NLNet
Nederlands Netwerk voor
Lymfoedeem & Lipoedeem

PROGRAMME & ABSTRACTS

8TH INTERNATIONAL LYMPHOEDEMA FRAMEWORK CONFERENCE

Rotterdam
The Netherlands
6-9 June 2018

WWW.2018ILFCONFERENCE.ORG

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Welcome

Dear colleagues and participants,

It is a pleasure to welcome you to the 8th International Conference of the International Lymphoedema Framework (ILF) which is co-hosted by the Dutch Lymphoedema Framework (NLNet).

The Scientific programme will include keynote lectures, abstract sessions, workshops, industry symposia and posters. Thanks to eminent experts and speakers, the programme offers a number of excellent sessions on cancer, surgery, therapy and assessment related to lymphoedema, the LIMPRINT project, plus a specific session with updates from the national frameworks.

We hope you will enjoy the conference and the beautiful city, Rotterdam. The Netherlands is well known because of its water management, which is more or less like the lymphatic system, with lots of canals and rivers comparing it to capillaries and lymph vessels. Every now and then, they threaten to be overloaded and solutions are sought to overcome these obstructions. It is therefore fitting that this conference is held in conjunction with the ILF's newest national lymphoedema framework.

Welcome to Rotterdam!

Best regards,

On behalf of the ILF and the NLNet Organising and Scientific Committees.

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Organisation

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ABOUT THE ILF

The international Lymphodema Framework (ILF) was establisted as a charity in 2009. Its aim is to improve the management of lymphedema care and related disorders worldwide, by sharing expertise and resources and supporting individual countries to develop a long term stategy for lymphedema.

For more information about the ILF, please visit:
www.lympho.org

CONFERENCE SECRETARIAT

C/O CAP Partner
Nordre Fasanvej 113, 2.
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General information

CONFERENCE VENUE

SS ROTTERDAM
3e Katendrechtsehoofd 25
3072 AM Rotterdam
The Netherlands

CONFERENCE LANGUAGE

The conference will be held in English.

NAME BADGES

All participants and exhibitors must wear their name badge in the conference area at all times. The badge must be visible.

CERTIFICATE OF ATTENDANCE

If you wish to have a certificate of attendance, please log in to the online registration again after the conference and follow the instructions to download your certificate.

Should you need any help with this, please contact the ILF 2018 Conference Secretariat at info@cap-partner.eu

LUNCH AND COFFEE BREAKS

Lunch and coffee is available in the exhibition area at Queen's Lounge & Atlantic Promenade and upstairs at the Glass Promenade. See programme for exact time of breaks.

POSTER SESSION

The poster area is at the Glass Promenade. Remember to visit the poster sessions at Thursday and Friday at 13.00-14.00.

YOGA

Participators in yoga sessions are advised not to take coffee or snacks before the sessions because yoga should not be done immediately after taking food.

SPEAKER INFORMATION

Please bring your presentation to the session room before your session starts. We recommend you that you upload your presentation at least 30 minutes before your session. You can get help with the upload, if necessary. Please bring your presentation on a USB stick. Unless otherwise agreed all presentations will be deleted after the conference in order to secure that no copyright issues will arise at the end of the conference.

WIFI

Free WiFi is provided. Name: Welkom ss Rotterdam & Password: Internet (with a capital i)

MOBILE PHONES

All mobile phones must be on silent mode during the sessions.

LOST AND FOUND

Found items should be returned to the registration desk. If you lose something, please report to this desk for assistance.

CONFERENCE SECRETARIAT

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PARTNER

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CONFERENCE WEBSITE

www.2018ilfconference.org

Social programme

WELCOME RECEPTION

(included in the registration fee)

Date	6th June 2018
Time	17.30-19.00
Place	Rotterdam's City Hall, Coolsingel 40, 3011AD Rotterdam

The welcome reception will be held at Rotterdam's City Hall, which is one of the few old buildings left in the center of the city. Here you can enjoy drinks and hors d'oeuvres while viewing the several sculptures used to express the history of world port Rotterdam from the outset. Make sure to be there – it will be an evening full of networking and a good start on the ILF 2018 conference.

