacteria counting system could be used to evaluate bacterial count against wound healing.

**MY A.C.E IS ACE**

Mark Johnson & Sarah Gray
Musgrove Park Hospital, United Kingdom

Aims: The case study will demonstrate how the use of an irrigation pump and formation of an antegrade continence enema (ACE) can be an effective tool to enhance quality of life, return gut motility and achieve continence in a long-standing slow transit bowel (STB) patient.

Description: The presentation will introduce Sarah, a patient with STB who experienced incontinence which had led her to feel isolated, low confidence and depression. Sarah felt rectal irrigation was ineffective and manual evacuation was degrading and reminded her of her sexual abuse as a child.

Our department had little experience of ACE care, so a care pathway and ACE management guide was developed to support, counsel, prepare and care for Sarah postoperatively. Following a period of evaluation of the effectiveness of the ACE management, trial of an irrigation pump to promote more effective emptying was introduced. The outstanding benefit was that Sarah achieved 48 hours between irrigations.

Outcome: For the first time Sarah could leave her house without fear of incontinence. The case study demonstrates how an ACE can be an effective treatment for STB and with support, a patient can achieve continence, gut function and achieve an enhanced quality of life.

**THE UNDERESTIMATED ROLE OF SKIN PH IN MANAGING WOUND, OSTOMY, AND CONTINENCE NURSING**

Diana Gallagher
Highlands Oncology, United States of America

Aims: The impact of skin pH is best understood in managing incontinence-associated dermatitis (IAD). The prolonged presence of stool and/or urine causes an elevation in skin pH and escalates skin breakdown. This elevation is seen with all sources of excess moisture including sweat and wound drainage. Helping clinicians expand their basic knowledge of skin science and expanding their understanding from IAD management to the management of other types moisture-associated skin damage (MASD), wounds and peristomal skin complications is critical to quality patient care.

Methods: A literature search on the role of pH, the importance of the acid mantle and a healthy microbiome was conducted. Based on accepted standards of care and knowledge gained, the importance of establishing a healthy acid mantle with a restoration of a normal (low) pH was more clearly understood. This knowledge was then transferred to patient care situations and compared to previous standards of care.

Results: Treatments for IAD, including IAD that was unresolved in spite of traditional management, Intertrigo, Erythrasma, Peristomal Irritant Dermatitis, Pseudoverrucous Lesions and Periwound Dermatitis were modified to include therapies that could reliably lower the skin pH. In every instance, the time to healing was decreased and patient comfort was increased without increasing cost.

Conclusions: The role of a normalised pH is critical in maintaining healthy skin and an intact Stratum Corneum. This restores the body’s best natural protection, a healthy stratum corneum.

**REFERENCES**


Book review

**Essential Stoma Care**

Authors: Jennie Burch and Pat Black  
Publisher: St Mark’s Academic Institute, Middlesex, UK  
Published: 2017  
Format: Hard cover  
Pages: 107

Reviewer: Lorrie Gray, MSc (Ed)  
Retired STN, Perth, WA, Australia  
Lorriegray07@yahoo.com.au

As the name suggests, the two stoma specialist nurse authors have provided a concise overview of stoma basics for a readership of health professionals who are not requiring in-depth, practical details.

The book has five chapters, the first of which provides a clear picture of the background and development of stoma management in general, including relevant anatomy, physiology and reasons for stoma formation. This is followed by coverage of each of the three major stoma output types in separate chapters and a final chapter devoted to other pertinent topics, including stoma complications, sexual and cultural issues, body image adjustments, social support and psychological distress, education needs and adaptation, quality of life concerns and stoma accessory products.

Written information is clearly worded, well laid out using headings and supplemented by relevant data boxes, diagrams and photographs. Each chapter concludes with the references used, providing an additional resource for further information, as required. A number of these would be considered “old” (more than 10 years) but some are sentinel articles reflecting the dearth of follow-up research or publication. Details of stoma product suppliers and the various support groups available to patients is necessarily UK-based, but would still provide a starting point for the non-specialist, international health professional to obtain relevant information.

This book provides an up-to-date overview of basic stoma management without specific practical information, hence it is ideal for introductory reading or revision purposes of stoma management. It would be a positive addition to a general nursing library.

It is noted that no wound or continence components of the composite role of an Australian stoma therapy nurse or United States of America’s enterostomal therapist are included.

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**Norma N Gill Foundation**

❖ **Roll of Honour Organisations 2017–2018** ❖

The following organisations have very generously given donations to the Foundation to help fund NNGF scholarships, so furthering Norma’s vision.

- Foundation of WOCN Netherlands – Netherlands
- Mideast Region of the WOCN – USA
- Saudi Chapter of Enterostomal Therapy (SCET) – Saudi Arabia
- Saudi Society of Colon and Rectal Surgery (SSCRS) – Saudi Arabia
- Malaysian Enterostomal Therapy Nurse Association (METNA) – Malaysia
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