In this issue

President’s message: ‘Time to say goodbye’

Guest editorial
Key components for success in partnerships and wound care

WCET™ leadership through the years
History of the WCET™ Executive Board

Stoma self-efficacy, hope and social relationships among patients with permanent colostomy

Revisiting the history of stoma siting and its impact on modern day practice

Peristomal skin changes: what treatment should be adopted?
Results of an observational multi-centre study

Root cause analysis: An effective QI tool

Comparison of self-constructed versus commercial monofilaments to validate self-constructed monofilaments for assessment of neuropathy in the diabetic foot at risk
Our best-performing seal yet

The NEW Brava® Protective Seal improves appliance fit. It is designed to protect against leakage and protect the skin.

The Brava Protective Seal is used to seal gaps between the stoma and baseplate. Its polymer formulation has special benefits:

Dual-protection
The seal protects against leakage because it’s output resistant. It protects the skin by absorbing moisture and leaving minimal residue behind.

Easy to handle
The seal is easy to shape, fits snugly around the stoma and can be applied over uneven skin. It will stay securely in place, yet can be removed easily.

Please contact your local Coloplast representative for samples and more information or visit www.coloplast.com
Contents

President’s message: ‘Time to say goodbye’ 4
Susan Stelton

Guest editorial
Key components for success in partnerships and wound care 8
Gulnaz Tariq

WCET™ leadership through the years
History of the WCET™ Executive Board 9

Stoma self-efficacy, hope and social relationships among patients with permanent colostomy 12
Bao-Jia Luo, Mei-Chun Zheng, Jun-E Zhang, Meng-Xiao Jiang
Zhi-Zhong Pan, De-Sen Wan, Rong-Xin Zhang, Xiao-Jun Wu
Yu-Jing Fang & Hui-Qin Zhang

Revisiting the history of stoma siting and its impact on modern day practice 22
Magdalena Leyk, Priscilla J d’E Stevens, Susan Stelton, Laurent Chabal,
Denise Hibbert, Mariam Mohd Naur, Michelle Gayot-Pomathios,
Vera Lúcia Conceição de Gouveia Santos, Alison Craeshaw & Elizabeth A Ayello

Peristomal skin changes: what treatment should be adopted?
Results of an observational multi-centre study 30
Mario Antonini, Raimondo Arena, Simona Mancini, Raffaella Tantulli Bartoli,
Silvia Manfredda, Gaetano Militello, Stefano Gasperini & Stefano Veraldi

Root cause analysis: An effective QI tool 35
Karen Zulkowski

Comparison of self-constructed versus commercial monofilaments to validate self-constructed monofilaments for assessment of neuropathy in the diabetic foot at risk 40
Daziel Tagum, John-Michael Llagas & Hiske Smart

The World Council of Enterostomal Therapists Journal is indexed in the Cumulative Index to Nursing and Allied Health Literature.

Disclaimer Opinions expressed in the WCET™ Journal are those of the authors and not necessarily those of the World Council of Enterostomal Therapists, the editor or the editorial board.

Journal Sustaining Partnerships
The WCET™ mission is to lead the global advancement of specialised professional nursing care for people with ostomy, wound or continence needs
Healthy skin for a healthy bond.

Simon, colostomy since 2010

We believe people are more than their stomas.

Real people. Real lives. Helping make life better for people with stomas has been our promise since the beginning. A big part of that is supporting skin health by providing products and services that help promote a natural skin environment. Because when patients are comfortable in their own skin, they can experience life without worry or irritation.

Discover more at dansac.com.
President’s message
‘Time to say goodbye’

Susan Stelton
MSN, RN, ACNS-BC, CWOCN
Adult Health Clinical Nurse Specialist
Certified Wound Ostomy Continence Nurse
Email president@wcetn.org

There is a very popular song, sung by Sarah Brightman and Andrea Bocelli, entitled ‘Time to Say Goodbye’. I have been thinking of that song as I worked on a theme for this message. I have been a WCET™ member for 22 years and have worked on the executive board (EB), or with the executive board as the congress liaison for three WCET™ Congresses, for the past 18 years. How time flies!

To borrow part of a quote from an African proverb, “It takes a village …” of dedicated people to make the WCET™ run smoothly. I extend a big ‘thank you’ to the ‘village’ that has contributed to the success of the WCET™ during my terms. There are many neighbourhoods in our WCET™ village. I will try to acknowledge as many as possible in this message.

Thank you to the following: Our International Delegates who communicate with their country members (see the last page of the journal for their names), the 606 of our members who took the time to complete the 2017 Membership Survey (because it was completed anonymously, no names can be listed here), our members who contribute items of interest regularly for the WCET™ Bulletin and Past Editor, Karen Zulkowski, and the members who have helped in the production of our WCET™ Journal by being Editorial Board Members or article translators who translate the President’s messages and articles from English to other languages (see Box 1).

The EB of the WCET™ is different to those of many other organisations of which I have been a member. The board is a small, hard-working group of volunteers. As the motto for the USA-based Peace Corps says, “It is the hardest job you’ll ever love”. It has been like that for me working with the WCET™. Working with the board gives us the opportunity to meet, teach and learn from fellow nurses from all over the world and to make a difference in the patient care that they provide. What is not to like about a ‘job’ like that!

I have had the good fortune, as your president, to lead a fantastic EB team. Thank you:

- Vice-president, Elizabeth Ayello, for working with our International Delegates, completing the 2015 and 2017 Membership Surveys, working to help publish the Bulletin, co-authoring the Ostomy Pocket Guide, working on the 2nd edition of the International Ostomy Guideline (IOG) and virtually anything else I needed help with.

- Treasurer, Alison Crawshaw, for managing the finances of the WCET™, assisted by the contracted services of bookkeeper, Tracy Addis, and accountant, Ian Katte, and for co-authoring the new Pocket Stoma Site Selection Guide.

- Education Committee chairperson, Denise Hibbert, and her committee (see Box 2) and the presenters of our WCET™ webinars this term: Mikel Gray, Denise Hibbert, Vera Santos, Gary Sibbald, Carol Stott and Karen Zulkowski.

- NNGF Committee chairperson, Arum Pratiwi, and her committee members (see Box 3).

- Publication and Communications Committee chairperson, Laurent Chabal, and his committee members (see Box 4).

- Congress and Meeting Coordinator, Dee Waugh.

- Jen Woods and Graham Hauck at the WCET™ Central Office for providing guidance and support services to the WCET™. Along with the VP, Graham has worked with the Constitution Advisory Panel (see Box 5).

- Greg Paull, a member of the Publication and Communications Committee, and his team at Cambridge Media have assisted us in many ways by helping us produce the WCET™ Journal and Bulletin.

- IIWCG 2017, we welcomed two members from the International Interdisciplinary Wound Care Group (IIWCG) that contribute to the WCET™ Journal.

The year 2018 is a banner year for the WCET™ as it celebrates the 40th anniversary of its founding in 1978. All this would not have happened without the EB leaders, who have since the 1970s given so much to the WCET™. Please see their names listed in this journal. As this WCET™ Journal issue goes to press, final preparations are being completed for the
22nd Biennial Congress in Kuala Lumpur, Malaysia. The 2018 Congress will be festive, another WCET™ life member will be announced, and a special 40th anniversary publication will be distributed there. Thank you to Dee Waugh and Prilli Stevens, for coordinating this special publication! The WCET™ is excited to launch the sale of a new publication in Kuala Lumpur, entitled the *Guide to Stoma Site Marking*, edited by EB members, Alison Crawshaw and Elizabeth Ayello, with contributions from several WCET™ members of the Education Committee. Watch out for several other 40th anniversary celebratory items in the *WCET™ Journal* and on the website during 2018.

In conclusion, it has been my privilege to serve the WCET™. In the words of a song by the singer Bob Hope, “Thanks for the memories”.

Kind regards,

Susan

---

**WCET™ 主席的信息：第一期2018**

Susan Stelton 主席

‘是時候說再見了’

莎拉布莱曼 (Sarah Brightman) 和安德烈波切利 (Andrea Bocelli) 唱了一首非常受欢迎的歌曲，题目是‘是時候再見了’。我一直在思考這首歌，因為我正在為這封信製作一個主題。我成為WCET™成員已十二年。而過去18年來，我一直在執行委員會（EB）工作，或者擔任與執行委員會一起的WCET™大會會議聯絡員三次。時光飛逝！

借用非洲諺語中的一段引語，“需要一個村莊......” 的專門人才才能使WCET™順利運作。我向這個“村莊”致以很大的“謝謝”，因他們在我的任期裏為WCET做出了貢獻及取得成功。我們的WCET村旁也有很多社區。我將盡力在此通訊中多謝他們。

感謝以下人員：我們的國際代表 (ID) 與他們的國家成員溝通 (請查看期刊最後一頁他們的名字)。我們的六百六十名會員花時間完成了2017年會員調查 (因為它是匿名完成的，沒有名字可以在這裡列出)，我們為WCET™BullETin定期貢獻有趣的文章的會員，和前編輯Karen Zulkowski及那些幫助製作我們WCET期刊的編輯委員會成員，或將主席信息和文章從英文翻譯成其他語言的文章翻譯人員（見方框1）。

WCET™的執行委員會 (EB) 與我曾加入的許多其他組織不同。執委會是一個由志願者組成的小型工作組。正如美國維持和平部隊的座右銘所說：“這是你永遠都會愛的艱苦工作。”對我而言，WCET™就是這樣。與執委會合作讓我有機會與來自世界各地的護士見面，教授和學習，並為他們提供的病人護理帶來改變。有誰能不喜歡這樣的‘工作’呢！

作為主席，我有幸領導了一支出色的EB團隊。謝謝：

- 副主席Elizabeth Ayello與我們的國際代表 (ID) 合作，完成2015年和2017年會員調查，致力於發佈BullETin，共同編寫造口術袖珍指南，參與第2版國際造口術指南 (IOG) 的工作和幾乎所有我需要幫助的東西。

- 財務主管Alison Crawshaw在提供合同服務的會計Tracy Addis和會計師Ian Katte幫助下負責管理WCET的財務狀況，以及合作編寫新的造口定位袖珍指南。

- 教育委員會主席Denise Hibbert及其委員會 (見方框2) 以及本期WCET網絡研討會的演講人：Mikel Gray，Denise Hibbert，Vera Santos，Gary Sibbald，Carol Stott和Karen Zulkowski。

- 諾瑪吉爾基金 (NNGF) 委員會主席 Arum Pratiwi及其委員會成員 (見方框3)。

- 出版和傳播委員會主席Laurent Chabal及其委員 (見方框4)。

- 大會和會議聯絡員Dee Waugh。

- WCET™中央辦公室的Jen Woods和Graham Hauck為WCET™提供指導和支援服務。與副主席一起，Graham與本會的憲法顧問小組一起工作（見方框5）。

- 出版和傳播委員會成員之一Greg Paul及其劍橋媒體 (Cambridge Media) 團隊以多種方式協助我們製作WCET™期刊和BullETin。

- IIWCG 2017，我們歡迎來自國際跨學科傷口護理小組 (IIWCG) 的兩名成員參與WCET™期刊。

2018年是慶祝WCET™從1978年至今成立了40週年的一年。如果沒有EB領導者自1970年代以來的付出，就沒有今天的WCET™。請看看在這本期刊上所列出他們的名字。隨著今年WCET™期刊的出版，在馬來西亞吉隆坡舉行的第22屆雙年會的最後準備工作也即將完成。 2018年的會議將是一個我們的節日，我們將會宣布WCET™永久會員，並將在那兒分發特殊的40週年紀念刊物。謝謝Dee Waugh和Prilli Stevens協調製作這本特刊！WCET™很高興在吉隆坡出版了一份由EB成員Alison Crawshaw和Elizabeth Ayello編輯，並由教育委員會的幾名WCET™成員提供了文稿的題為“造口造口定位指南”的新出版物。在2018年間，請流瀏覽WCET™期刊和網頁，看看其他幾個40週年慶典項目。

總括而言，我有幸為WCET™服務。用歌手Bob Hop的話來說，“感謝你帶給我的回憶。”

親切的問候，

蘇珊 Susan

Translation by Peter Lai, Hong Kong
BOX 1
2016–2018 WCET™ EDITORIAL ADVISORY BOARD

Elizabeth A Ayello, USA — Executive Editor Emeritus
Barbara Delmore, USA — Assistant Editor, Wounds
Judy Pullen, UK — Assistant Editor, Ostomy
Sarah Lebovits, USA — Assistant Editor, Ostomy
Kevin Woo, Canada — Assistant Editor, Incontinence
Jo Sica, UK — UK Education

Sharon Baranoski, USA
Carmel Boylan, Australia
Eva Carlsson, Sweden
Pankaj Choudhary, India
Jill Cox, USA
Lori Henderson, USA
Chi Keung Peter Lai, Hong Kong
Diane Maydick, USA
Daniel O’Neill, USA
R Gary Sibbald, Canada
Hiske Smart, South Africa
Sandra Smits, the Netherlands Past President
Erica Thibault, USA
Michelle Lee Wai-Kuen, Hong Kong

Translators
Lupita Lobo Cordero, Mexico
Sandra Guerrero Gomboa, Columbia
Ayisa Karadag, Turkey
Svatava Novakova’, Czech Republic
Ingunn Aamot, Norway
Supun Prageeth Samarakoon, Sri Lanka
Jiune Zhang, China

BOX 2
2016–2018 EDUCATION COMMITTEE

Denise Hibbert, Saudi Arabia — Chairperson
Carol Stott, Australia
Carmen George, Australia
Elizabeth English, Australia
Sonia Dantas, Brazil
Vera Santos, Brazil
Louise Forest-Lande, Canada — Past President WCET™
Virginia McNaughton, Canada
Heidi Hevia, Chile
Hong Yang (Heidi) Hu, China
Aihua (Alice) Chen, China
Song Pauli, China
Julia Weng, China
Nidia Sandra Guerrero Gamboa, Colombia
Peter Lai, Hong Kong
Chak Hau Pang, Hong Kong
Irma Puspita Arisanty, Indonesia,
Arum Pratiwi, Indonesia — WCET™ NNGF Committee
Chairperson
Zahra Dokouhaki, Iran
Mariam Mohd Nasir, Malaysia
Lupita Maria Lobo Cordero, Mexico
Louise Rafferty, Saudi Arabia
Laurent Chabal, Switzerland — WCET™ Publications
Committee Chairperson
Kai-Li (Kelly) Lee, Taiwan
Jo Sicca, UK
Jill Cox, USA
Wang Ling-Yan, China

BOX 3
2016–2018 NORMA N GILL FOUNDATION
COMMITTEE

Arum Pratiwi — Chairperson
Carmen George, Australia
Elizabeth English, Australia
Carol Stott, Australia
Fiona Bolton, Australia
Silvana Prazeres, Brazil
Vera Santos, Brazil
Mei Chun, China
Widasari Srigitarja, Indonesia
Fatimah Jardeh, Saudi Arabia
Denise Hibbert, Saudi Arabia — WCET™ Education
Committee Chairperson
Lidia Krijit, South Africa
Alison Crawshaw, United Kingdom — WCET™ Treasurer
Vashi Livingston, USA

BOX 4
2016–2018 PUBLICATIONS & COMMUNICATIONS
COMMITTEE

Laurent Chabal, Switzerland — Chairperson
Eisiah Maqboul Abbas, Saudi Arabia
Elizabeth A Ayello, USA — Vice-President WCET™
Greg Paull, Australia
Irma Puspita Arisanty, Indonesia
Jolanda Janse van Noordwyk, South Africa
Kai-Li (Kelly) Lee, Taiwan
Karen Bruton, Canada
Kathleen Leask Capitulo, USA
Louise Forest-Lande, Canada — Past President WCET™
Maria Angela Bocca de Paula, Brazil
Michelle Lee, Hong Kong
Mohd Rahime Bin Ab Wahab, Malaysia
Paula Cristina Quiambao, Philippines
Saldy Yusuf, Indonesia
Supun Prageeth Samarakoon, Sri Lanka
Yajuan (Julie) Weng, China

BOX 5
2016–2018 CONSTITUTION ADVISORY PANEL

Karen Bruton  Hiske Smart
Susan Dunne  Graham Hauck
Kathy Porras  Elizabeth Ayello — Board Liaison
Every Patient Has Different Needs.

That’s Why There is a Marlen UltraMax™ for Every Patient.

Pre-Cut & Cut-To-Fit

Opaque® & Transparent

Flat, Shallow or Deep Convexities

MiniMax™ Drainable Pouches (30% Smaller)

Standard and XL Flanges

Call or visit our website to request a sample.

Marlen Manufacturing & Development Company
5150 Richmond Road Bedford, Ohio 44146 USA
Phone: 216.292.7060 Fax: 216.292.9196
E-mail: info@marlenmfg.com

marlenmfg.com

You’re always covered under the Marlen umbrella.

We have the largest combination of pouch types, convexities, sizes and body flanges in the industry.

*Urostomy available in transparent only. ©2018 Marlen Mfg. & Dev. Co. All rights reserved.
Guest Editorial

Key components for success in partnerships and wound care

Gulnaz Tariq
RN, MA, IIWCC-IR
President, International Interprofessional Wound Care Group (IIWCG); President Elect, World Union of Wound Healing Societies (WUWHS); President, WUWHS 2020 Congress; Manager for Wound Care/Surgery/VIP, Sheikh Khalifa Medical City, Abu Dhabi, United Arab Emirates
Email info@iiwcg.com

We wish to congratulate the WCET™ on the occasion of its 40th anniversary. The International Interprofessional Wound Care Group (IIWCG) is delighted to have entered into a partnership with the WCET™ so that the WCET™ Journal is now the official journal of the IIWCG. The IIWCG (www.iiwcg.com) was founded in 2014 as a result of needs expressed by International Interprofessional Wound Care Course (IIWCC) graduates to remain connected and updated. It was my honour to be elected as the first IIWCG president in 2017.

The IIWCG is an interprofessional organisation composed of 500 members in the Gulf region. Currently our members come from the Gulf countries (GCC), others in the Middle East and South Africa, also known as the Middle East and Africa region (MEA). Our goals and objectives are to educate everyone everywhere. In 2016, the IIWCG won the bid to host the next World Union of Wound Healing Societies (WUWHS) congress to be held in Abu Dhabi in 2020. So, I also serve as WUWHS President elect and Chair for the 2020 conference. Please visit our website, www.wuwhs2020.org to learn more about the international team working on this conference.