CONFERENCE DINNER

(not included in the registration fee)

Date	8th June 2018
Time	18.30-20.30
Place	"The Grand Ballroom" at SS ROTTERDAM, 3e Katendrechtsehoofd 25, 3072 AM Rotterdam

A welcome drink and a delicious Dutch buffet will be served.

CONFERENCE PARTY

(not included in the registration fee)

Date	8th June 2018
Time	20.30-23.30
Place	"The Grand Ballroom" at SS ROTTERDAM, 3e Katendrechtsehoofd 25, 3072 AM Rotterdam

"SS Rotterdam Glory Sailing Years – Dress to impress!"
Put on your dancing shoes and join the party with music from the sixties to the nineties. The ticket includes beer/wine, soda's and light snacks. At the party you will have the possibility to mingle with fellow participants and Prof. Dr. Hugo Partsch, honorable former president of the ICC.
Please note that the conference dinner and the party are two different events. Therefore, if you wish to participate at both events you need to purchase two tickets one for each events.

ILF RUN AROUND THE GLOBE

(not incl. in the registration fee)

Date	9th June 2018
Time	08.00-09.00
Place	In front of SS ROTTERDAM

Support ILF by running with medi! There will be three routes to choose from:

- 1 km for the youngest participants (€ 3)
- 3 km for all other participants (€ 5)
- 5 km for all other participants (€ 10)
- Yoga (Grand Balroom Deck) (€ 10)

You can choose to either run or walk. Everybody is welcome at this event. All participants will receive a pair of CEP running socks and an event shirt. The money raised by the event will be given to the ILF to support one of their projects regarding developing countries.

Medi also offer the opportunity to take part in a group yoga session for those who are unable to participate in the run. The session will be held at the top of the SS Rotterdam, on the deck in the sun (wee will go inside in case of rainy weather in the Smoking Room). A yoga master will offer a spiritual morning greet in a workshop to ensure you can start the last day relaxed and in optimum condition in both body and soul.

Wednesday - Thursday

Wednesday	Theatre/plenary room	Odyssee	La Fontaine	Trinidad
16.00 - 17.00	Registration			
17.30 - 19.00	**Welcome reception at City Hall**			

Thursday

09:00 - 09.45	**Opening session:** **Positive health**, Machteld Huber, introducing a new vision on healthcare 2.0			
09.45 - 10.45	**Plenary session I: LIMPRINT, international achievements** **Chair Neil Piller**			
	Invited speaker: Christine Moffatt			
	Invited speaker: Pinar Borman The Demographic and Clinical Characteristics of Turkish Patients with Lymphedema: LIMPRINT-TURKEY FINAL DATA			
	Invited speaker: Peter Franks "Observational Study"			
10.45 - 11.15	Coffee/tea			
11.15 - 12:15	**Abstract session:** **Qol tools etc.** **Chair Susan Nørregaard**	**Abstract session:** **Breast cancer lymphoedema** **Chair Margaret McNeeley**	**Abstract session:** **National initiatives** **Chair Junko Sugama**	**Abstract session:** **Therapy general** **Chair Wouter Hoelen**
	How are Occupational Therapists practicing in the area of chronic oedema and lymphoedema in Ireland? (Emma O'Leary & Claire O'Sullivan)	Local skin cooling to treat and reduce breast cancer-related lymphedema and fibrosis of the arm or breast (Jean Yzer)	Developing a Dedicated Lymphedema Clinic:The Impact on the Population of Qatar (Emad Abdalla)	**Invited speaker: Dorit Tidhar ”Lymphedema, A Significant Health Problem in Israel - a community-based study ”**
	Revision of the Lymphedema Functioning, Disability and Health Questionnaire for Upper Limb Lymphedema (Lymph-ICF-UL): Validity and Reliability (Tessa De Vrieze)	Validity and reliability of the breast edema questionnaire (BrEQ) for the assessment and follow-up of breast edema (Hanne Verbelen)	Perceptions of living with lymphoedema in Singapore (Elizabeth Jiahui Chan)	
	Does the Lymphoedema Genitourinary Cancer Questionnaire (LGUCQ) facilitate symptom disclosure from men? (Rhian Noble-Jones)	Accuracy of a single measurement site for self-monitoring of patients with breast cancer at risk for lymphedema (Janine Hidding)	Results and Tolerance of Compression therapy in a tropical environment (Arun Gogia)	**Invited speaker: Dorit Tidhar ”The meaning of success in lymphoedema management: a qualitative and a quantitative perspective”**
	The Reliability and Validity of Lymphedema Quality of Life Questionnaire-Leg (LYMQOL-Leg) in Turkish Patients with Lower Limp Lymphedema (Merve Denizli)	Lymphedema Results of Alliance Z1071 (American College of Surgeons Oncology Group [ACOSOG]): Self-reported Symptoms and Limb Volume Changes for Breast Cancer Survivors Treated with Neoadjuvant Chemotherapy and Axillary Dissection (Jane Armer)	Lymphoedema Awareness in International Health and Development (Tamara Kosevic)	
12.15 - 13.00	Lunch			

Wednesday - Thursday

Sun room	Sky room	Smoking room / Grand Ballroom deck	Grand Ballroom
Registration			
Coffee/tea			
Abstract session: Service development & review Chair Robert Damstra	**Abstract session: Assessment Chair Hiromi Sanada**	**Workshop: Yoga (2 hr)**	**Abstract session: Surgery for lymphoedema Chair Håkan Brorson**
The Development of Lymphoedema Network Wales (Melanie Thomas)	The incidence and detection of Planter oedema (Jane Wigg)	Yoga exercises for upper limb (breast cancer related) lymphoedema	**Invited speaker: Harry Voesten "Surgery of advanced lymphoedema "**
The Demographic Properties of the Patients Referring to Lymphedema Unit in a University Hospital (Pinar Borman)	Lymphoedema: usefulness of the Echo-colour-Doppler diagnostics (Marina Cestari)		Values and limits of surgery in primary and secondary lymphedema (Sandro Michelini)
Abstract session: Paediatric & primary	Versatility of Indocyanine Green Fluorescence Lymphography in the Outpatient Setting (Hiroo Suami)		The impact of Lymphatic Venous Anastomosis (LVA) surgery at the Welsh national centre (Nader Ibrahim)
Lymphatic Anomalies in Cardio-Facio-Cutaneous Syndrome (KRAS mutations): Case Report of Three Paediatric Cases and a Review of the Literature (Manon van Huijkelom)	Venous congestion and lymphoedemaenous congestion and lymphoedema (Alex Munnoch)		
An Evaluation of a Paediatric Lymphoedema Service -- A Family Centred Approach (Elizabeth Coveney)			
Lunch			