Rather than creating our own journal, the IIWCG began to look to partner with an already established international journal. Given that the WCET™ Journal has an over 35-year track record of publication and enjoys a reputation for quality manuscripts, the IIWCG approached the WCET™ Executive Board to investigate the possibility of having the WCET™ Journal become the official journal of the IIWCG. This issue of the WCET™ Journal begins that relationship. Hiskie Smart, former WCET™ ID from the Kingdom of Bahrain and originally from South Africa, will serve as the Assistant Editor for the IIWCG portion of the WCET™ Journal. She will coordinate the manuscripts from the IIWCG that will include content from the best selective studies from the IIWCC over the past year. All IIWCG members are required to join the WCET™ and can do so by going to www.wcetn.org. This is necessary to ensure that all IIWCG members will receive the WCET™ Journal to keep up to date with news about the IIWCG, while simultaneously giving WCET™ members access to manuscripts from this region of the world. At the 9th annual Abu Dhabi Wound Care Conference, both I and WCET™ Vice-President Elizabeth Ayello were able to announce this relationship to the over 1000 delegates present. It was a moment of great pride. We also had the opportunity to celebrate the graduation of 43 students from the 5th International Interprofessional Wound Care Course (IIWCC-UAE) and four students from the second Ostomy Continence Course (OCC).

Ms Smart has chosen the two peer-reviewed manuscripts in this premier IIWCG section carefully. These manuscripts are exemplary of two essential components needed for success in managing wounds with enhanced clinical outcomes. Firstly, you need a great team. Certainly, this is true of the team working to make this section of the IIWCG portion of the WCET™ Journal happen, as well as in the practice setting. Interprofessional teams draw on each other's strengths and work as an efficient, well-organised group. This is depicted in the Gulnaz Tariq et al. article about how a wound care link nurse system was established in a health facility. This reflects on how evidence-based change to the way in which work is implemented produces positive patient outcomes. Next you need to use correct equipment to measure what is intended to be measured. This is evident in the article by Daziel Tagum, John Michael Llagas et al. on how monofilaments were utilised and validated in a practice setting that does not have access to commercial ones. The take-home message of both articles is that the presence of a team and creativeness when confronted with lack of resources is how practice innovations occur. If you do not have the equipment available, you create it. Once you have put it to the test, do evaluations and keep on improving it until you have outcomes that can be compared to the best available evidence. All of us at IIWCG are very pleased to be part of the WCET™ Journal team and look forward to a long and successful working relationship with all of you.
WCET™ leadership through the years: History of the WCET™ Executive Board

1976
Chairperson of Meeting ................. Norma N Gill, USA
Liaison to I.O.A .......................... Doreen Harris, England
Secretary ............................... Joan Kerr, USA

1978
President ............................... Norma N Gill, USA
Vice-President ............................ Miriam Dolphen, England
Treasurer ............................... Barbara Foulkes, England
Corresponding Secretary ............... Lorraine Acworth, Australia
Recording Secretary .................... Marilyn Spencer, USA
Editor .................................. Nortrud Schindzierlorz, Germany

1979
Chairperson of meeting ............... Priscilla J d’E Stevens, South Africa
Secretary ............................... Joan Kerr, USA

Committee Chairpersons
Budget and Finance .................... Barbara Foulkes, Spain
By-laws ................................. Margaret Lee, England
Country Reports ....................... Marie Burroughs, Canada
Education ................................ Mary Jane Koch, USA
Historian ............................... Inger Palselius, Sweden
Membership ........................... Barbara Foulkes, Spain
Publication ........................... Lorraine Acworth, Australia
Associate Editor ....................... Nortrud Schindzierlorz, Germany

1980
President ............................... Priscilla J d’E Stevens, South Africa
Vice-President ........................... Marie Burroughs, Canada
Treasurer ............................... Maryln McManus, South Africa
Corresponding Secretary ............... Lorraine Acworth, Australia
Recording Secretary .................... Marilyn Spencer, USA

Committee Chairpersons
By-laws ................................. Margaret Lee, England
Education ................................ Mary Jo Kroeber, Australia
Nominations ........................... Maryln McManus, South Africa
NNGF .................................... Lorraine Acworth, Australia
Publications ........................... Norma Gill, USA
Editor .................................. Nortrud Schindzierlorz, Germany

1982
President ............................... Mary Jo Kroeber, Australia
Vice-President ........................... Maryln McManus, South Africa
Treasurer ............................... Margaret Lee, England
Corresponding Secretary ............... Harriet Scott, USA
Recording Secretary .................... Patricia Blackley, Australia

Committee Chairpersons
By-laws ................................. Mary Jo Kroeber, Australia
Education ................................ Mary Jo Kroeber, Australia
Nominations ........................... Margaret Lee, England
NNGF .................................... Maryln McManus, South Africa
Publications ........................... Patricia Blackley, Australia
Editor .................................. Lorraine Acworth, Australia

1984
President ............................... Mary Jo Kroeber, Australia
Vice-President ........................... Marilyn Spencer, USA
Treasurer ............................... Diana Kerwood, England
Corresponding Secretary ............... Joan Van Niel, USA
Recording Secretary .................... Dianne Garde, Canada

Committee Chairpersons
By-laws ................................. Marilyn Spencer, USA
Education ................................ Mary Jo Kroeber, Australia
Nominations ........................... Priscilla J d’E Stevens, South Africa
NNGF .................................... Margaret Lee, England
Publications ........................... Margaret Dixon, South Africa
Editor .................................. Patricia Blackley, Australia

1986
President ............................... Mary Jo Kroeber, Australia
Vice-President ........................... Maryln McManus, South Africa
Treasurer ............................... Heather Hill, Australia
Corresponding Secretary ............... Dianne Garde, Canada
Recording Secretary .................... Margaret Weinman, Zimbabwe

Committee Chairpersons
By-laws ................................. Mary Jo Kroeber, Australia
Education ................................ Mary Jo Kroeber, Australia
Nominations ........................... Margaret Lee, England
NNGF .................................... Maryln McManus, South Africa
Publications ........................... Patricia Blackley, Australia
Editor .................................. Marilyn Spencer, USA

1988
President ............................... Marilyn Spencer, USA
Vice-President ........................... Mavis Watson, England
Treasurer ............................... Heather Hill, Australia
Corresponding Secretary ............... Dianne Garde, Canada
Recording Secretary .................... Margaret Weinman, Zimbabwe

Committee Chairpersons
By-laws ................................. Mavis Watson, England
Education ................................ Al Priest, USA
Nominations ........................... Al Priest, USA
NNGF .................................... Mavis Watson, England
Publications ........................... Al Priest, USA
Manufacturers’ Liaison ............... Al Priest, USA
Editor .................................. Priscilla J d’E Stevens, South Africa

1990
President ............................... Marilyn Spencer, USA
Vice-President ........................... Mavis Watson, England
Treasurer ............................... Jill Munter, Australia
Corresponding Secretary ............... Margaret Dixon, South Africa
Recording Secretary .................... Priscilla J d’E Stevens, South Africa

Committee Chairpersons
By-laws ................................. Al Priest, USA
Education ................................ Al Priest, USA
Nominations ........................... Al Priest, USA
NNGF .................................... Al Priest, USA
Publications ........................... Al Priest, USA
Editor .................................. Mavis Watson, England
President ........................................ Mavis Watson, England
Vice-President .............................. Catherine Foster, Canada
Treasurer ....................................... Fiona Sheerin, Ireland
Secretary ..................................... Sandra Smits, The Netherlands
Editor ............................................ Mary Jo Kroeber, Australia

Committee Chairpersons
Constitution ..................................... Norma Briggs, South Africa
Education ...................................... Elizabeth English, Australia
NNGF ............................................. Patricia Blackley, Australia
Industry Liaison ............................. Teri Johnston, USA
Publications .................................. Mary Jo Kroeber, Australia

1992
President ........................................ Mavis Watson, England
Vice-President .............................. Catherine Foster, Canada
Treasurer ....................................... Heathier Hill, Australia
Secretary ..................................... Gun Nordstrom, Sweden
Editor ............................................ Aiza Yaffe, Israel

1994
President ........................................ Mavis Watson, England
Vice-President .............................. Catherine Foster, Canada
Treasurer ....................................... Fiona Sheerin, Ireland
Secretary ..................................... Sandra Smits, The Netherlands
Editor ............................................ Ole Hahn, Denmark

Committee Chairpersons
Constitution ..................................... Norma Briggs, South Africa
Education ...................................... Nancy Faller, USA
NNGF ............................................. Barbara Borwell, England
Industry Liaison ............................. Steven Kuehn, England
Publications .................................. Mary Jo Kroeber, Australia

2000
President ........................................ Nancy Faller, USA
Vice-President .............................. Sandra Smits, The Netherlands
Treasurer ....................................... Marianne Doran, Ireland
Secretary ..................................... Susan Stelton, USA
Editor ............................................ Dianne Garde, Canada

Committee Chairpersons
Constitution ..................................... Susan Dunn, Australia
Education ...................................... Elizabeth English, Australia
NNGF ............................................. Fiona Sheerin, Ireland
Industry Liaison ............................. Judy Chamberlain, South Africa
Publications .................................. Julia Thompson, Australia
Editorial Board ............................. Robert Lowell (ConvTec), USA
Industry Congress Liaison ............. Sandra Smits, The Netherlands
WCET Congress Liaison ................. Mavis Watson, England
Charities Commission Trustee ......... Bart Tappe, England

2002
President ........................................ Sandra Smits, The Netherlands
Vice-President .............................. Elizabeth English, Australia
Treasurer ....................................... Susan Dunne, Australia
Secretary ..................................... Susan Stelton, USA

Committee Chairpersons
Constitution ..................................... Shirley McSavaney, Canada
Education ...................................... Louise Forest-Lalonde, Canada
NNGF ............................................. Judith Weller, Switzerland
Industry Liaison ............................. Donna Weiss, Canada
Publications .................................. Julia Thompson, Australia
Editorial Board ............................. Carla Benedito (ConvTec), USA
Industry Congress Liaison ............. Susan Stelton, USA
WCET Congress Liaison ................. Mavis Watson, England
Charities Commission Trustee ......... Bart Tappe, England

2004
President ........................................ Sandra Smits, The Netherlands
Vice-President .............................. Elizabeth English, Australia
Treasurer ....................................... Susan Dunne, Australia
Secretary ..................................... Michelle Lee, Hong Kong

Committee Chairpersons
Constitution ..................................... Shirley McSavaney, Canada
Education ...................................... Louise Forest-Lalonde, Canada
NNGF ............................................. Judith Weller, Switzerland
Industry Liaison ............................. Donna Weiss, Canada
Publications .................................. Julia Thompson, Australia
Editorial Board ............................. Al Maslov, USA
Industry Congress Liaison ............. Susan Stelton, USA
WCET Congress Liaison ................. Bart Tappe, England
Charities Commission Trustee ......... Bart Tappe, England

2006
President ........................................ Elizabeth English, Australia
Vice-President .............................. Susan Stelton, USA
Treasurer ....................................... Judith Weller, Switzerland
Secretary ..................................... Elizabeth A Ayello, USA

Committee Chairpersons
Constitution ..................................... Bart Tappe, England
Education ...................................... Louise Forest-Lalonde, Canada
NNGF ............................................. Judith Weller, Switzerland
Publications .................................. Ameer Ally, England
Industry Congress Liaison ............. Bart Tappe, England
Charities Commission Trustee ......... Bart Tappe, England

2008
President ........................................ Elizabeth English, Australia
Vice-President .............................. Walter Lo, Hong Kong
Treasurer ....................................... Judith Weller, Switzerland
Secretary ..................................... Elizabeth A Ayello, USA

Committee Chairpersons
Constitution ..................................... Bart Tappe, England
Education ...................................... Carmen George, Australia
NNGF ............................................. Mary Quigley, Ireland
Publications .................................. Peter Lai, Hong Kong (2009)
Publications & Communications ............................ Shirley McSavaney, Canada

2010
President ........................................ Louise Forest-Lalande, Canada
Vice-President ................................. Susan Stelton, USA
Treasurer ......................................... Walter Lo, Hong Kong
Secretary  ........................................ Dee Waugh, South Africa
Journal Executive Editor .............. Elizabeth A Ayello, USA
Congress Liaison ............................... Elizabeth English, Australia

Committee Chairpersons
Education ........................................ Carmen George, Australia
NNGF .............................................. Chi Keung Peter Lai, Hong Kong
Publications & Communications ............. Carole Abboud, Lebanon

2012
President ........................................ Louise Forest-Lalande, Canada
Vice-President ................................. Susan Stelton, USA
Treasurer ......................................... Walter Lo, Hong Kong
Secretary  ........................................ Werner Droste, Germany
Journal Executive Editor .............. Elizabeth A Ayello, USA
Congress & meeting ........................ Dee Waugh, South Africa

Committee Chairpersons
Education ........................................ Vera Santos, Brazil
NNGF .............................................. Carmen George, Australia
Publications & Communications ............. Karen Zulkowski, USA

2014
President ........................................ Susan Stelton, USA

Vice-President ................................. Elizabeth A Ayello, USA
Treasurer ......................................... Alison Crawshaw, Scotland, UK
Secretary  ........................................ Karen Zulkowski, USA
Journal Executive Editor .............. Karen Zulkowski, USA
Congress & meeting ........................ Dee Waugh, South Africa

Committee Chairpersons
Education ........................................ Denise Hibbert, Saudi Arabia
NNGF .............................................. Arum Ratna Pratiwi, Indonesia
Publications & Communications ............. Laurent Chabal, Switzerland

References
1976–2004 information obtained from the previous Membership Handbook.
2004–2018 information obtained from the WCET™ Journal

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.

2017 NNGF Scholarships

ETN/C/REP Scholarships
Jerusha Ncororo Munyaka – Kenya
Nguyen Thi Thuong – Vietnam

Congress Travel Scholarships
Caren Kasera – Kenya
Shanti Bajracharya – Nepal
Lisiane de Almeida – Brazil
Heidi Campos – Chile
Saraswati Bhandari – Nepal

General Scholarship
Carmen George – Australia
Patricia Griffin – Australia
Sharon Lee Boxall – Australia

Membership Scholarships
sponsored by Friends of Ostomates Worldwide (FOW) USA and WCET members
Sophie Ndungu – Kenya
Nguyen Thi Thuong – Vietnam
George Makori – Kenya
Shanti Bajracharya – Nepal
Bilhan Madegwa – Kenya
Fathiya Hasan Ibrahim – Kenya
Lilian Nthenya Mutua – Kenya
Maria Albino – Kenya
Roseline Kasera – Kenya
Cheruiyot Kipkoech Timothy – Kenya

Monica Auma Omolo – Kenya
Duncan Amba Okoth – Kenya
Keziah R Nzole – Kenya
Grace Mukami Thimba – Kenya
Lilian Mnyazi Saidi – Kenya

www.wcetn.org
Stoma self-efficacy, hope and social relationships among patients with permanent colostomy

Bao-Jia Luo
Department of Colorectal Surgery, Sun Yat-Sen University Cancer Center; State Key Laboratory of Oncology in South China; Collaborative Innovation Center for Cancer Medicine
Guangzhou, Guangdong, China

Mei-Chun Zheng
Department of Colorectal Surgery, Sun Yat-Sen University Cancer Center; State Key Laboratory of Oncology in South China; Collaborative Innovation Center for Cancer Medicine
Guangzhou, Guangdong, China

Jun-E Zhang
School of Nursing, Sun Yat-Sen University, Guangzhou, Guangdong, China

Meng-Xiao Jiang
Department of Urological Surgery, Sun Yat-Sen University Cancer Center; State Key Laboratory of Oncology in South China; Collaborative Innovation Center for Cancer Medicine
Guangzhou, Guangdong, China

Zhi-Zhong Pan
Department of Colorectal Surgery, Sun Yat-Sen University Cancer Center; State Key Laboratory of Oncology in South China; Collaborative Innovation Center for Cancer Medicine
Guangzhou, Guangdong, China

De-Sen Wan
Department of Colorectal Surgery, Sun Yat-Sen University Cancer Center; State Key Laboratory of Oncology in South China; Collaborative Innovation Center for Cancer Medicine
Guangzhou, Guangdong, China

Rong-Xin Zhang
Department of Colorectal Surgery, Sun Yat-Sen University Cancer Center; State Key Laboratory of Oncology in South China; Collaborative Innovation Center for Cancer Medicine
Guangzhou, Guangdong, China

Xiao-Jun Wu
Department of Colorectal Surgery, Sun Yat-Sen University Cancer Center; State Key Laboratory of Oncology in South China; Collaborative Innovation Center for Cancer Medicine
Guangzhou, Guangdong, China

Yu-Jing Fang
Experimental Research Department of Sun Yat-Sen University Cancer Center; State Key Laboratory of Oncology in South China; Collaborative Innovation Center for Cancer Medicine
Guangzhou, Guangdong, China

Hui-Qin Zhang
Department of Colorectal Surgery, Sun Yat-Sen University Cancer Center; State Key Laboratory of Oncology in South China; Collaborative Innovation Center for Cancer Medicine
Guangzhou, Guangdong, China
patients with low rectal cancer have to confront their diagnoses of cancer, but it is far more difficult to adjust to the formation of a permanent colostomy, which requires a big change in life8,9. Colostomies have been shown to have significant effect in both physical and psycho-social functioning10,11. How patients adjust to life with a colostomy and what we can do to help them better adjust has been the focus of our care. Regardless of the efforts our stoma therapists made and increasing developments in stoma appliance technology, a large number of people with a permanent colostomy continue to suffer problems related to their stoma11. This suggests that management of the stoma is not enough to maintain the normal physical and psycho-social function. Results of current research suggest that self-efficacy is an important influencing factor in stoma adjustment12 and quality of life13.