Thursday

	Theatre/plenary room	Odyssee	La Fontaine	Trinidad
13.00 -14.00	Poster session			
13.00 -14.00	Sponsored session Symposium (BSN) "Impact of seamless compression garments on limb functionality, comfort and quality of life", Dr. Anya Miller - Private Practice, Berlin, President German Society of Lymphology (DGL), Germany "Making night-time compression a comfortable reality" Justine Whitaker - Director & Nurse Consultant Northern Lymphology Ltd, Senior Lecturer University of Central Lancashire, UK "JOBST® Relax as pediatric solution – case study on a 4 year old" Mireille Lauret-Roemers – Physical Therapist, co-owner OOFU, teacher at the NPI, school for oedema physiotherapists, Netherlands	Sponsored session Symposium (3M) ***2 layers, many possibilities*** "Using a 2 layer compression bandage as part of a lymphedema care pathway by Vodder – BENEVOLUTION" Tim De Cock - Physiotherapist & Lecture at Vodder School BE NL. "How a 2 Layer Compression System can aid in self bandaging" Denise Hardy - Kendal Lymphology Centre (UK) clinical nurse specialist. Joyce Bosman - Oedema Therapist LOF Groningen (NL) - TBC		
14.00 -15.00	Abstract session: Therapy general Chair Susan Nørregaard	Abstract session: Surgery for lymphoedema Chair Harry Voesten	Abstract session: Assessment Chair David Keast	Abstract session: Breast cancer Chair Nicole Stout
	Invited speaker: Dorit Tidhar "Lymphoedema in heart failure patients "	**Invited speaker: Alex Munnoch "Quality of life for lymphoedema patients undergoing surgical treatment"**	Imaging of lymphatic and interstitial space in lymphedema- necessity to use combined methods (Waldemar Olszewski)	Axillary Web Syndrome, Breast Pain, Swelling and Seroma appearing Seven Months Post Lumpectmy and Radiation (Jillian Bracha)
			Near Infrared Lymphofluoroscopy Imaging (NIRLFI) ; Outcomes and drainage pathways from our first 60 UK patients (Jane Wigg)	Feasibility of conducting RCT of effectiveness of treatment for women presenting with early untreated breast cancer-related arm lymphoedema (Eunice Jeffs)
	ICF Core Sets for lymphedema in daily practice: a case report (Peter Viehoff)	Choice of Lymphatic Microsurgery Procedure Guided by Pathological Transport Index on Lymphoscintigraphy (Corradino Campisi)	Early detection of secondary lymphedema after cancer treatments (Jean-Paul Belgrado)	Evaluation of the reliability of four measuring methods of hand's perimeter and volume : Buoyancy Forces ValGrado System, circumference measurement, Figure-of-Eight Method and Manu3metrix Scanner (Sophie Vankerckhove)
	Eating to Starve Lymphedema (Chuck Ehrlich)	Lymphatic Vessel Sparing Liposuction for Advanced Stages of Peripheral Lymphedema (Corrado Cesare Campisi)		What do women want and practitioners expect from lymphoedema treatment? Views of lymphoedema practitioners and women with breast cancer-related arm lymphoedema (Eunice Jeffs)

Sun room	Sky room	Smoking room / Grand Ballroom deck	Grand Ballroom
Poster session			
			ICC
Workshop: "Comprehensive approach for assessing chronic oedema"	**Abstract session: Self- management Chair Nele Devoogdt**	**Workshop: Yoga (2hr)**	Standardization of a pressure-measuring device for optimizing lymphedema treatment with compression garments H.Brorson
Does oedema predict pressure ulcer development among inpatients? Analysis using medical big-data in an university hospital in Japan (Prof. Hiromi Sanada)	**Invited speaker: Sue Gordon "The challenges of self-management in lymphoedema"**	Yoga exercises for Lower Limb (Primary and secondary) lymphoedema	Effect of subcutaneous pressure on interface pressure measurement during compression therapy Y.W.Chi
Prevalence and impact of chronic oedema in Japan (Invited speaker Prof. Junko Sugama)			Monitoring of edema treatment by electronic device H.J.Thomae
Investigation of lower extremities with oedema and the mini-nutritional assessment among elderly people in daycare (Dr. Aya Sato)	Towards Lymphoedema Self-Management: A Qualitative Systematic Literature Review (Teksin Kopanoglu)		Combining IPC with static compression treatment to improve patient's compliance using innovative smart materials O.Zelka
Ultrasonography, thermography and skin blotting as a new assessment method for cellulitis with lymphoedema: A case study (Invited speaker: Dr. Misako Dai)	Reducing Compression Garment Waste, Harm and Variation in Lymphoedema Services in Wales (Melanie Thomas)		Good buy slippage - a new fusion to tackle bandage slippage on the foot A.Nilsson, J.Damm

Thursday

	Theatre/plenary room	Odyssee	La Fontaine	Trinidad
15.00 -15.30	**Coffee/tea**			
15.30 - 17.00	**Plenary session II: Children Chair Robert Damstra**			
	Invited speaker: Kristiana Gordon "Primary lympho-edema"			
	Invited speaker: Isabelle Quèrè "Cellulitis in children with lymphoedema"			
	Invited speaker: Aimee Auberluck "A mixed method study to explore the perceptions of self management in children ,adolescents parents and professionals. An ILF research initiative"			
17.00				

Thursday

Sun room	Sky room	Smoking room / Grand Ballroom deck	Grand Ballroom
A possible biomarker for lymphatic injury detected by skin blotting technique: An experimental study in pressure ulcer model mice (Gojiro Nakagami)			A new sub bandage measuring device S.Kravitz
Coffee/tea			
			ICC
			Working groups
			International Compression School: A new ICC initiative G. Mosti, H. Partsch
			How to measure the pressure: J.Schuren
			IPC: M.Klöppels

Friday

	Theatre/plenary room	Odyssee	La Fontaine	Trinidad
09.00 -10.30	**Plenary session III: Obesity in Lymphoedema Chair Vaughan Keeley**			
	Invited speaker: Tobias Bertsch ”Obesity related lymphedema – underestimated and unpopular”			
	Invited speaker: Babak Mehrara ”Obesity, inflammation and lymphatic dysfunction”			
10.30 - 11.00	**Coffee/ tea**			
11.00 - 12.15	**Abstract session: Cancer related lymphoedema Chair Babak Mehrara**	**Abstract session: Surgery for lymphoedema Chair Alex Munnoch**	**Abstract session: Therapy general Chair Sue Gordon**	**Abstract session: Lipoedema Chair Wilfried Schmeller**
	Invited speaker: Nicole Stout ”Oncology rehabilitation and secondary lymphoedema: the prospective surveillance mode”	**Invited speaker: Håkan Brorson ”Liposuction in lymphedema patients – a 25 years’ prospective study without recurrence”**	**Invited speaker: Margareth McNeeley ”The role of exercise in the management of lymphoedema”**	**Invited speaker: Dorit Tidhar ”Aqua lymphatic therapy in the management of Lymphedema and lipoedema”**
	The prevalence, incidence and quality of life impact of lymphoedema after treatment for vulvar or vaginal cancer (Elise Gane)			Quality of life in relation to physical activity in patients with lipedema (preliminary results) (José van Esch-Smeenge)
	Distress and self compassion among women with cancer-related lymphoedema in Australia (Malou van Zanten)	Microsurgical procedures for unresponsive groin lymphocele associated to leg lymphedema (Sara Dessalvi)	Randomized study to compare efficacy of short stretch bandage systems from KOB with locally used Cotton Crepe Bandages in the treatment of lower limb lymphoedema (Arun Gogia)	Upper Extremity Lipedema (Type IV) in a Male Patient: A Case Report of a Rare Condition (Alper Tuğral)
	The incidence and effects of lower limb lymphedema in women treated for gynaecological cancer in South Africa (Lize Maree)	Super-microsurgical lymphaticovenous anastomosis (LVA) for gluteal lymphedema secondary to hip replacement (Guido Giacalone)	Hydromechanics of edema fluid under elastic material compression (Marzanna Zaleska)	Lipedema and metabolic disease (Sandro Michelini)
	Assessment of armlymphedema using tissue dielectric constant (TDC) technique in patients previously treated for breast cancer without pre-surgery measurements (Tapani Lahtinen)	Lymphedema of lower limbs can be successfully controlled by implanted silicone bypass tubings (Waldemar Olszewski)	The effect of compression with a non-elastic compression device in patients undergoing a total knee arthroplasty, compared with usual care. A pilot study with 39 participants (Ad Hendrickx)	Review Lipoedema guidelines (Ellen Kuijper-Kuip)

Friday

Sun room	Sky room	Smoking room / Grand Ballroom deck	Grand Ballroom
Coffee/tea			
Abstract session: Framework initiatives & Education Chair Margaret Snedden	**Abstract session: Self-management Chair Kristiana Gordon**		**ICC**
On the Ground Education Project results and recommendations (Karen Morgan)	**Invited speaker: Nicole Stout ”Guidelines for self-management of lymphedema”**		Epidemiology of chronic edema C. Moffatt
American Lymphedema Framework Project (ALFP) Open-space Stakeholder Meetings: Aiming to Shape the Future of Lymphedema Care in the United States and the World (Jane Armer)			Edema is more than excess of fluid W. Olzewski
Creation of an ELearning Lymphoedema Module (Karen Morgan)	Using Technology To Improve Lymphoedema Self Care (Melanie Thomas)		Every kind of edema is lymphedema V.Keeley
Passion;what are the reasons health care professionals loose their passion and how to find it (Jane Wigg)	Evaluating the Tripudio Movement System within a lymphoedema self-management programme: a third sector service development initiative (Anne Williams)		Contraindication and special precaution for compression in chronic edema E.Rabe
Development of the Chronic Oedema "Wet Leg" Pathway and educational film to support implementation (Karen Morgan)	Keys to enhance patients adherence to compression therapy (Joseph Harfouche)		Compression materials in chronic edema F.Schingale
	A perspective on addressing patient-reported barriers to lymphedema self-bandaging by utilizing the therapeutics of communication (Naomi Dolgoy)		Self management in lymphedema R. Damstra