According to Bandura’s social learning theory, self-efficacy was defined as the confidence a person has in his or her ability to perform relevant behaviour in a particular situation14. People are more likely to devote time to certain behaviours when they believe they are capable of executing those behaviours successfully15. The theory advocates a theme of “triadic reciprocity”, which claims that a person’s behaviour is constantly influenced by the environment and personal cognitions reciprocally16. When applied to stoma adjustment of patients with a permanent colostomy, stoma self-care is affected by the support provided by stoma specialists, families, friends and relatives (environment or social support) and his or her own thought about the stoma (cognitions). Some researchers in psychological health have demonstrated that patients’ thought and beliefs about their situation was the important factor influencing the way they act17. Hope is a positive thought and described as a belief that the present situation can be changed and that there is a way to get out of the situation18. Self-efficacy emphasises the belief in his or her ability to achieve a goal while hope is an inner positive perception of being able to do so. We supposed if the individual has a higher level of hope, he or she might be more confident about coping with the situation. That will help to improve the perception of self-efficacy.

As stated above, environment factors such as social support affect one’s self-efficacy and have been demonstrated important in giving the individual with breast cancer the
feeling of hope\textsuperscript{19}. Yet until now, no research has discussed the association of the three variables in patients with a permanent colostomy. To colostomates, evidence showed that support from family and his or her significant others contributed to psychological health\textsuperscript{20}. With the impact of culture, colorectal cancer (CRC) patients in Asia, especially in China, compared to European or Americans, emphasised family and friends as the major source of support and highlighted the importance of getting the feeling of love and alliance with these social partners\textsuperscript{21}, which showed the qualitative aspect of the social support. Hong Kong Chinese CRC patients have been examined to care more about the quality rather than quantity of social relationships when they obtained support from a restricted group of close social partners\textsuperscript{22}. Taking this into consideration, social relationship quality (SRQ) may be more adaptive to reflect the condition of social support of Chinese CRC patients. Independent of each other, hope and social support clearly correlate with self-efficacy in some chronic illness. Self-efficacy is better in those who have higher levels of hope\textsuperscript{23} and have assess to better social supports\textsuperscript{24,25}. Although it has not been specially examined and reported in patients with permanent colostomies yet, we suppose that the results would be similar. Therefore, we conducted the study to evaluate the association with state of stoma self-efficacy, hope level and social support (SRQ) among patients with a permanent colostomy returning home. We believe if the association between the three variables is ascertained it could help to provide more effective interventions, such as encouragement, help and mental support from family.

METHODS

Participants and setting

The study was conducted from July to December 2016. Patients diagnosed with low CRC who had surgery resulting in a permanent colostomy were discharged from hospital 10–14 days after surgery. Those who came to the enterostomal outpatient department of a cancer center affiliated with a university for visits were identified as potential subjects. The patients had to meet the following inclusion criteria: (1) being Chinese with Chinese the mother tongue; (2) aged eighteen years old or above; (3) at least one month after colostomy formation with experience of stoma self-care at home; (4) no diagnosis of cancer recurrence and metastasis; (5) no diagnosis of psychiatric problems; and (6) willingness to participate in the study and got informed consent. According to the criteria, 110 patients were eligible and recruited to the studies which exceed the target sample size. The patients had to meet the following inclusion criteria: (1) being Chinese with Chinese the mother tongue; (2) aged eighteen years old or above; (3) at least one month after colostomy formation with experience of stoma self-care at home; (4) no diagnosis of cancer recurrence and metastasis; (5) no diagnosis of psychiatric problems; and (6) willingness to participate in the study and got informed consent. According to the criteria, 110 patients were eligible and recruited to the studies which exceed the target sample size.

Data collection

Permission was approved from the Nursing Department of the Cancer Center affiliated to a university before the data collection commenced. A preliminary experiment was conducted on 15 patients to retest the reliability of the questionnaires used in the study. These patients’ data were excluded from the formal study and the patients did not fill out the questionnaires again. All the data were collected by a dedicated and experienced enterostomal therapist who took charge of the work of the enterostomal outpatient department. Data were mainly collected from patients who attended the department in the form of a questionnaire in face-to-face interviews and completed the forms personally. Some patients who were unable to return for a visit filled out the questionnaire by mail, while those who needed help were assisted by the researcher with reading the items and given choices only. The time to complete the questionnaire was controlled within 30 minutes for each participant. In the process of data collection, 40 questionnaires were completed by mail and only 29 pieces were sent back with the recovery of 72.5%. Forgetting to mail the questionnaire may be the most probable reason. Seventy questionnaires collected in the interview were all completed well. Ninety-nine questionnaires were double-checked and 13 were eliminated because of missing items. The total number of valid questionnaires we finally collected was 86 pieces.

Measurement

In the study, the general information form designed by the researcher was used to describe the social-demographic characteristics and information associated with stoma. The Stoma Self-efficacy Scale (SSES), the Herth Hope Index (HHI) and the Social Relational Quality Scale (SRQS) were applied to evaluate the state of stoma self-efficacy, the level of hope and the quality of social relationships, respectively.

General information form

A literature review was done before we developed the questionnaire. Before the final version was determined, five experienced enterostomal therapists from three first-class hospitals were invited to review and modify the items. The final version of the form contained 11 socio-demographic questions such as age, gender, education, family income and 18 questions on stoma-related matters such as months with stoma, time spent on daily stoma care, and stoma self-acceptance.

Stoma Self-efficacy Scale

The Stoma Self-efficacy Scale (SSES) was developed to measure the self-efficacy of patients with a stoma. Helen and her colleagues\textsuperscript{13} translated the original English version into Chinese with 22 items in 2007. The Hong Kong (HK) Chinese version was adopted in this study. The scale emerged two subscales. The Stoma Care Self-efficacy (Stoma Care SE) subscales made up of 13 items measures the expected self-efficacy of the person’s ability to care his or her stoma, while the nine-item Social Self-efficacy (Social SE) subscales measures the expected self-efficacy of the person’s social function related to his or her stoma. Cronbach’s alpha for the HK Chinese version was 0.97. The alpha coefficients for the Chinese Stoma Care SE and Social SE subscales were...
0.97 and 0.89, respectively. The correlation between the two scales was 0.73. A study conducted by Zhang\textsuperscript{26} tested the alpha coefficients of the HK Chinese version of the SSSES with the result of 0.89. The test-retest reliability of the 15 cases of patients was 0.96 with an interval of two weeks. Each item is rated on a 5-point Likert scale from 1 point, which means not being confident at all to 5 points, which means extremely confident. The higher score of the scale predicts better stoma SE. The maximum score was 110 with the minimum 22.

**Herth Hope Index**

The Herth Hope Index (HHI)\textsuperscript{27} is an adapted version of the Herth Hope Scale. The HHI is most commonly used to examine the level of hope and has been tested to have satisfactory reliability and validity in foreign patients. In this study we used the Chinese version, translated by Zhao\textsuperscript{28}, with the Cronbach’s alpha of the scale determined as 0.85. The HHI consists of 12 items and was rated from 1 (strongly disagree) to 4 (strongly agree) on a 4-point Likert scale that reflects the three subscales of hope: (1) temporality and future (T); (2) positive readiness and expectancy (P); and (3) interconnectedness (I). It is important to note that item 3 and 6 are negative expressions, which means the score should be reversed in calculation. The total score of the index ranges from 12 to 48 with the higher score indicating the greater hope.

**Social Relational Quality Scale**

The Social Relational Quality Scale (SRQS) was developed by Wai Kai Hou and Wendy Wing et al.\textsuperscript{29} in 2009, who are the experts of Hong Kong University and the Queen Elizabeth Hospital. In the process of its development, from scale design to the results, only colorectal cancer patients were recruited as the targeted subjects. That means it was adaptive specifically to the kind of disease. The scale measures the level of social support based on the quality and different resources available, and is composed of three subscales: family intimacy, family commitment, and friendships. Cronbach’s alpha for each subscale was 0.80, 0.82 and 0.75, respectively, while the mean inter-item correlation coefficients were 0.40, 0.45 and 0.38. The item-to-total correlation coefficient ranged from 0.43 to 0.69, indicating that internal consistency was satisfactory. A high total score denoted the better quality of social relationship.

**Ethical considerations**

The study was approved by the university and the hospital ethics committee. Patients who were eligible were invited to participate. All participants received written information about the study’s purpose and procedures, with the written informed consent statement confirming their voluntary participation. We promised that any reason to withdraw from or refuse the participation would have no any effect on their treatment or care. All questionnaires were collected anonymously to protect the privacy of the participants.

**Data analysis**

All the data were double-checked by the researcher and entered to SPSS (Version 17.0) for analysis. Descriptive statistics such as mean, standard deviations were used to describe the sample’s characteristics. All variables are first screened for their association with self-efficacy. Pearson’s correlation was used for continuous variables while chi-square for non-continuous ones. Those with a statistically significant relationship (P<0.05) were entered into a multiple regression analysis. All tests are two-tailed with the level of statistical significance set at 0.05.

**RESULT**

**Instrument reliability**

We evaluated Cronbach’s alphas to determine the reliability of the questionnaires used in this study specific to patients with permanent colostomy in mainland China. Cronbach’s alphas for SSSES, HHI and SRQS were 0.96, 0.93 and 0.82, respectively.

**Subject characteristics and stoma-related information**

Eight-six participants (male=63, female=23) ranged in age from 28 to 85 years (mean=60.79, SD=13.67). Of these, 91.8% were married and had mean time since the stoma surgery of 81.83 month. Of the subjects, 81.4% (70/86) could take care of their stoma independently. The average time spent in caring for their stoma daily was less than 30 minutes. More than 56% of the participants perceived body-image change caused by their stoma and nearly 16.3% couldn’t accept their stoma more or less. Tables 1 and 2 outline the demographic characteristics and some stoma-related information and the correlation with self-efficacy respectively was included.

**Demographic, stoma-related characteristics and stoma self-efficacy**

Of the demographic variables, family income and the relationships were related to stoma self-efficacy as measured by SSSES (Table 1). Stoma-related matters included months of the stoma, degree of stoma self-care, time spent on stoma care daily, body-image changed caused by the stoma and stoma acceptance were correlated with the total score of SSSES as listed in Table 2. Statistically significant positive relationships was found between SSSES score and family income (r=0.311, P< 0.01) as well as and family relationships (r= 0.351, P<0.01). Those who were longer after stoma formation, better in stoma self-care, spent less time in caring stoma, felt less change in body-image after the surgery and had a better acceptance of their stoma were found to have significantly higher SSSES score statistically.

**Stoma self-efficacy, hope, quality of social relationships**

Descriptive statistics for the SSSES, HHI, and SRQS are presented in Table 3. Mean score for the SSSES, HHI and SRQS were 76.00, 38.52 and 49.42, respectively.
Pearson correlation coefficients were calculated for the three variables and their composing subscales to determine their relations (Tables 4 and 5). A statistically significant positive correlation was found between Stoma self-efficacy (SSES) and hope (HHI), whose composing subscales showed the similar correlation ($r=0.341–0.559$, $P<0.01$). It suggested that increasing levels of hope were positively correlated with self-efficacy. The SSES and its subscales proved to have a statistically significant positive correlation with the quality of social relationships and its subscales ($r=0.160–0.454$, $P<0.05$), indicating that better SRQ increases the perception of stoma self-efficacy. Statistically significant positive correlation was also found between total HHI and SRQS score ($r=0.340$, $P<0.01$) (Table 5). Multiple linear regressions were calculated (Table 6). Three variables: the acceptance of stoma, the level of hope and family intimacy subscale of SRQS entered into the regression formula, which model accounted for 42.5% of stoma self-efficacy. The result suggested that patients who better accepted their stoma, had higher levels of hope and more close relationships with family may have a greater perception of stoma self-efficacy.

**DISCUSSION**

Permanent colostomy formation brought great changes to the patients with substantial body change, and psychological impact. As early as 60 years ago, Sutherland et al. had discussed the challenges faced by colostomies like body-image changed, increased rates of depression, and anxiety, social isolation and the like. The ultimate goal we hope to achieve is helping patients to care for their stoma independently and maintain their quality of life as before. In the process, it is very important to make sure that people have such skill or ability to manage their stoma and, further to enhance that, to achieve stoma self-efficacy, as is currently stated in the case.

The mean total SSES score of our participants was in accordance with the score reported in a previous study and analysis showed that age, gender, level of education, economic status and the ability of self-care were factors related to stoma self-efficacy. However, the variables were not calculated by multiple regressions for further analysis. In the present study, screening analysis showed that two socio-demographic and five stoma-related matters were

**Table 1: Demographics ($n=86$) and the correlation with SSES**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Items</th>
<th>$\bar{x} \pm s$ years</th>
<th>Maximum</th>
<th>Minimum</th>
<th>Correlation with SSES ($r$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td>60.79 ± 13.67</td>
<td>28</td>
<td>85</td>
<td>-0.047</td>
</tr>
<tr>
<td>Items</td>
<td>Groups</td>
<td>Frequencies</td>
<td>Percentage (%)</td>
<td>Score of SSES</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>Female</td>
<td>23</td>
<td>26.7</td>
<td>75.30 ± 20.59</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>63</td>
<td>73.3</td>
<td>77.91 ± 13.43</td>
<td></td>
</tr>
<tr>
<td>Marital status</td>
<td>Married</td>
<td>79</td>
<td>91.9</td>
<td>75.97 ± 19.09</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Divorced/widowed/single</td>
<td>7</td>
<td>8.1</td>
<td>76.29 ± 18.02</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>Primary school</td>
<td>6</td>
<td>6.9</td>
<td>61.12 ± 15.32</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Secondary school</td>
<td>27</td>
<td>31.4</td>
<td>73.15 ± 17.40</td>
<td></td>
</tr>
<tr>
<td></td>
<td>High school</td>
<td>38</td>
<td>44.2</td>
<td>82.67 ± 13.67</td>
<td></td>
</tr>
<tr>
<td></td>
<td>College level and above</td>
<td>15</td>
<td>17.4</td>
<td>76.00 ± 18.90</td>
<td></td>
</tr>
<tr>
<td>Employment status</td>
<td>Working</td>
<td>18</td>
<td>20.9</td>
<td>71.72 ± 18.18</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not working</td>
<td>68</td>
<td>79.1</td>
<td>77.13 ± 19.06</td>
<td></td>
</tr>
<tr>
<td>Family income</td>
<td>0–2000</td>
<td>28</td>
<td>32.6</td>
<td>66.07 ± 15.31</td>
<td></td>
</tr>
<tr>
<td>(yuan/per month)</td>
<td>≥2000</td>
<td>58</td>
<td>67.4</td>
<td>80.79 ± 18.71</td>
<td></td>
</tr>
<tr>
<td>Family relationship</td>
<td>Very good</td>
<td>43</td>
<td>50.0</td>
<td>80.91 ± 17.91</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Good/not so good</td>
<td>43</td>
<td>50.0</td>
<td>71.09 ± 18.79</td>
<td></td>
</tr>
</tbody>
</table>

Notes: 1) $P<0.05$  2) $P<0.01$
correlated with stoma self-efficacy (SSES), with statistical significance. However, after the final regression analysis, only self-acceptance was present in the regression model.

It is beyond our expectation that our patients’ mean HHI score was much higher than other cancer patients, such as hospitalised breast cancer patients in China. We originally thought that patients with a colostomy had to face much more than cancer therapy and the risk of recurrence, due to stoma formation, which impacted all aspects of daily life. In addition, they were more likely to experience negative thoughts. The result suggested that our patients were still hopeful about life, despite suffering from a stoma.

A statistically significant positive association between stoma self-efficacy and hope in the study supports the finding explored in other populations. It has been shown that students with a higher level of hope had a better perception of self-efficacy and positive performance. Consistent with our prediction, those who have a higher level of hope were better at controlling their stoma. According to Snyder, hopeful thinking may support and enable people to meet the increasing demands of the skill in managing their stoma, enabling them to set valued goals, understand their meaning and be able to drive them. Stoma self-acceptance was proved to be one of the three variables related to stoma self-efficacy. Those who accepted their colostomy showed better self-efficacy. This finding in patients with a colostomy may help to explain the cases. It suggested that people who are more accepting of their colostomy were less fearful of public embarrassment and feelings of inadequacy, and demonstrated lower levels of functional limitations and feelings of having more control over their colostomy.

The positive correlation between stoma self-efficacy and the quality of social relationship in the study was calculated to be statically significant. Inconsistent with prediction, only family intimacy subscales of SRQS remained as an

Table 2: Stoma-related matters (n=86) and the correlation with SSES

<table>
<thead>
<tr>
<th>Items</th>
<th>Maximum</th>
<th>Minimum</th>
<th>Correlation with SSES (r)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Months of stoma</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Items</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Groups</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stoma self-care</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Independently</td>
<td>1.7</td>
<td>614.5</td>
<td>0.3512)</td>
</tr>
<tr>
<td>Self-care with assistance</td>
<td>6.82 ± 7.83</td>
<td>0.3512</td>
<td></td>
</tr>
<tr>
<td>Almost and totally relies on others</td>
<td>2.4</td>
<td>52.00 ± 9.90</td>
<td></td>
</tr>
<tr>
<td>0–15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15–30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30–60</td>
<td>0.3512</td>
<td>0.3512</td>
<td>0.3512)</td>
</tr>
<tr>
<td>&gt;60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time spent on stoma care daily (minute)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>101–200</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>201–300</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;300</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Money cost on stoma appliance monthly (yuan)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>101–200</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>201–300</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;300</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body-image changed related to stoma</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extremely significant</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rather significant</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A little bit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Almost no change</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Remains the same as before</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stoma self-acceptance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strongly / mostly disagrees</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slightly disagrees</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mostly agrees</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Totally agrees</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: 1) P<0.05  2) P<0.01
influencing factor after regression analysis. Hou et al. described family intimacy as expressing a state of family empathy, experiencing family closeness through day-to-day emotions and activities, and providing a secure attachment to family at critical times. As the literature suggests, older people reported greater family intimacy and commitment than the younger ones. The mean age of participants in this study was older than 60 years, a population which cared more about family intimacy and placed greater emphasis on emotional support from family. The younger people carried more family responsibilities and were more active in seeking extra-family relationships. This may help to explain why only the family intimacy subscale were entered into multiple regression analysis. The evidence showed that people with better SRQ were more optimistic and hopeful. Positive social relationships have been proved to be an important contextual factor for dispositional hopeful thinking, determination in goal achievement and it is also associated with higher self-efficacy.

### STUDY LIMITATIONS

As we employed convenience sampling, only those who attended the enterostomal outpatient department of the targeted hospital were invited to participate. This means that patients with colostomies in other health care organisations were not taken into consideration. Since the enterostomal specialty has been well developed in the targeted hospital, all the patients have been encouraged and taught to care for their stoma themselves before returning home. The situation may not translate in health care organisations without

---

**Table 3: Descriptive statistics of SSES, HHI and SRQS**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSES</td>
<td>76.00</td>
<td>18.90</td>
<td>29.00–110.00</td>
</tr>
<tr>
<td>HHI</td>
<td>38.52</td>
<td>4.64</td>
<td>29.00–46.00</td>
</tr>
<tr>
<td>SRQS</td>
<td>49.42</td>
<td>4.98</td>
<td>32.00–64.00</td>
</tr>
</tbody>
</table>

**Table 4: Pearson correlation coefficients for SSES with HHI and SRQS**

<table>
<thead>
<tr>
<th>Variable</th>
<th>HHI score</th>
<th>T</th>
<th>P</th>
<th>I</th>
<th>SRQS score</th>
<th>FI</th>
<th>FC</th>
<th>FS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSES score</td>
<td>0.459&lt;sup&gt;2&lt;/sup&gt;</td>
<td>0.506&lt;sup&gt;2&lt;/sup&gt;</td>
<td>0.470&lt;sup&gt;2&lt;/sup&gt;</td>
<td>0.559&lt;sup&gt;2&lt;/sup&gt;</td>
<td>0.404&lt;sup&gt;2&lt;/sup&gt;</td>
<td>0.214&lt;sup&gt;1&lt;/sup&gt;</td>
<td>0.457&lt;sup&gt;2&lt;/sup&gt;</td>
<td>0.454&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td>Stoma care SE</td>
<td>0.460&lt;sup&gt;2&lt;/sup&gt;</td>
<td>0.493&lt;sup&gt;2&lt;/sup&gt;</td>
<td>0.469&lt;sup&gt;2&lt;/sup&gt;</td>
<td>0.554&lt;sup&gt;2&lt;/sup&gt;</td>
<td>0.409&lt;sup&gt;2&lt;/sup&gt;</td>
<td>0.239&lt;sup&gt;1&lt;/sup&gt;</td>
<td>0.384&lt;sup&gt;2&lt;/sup&gt;</td>
<td>0.415&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td>Social SE</td>
<td>0.397&lt;sup&gt;2&lt;/sup&gt;</td>
<td>0.452&lt;sup&gt;2&lt;/sup&gt;</td>
<td>0.409&lt;sup&gt;2&lt;/sup&gt;</td>
<td>0.491&lt;sup&gt;2&lt;/sup&gt;</td>
<td>0.345&lt;sup&gt;2&lt;/sup&gt;</td>
<td>0.160&lt;sup&gt;1&lt;/sup&gt;</td>
<td>0.282&lt;sup&gt;2&lt;/sup&gt;</td>
<td>0.434&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

Notes: T=Temporality and the future; P=positive readiness and expectancy; I=interconnectedness; FI=Family Intimacy; FC=Family Commitment; FS=Friendship

1) P<0.05 2) P<0.01

**Table 5: Pearson correlation coefficients for HHI with SRQS**

<table>
<thead>
<tr>
<th>Variable</th>
<th>SRQS score</th>
<th>FI</th>
<th>FC</th>
<th>FS</th>
</tr>
</thead>
<tbody>
<tr>
<td>HHI score</td>
<td>0.340&lt;sup&gt;2&lt;/sup&gt;</td>
<td>0.680&lt;sup&gt;2&lt;/sup&gt;</td>
<td>0.428&lt;sup&gt;2&lt;/sup&gt;</td>
<td>0.588&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td>T subscale</td>
<td>0.328&lt;sup&gt;2&lt;/sup&gt;</td>
<td>0.570&lt;sup&gt;2&lt;/sup&gt;</td>
<td>0.389&lt;sup&gt;2&lt;/sup&gt;</td>
<td>0.503&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td>P subscale</td>
<td>0.344&lt;sup&gt;2&lt;/sup&gt;</td>
<td>0.647&lt;sup&gt;2&lt;/sup&gt;</td>
<td>0.377&lt;sup&gt;2&lt;/sup&gt;</td>
<td>0.549&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td>I subscale</td>
<td>0.371&lt;sup&gt;2&lt;/sup&gt;</td>
<td>0.625&lt;sup&gt;2&lt;/sup&gt;</td>
<td>0.502&lt;sup&gt;2&lt;/sup&gt;</td>
<td>0.604&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

Notes: T=Temporality and the future; P=positive readiness and expectancy; I=interconnectedness; FI=Family Intimacy; FC=Family Commitment; FS=Friendship

1) P<0.05 2) P<0.01

**Table 6: Multiple regression analysis for stoma self-efficacy**

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>B(SE)</th>
<th>β</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>−35.30</td>
<td>17.70</td>
<td></td>
<td>0.049</td>
</tr>
<tr>
<td>Degree of stoma acceptance</td>
<td>9.35</td>
<td>2.09</td>
<td>0.41</td>
<td>0.000</td>
</tr>
<tr>
<td>HHI score</td>
<td>1.23</td>
<td>0.54</td>
<td>0.22</td>
<td>0.025</td>
</tr>
<tr>
<td>FI</td>
<td>1.86</td>
<td>0.92</td>
<td>0.20</td>
<td>0.047</td>
</tr>
</tbody>
</table>

Notes: R²=0.425; P<0.00; FI=Family Intimacy;
enterostomal nurses. This suggested that stoma self-efficacy, hope level and social quality may be quite different with or without the help of enterostomal nurses. Therefore, further study with a larger sample including patients from different kinds (for example, different grade, general hospital, with and without stoma nurses) is needed to clarify the inner correlation between the three variables. Moreover, the study was cross-sectional in nature, which means the measurement of the variables was one-time. However, with time past after the surgery, patients would adjust to their stoma gradually and the association between the variables may vary. In addition, it should also be noted that in this study the length of time of the samples was from stoma creation, which might also pose bias as the longer one has a stoma, the more likely their self-efficacy score would be achieved. A longitudinal study in the same population and separated study of patients with the newly made stoma and those with a stoma for more than one year would be a necessary step to examine the pattern of variables reacting to each other.

CLINICAL IMPLICATIONS

Despite the limitations stated above, the findings have implications for clinical work. Hope and stoma self-acceptance is important in this population and these relate to stoma self-efficacy, implying that increasing the feeling of hope and stoma acceptance helps to improve the ability to achieve goals. An additional finding was the relationship between family intimacy (one aspect of SRQ) and stoma self-efficacy reminds us of the importance of support from family, which may contribute to better self-efficacy. In general, these findings may offer some theoretical foundation for developing strategies to promote better stoma self-efficacy. According to our study, strategies should involve promoting a higher level of hope, stoma acceptance and mobilisation of family support. It suggested that, in the process of providing stoma care, we should help and encourage patients to have a correct understanding of their stoma and the disease so as to achieve stoma self-care gradually and maintain a positive attitude towards life. At the same time, we need to keep in close touch with the family members or main care-givers, helping them to accept the stoma and teaching them some skills to encourage and support the patients, thus allowing them to recover and return to normal life as soon as possible.

CONCLUSION

Stoma self-efficacy is a key factor in the process of adjusting to a colostomy. Nevertheless, the present approach to care is not enough because it does not pay sufficient attention to the mental adjustment to the colostomy. The present study suggests that better stoma self-efficacy will occur if our patients can be encouraged to accept their stoma, remain hopeful and maintain intimate relationships with family. It may take some effort to achieve this. Our findings also offer some direction for future research. Research with a larger sample and longitudinal design is needed for a better understanding of the reacting pattern of stoma self-efficacy, hope and social relationship quality.

CONFLICTS OF INTEREST

No conflicts of interest have been declared by the authors.

ACKNOWLEDGEMENTS

We would like to thank the patients who participated in the study and the enterostomal nurse outpatient department at the cancer center for facilitating this study.

REFERENCES

The following companies have very generously given donations to help fund NNGF scholarships:

- Hollister
- B|BRAUN
- Calmoseptine® Ointment
- Coloplast
- eakin®
- Welland Medical
- 3M
- salts HEALTHCARE
- Convatec
- TOPMEDICAL®
Revisiting the history of stoma siting and its impact on modern day practice

Magdalena Leyk  
RN, ET  
WCET™ ID Poland

Mariam Mohd Nasir  
RN, ET  
Congress Chairman WCET™ 2018

Priscilla J d’E Stevens  
SRN, ET  
WCET™ Life Member

Michelle Guyot-Pomathios  
RN, ET, AFET (French ET Association)  
Past President

Susan Stelton  
MSN, RN, ACNS-BC, CWOCN  
WCET™ President 2014–2018

Vera Lúcia Conceição de Gouveia Santos  
PhD, CWOCN  
WCET™ Education Committee Member

Laurent Chabal*  
RN, Specialised ET, UAS Lecturer  
WCET™ Publications & Communications Committee  
Chairperson 2014–2018  
EHC — Hôpital de Morges,  
Chemin du Crêt 2, 1110 Morges,  
Switzerland  
Email l.chabal@bluewin.ch

Alison Crawshaw  
RGN, BSc, ENB216  
WCET™ Treasurer 2014–2018

Denise Hibbert  
MSc-WHTR, RGN, BSc(Hons),  
DipHE, ONC, STN, FSSCRS,  
WCET™ Education Committee  
Chairperson 2014–2018

Elizabeth A Ayello  
PhD, RN, ACNS-BC, CWON, ETN,  
MAPWCA, FAAN,  
WCET™ Vice-President 2014–2018,  
Executive Editor Emeritus  
WCET™ Journal

* Corresponding author
ABSTRACT

Research supports that appropriate stoma placement results in fewer postoperative peristomal skin complications and enhanced adjustment to life with a stoma. In this article, an international group of enterostomal therapy nurses look back at the history of stoma siting, originally called stoma location, to better inform and improve today’s practice.

Keywords: Stoma siting, stoma location, stoma placement, history of WCET™ nursing, stoma nursing, ostomy nursing.

INTRODUCTION

Reflective practice is a hallmark of professional nursing and part of continuous professional development. Our ability to reflect on our daily practice and examine it in light of the current evidence (reflection for action) is the cornerstone of evidence-based practice (EBP), which is instrumental in the process of improving patient outcomes1.

A call to action

A review of practice invariably begins with someone asking a question of current practice; this review was no different. A question regarding the history of stoma siting was sent by email to the WCET™ Executive Board from the WCET™ International Delegate (ID) for Poland, Ms Magdalena Leyk.

“I would like to ask you for a little help. I am looking for some information about preoperative stoma site marking because I would like to do some research in Poland. I can’t find information of when the first site marking procedure was done. In Polish books and articles there is no information, in American journals, which I have access to, I could not find anything. If you would be so kind as to write me just the name of the person who wrote about it the first time and the year when it was first published, it would be very helpful for me; then I could find some articles, or research about it. I would be very grateful for your help.”

Ms Magdalena Leyk

Gathering the team

This request set in motion a series of emails. Thus began a search for an answer that brought together a team composed of members of the WCET™ Executive Board, the WCET™ Education Committee and the WCET™ Publications and Communications Committee. It is interesting to note that the WCET™ Education Committee has a task force led by Alison Crawshaw, that is in the final stages of producing a new educational resource on stoma siting. So this was a very timely request.

This search for an answer then continued around the WCET™ world and finally circled all the way back to one of the founding, life members of the WCET™, and a past president, Ms Prilli Stevens. Not only does this provide the opportunity to revisit the origins of our stoma nursing practice, it gives the WCET™ family a chance to participate in an exciting team effort of practice reflection and an attempt to share knowledge to improve patient outcomes. So began our journey to discover the history of stoma siting while assisting a WCET™ member with her everyday practice.

“Dear (names redacted) and all WCET™ members,

I would like to thank you for this information and for your great involvement in my request. You are wonderful and I feel like a member of a thoughtful family. :) All this information is so interesting. I was asking you about this because I did some research about stoma care in Poland and in the results we discover we still have a problem with site marking. I decided to prepare another survey sent to stoma nurses (a bigger group), just about the procedure of site marking, to find where the problem is. In the beginning of this survey I wanted to add that this procedure is used around the world for a long, long time. That was why I asked about it, but reading your emails I feel like I have journeyed into the past. :) It was so exciting to read the long history about stoma site marking. I suppose the surgeon did the first stoma location and the procedure has evolved to current site marking (three position) over years, and the nurse was involved in it. You have a lot of information to write an amazing article about the history of stoma siting/stoma location. I hope that in the future maybe I could read your article about it. :) One more time, thank you very, very much for all your help ...

Kind regards, Magdalena”

THE WAY IT WAS — EARLY REFLECTIONS ON STOMA SITING

Stomas, or openings into the bowel, have been used in an attempt to save lives since 350 BC2. While surgical stomas were first mentioned in 1710 and the first successful attempt was in 1793, by Duret as a solution for imperforate anus3, a procedure for correct siting of abdominal stomas was not mentioned until 19784. The important procedure of stoma siting, originally the duty of the surgeon5, is today performed by a certified stomal therapist or enterostomal therapist (ET) in many developed and developing countries.

A personal reflection

Ms Prilli Stevens remembers her first encounter in caring for a patient with a stoma and reflects on the lack of siting and its consequences:

“In common with many stomaltherapy nurses I have a very vivid memory of my first exposure to a patient with an intestinal stoma. The year was 1958 and it was the third month of my nursing career at St Bartholomew’s Hospital, London. The sign on the single room door was very explicit — NO VISITORS — and behind that door lay an emaciated, tearful man about to have a dressing change following emergency surgery four days before for a toxic mega colon and long-standing ulcerative colitis.
The senior dressing nurse on the surgical unit asked me to come and assist her. The wound and stoma, at this time, were covered in a cellulose and cotton wool dressing and secured with a many-tailed bandage. On removal of the dressings, it was all I could do to restrain myself from expressing some horror, as the abdominal wall was a bright red colour — merged with silver aluminium paste and faecal material spurted forth from the phallic 2 inch ileostomy, sited low on the right abdomen. Our patient was deeply distressed and sobbed throughout the cleaning procedure. Within the hour a gentleman wearing a bowler hat, three-piece suit and carrying a leather suitcase arrived from Down Bros, the highly respected surgical appliance store in Welbeck Street, London, to ‘fit’ the patient with a stoma appliance. This consisted of a double-sided zinc-oxide plaster, a circular rubber flange and a rubber bag with an unscrewable plug on the side for drainage. The whole appliance was kept in place by a metal ring with two belt lugs and a rubber belt. Mr Percy Payne, the gentleman fitter, who I will never forget for his professionalism and skill, expressed concern at the site of the stoma, which compromised a snug, reliable fitting of the appliance. Indeed, should the patient lie in any position other than lying flat he was sure that there would be a strong likelihood of leakage. The next few days bore out his concerns and the postoperative rehabilitation was greatly compromised by frequent leaks and changes. Unfortunately, a chance to re-operate and site the stoma in a better position was out of the question due to the poor nutritional state of our patient at this time.

I will fast forward six months and simply say that that particular patient eventually made a wonderful recovery from the surgery and gained over a stone in weight, which of course made the stoma care even more complex with the change in his body contour. Reluctantly, he underwent a re-site of the ileostomy with the surgeon a wiser man, having seen firsthand the problems and the angst a poor site can produce. The patient returned to a full and highly successful life as a famous musician travelling the world and entertaining thousands with confidence and continence!"

Priscilla J d’E Stevens

AN INSIGHT INTO THE HISTORY OF STOMA SURGERY

The early years — 1700s

Dorothy B Doughty wrote about the history of stoma surgery in her manuscript published in the Journal of Wound, Ostomy and Continence Nursing in 2008. She highlights the initial challenges of stoma location in an era highlighting advancements in surgical practice and survival, without much consideration for the patients’ quality of life.

The first reported colostomy in 1710 was located in the groin area, on the patient’s left side. Later stomas were raised in the lumbar region. It is difficult to imagine how patients managed to self-care and lead any sort of life, especially when you consider the lack of modern appliances. Although surgical techniques have advanced and the work of pioneers such as Norma N Gill, along with innovative industry solutions have improved stoma care in relation to sitting and pouching, we still see stomas incorrectly sited with no standardised technique.

How gold standard has been fixed — 1950s–1990s

The reason that early reference to stoma sitting appears to be missing is because in early papers and articles, this activity was referred to as stoma location or stoma placement in early papers and articles. The first reference found was 1967, in the excellent Atlas of Intestinal Stomas authored by Doctors Rupert Turnbull and Frank Weakley of the Cleveland Clinic. Ira Kodner (another Cleveland graduate) published a booklet in 1978 on colostomy and ileostomy care, including the importance of stoma location and planning. However, the best enterostomal therapy nursing early references came from the excellent pioneering ETs of the USA: Rosemary C Watt, ET from Stanford University Hospital of San Francisco, California. She wrote the definitive article on Stoma placement in principles of ostomy care, published in 1982.

In this first stomatherapy text, there is a description in the preoperative care chapter that demonstrates several diagrams showing various siting techniques. This book was our ET “bible” for many years. It was still available for ETNEPs in 1991, but unfortunately has been out of print since the early 1990s.

The next textbook was written by Beverly Hampton and Ruth Bryant in 1992. Cited in this book is an article written in 1979 by Victor Braren and colleagues discussing the use of the umbilical area for placement of urinary stomas.

However, it was only when Norma N Gill set the stoma world alight with her observations and suggestions following her own surgery, that siting preoperatively became common practice. Initially performed by surgeons, stoma siting eventually becoming an integral part of the ET nurse’s role.

According to Prilli Stevens: “We can never divorce the hole from the whole” and in all matters concerned with enterostomal therapy nursing it should be appreciated that as an entity it was only introduced as a concept in 1958 — when our founder Mrs Norma N Gill was appointed as an “ostomy technician” to the colorectal service at the Cleveland Clinic Foundation, Ohio, USA. In 1961, an education program was established at the Cleveland Clinic. The initial trainees under Mrs Gill were themselves rehabilitated ostomates drawn from the various ostomy chapters (patient self-help groups) in the USA. Therefore, although members of the colorectal ostomy rehabilitation team were highly respected, it would be highly unlikely that surgeons would defer the responsibility of preoperatively selecting a stoma site to an otherwise unqualified “lay ostomate”.

It was not until 1961 that the concept of creating a specialised nursing role was recognised by the Ferguson-Droste-Ferguson Hospital in Grand Rapids, Michigan, USA.
tandem with this, the Cleveland Clinic, Ohio, USA, opened their ET program to trained nurses. Over the following eight years, these trainees formed a national body and established five educational programs with 351 graduates. Also in the 1960s, other key areas of the globe such as England at St Bartholomew’s Hospital in London, France at the Hotel Dieu in Lyon, Australia at the Alfred in Melbourne and Sweden at Salkenska in Gotenborg, other eminent colorectal surgeons had also identified and seconded senior nursing staff to specialise solely in the care of persons with ostomies or fistulae. Thus, a whole new speciality of nursing emerged. This new role addressed preoperative counselling and orientation or stoma siting and practical skills and procedures.

In the education programs developed by the excellent stomaltherapists of the Cleveland Clinic, specifically Joan Kerr and Joan Van Niel, the correct procedure for undertaking preoperative stoma placement was documented and taught. The same work was accomplished by the pioneers in the other countries mentioned, such as Barbara Saunders in the UK, and so ET programs became well established and the next generation of ETs taught the correct siting protocols.

SITING METHODS AND CHALLENGES

In the beginning there was much trial and error in stoma siting. From personal experience, there is nothing more distressing than marking the chosen site carefully then receiving the patient postoperatively with another site used by the surgeon. This might be due to preoperative scrubbing and towelling by the theatre staff that completely removed the indelible mark. This led to the development of a variety of alternative marking methods. One example is the placement of an adhesive red dot covered by a transparent waterproof dressing or tattooing the site with a Hagedorn needle once the patient was anaesthetised.

At the Cleveland Clinic, Dr Rupert Turnbull established special metal marking tools which were placed on the abdomen, especially in the emergency surgery situation when an ET had not met the patient preoperatively. Some of us were lucky to actually watch him siting an acute abdomen in the anaesthetic preparation room with these circular discs as his guide. He was of the opinion that all acute abdomens should be sited prophylactically. These three discs are still used today, even if they are made of plastic now (Figure 1).

Ostomy irrigation

In the early years following formation of a sigmoid colostomy, it was common practice to teach colostomy irrigation, with the wearing of a protective pad between irrigations rather than a colostomy pouch. Remember that the age of plastic disposables only came in the late 1960s. An ideally sited stoma would not have been so crucial, as pouching was not necessary.

Loop colostomy

However, formation of a loop colostomy, especially in the right transverse colon for the relief of left-sided obstruction, or as a staged procedure for colonic or rectal carcinomas, frequently resulted in a poor site. Either too high under the costal margin, too near the incision or even too lateral over the iliac crest. It should be understood that midline incisions were not the gold standard in the early days. A left paramedian incision for sigmoid and rectal resections and right paramedian for small bowel resections were common. It might be presumed that strong lobbying by ETs in addition to changes in surgical practice, may have led to a change to midline incisions in the 1980s.

“In 1975, I was introduced to the strict routine of the Cleveland Clinic colorectal service of siting ALL emergency abdominal surgery for a potential stoma by Professor Turnbull himself. He demonstrated taking a metal circular disc with a hole punched in the middle to the anaesthetic preparation room and even with distended abdomen and the patient only in the recumbent position, the major parameters were noted and the disc placed in the best site he could identify at the time — and marked with an indelible pen. Once anaesthetised, and prior to the preparation of the abdomen for surgery, the mark was further scratched with a blade prior to cleaning and towelling. In the same year I was fortunate to visit and work alongside another ‘great’ — Rosemary C Watt of the Stanford Clinic in San Francisco. Her excellent unit proudly carried out the very best of stoma caring and had a picture of ‘the perfect stoma … well sited — well mobilised — well perfused — well fixed’ above the desk … bearing in mind the need for all the residents...
to be aware of the difficulties for all concerned should the site be inadequate. In Toronto, where Dianne Garde ruled with a very experienced rod of iron, junior surgical interns were encouraged to wear an ostomy pouch for a couple of days with either porridge or water in them. If the site chosen to fix the pouch was inadequate, leakage would occur … thus a great lesson was learnt.”

Priscilla J d’E Stevens

Some of the WCET™ Executive Board members remember the "bad old days" of stoma siting and stoma construction.

**Devices to keep the bowel on the abdomen**

"Reflecting back, the "good old days" were not always so good. In 1972, some of the surgeons were still using DeMartel clamps to create the stoma. The surgeon would pull the bowel up through the incision to two inches or so above skin level, a DeMartel (or similar) (figure 2) was clamped onto the bowel near skin level; petrolatum gauze was wrapped around the bowel and clamp; the bowel would necrose and the clamp would fall off. Whilst the clamped bowel was necrosing, there was a very unpleasant odour of decomposing flesh. This approach was very crude. Additionally, the stoma sites were not carefully selected before surgery. They were located more for surgical convenience. When the clamp finally fell off, the resulting stoma was essentially a hole at the skin level, or slightly recessed, that was often difficult to pouch.

Loop stomas were held above skin level using various devices, some self-made and others (rods and bridges) commercially made (figure 3)."

Susan Stelton

We should remember that as important as preoperative stoma siting is, just as crucial is stoma construction. This construction is not always achieved even today (Figures 4, 5, 6 and 7). It may depend on abdominal wall thickness and contours. It would have major impacts on stoma management and most of all on the patients’ quality of life19-21.

**TODAY’S PRACTICE**

In most countries, certified experienced stoma therapists or ETs perform stoma siting22,23; this is an important competency for ET education programs. Although some countries where legislation does not allow this, require that the surgeon perform siting, which may also be necessary in an emergency, making it an important competence for Colorectal Surgery Fellowships24.

**WCET™ International Ostomy Guideline**

In the WCET™ International Ostomy Guideline (IOG)25, section 3.1 Preoperative care needs, pages 10–11, there are two recommendations for stoma site marking. They are:

3.1.1 Stoma site marking on the summit of the infra-umbilical mound, within the rectus muscle away from abdominal scars, creases, skin folds, or belt line should be done preoperatively for both elective and non-elective (when possible) surgery by an ET nurse or clinician educated in ostomy care. Strength of Evidence (SOE)= B+

3.1.2 Preoperative education for both the patient and the family (when possible) should include stoma explanation and site marking, the surgical procedure, and postoperative stoma management. SOE= B+25, pages 10–11

A special page is also dedicated to stoma siting recommendations in section 5, page 34.

**The rise of the stoma therapist/ET**

It took time and experience for the message to get through that one had to think not only about the type of surgery
and the planned incision but also that the patient should be sited, having been assessed in three positions: sitting lying and standing. Good communication between the ET nurse and the surgeon preoperatively was also required. In some countries, surgeons found it difficult to treat the specialist nurse as a colleague with skills able to carry out the task of siting! Seeing the ET as an experienced colleague rather than a handmaiden has taken time in some countries.

Siting for two stomas was noted to require extra considerations. This included the use of a belt to ensure security for the urinary diversion, whereas many colostomies in the early years utilised colostomy irrigation rather than pouching. Other stomas formed at several different levels of the gut required siting as well. Thus cervical oesophagostomy, gastrostomy, jejunostomy and caecostomy, and some intra-abdominal drainage sites were noted to benefit from preoperative siting. Although in many situations these stomas have not always received the attention they require and failed to be sited, adding to the difficulties for all concerned.

The majority of pioneering ET nurses were not prone to writing papers! They were totally immersed in becoming team members and taking on more and more clinical responsibility as their talents emerged and practice roles grew. Sub areas of expertise emerged and paediatric stoma care, oncology and inflammatory bowel disease, trauma stoma nursing and the management of complex fistulae and open abdomen have called on knowledge and understanding in order to efficiently plan the stoma site.

Gunshot wounds, external fixations frames, open abdomen, multiple fistulae, necrotising fasciitis and chemical burns all require individualised and multidisciplinary discussion prior to siting. Interesting work studying bowel motility following spinal cord injury as a combined study by ETs and spinal cord teams have led to individualised stoma sites being selected dependent on the point peristalsis ceases. The assumption that stomas of the sigmoid colon suit all
spinally compromised persons falling away once the study demonstrated contrary information\textsuperscript{27}.

**Modern day stoma sitting**

The benefit of placing a mark at the site of the stoma preoperatively is twofold. Firstly, to ensure that a flat surface is identified during lying, sitting, standing and bending at the waist in both sitting and standing positions, in order to avoid leakage. Secondly, it is also to ensure that the patient is in agreement with the site in relation to being able to self-care and make decisions related to lifestyle and clothing.

Whenever possible, the aim is to raise the stoma at the centre of a flat surface (so it can accommodate the size of the wafer) and be through the rectus abdominis muscle, which provides a firm support. The stoma also must be in a place where the patient can see it to do self-care, and where the appliance can be hidden under clothing.

There are several factors that need to be elicited before stoma site marking that may affect the stoma site or warrant a discussion with the patient about adaptation. The diagnosis, type of surgery, stoma and abdominal wound will provide information regarding anatomical placement of the stoma and also avoidance of the planned wound. Age, fashion, occupation, lifestyle, disability, physical or mental impairment, and religious beliefs are all factors that may influence stoma positioning, self-care and adaptation. The technical process is performed in light of this holistic assessment. There are many sites that must be avoided or acknowledged and discussed. Consider the following:

- Observe patient in usual clothes in sitting and standing positions to ascertain waistband, belt or brace placement, type of undergarments.
- Ask patient to lay flat and straight, exposing abdomen and ensuring that the abdominal contours are not affected by clothes.
- Observe scars, skin folds, hernia, skin mounds, wrinkles, bony protuberances, umbilicus, radiation sites, loose skin and hernia, pendulous breasts and abdominal aprons.
- Ask the patient to cough, while palpating the abdomen in order to locate the rectus abdominis muscle. Once identified, ask the patient to raise their head (which will tighten the muscle) making the lateral border easier to identify.
- Place a mark with a pen at the flattest possible site within the rectus muscle.
- Ask the patient to sit upright, sit reclining, sit as they would while relaxing, stand, bend forward, bend to the right, bend to the left and lie down. If cultural issues require kneeling and bowing, then ask the patient to kneel and bow as they usually would. Work with the patient to ensure all possible positions have been checked in accordance with their occupation and lifestyle.
  - In all positions, check that body contours and that the proposed site is still at the centre of the flattest surface.
  - Gently grasp any skin folds between thumb and forefinger and ask patient to straighten the abdomen, avoid overhangs and aprons.
  - Mark an area that is as flat as possible in these positions and is visible to the patient. This mark should be approximately 2 inches (5 cm) away from bony prominences, scars, creases, skin defects, waistline and midline, as well as being on a flat, even abdominal surface within the patient’s visual field.
  - Confirm with the patient that they can see the stoma and that it is in an area that they feel they can live with.
  - Mark the area with indelible pen with a filled-in circle and cover pen mark with film dressing.
  - If the patient is to receive pelvic radiation the site must be above the anterior superior iliac spines.

**SUMMARY AND CONCLUSIONS**

A poorly located stoma may result in pouching problems, increase the potential for leakage, and place undue hardship and emotional trauma on the patient\textsuperscript{28-30}. Yet Pittman found up to 67\% of stomas were not marked preoperatively\textsuperscript{31}. This underscores the importance of proper location of the stoma.

The technique for appropriate stoma siting can be found in the newly released WCET™ educational resource on ostomy siting available on the website at www.wcetn.org. This newest WCET™ creation is the result of a task force led by Alison Crawshaw\textsuperscript{32}. In addition, a dedicated webinar on stoma siting has been published and posted on the WCET™ website.

Preoperative stoma siting, based on these best practice principles (including how to adapt to individual patients) is recognised as a crucial competence in specialised training programs. The WCET™, via its Education Committee, Twinning projects, and Congress Travel Scholarships aims to promote these specialised skills to prevent ostomates suffering with poorly sited stomas.

Much has been achieved since the early days of stoma surgery, but siting remains a challenge which impacts on the patient quality of life. Reflection within interdisciplinary, collaborative teams is important to successful coordination\textsuperscript{1}. This can be demonstrated by projects such as enhanced recovery after surgery (ERAS) programmes\textsuperscript{33,34}. These trends in surgery and patient care continue to provide challenges for stomal therapists, including preoperative siting. Therefore, it is important that we continue to review and improve practice to meet these challenges.
A FINAL WORLD FROM WCET™ LIFE MEMBER, MS PRILLI STEVENS

“Finally, I would like to commend the early ostomy chapters in the USA and the UK for initially supporting each other during the difficult times prior to formal professional specialised care. By forming provincial and then national bodies and creating awareness of the plight of ostomates and appraising their surgeons of the problems they encountered. The pioneering of the International Ostomy Association, with Mr Archie Vinitsky at the helm in 1975, was a watershed moment. It was in London at their second meeting that those first pioneering nurses met to form the idea of our international ET nursing body, the WCET™. On a personal note, I would dedicate this reminiscence to the many hundreds of ‘poorly sited’ ostomates from the past and those who in 2017 still suffer the problem of leakage and odour, sore skin and loss of confidence and dignity due to failure to appreciate the need for a good site. On the positive side, how wonderful it is to have a global body sharing the importance of preoperative siting and I salute the WCET™ for the continuing quest to promote this procedure.”

Priscilla J d’E Stevens

ACKNOWLEDGEMENTS

Thank you to all the co-authors for their contributions. This manuscript tells a lot about our global ET family, the WCET™. Next year we will celebrate our 40th anniversary: what a fantastic way to celebrate it by showing what this working team project was able to achieve!

AUTHORS’ DISCLOSURE

The authors disclose that they have no conflicts of interest.

REFERENCES

Peristomal skin changes: what treatment should be adopted?

Results of an observational multi-centre study

ABSTRACT

There are only a few, non-exhaustive scientific contributions available relating to the treatment of peristomal skin lesions and this situation may be attributed to difficulties associated with the anatomical area to be treated and characteristics relating to the atypical nature of these lesions, even though we are certain they may have a significant impact on both the quality of life of patients and relative costs.

The aim of this study was to assess whether some topical preparations available on the market have a significant impact on healing time with respect to such lesions.

Keywords: Peristomal cutaneous alterations, L3-L4-L5, SACS 2.0, LMW-HA, collagen.

Mario Antonini*
ET/Wound Care Nurse
Health Care Department for Central Tuscany, San Giuseppe Hospital, Empoli, Italy
Email mantonini11@alice.it

Gaetano Militello
ET Nurse
Health Care Department for Central Tuscany, Santo Stefano Hospital, Prato, Italy

Raimondo Arena
ET/Wound Care Nurse
AO ARNAS Garibaldi, Catania, Italy

Stefano Gasperini
Medical Advisor
Pisa, Italy

Simona Mancini
ET Nurse
Health Care Department for Central Tuscany, Santa Maria Annunziata Hospital, Florence, Italy

Stefano Veraldi
Department of Pathophysiology and Transplantation, Università degli Studi di Milano, IRCCS Foundation, Cà Granda Ospedale Maggiore Policlinico, Milan, Italy

Raffaella Tantulli Bartoli
ET Nurse
Health Care Department for Central Tuscany, Santa Maria Annunziata Hospital, Florence, Italy

* Corresponding author

Silvia Manfredda
ET Nurse
Ceccarini Hospital, Riccione, Italy
INTRODUCTION

A stoma is an opening surgically created to connect internal organs (intestine, ureters, stomach and so on) to the abdominal wall. It has been estimated that in Italy there are at least 60,000 people living with an ostomy.

For ostomates it is essential to maintain the peristomal skin intact and free from reddening or excoriation as effluents from the intestine, ureters or other organs must be collected in a collection system that must remain attached to the abdominal skin. Contact of effluents with the abdominal skin may cause lesions that reduce the adhesion of the collection system. This condition further increases the risk of infiltration, premature detachment of the collection system and the emergence of increasingly severe peristomal skin lesions.

International literature reports a highly variable incidence of peristomal complications and in any case ranging from 18% to 55%. With reference to these data, one of the main reasons for accessing nursing-assistance units is in fact the occurrence of peristomal skin complications. This fact in itself is an indication of the extent to which the problem has been underestimated and may greatly affect the quality of life of ostomates, the work of stomal therapy nurses and management costs.

The main cause of peristomal cutaneous changes is represented by contact of the skin with irritants. This type of lesion is most commonly known as irritant contact dermatitis (ICD), which in most cases develops lesions of the L1 and L2 types, according to the SACS 2.0 Classification. With regard to the more complex peristomal skin alterations, in particular L3, L4, L5 and LX, according to SACS 2.0, stomal therapy nurses have to contend on a daily basis with a definite challenge and this is rendered more complicated by a total lack of specific topical therapies for all of the clinical pictures referred to above. The associated, particularly high health care costs deriving from such a situation are a consequence of this shortcoming in the treatment of these lesions. In addition, health care economic analyses often represent a simple average cost that excludes those alterations where the loss of substance is massive, with the involvement of structures also below the fascial plane of the abdominal wall that are difficult to manage for the stoma patient, for stomal therapy nurses and for the health care system.

Obviously, for each complication a targeted intervention is required, which will often have to be multidisciplinary, consisting of intervention on the part of the stomal therapist and a specialist. Furthermore, it should be noted that not all medical specialties are capable of correctly dealing with peristomal skin lesions. The pharmaceutical industry has so far not studied and experimented with certain specific medicines or forms of medical-surgical treatment that might respond to the needs of this type of patient.

MATERIALS AND METHODS

A spontaneous observational multi-centre study was conducted in Italy at five centres offering medical care for ostomised patients (Empoli, Prato, Riccione, Catania and Florence).

The study had an overall duration of two years, from 1 January 2014 to 31 December 2015. The study group consisted of six stomal therapists and two physicians. To initiate the work, the coordination centre submitted the study proposal to the ethics committee, obtaining the relative authorisation to proceed. The other centres were included in accordance with the corresponding regulations in force. All patients enrolled in the study had read and signed the informed consent and also an authorisation to acquire and use digital images.

The subject of this study was verification of a rigorous therapeutic protocol (Table 1) which included the use of some topical preparations in each (L) according to the SACS 2.0 Classification, controlling the trend in terms of tissue repair of the lesions analysed over the 12 weeks of treatment.

Verification and follow-up were carried out with the use of a special form at T0 (enrolment), T1 (after 4 weeks), T2 (after 8 weeks) and T3 (after 12 weeks), while during outpatient examinations the normal standard of care (SOC) was followed, which provided for a change of medication every three days. Further parameters were simultaneously checked, on the basis of the same scheduling, as possible indicators and, in particular, itching, burning, pain, bleeding during detachment and the digital image.

---

Table 1: Therapeutic protocol. The letter (P3, P4, P5, P6) identifies the treatment performed

<table>
<thead>
<tr>
<th>Composition of the product</th>
<th>Type of lesion for which it was used</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.2% LMW-HA + V.alg. collagenase (P4)</td>
<td>LX, L4</td>
</tr>
<tr>
<td>0.2% LMW-HA + 2% micronised metallic silver (P5)</td>
<td>On each erythematous lesion (L1) or on each lesion at risk of infection</td>
</tr>
<tr>
<td>0.2% LMW-HA cream (P3)</td>
<td>L2, LX</td>
</tr>
<tr>
<td>2.5% LMW-HA + 95% equine collagen (P6)</td>
<td>L3, L4, L5</td>
</tr>
</tbody>
</table>
During the two-year study, 331 patients were enrolled (demographic summary in Table 2). These subjects presented abdominal stoma with peristomal skin changes as reported in Table 3 according to the SACS 2.0 Classification.

RESULTS

All 331 patients enrolled were evaluated at the end of the study. They presented peristomal skin alterations as summarised in Table 3. Of the sample, 74% presented more than one lesion in the peristomal area (Figure 1). For the purpose of the study, the plan established that the most serious lesion would be analysed and descriptions of the other lesions were also provided.

P5 treatment was the most commonly utilised, and adopted as the primary choice in 21% of cases (L1) and as an adjuvant treatment in 68% of cases, regardless of the picture (L) presented by the lesion. In all lesions (L1), this resolved the erythematous condition within four weeks of treatment (Figures 2 and 2.1) and in all other cases presenting a variety of (L) conditions we believe it ensured an adjuvant action with respect to the process of repairing and avoiding a critical colonisation of the lesions (Figures 3 and 3.1). The P5 treatment comprised a spray consisting of 0.2% MLW-HA with metallic silver combined in a light kaolin and silicon dioxide matrix. The preparation ensured three fundamental properties comprised within a single formulation: exudate absorption, prevention of possible bacterial contamination and activation of the healing process.

The P3 and P4 treatment, although theoretically indicated for the L2, L4 and LX conditions, did not present significant results due to its cream-based (P3) or ointment-type (P4) formulation, which did not allow for perfect adhesion of the skin barrier anchoring the collection bag. It was for this reason that the treatment was suspended and continued with the usual SOC used in the various outpatient clinics. However, we must point out that neither treatment resulted in any adverse outcomes, of either a light or serious nature, and the treatment was fully tolerated. An important reflection should be noted: the LX and L4 lesions, the latter being closely related to the presence of fibrin or necrosis, still lack an adequate form of treatment.

P6 treatment was used in 37% (L3, L4, L5) of the patients studied, demonstrating a very high level of performance. The treatment succeeded in healing 100% of cases at 8 weeks with respect to L4 and L5 lesions, and 98% in relation to L3 lesions after 12 weeks of treatment. In particular, in the L5 lesions (Figures 4, 4.1 and 4.2), albeit rare but certainly not easy to manage, it presented the most encouraging data and to the extent that it may be considered as the first choice in this type of situation.

Its unique formulation comprises 2.5% LMW-HA associated with 95% equine collagen. It is very likely that the correct mix of these two components generates a biologically active form of medication.

DISCUSSION

We conducted a systematic review of the literature in order to identify possible therapeutic protocols for peristomal lesions, but a strong propensity was found towards the study of individual preparations, often abandoning ongoing tests on account of the inadequacy of the formulation. This prompted us to study and propose a therapeutic protocol that might validate some treatments subdivided according to the type of lesion.

We are certain that peristomal skin lesions represent a therapeutic challenge which to date remains unresolved. Those who wish to operate in this field must take into account two related aspects: their atypical nature, and the fact they are not skin lesions which may be classified in the same way as other skin lesions (for example, UP, VLU, DFU and so

<table>
<thead>
<tr>
<th>Patients</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Totals</td>
<td>331</td>
<td>100%</td>
</tr>
<tr>
<td>Males</td>
<td>178</td>
<td>54%</td>
</tr>
<tr>
<td>Females</td>
<td>153</td>
<td>46%</td>
</tr>
<tr>
<td>Average age</td>
<td>62.68</td>
<td>Years</td>
</tr>
<tr>
<td>Age range</td>
<td>22–100</td>
<td>Years</td>
</tr>
<tr>
<td>Crohn’s disease</td>
<td>38</td>
<td>12%</td>
</tr>
<tr>
<td>Rectal cancer</td>
<td>129</td>
<td>39%</td>
</tr>
<tr>
<td>Bladder cancer</td>
<td>51</td>
<td>15%</td>
</tr>
<tr>
<td>Perforation of the diverticulum</td>
<td>44</td>
<td>13%</td>
</tr>
<tr>
<td>Various</td>
<td>69</td>
<td>21%</td>
</tr>
<tr>
<td>Temporary ostomy</td>
<td>156</td>
<td>47%</td>
</tr>
<tr>
<td>Definitive ostomy</td>
<td>175</td>
<td>53%</td>
</tr>
<tr>
<td>Chemotherapy</td>
<td>104</td>
<td>32%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Types of lesion</th>
<th>Sample</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>67</td>
<td>21%</td>
</tr>
<tr>
<td>L2</td>
<td>99</td>
<td>31%</td>
</tr>
<tr>
<td>L3</td>
<td>62</td>
<td>19%</td>
</tr>
<tr>
<td>L4</td>
<td>53</td>
<td>17%</td>
</tr>
<tr>
<td>L5</td>
<td>19</td>
<td>1%</td>
</tr>
<tr>
<td>LX</td>
<td>31</td>
<td>11%</td>
</tr>
</tbody>
</table>
on), and the need to heal the condition “urgently”.

Realising there is still a long way to go before a therapeutic protocol is defined, validated and accepted by the international scientific community, our contribution aims to provide an initial stimulus for all sector operators and an invitation to collaborate in the definition of the same. As far as we are concerned, the intention is to offer a high level of collaboration, as we are convinced that the quality of life of stoma patients is conditioned by the integrity of their skin or, in the worst case scenario, by the time necessary for peristomal ulcers to heal.

LIMITATIONS OF THIS STUDY

The most significant limitation is the impossibility of conducting a comparison study as there is no recognised and validated SOC. In the various outpatient clinics advanced forms of medication are studied and formulated for the treatment of “simple” skin lesions.

Our study rigorously adhered to the proposed protocol and may thus be considered a source of possible inspiration for the proposal of further clinical investigations.

CONCLUSIONS

With regard to therapeutic appropriateness in the case of peristomal skin alterations, the crux of the matter is in fact the topical therapy. The major therapeutic error is probably to consider peristomal lesions as skin lesions, which may present a different aetiology and consequently treat them with materials not suitable for the area to be cured.

Our work represents an initial systematic approach, which, in the protocol studied, identifies what may be considered as a solution and what can not resolve the conditions presented.

We trust that other colleagues will deal with the same subject in a determined manner, contributing to the growth of
knowledge. In our own case, we shall endeavour to maintain the enthusiasm that to date has stimulated us to carry out our studies.

REFERENCES

ABSTRACT
The purpose of a root cause analysis (RCA) is to clarify exactly which adverse event has happened, determine why it happened and help prevent it occurring again. It is not punitive to any individual; rather the goal of an RCA is to prevent future harm by eliminating ALL errors or issues that underlie adverse events. It could also be used to determine why something worked well. An RCA looks at all the reasons something happened that are not immediately obvious, rather than focusing on a single cause.

An RCA helps identify these underlying problems using a systems approach to identify active errors (errors occurring at the point of contact between humans and a complex health care system) and latent errors (hidden problems within health care systems that contribute to adverse events). It looks at the “big” picture. The problems that are uncovered may result in changes in reporting, record keeping or process. It is important to remember that multiple errors and system flaws must intersect for a critical incident to reach the patient. Labelling one or even several of these factors as the cause, without consideration of all factors, may obscure the true picture of patient care.

USING ROOT CAUSE ANALYSIS FOR ADVERSE EVENTS
Unfortunately, adverse events happen during medical care. Some may be life-threatening, major errors, while others may be problematic but not life-threatening. Understanding why problems occurred can help change care processes and improve patient outcomes. Root cause analysis (RCA) can be especially helpful when examining why a patient developed a pressure injury. Often both patients and families attribute the development of pressure injuries to an event that should never occur. However, patient factors such as medical conditions, medications, as well as facility issues are often the actual “cause”.

The aim of an RCA is to clarify which adverse event has occurred, determine the causes and help prevent it happening again. It is not intended to be punitive to any individual; rather the goal of an RCA is to prevent future harm by eliminating any errors or issues that may underlie adverse events. It could also be used to assess a process that has worked well. It looks at all the causes rather than focusing on a single cause.

An RCA uses a systems approach to identify active errors (errors occurring at the point of contact between humans and a complex system) and latent errors (hidden problems within health care systems that contribute to adverse events). It looks at the “big” picture. The problems that are uncovered may require a change in reporting, record keeping or process. It is important to remember that multiple errors and system flaws must intersect for a critical incident to reach the patient. Labelling one or even several of these factors as the cause, without consideration of all factors, may obscure the true picture of caring for a patient’s wound.

Performing an RCA must be an interdisciplinary process. It needs to involve those persons most familiar with what happened, but also the people familiar with other departments that influenced or contributed to what happened. Conducting an RCA means going deeper by asking the question why at each level of cause and effect. The goal is to identify changes for the system and, as such, it should be conducted in a manner that is as impartial as possible.

To be thorough, an RCA must include: examination of human and system factors; analysis of the underlying cause and effect through a series of “why” questions; identification of risks that occurred and their potential contributions; and determination of which improvements could be made to the processes within the system to prevent this occurring again. To be credible, an RCA must: invite participation by organisational leadership as well as those most closely involved in the processes and systems; be internally consistent; include consideration of relevant literature and examine the basis for best practice.

The process also involves repeatedly asking the question why, sometimes called the rule of five whys. The event that happened is the outcome. For example, a patient developed...
a pressure injury, which is an adverse outcome. Why did it develop? The five whys were:

1. He was immobile.
2. He refused to move because of pain.
3. He was not offered pain medication before an attempt to turn him.
4. The certified nursing assistant (CNA) did not know to ask the nurse.
5. Lack of education, and so on.

In this example, the direct cause is lack of movement, but the indirect causes are the most significant and require changes in the system.

THE “HOW” OF RCA:

1. An RCA begins with data collection and reconstruction of the event in question through record review and participant interviews. It is important to stress to staff that this process is not designed to blame any individual(s).
2. The interdisciplinary RCA team analyses the sequence of events leading to the event or error, with the goal of identifying how the event occurred (through identification of active errors) and why the event occurred (through systematic identification and analysis of latent errors). It looks at all departments and processes within the facility. This is the five whys stage.
3. The RCA process then identifies where changes/improvements should be made.
4. The changes are trialled or pilot-tested.
5. Outcomes are tracked and examined.
6. The process to be changed is refined.
7. The change is made facility-wide.
8. Re-evaluation is ongoing.

In other words, exactly what happened, why did it happen and where did it happen? Problems are identified in:

1. Policy/procedures.
2. Safeguards (barriers and controls).
4. Equipment.
5. Information technology.
6. Fatigue in scheduling.
7. Training.
8. Communication.
9. Other issues.

Once the issues have been identified then required changes need to be planned and implemented. This includes addressing how this problem can be corrected so it does not reoccur. Other considerations include deciding which changes will be implemented and who is responsible for the implementation. The process must be tested and evaluated, then redesigned or modified, as required. This process is often represented as a fishbone diagram (see Figure 1). It considers: equipment/supply factors; environmental factors (location, physical layout, and safety); policy/procedures/rules factors (standards or compliance with standards, and documentation); and people/staff factors (ability/supervision/staffing, lack of knowledge or information, scheduling, and communication). One of the best ways to learn how to follow this process is with an example. The results are often conceptualised in a fishbone or Ishikawa diagram to help see the bigger picture\(^5\). However, this is just a guide to the question how and is often rather intimidating to people using it for the first time. The important point is to remember this is just a tool to help look at quality improvement in a bigger picture\(^7\). An RCA is effective when looking at the big picture with pressure injury\(^8\)-\(^10\).

CASE STUDY: AMANDA’S STORY — HOW DID THIS WOUND HAPPEN?

Day 1: Amanda is brought to the emergency room (ER) via ambulance and on a backboard at 1930 on Saturday. Her daughter arrives shortly thereafter. Amanda is a 78-year-old widow, with a history of arteriosclerotic heart disease (ASHD), diabetes mellitus (DM) and hypertension. She had a coronary artery bypass graft (CABG) six years ago. Currently, she is complaining of nausea, blurred vision and pain in her left hip. The ride in the ambulance was 45 minutes. When Amanda arrives, the ER is very busy, with patients from a traffic accident. She is put in a trauma bay and her vital signs are taken right away. The ER is short-staffed by two registered nurses (RNs) due to a local flu outbreak. Therefore, her history isn’t taken for another 30 minutes (2000) and the physician arrives at 2015.

Amanda appears to be alert and oriented to time and place but is a poor historian. However, her daughter Ginger tells you her mother has had periods of confusion over the past several days and fell at home yesterday and again today, although she is sure her mother was “only on the floor for 15 minutes before we found her”. She goes on to say that she recently moved her mother into her home from out of town, because she wasn’t looking after herself or taking her medications. In the last six months, she has lost 30 lb. As a result of the long-distance move, no previous medical records are immediately available.

Ginger tells you that her mother had been receiving medical care for episodes of atrial fibrillation and flutter prior to the move. Currently she is on 0.125 mg of digoxin daily, and quinidine sulphate and Catapres, but she can’t remember the
dose or times for these. Amanda has rales in her lung sounds and 3+ pitting oedema in her lower extremities. She is started on 4 L of oxygen (O₂) via nasal cannula and intravenous (IV) Lactated Ringers at 100 ml/hr. She is transferred to the cardiac intensive care unit (ICU) at 0145. The time on the backboard is 90 minutes. Her stay in ER is 4.5 hours, where a hip and chest X-ray are taken. The chest X-ray showed fluid and presence of pneumonia in both lower lobes of her lungs, but the hip results were not received until after her transfer to the ICU.

Day 2 in the ICU: the cardiac monitor shows atrial fibrillation with a ventricular rate of 189 beats per minute (BPM). Her blood pressure (BP) is 120/82. She has pulse oximetry (pulse ox), and a 12-lead electrocardiogram (ECG), portable chest and hip X-ray and serum digoxin level are ordered. Pulse ox is 80% and O₂ is increased to 6 L. She is started on Lasix. The hip X-ray shows a left hip fracture (Fx). The orthopaedic department is consulted, but surgery is deemed not possible until she is medically stable; they order a morphine pump to control the pain, and no turning to her left side.

After being in ICU for four hours, Amanda is more confused but her O₂ statistics are now 90% (0545). She becomes incontinent of urine and tries to climb out of bed several times, pulling off her O₂ and pulling out her IV. She is restrained for the next eight hours, but documentation shows she was turned only once (1345). Unfortunately, when she was placed on her right side her O₂ statistics dropped and she has to be maintained on her back with the head of her bed elevated. An adult diaper is used to manage the incontinence when excessive due to the Lasix given. Her Braden scale score was 14 on day 2 at 1130.

After another eight hours (2145) her medical condition stabilises enough that the restraints can be removed. She is bathed and at this time a stage III pressure injury and a friction injury are noted on her coccyx.

Think about Amanda to answer these questions but imagine if this case happened in your hospital. The idea is to look at the big picture. No one department or person is to blame. Rather there were multiple failures, both in the care provided and the system. The goal is to improve care by addressing the large issues.

So, who is at fault? The answer is no one. Go through the case step by step. Root cause does not blame — it improves and is a positive.

So, the problems are multifactorial:

1. **Equipment**: Had not been evaluated for condition, so pressure redistribution was not being adequately provided.

2. **Rules/policy/procedure**: Training was not adequate for wound prevention. There was no policy on communication between departments or oversight of cumulative time spent on hard surfaces. There was poor
<table>
<thead>
<tr>
<th>Look at the patient and the event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amanda’s primary diagnosis (Dx) and secondary Dx</td>
</tr>
<tr>
<td>Which of these increased pressure injury risk? Which increased moisture damage risk?</td>
</tr>
<tr>
<td>When and where were the wounds first noted?</td>
</tr>
<tr>
<td>When was the medical provider notified?</td>
</tr>
<tr>
<td>Was family notified of the wound/when?</td>
</tr>
<tr>
<td>Was skin team consulted? Y/N</td>
</tr>
<tr>
<td>Was a dietary consultation ordered?</td>
</tr>
</tbody>
</table>

1. Was a skin assessment documented and where?
   - Ambulance: No
   - ER: No
   - ICU: Not until wound was noted

2. Was a pressure injury risk assessment scale completed on ICU admission?
   - Day 2 at 1130

3. What pressure injury and wound risk factors were problematic and should have been addressed in the care plan?
   - Immobility-related pain and hip Fx and restraints
   - Decreased turning sites available
   - Incontinence/moisture
   - Nutrition
   - Decreased tissue perfusion

4. What medical conditions and changes in condition increased Amanda’s pressure injury risk in the ICU?
   - Hip Fx
   - Decreased oxygenation
   - Incontinence

5. Was skin reassessed and documented every 4 or 8 hours in ICU?
   - No

6. Was moisture adequately addressed?
   - No and it resulted in moisture-associated skin damage
   - Contributing factor: Lasix for oedema increased urine output with no toileting plan
   - Possible urinary tract infection (UTI)

7. When did staff last have training on pressure ulcer prevention?
   - One year ago, at skills day
   - Unknown for staff hired to ICU in past year

What departments/people were connected to the event?
Think broadly (and not just the obvious ones)

- Family
- Ambulance
- ER
- ICU
- X-ray
- Education
- Nursing
- Medicine
Staffing  ER was inadequately staffed as 2 RNs were ill and not replaced

Surface/transportation factors  Time spent
- on backboard
- in ER
- in restraints
Surface evaluation for each department was not done for the past 3–4 years

Intra- and interdepartmental communication  Time spent in ambulance, on backboard, and in X-ray was not communicated between departments

documentation of risk and skin condition. The required consultations were not carried out. Care planning was not adequate for risk. Wound policy and procedures had not been updated for four years and were no longer based on current evidence.

3. **People**: The ER was short-staffed, which impacted time to treatment and skin examination. The patient was a poor historian.

4. **Environment**: Facility building was not at fault.

You need to decide: Could this pressure injury have been prevented? What should this facility do next?

**CONCLUSION**

Multiple issues cause adverse events. A pressure injury is not the fault of one person; rather it can be caused by a series of failures that occur. Yet nurses often feel that an RCA will blame them for the pressure injury and they will be penalised. The purpose of an RCA is to improve patient care by examining and correcting all the contributing factors. This is part of an ongoing quality improvement process.

In the above example, multiple failures occurred from before admission, to unit and system issues. Unfortunately, the patient is the one that suffered the consequences and developed a pressure injury. If everything was done correctly and an RCA found no errors, the pressure injury would be unavoidable. Everything was done that could be done. An RCA can highlight good care as well as any deficiencies.

**REFERENCES**

Comparison of self-constructed versus commercial monofilaments to validate self-constructed monofilaments for assessment of neuropathy in the diabetic foot at risk

Daziel Tagum
RN, BSN (University of Saint Anthony, Philippines), International Interprofessional Wound Care Course (IIWCC — UAE)
Staff Nurse Wound Care and Hyperbaric Oxygen Therapy Unit, King Hamad University Hospital, Kingdom of Bahrain

John-Michael Llagas
RN, BSN (Lyceum of the Philippines University, Batangas City), International Interprofessional Wound Care Course (IIWCC — UAE)
Staff Nurse, Wound Care and Hyperbaric Oxygen Therapy Unit, King Hamad University Hospital, Kingdom of Bahrain

Hiske Smart*
RN, RM, MA Nursing Science (PU for CHE — South Africa), Postgraduate Diploma in Wound Healing and Tissue Repair (University of Cardiff, UK), International Interprofessional Wound Care Course (IIWCC — CAN)
Nurse Manager, Wound Care and Hyperbaric Oxygen Therapy Unit, King Hamad University Hospital, Kingdom of Bahrain

* Corresponding author

ABSTRACT
Diabetes mellitus is a metabolic disease caused by abnormal insulin secretion that regulates glucose use by the cell for energy, thereby resulting in a high blood glucose level. Diabetic peripheral neuropathy is a sensory dysfunction resulting from the disease and a major cause for foot ulceration in the diabetic population. In order to prevent the foot from breakdown, early identification is necessary by screening for the foot at increased risk of a diabetes-related complication. The 60-second diabetic foot screening tool has been designed and validated as a quick and relatively simple tool for identifying the high-risk diabetic foot/feet in need of referral for specialist intervention.

Self-constructed monofilaments are often utilised in clinical practice for neuropathy testing where there were no other options available. This was previously published as a practice innovation for resource-challenged settings. Our study aimed to verify the use of self-constructed monofilaments by comparing it to commercial monofilaments in a patient case series as well as blinded-to-the-participant and open-to-the-evaluator measurement of exerted pressure on a gram scale of weight.

The lesson learned from this study was that size does matter and that self-constructed monofilaments to assess neuropathy needs to be evaluated in the setting, by using readily available measuring equipment as a calibration mechanism.

Keywords: Diabetic foot, neuropathy, 60-second screening tool, monofilaments.

INTRODUCTION
Diabetes is known to be one of the causes of death all over the world. A person with high blood sugar or HBA1c if not controlled is prone to complications that eventually may cause limb loss and eventually death. The early detection and assessment of a diabetic foot is vital in the management of persons with diabetes as the cost associated with treatment for complications is high in all health care systems. By using a simplified 60-second screening tool, foot screening can be accomplished despite busy high patients loads, to identify those individuals who are high risk and needed for early referral, prevention and intervention.

BACKGROUND
Diabetes mellitus is a metabolic disease caused by abnormal insulin secretion that regulates glucose use by the cell for energy, thereby resulting in a high blood glucose level. It is classified into three major types. Type 1 diabetes is a consequence from the destruction of the beta cells in the pancreas that leads to insulin deficiency. It is usually seen and diagnosed in children and young adults and requires insulin treatment. Diabetes type 2 is usually characterised by insulin resistance and insulin deficiency. It is a lifelong disease that occurs in the adult population and is treated
and controlled by eating healthy foods, dieting, exercising, insulin therapy, medications, and correction of other medical co-morbidities. Type 3 diabetes, also known as gestational diabetes, is primarily diagnosed in the period of pregnancy and disappears after the baby is born.

**Diabetic foot ulcer development pathway**

In the management of the foot of the diabetic it is a valuable habit to assess the underlying causes and address those appropriately before attempting to get a foot ulcer to heal. Vascular supply, deep or surrounding tissue infection and the presence of pressure are the three main components associated with the formation of a foot ulcer. Peripheral vascular disease is a painful condition that patients usually feel at night and is clinically detected by the patient having poor palpable pulses.

Diabetic peripheral neuropathy is a sensory dysfunction in the person with diabetes and the most common cause of foot ulceration. Clinical presentation and symptoms of neuropathy are the presence of altered temperature perception, episodes of paraesthesia and hyperaesthesia, and painful sensations that may include stinging, burning or stabbing pain stimuli. In diagnosis, the patient may complain of numbness in the feet that may be localised or later includes the whole foot up to the ankle. Current practice to detect neuropathy is the use of a Semmes Weinstein monofilament designed to exert 10 gram (g) of pressure on the tarsal aspect of the foot in various locations. An inability of patients to detect that pressure on their feet signifies the loss of protective sensation.

A consequence of diabetic peripheral neuropathy is the development of motor dysfunction that will include stiffening of the ankle joint, claw foot deformities, dropping of metatarsal heads and a fat pad that migrates to underneath the toes, leaving the metatarsal heads exposed. The resulting complication is the development of a Charcot complication that includes foot fractures with or without osteomyelitis in the midfoot to ankle range. The use of infrared thermometry is valuable in detecting the acute Charcot and may have bilateral temperature differences exceeding 10 degrees Fahrenheit compared to the other foot. It affects the bones, joints and soft tissues of the foot and ankle that is characterised by inflammation in the early stage. The hallmark deformity associated with this condition is midfoot collapse, described as a “rocker-bottom foot”, resulting in increased plantar pressure often leading to ulceration and then amputation.

When assessing pressure effects in a diabetic foot, the rule of thumb is to look for callous build-up over a bony prominence. The presence of blisters is often associated with friction but also poses a risk for skin breakdown. It is vital to identify these elements to prevent the foot from deteriorating unbeknownst to the patient. The simplified 60-second diabetic foot screening tool has been designed and validated in rapidly identifying the high-risk diabetic foot/feet in need of referral for specialist intervention.

**The simplified 60-second screening tool**

This assessment tool is a validated tool in sensitivity and specificity to identify the diabetic foot at risk for skin breakdown. It identifies the loss of protective sensation, foot deformity and a history of ulceration, amputation or Charcot foot (Box 1). These assessment elements are included in the 60-second assessment tool by Sibbald et al. in 2012, which was validated by Woodbury et al. and is now widely applied in clinical settings.

Commercially designed handheld monofilaments are readily available in most of the developed world. In environments

<table>
<thead>
<tr>
<th>Box 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The simplified 60-second screening tool</strong></td>
</tr>
<tr>
<td><strong>History of any previous ulcer or amputation.</strong></td>
</tr>
<tr>
<td><strong>Physical examination of the foot:</strong></td>
</tr>
<tr>
<td>* Palpate foot pulses on the dorsalis pedis and posterior tibial arteries.</td>
</tr>
<tr>
<td>* Identify any foot deformities including Charcot foot, hammertoes, claw foot, dropped metatarsal heads and a migrated fat pad.</td>
</tr>
<tr>
<td>* Identify active foot lesions such as ulcers, blisters and calluses.</td>
</tr>
<tr>
<td>* Identify fungal presence between the 4th and 5th toes.</td>
</tr>
<tr>
<td>* Assess presence or loss of protective sensation by using a Semmes Weinstein monofilament, also known as a neuropathy test.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Box 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Neuropathy testing procedure</strong></td>
</tr>
<tr>
<td>Use a monofilament exerting 10 g of pressure and ask patients to close their eyes:</td>
</tr>
<tr>
<td>* Let them feel the pressure on their forearm and acknowledge they feel the pressure.</td>
</tr>
<tr>
<td>Then check 10 sites on each foot:</td>
</tr>
<tr>
<td>* The 1st, 3rd and 5th toes.</td>
</tr>
<tr>
<td>* The 1st, 3rd, and 5th metatarsal heads.</td>
</tr>
<tr>
<td>* The medial and lateral areas of midfoot.</td>
</tr>
<tr>
<td>* The 10th site is on the dorsal aspect of the foot.</td>
</tr>
</tbody>
</table>
with resource challenges, a commercial monofilament is not that readily available as a result of unawareness\textsuperscript{10} and maybe the cost thereof. Self-constructed monofilaments are often used in clinical practice where there are no other options available. This was previously published as a practice innovation for resource-challenged settings\textsuperscript{10} as a huge number of monofilaments can be constructed from a single roll of fishing line. This monofilament is to touch the patient’s foot and bend like a C-shape, exerting only 10 g pressure on 10 points of the patient’s foot. It is recommended that one monofilament is intended for each patient.

**Monofilament construction**

Use 5 mm width of 30 lb fishing line and a 5 cm x 10 cm piece of soft cardboard

Fold the cardboard double to be a 5 cm x 5 cm size

Cut a 5 cm length of the fishing line

Put a spot of glue on the open edge of the cardboard to paste the monofilament between the cardboard edges

Insert 1 cm of the fishing line into the folded cardboard on top of the glue and press the edges together for 1 minute to dry

For added stability, a paper staple can be applied on the cardboard edge to keep the monofilament secure

The 4 cm fishing line that is protruding from the end of the paper is the standard length for commercially manufactured monofilaments

In 2015 there were 154,300 cases of diabetes in Bahrain, with diabetes one of the most common public health problems not only in Bahrain, but in the region of West Asia\textsuperscript{11,12}. Of the population of the Gulf region it is estimated that 20% suffers from diabetes, while another 70% is at risk for developing this condition, as depicted in Figure 1\textsuperscript{11}. Within the population, the age bracket with the highest proportion of diabetes is those aged 40–70 years (red line). If that is compared to the rest of the world (dotted line) and the region (black line), it is clear that Bahrain has a high level of prevalence. A change in social

---

**Figure 1: Prevalence of diabetes in adults by age, 2015\textsuperscript{11}**
conditions with a sedentary lifestyle\textsuperscript{11}, as well as widely used traditional footwear, adds to the risk for breakdown of the foot for the person with diabetes in this region\textsuperscript{2}. Screening for risk is therefore paramount in preventing the complications associated with a diabetic foot ulcer\textsuperscript{3}.

\textbf{INVESTIGATION METHODOLOGY AND FINDINGS}

This study comprised three phases that included teaching nurses the 60-second screening tool, including constructing a monofilament, followed by a competency pressure test on the self-constructed monofilament measured on a pharmacy weighing scale. The two primary investigators then did monofilament tests on a sub-set of patients by using both commercially manufactured and self-constructed monofilaments. Data were collected on a specialist wound nurse doing the assessment compared to a not-so-skilled nurse doing the same assessment with both monofilaments.

\textit{Phase I: Educational intervention and monofilament construction (n=11)}

A small group lecture was constructed on the elements of the high-risk diabetic foot that also included a video presentation about the 60-second diabetic foot screening tool and how to construct a monofilament. This lecture was designed by the two primary investigators and conducted to the small group who are all working with diabetic feet on a daily basis. This was done in preparation for constructing a monofilament. The participants included two medical doctors (senior house officers), seven staff nurses, one clinical support nurse who fills the in-service training requirements of the unit and one health care assistant.

After the demonstration to construct a monofilament, all attendees were provided with the materials to construct their own monofilaments. Participants were then paired in twos and instructed to conduct the 60-second screening tool on each other’s feet. All participants could do the 60-second screening process correctly.

\textit{Phase II: Monofilament on weighing scale (n=16)}

A week later the same group was re-tested on making a monofilament. This time it was done without any instruction. This session was attended by one clinical support nurse, one health care assistant and 13 staff nurses.

Each attendee constructed their own monofilament. One participant was willing to have a test foot that was used as a test site to ensure the C-shape was present in the procedure of testing the foot site. This ensures that the correct pressure was applied for the procedure. Participants were then asked to exert the same pressure to the base of a digital pharmacy scale (Photo 1). The scale could measure milligram increments and served as a calibration test for each participant. Each had a commercial monofilament thereafter and was asked to do the same test again on the test foot and then weighing scale thereafter. In the process of exerting pressure on the weighing scale, the participants were blinded for the digital reading (Photo 2) and were not able to see the pressure they applied on the scale (Photo 3). They were instructed to apply the same pressure during the monofilament testing that they had applied on the foot previously. The findings are depicted in Tables 1 and 2.

Based on the comparison of the weight of the self-constructed and commercial monofilaments the exerted pressure between
9.5 and 10.5 g was deemed to be the acceptable variance range for a 10 g pressure reading on monofilament testing. In the commercial monofilament category, two participants applied less pressure and five exceeded the 10 g set pressure. In the self-constructed category (4.0 cm length), 14 attendees applied less pressure and two went beyond. It was then realised that the monofilament of 4 mm in width (standard available) was not acceptable and may be over-sensitive as a testing modality. The monofilaments were then all shortened by 5 mm in order to see if that would supply equilibrium that could get the self-constructed monofilament calibrated as close as possible to the commercial monofilament. In the self-constructed monofilaments (3.5 cm length) four participants applied less pressure and five applied more pressure.

The mean score of the weight pressure difference between the self-constructed (4.0 cm length) and commercial monofilament was −2.23 g (range −0.5 to −4.5 g). For the weight pressure between the self-constructed (3.5 cm length) and commercial the mean difference was −0.38 g (range −0.1 to −1.5 g).

Phase III: Monofilament test on diabetic patients (n=10)

Both monofilaments were then taken to the bedside of patients. All new patients with diabetes that were admitted to the wound care centre underwent monofilament testing using the self-constructed and commercial monofilament on each. Two sets of data were gathered. One set was gathered by one wound care specialist and the other set by the staff nurse who was assigned to take care of the patient. This was done to determine if accuracy and precision differ between skilled and not-so-skilled wound care nurses. Our respondents were all diabetic male patients, all with foot ulcers present signifying already lost protective sensation. Ten new diabetic patients were assessed for neuropathy and loss of protective sensation by using the two sets of monofilaments.

On the commercial monofilament testing no difference was found between the two testers (0/20 missed). In using the self-constructed monofilament, the specialist missed two feet (2/20 = 10% error), while in the random staff group using self-constructed monofilament missed two feet (2/20 = 10% error).

DISCUSSION

By measuring exerted pressure on a digital pharmacy scale in a blinded-to-the-attendee and open-to-the-evaluator-tester method, we found that the pressure applied by participants with the self-constructed monofilaments were problematic.

<table>
<thead>
<tr>
<th>Participant</th>
<th>Commercial Weight</th>
<th>Self-constructed (4 cm length) Weight</th>
<th>Self-constructed (3.5 cm length) weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurse 1</td>
<td>0/10 9.1 g</td>
<td>1/10 6.5 g</td>
<td>9.0 g</td>
</tr>
<tr>
<td>Nurse 2</td>
<td>0/10 10.5 g</td>
<td>0/10 8.2 g</td>
<td>9.5 g</td>
</tr>
<tr>
<td>Nurse 3</td>
<td>0/10 10.5 g</td>
<td>0/10 9.9 g</td>
<td>9.0 g</td>
</tr>
<tr>
<td>Nurse 4</td>
<td>0/10 10.3 g</td>
<td>0/10 5.8 g</td>
<td>9.2 g</td>
</tr>
<tr>
<td>Nurse 5</td>
<td>1/10 9.9 g</td>
<td>0/10 10.3 g</td>
<td>9.5 g</td>
</tr>
<tr>
<td>Nurse 6</td>
<td>0/10 9.8 g</td>
<td>0/10 7.5 g</td>
<td>9.1 g</td>
</tr>
<tr>
<td>Nurse 7</td>
<td>0/10 10.8 g</td>
<td>0/10 8.1 g</td>
<td>11.1 g</td>
</tr>
<tr>
<td>Nurse 8</td>
<td>0/10 10.2 g</td>
<td>0/10 8.2 g</td>
<td>10.6 g</td>
</tr>
<tr>
<td>Nurse 9</td>
<td>0/10 10.2 g</td>
<td>0/10 8.2 g</td>
<td>10.6 g</td>
</tr>
<tr>
<td>Nurse 10</td>
<td>1/10 10.8 g</td>
<td>0/10 6.5 g</td>
<td>9.8 g</td>
</tr>
<tr>
<td>Nurse 11</td>
<td>0/10 10.0 g</td>
<td>0/10 9 g</td>
<td>9.6 g</td>
</tr>
<tr>
<td>Nurse 12</td>
<td>0/10 10.6 g</td>
<td>0/10 8.7 g</td>
<td>9.8 g</td>
</tr>
<tr>
<td>Nurse 13</td>
<td>0/10 10.6 g</td>
<td>0/10 7.6 g</td>
<td>10.2 g</td>
</tr>
<tr>
<td>CSN</td>
<td>1/10 11.1 g</td>
<td>1/10 7.2 g</td>
<td>10.0 g</td>
</tr>
<tr>
<td>HCA 1</td>
<td>1/10 9.4 g</td>
<td>0/10 6.6 g</td>
<td>10.7 g</td>
</tr>
<tr>
<td>HCA 2</td>
<td>1/10 10.6 g</td>
<td>0/10 9.4 g</td>
<td>10.6 g</td>
</tr>
</tbody>
</table>

Table 1: Pressure exerted by the different monofilaments on a digital pharmacy scale of weight.
They could not achieve the standard pressure of 10 g expected, to accurately assess neurologic function and loss of protective sensation in the person with a diabetic foot.

It was then realised that size does matter and that compromising the fishing line from 5 mm width to 4 mm width (the most affordable roll of fishing line and the one supplied to the wound care unit) actually has an effect on the sensitivity of the assessment tool in use. Most of the attendees had problems to achieve 10 g with the self-constructed monofilament of 4 mm width.

The use of a 5 mm width fishing line was prescribed for constructing monofilaments for neuropathy identification in resource-restrained environments. The team advised in their study to leave a 4 cm length of the line protruding from the edge of the paper that serves as the holder. In our investigation, the same length was used, but inadvertently it was 4 mm width fishing line with a mean weight pressure compared to a commercial monofilament that was 2.23 g less. As this was an explorative study it was then decided to decrease the length of the line from the edge of the paper by 0.5 cm increments until equilibrium could be achieved to identify if a correction can be achieved. All that was needed was to shorten it by 5 mm. The test was then repeated and that resulted in a mean weight pressure of only 0.38 g less than the commercial monofilament. This shows the relationship of the width and length of the line in making the monofilament. This means that the thinner the fishing line in use, the shorter it needs to be to exert close to the needed 10 g pressure.

When the monofilaments were tested at the bedside (with the self-constructed monofilament already shortened by 5 mm), it showed that there was no difference (0/20 missed) in monofilament testing using a commercial monofilament between the wound care specialist and random staff nurse. On the other hand, when a self-constructed monofilament was used by the wound care specialist, an over-identification of one foot and under-identification of one foot occurred, resulting in a 10% error (2/20 missed). In the staff nurse group, when using a self-constructed monofilament, over-identification with two feet occurred, also giving a 10% error.

**CONCLUSION**

The lesson learned from this study was that size does matter and that self-constructed monofilaments to assess neuropathy need to be evaluated in the setting by using readily available

### Table 2: Weight differences between the two monofilaments

<table>
<thead>
<tr>
<th>Participant</th>
<th>Weight difference between self-constructed (4 cm length) and commercial monofilaments</th>
<th>Weight difference between self-constructed (3.5 cm length) and commercial monofilaments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurse 1</td>
<td>-2.6 g</td>
<td>-0.1 g</td>
</tr>
<tr>
<td>Nurse 2</td>
<td>-2.3 g</td>
<td>-1.0 g</td>
</tr>
<tr>
<td>Nurse 3</td>
<td>-0.6 g</td>
<td>-1.5 g</td>
</tr>
<tr>
<td>Nurse 4</td>
<td>-4.5 g</td>
<td>-1.1 g</td>
</tr>
<tr>
<td>Nurse 5</td>
<td>0.4 g</td>
<td>-0.4 g</td>
</tr>
<tr>
<td>Nurse 6</td>
<td>-2.3 g</td>
<td>-0.7 g</td>
</tr>
<tr>
<td>Nurse 7</td>
<td>-2.7 g</td>
<td>0.3 g</td>
</tr>
<tr>
<td>Nurse 8</td>
<td>-2.0 g</td>
<td>0.4 g</td>
</tr>
<tr>
<td>Nurse 9</td>
<td>-2.0 g</td>
<td>0.4 g</td>
</tr>
<tr>
<td>Nurse 10</td>
<td>-4.3 g</td>
<td>-1.0 g</td>
</tr>
<tr>
<td>Nurse 11</td>
<td>-1.0 g</td>
<td>-0.4 g</td>
</tr>
<tr>
<td>Nurse 12</td>
<td>-1.9 g</td>
<td>-0.8 g</td>
</tr>
<tr>
<td>Nurse 13</td>
<td>-3.0 g</td>
<td>-0.4 g</td>
</tr>
<tr>
<td>CSN</td>
<td>-2.9 g</td>
<td>-1.1 g</td>
</tr>
<tr>
<td>HCA 1</td>
<td>-2.8 g</td>
<td>1.3 g</td>
</tr>
<tr>
<td>HCA 2</td>
<td>-1.2 g</td>
<td>0.0 g</td>
</tr>
<tr>
<td>Mean</td>
<td>-2.23 g</td>
<td>-0.38 g</td>
</tr>
</tbody>
</table>
measuring equipment. The use of a pharmacy scale of weight determined that not all nurses measure the same with a self-constructed monofilament. Regular calibration testing may be valuable to ensure that nurses use the monofilament correctly, especially if it is self-constructed. When self-constructed monofilaments are used in a practice setting, it may be a useful practice to calibrate the monofilaments as a batch when constructed, to ensure that the monofilaments are constructed to measure correctly and prevent erroneous findings.

Table 3: Monofilament testing of patients with diabetes by the assigned staff nurse of each patient

<table>
<thead>
<tr>
<th>Patient</th>
<th>Monofilament testing (random staff)</th>
<th>Commercial</th>
<th>Self-constructed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(L) foot</td>
<td>(R) foot</td>
</tr>
<tr>
<td>#1</td>
<td></td>
<td>6/10</td>
<td>6/10</td>
</tr>
<tr>
<td>#2</td>
<td></td>
<td>5/10</td>
<td>5/10</td>
</tr>
<tr>
<td>#3</td>
<td></td>
<td>3/10</td>
<td>4/10</td>
</tr>
<tr>
<td>#4</td>
<td></td>
<td>5/10</td>
<td>6/10</td>
</tr>
<tr>
<td>#5</td>
<td></td>
<td>4/10</td>
<td>0/10</td>
</tr>
<tr>
<td>#6</td>
<td></td>
<td>1/10</td>
<td>3/10</td>
</tr>
<tr>
<td>#7</td>
<td></td>
<td>2/10</td>
<td>2/10</td>
</tr>
<tr>
<td>#8</td>
<td></td>
<td>0/10</td>
<td>0/10</td>
</tr>
<tr>
<td>#9</td>
<td></td>
<td>0/10</td>
<td>0/10</td>
</tr>
<tr>
<td>#10</td>
<td></td>
<td>6/10</td>
<td>7/10</td>
</tr>
</tbody>
</table>

Table 4: Monofilament testing of patients with diabetes by specialist nurses

<table>
<thead>
<tr>
<th>Patient</th>
<th>Monofilament testing (specialist)</th>
<th>Commercial</th>
<th>Self-constructed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(L) foot</td>
<td>(R) foot</td>
</tr>
<tr>
<td>#1</td>
<td></td>
<td>8/10</td>
<td>6/10</td>
</tr>
<tr>
<td>#2</td>
<td></td>
<td>5/10</td>
<td>4/10</td>
</tr>
<tr>
<td>#3</td>
<td></td>
<td>0/10</td>
<td>0/10</td>
</tr>
<tr>
<td>#4</td>
<td></td>
<td>3/10</td>
<td>3/10</td>
</tr>
<tr>
<td>#5</td>
<td></td>
<td>3/10</td>
<td>0/10</td>
</tr>
<tr>
<td>#6</td>
<td></td>
<td>3/10</td>
<td>3/10</td>
</tr>
<tr>
<td>#7</td>
<td></td>
<td>2/10</td>
<td>4/10</td>
</tr>
<tr>
<td>#8</td>
<td></td>
<td>0/10</td>
<td>0/10</td>
</tr>
<tr>
<td>#9</td>
<td></td>
<td>0/10</td>
<td>0/10</td>
</tr>
<tr>
<td>#10</td>
<td></td>
<td>6/10</td>
<td>6/10</td>
</tr>
</tbody>
</table>

CONFLICTS OF INTEREST
None.

REFERENCES
Norma N Gill Foundation
Roll of Honour Members 2017

The following persons have very generously given financial support to help promote enterostomal therapy (ET) nursing and to assist nurses to become members of WCET.

Sponsored a member
- Deidre Ann Waugh – South Africa
- Paula Ervin Toth – USA
- Karen-Kennedy Evans – USA
- Roxanne Elbing – USA
- Karen Hill – USA
- Dorothy Doughty – USA
- Maimouh Taha – Abu Dhabi
- Janet Stoa Davis – Australia
- Ann Williams – USA
- Linda Raymond – Australia
- Gregory Paul – Australia
- Yi Jun Deng – China

Other member donations
- Nguyen Thi Lam – Vietnam
- Sue Delanty – Australia
- Norliza Turiman – Malaysia
- Genereve Cahir – Australia
- Areej Alkatifi – Saudi Arabia
- Susan Stelton – USA
- Julie Elizabeth Connolly – Australia
- Hileni Samuel – Namibia
- Jane Fellows – USA
- Kathryn Froiland – USA
- Hong Yang Hu – China
- Wang Qing Hua – China
- Irma Puspita Arisanty – Indonesia
- Endang Saptarini – Indonesia
- Frances Geschimsky – USA
- Dinusha Peiris – Sri Lanka
- Jinghua Hu – China
- Huen Lyu – China
- Yingfeng Dan – China
- Mohd Rahime Abd Wahab – Malaysia
- Vijayalakshmi Kallivelu – India
- Lina Zhao – China
- Xiuping Wang – China
- Xiaoyan Xiao – China
- Sujuan Yang – China
- Yi Fei – China
- Yu Hu – China
- Hua Wang – China
- Yingfeng Dan – China
- Song Lijang – China
- Xiaoqin Lan – China
- Estelle Gallindo – USA
- Danila Maccioletti – Italy
- Karen Zulkowski – USA
- Dinusha Peiris – Sri Lanka
- Rose Murphee – USA
- Carol Khate – UK
- Marka Zelic – Croatia
- Yanyongyan Yanghongyan – China
- Quanmet Shang – China
- Julia Kotsche – Australia
- Guadalupe Maria Lobo Cordero – Mexico
- Yanying Zhu – China
- Lesley Everingham – Australia
- Gulnaz Tariq – Abu Dhabi
- Keryln Carrille – Australia
- Serag Rizzo – Egypt
- Andrea Mansson – Canada
- Jing Li – China
- Jennifer Robyn Davenport – Australia
- Donna Dinopoulos – Australia
- Kristine Larsson – Sweden
- Mohid Rahime Abd Wahab – Malaysia
- Sandy Hyde-Smith – Australia
- Yolanda Murad – Mexico

Locadie Hamad – France
Shirley Newerding – Australia
Ying Liu – China
Jarapap Wongsaksarn – Thailand
Widasari Sri Gitarja – Indonesia
Sandra Marina Goncalves Benzerra – Brazil
Debie Dabha – Indonesia
Rehe Toelstad Lund – Norway
Niken Safitri Dyah Kusumaningrum – Indonesia
Koonthida Xlaitin – Thailand
Prapai Artyappra Yoon – Thailand
Juntima Sunnanerat – Thailand
Sureeet Chuangsawaduk – Thailand
Tharnthip Banprom – Thailand
Aujina Srichon – Thailand
Yapun Chapan – Thailand
Durannee Sae Lam – Thailand
Phromphak Phunmaklaung – Thailand
Natchira Winchart – Thailand
Laor Aroyakulmit – Thailand
Sirinya Kandlayanaldarp – Thailand
Chalaya Wattamaon – Thailand
Vigdis Hanesstad – Norway
Lin Lyn – China
Pan Shuk Nan – Hong Kong
Rosaura Pazcez – Brazil
Maria Olubeva – Russia
Diane Duran – USA
Kai Li Lee – Taiwan
Rifyan Hitalia – The Philippines
Lisa Wilson – Australia
Carol Ann Stott – Australia
Amattra Wannasave – Thailand
Wei Ken Michelle Lee – Hong Kong
Melanie Perez – Australia
Min Moon Chang – Hong Kong
Na Xie – China
Aimei Miao – China
Jiajia Xing – China
Liping Ma – China
Min Lu – China
Yinhua Guo – China
Ping Zhou – China
Jing Xu – China
Shuishan Lin – China
Jin Feng – China
Xin Cai – China
Xia Li – China
Zhiping Wang – China

Na Nie – China
Aimei Miao – China
Jiajia Xing – China
Liping Ma – China
Min Lu – China
Yinhua Guo – China
Ping Zhou – China
Jing Xu – China
Shuishan Lin – China
Jin Feng – China
Xin Cai – China
Xia Li – China
Zhiping Wang – China
WCET™ International Delegates

AUSTRALIA
Helen Richards
Email richardshelen88@gmail.com

AUSTRIA
Adelheid Anzinger
Email adelheid.anzinger@aon.at

BAHRAIN, KINGDOM OF
Eman Al Jahmi
Email eaaljahmi@gmail.com

BELGIUM
Brigitte Crispin
Email Brigitte.crispin@uc Louvain.be

BOTSWANA
Chabo Mbangiwa
Email cmbangiwa@gmail.com

BRAZIL
See Hee Park Kim
Email seehee@gmail.com

CANADA
Kimberly LeBlanc
Email kimbleblanc@rogers.com

CHILE
Heidi Marie Hevia Campos
Email hmhevia@vtr.net

CHINA
Hui Ying Qin
Email qinhuiy@mail.sysu.edu.cn

COLOMBIA
Sandra Gamboa
Email sguerrerog@unal.edu.co

COSTA RICA
Andrés Campos Vargas
Email ostocare@ostocarecr.com

CROATIA
Marija Hegedus Matetic
Email mmatetic@stoma-medical.hr

CZECH REPUBLIC
Iva Otradovcova
Email iva. otradovcova@uvn.cz

DENMARK
Jette Kundal
Email kundal@mail.tele.dk

ESTONIA
Janne Kukk
Email janne.kukk@mail.ee

FINLAND
Ann-Cristin Smidslund-Rastas
Email ankirastas@hotmail.com

FRANCE
Martine Pages
Email martine. pages196@orange.fr

GERMANY
Hans-Juergen Markus
Email hj.markus@kcm-versorgt-sie.de

HONG KONG
Siu Ming (Susan) Law
Email susanlawsm@gmail.com

HUNGARY
Timea Csizsar
Email csizsitzimi@gmail.com

INDIA
Hemlata Gupte
Email hemkriang_maha@yahoo.com

INDONESIA
Saldi Yusuf
Email saldy_yusuf@yahoo.com

IRAN
Setareh Azizi Elize
Email setarehzej@ahoo.com

IRELAND
Marianne Doran
Email stomacare@beaumont.ie

ISRAEL
Ruthy Efargan
Email r.efargan@rambam.health.gov.il

ITALY
Gian Carlo Canese
Email kingcharming@virgilio.it

JAPAN
Hitomi Kataoka
Email hikataoka@med.id.yamagata-u.ac.jp

KENYA
Patrick Mutuma Kiambi
Email kambipatrick@gmail.com

KOREA, SOUTH
Hae Ok Lee
Email hoklee@amc.seoul.kr

KUWAIT
Reda Mahboub
Email redamahboub88@gmail.com

MACAU
Kit Weng Ho
Email kristyweng2010@gmail.com

MALAYSIA
Mohd Rahime Bin Ab Wahab
Email mohdrahime@gmail.com

MEXICO
Guadalupe Maria Lobo Cordero
Email lupitalobo@yahoo.com.mx

NAMIBIA
Laura Obbes
Email laura.iway.na

NEPAL
Shanti Bajracharya
Email sbajracharya.wcet2011@gmail.com

NETHERLANDS
Kitty Peeten
Email kitty.peeten@gmail.com

NEW ZEALAND
Francesca Martin
Email franmartin100@hotmail.com

NIGERIA
Ogbonna Martina Nwadinkp
Email nwadinkpamartina@gmail.com

NORWAY
Grethe Foelstad Lund
Email glund@live.no

PERU
Maria Montalvanz
Email mariamontalvanz@gmail.com

PHILIPPINES
Rhyan Hitalla
Email rahitalla@themedicalcity.com

POLAND
Magdalena Leyk-Kolanczak
Email mgdalenaleyk@interia.pl

PORTUGAL
Isabel Morais Santos
Email isabelmorais@gmail.com

PUERTO RICO
Elsa Santiago
Email santiegoclass.72@gmail.com

QATAR
ID needed

ROMANIA
Cristina Ghiran
Email Cristina.ghiran@hospice.ro

RUSSIA
Maria Golubeva
Email mashagolubeva@gmail.com

SAUDI ARABIA
Hajer Alsabaab
Email hahmad0003@gmail.com

SERBIA
Zvika Madzic
Email stomasesestre@yahoo.com

SINGAPORE
Choo Eng Ong
Email eng.choo.Eng@sgh.com.sg

SLOVENIA
ID needed

SOUTH AFRICA
Monica Franck
Email zamfk@coloplast.com

SPAIN
ID needed

SRI LANKA
Dammalage Udena Athua Kumara
Email udenak@gmail.com

SWEDEN
Eva Bengtsson
Email eva.bengtsson@hotmail.com

SWITZERLAND
Claire Genoud
Email claire_genoud@bluewin.ch

TAIWAN
Kai-Li Lee
Email kelly. klee1115@gmail.com

THAILAND
Yuwadee Kestumpum
Email etnursing@gmail.com

TOGO
Vincent Kokou Kouami
Email vince_gate22@yahoo.com

TURKEY
Ayise Karadag
Email ayisekaradag@yahoo.com.tr

UNITED ARAB EMIRATES
Gulnaz Tariq
Email gtariq@skmc.edu

UNITED KINGDOM
Maddie White
Email maddie. white@uhb. nhs.uk

UNITED STATES
Shelly Burdette-Taylor
Email shelly@taylordhealth.com

VIETNAM
Nga Truc Tran
Email ngt21@yahoo.com

ZIMBABWE
Rudo Mutekedza
Email rmutekedza025@gmail.com

Is your ID missing?
If you are not receiving emails from WCET™ or your ID, please check your email address on the database as many emails are bouncing back!
20 miles this week

2 successful mergers

0 irritation around her stoma

We know how much is at stake for you and your patients.
That’s why we are dedicated to developing products that deliver the right fit to help prevent leakage, combined with the best formulations to help support healthy peristomal skin. Backed by science and clinical evidence, the Hollister Ostomy Care portfolio aspires to be your go-to source for helping your patients have more time to focus on the things that really matter.

Hollister.com
30 Years of innovation

#HappyStoma

2003 saw the launch of the world’s first flange extender to the market, HydroFrame®.

Our 30 years of innovation has seen groundbreaking solutions that enhance ostomate lives.

Read Jack’s story here: www.wellandmedical.com/jacks-story

“IT FITS INTO MY SCARS AND CREVICES AND I DON’T FEEL THAT I HAVE IT ON.”

Jack, 23, Ironman competitor, Denmark uses UltraFrame® flange extenders.

Visit wellandmedical.com