Friday

	Theatre/plenary room	Odyssee	La Fontaine	Trinidad
12.15 -13.00	**Lunch**			
13.00 -14.00	**Poster session**			
13.00 -14.00	**Sponsored session**			
	Symposium (Bauerfeind) *Treatment of patients with lymphedema*, Speakers: Christine Moffatt: "Concordance in compression therapy"; Misbah Ahmed: "Extreme lymphedema of lower extremities"			
	Abstract session: Assessment Chair Marina Cestari	**Abstract session: Therapy general Chair Jean-Paul Belgrado**	**Abstract session: Surgery Chair Hiroo Suami**	**Abstract session: Therapy general Chair Sandro Michellini**
14.00 - 15.00	**Invited speaker: Nele Devoogdt "Clinical diagnosis of lymphoedema (Lymphofluoroscopy)"**	Patient Experience of Lymhpoedema Care (David Keast)	Adavnced postmastectomy lymphedema is successfully treated ub slicone tubing arm pit bypasses (Waldemar Olszewski)	**Invited speaker: Margareth McNeeley "Nighttime compression"**
	Effectiveness of IPC can be shown on NIRF ICG lymphography (Marzanna Zaleska)	Development of Lymphoedema MDT and Complex Clinics (Cheryl Pike)	SPECT/CT lymphoscintigraphy for lymphatic venous anastomosis in peripheral lymphedema (Jiro Maegawa)	
	Exploiting 3D Scanning Technology in Lymphoedema for Accurate and Fast Measurements of Volume and Shape (Cheryl Pike)	Prevalence of local oedema surrounding diabetic foot ulcers (Mireille Boink)	Debulking surgery for lymphedema - 13 years experience with liposuction (Alex Munnoch)	Impact of 12 weeks of Intermittent Pneumatic Compression (IPC) on the quality of life of patients with lower limb lymphoedema (Neil Piller)
	Analysis of unilateral upper limb lymphoedema using a 3D camera (Raoul van Loon)	A new device to improve skin tissue oxygenation: the next generation of portable rehabilitation tools? (Justine Whitaker)	Treatment of recurrent lymphocele and severe lymphorrhea after oncologic surgery (Guido Giacalone)	Linforoll- tissue massaging device - tissue events directly observed during massage (Marzanna Zaleska)
15.00 -15.30	**Coffee/ tea**			
15.30 - 17.00	**Plenary session IV: Lipoedema Chair Neil Piller**			
	Invited speaker: Tobias Bertsch "Lipoedema facts and fiction"			
	Invited speaker: Stanley Rockson "The role of inflammation in lipoedema"			
	Invited speaker: Wilfried Schmeller "Liposuction in the management of lipoedema"			
17.00				

Sun room	Sky room	Smoking room / Grand Ballroom deck	Grand Ballroom
Lunch			
Poster session			
Abstract session: Lipoedema Chair Susan Nørregaard	**Workshops**		**ICC**
Comparison of Dielectric Values of Patients with Lipedema and Those with Lower Limb Lymphedema (Alper Tuğral)	Dorit Tidhar "The meaning of success in lymphoedema management: qualitative study and a systematic review on quantitative outcome"		What compression pressure to treat edema G.Mosti
A health profile in patients with lipedema (José van Esch-Smeenge)			Importance of stiffness for edema reduction M.Neumann
Does tumescent liposuction diminish the lymphatic function in the legs of lipoedema patients? (Robert Boonen)	Irene Zonderland & Ad Hendrickx "Applicability and added value of the concept op Positive Health in patients with complex lymphedema"		Compression pressure effect on lymphatics J.P.Belgrado
Abstract session: Prevalence			Optimal intermittent pneumatic compression in lymphedema M. Zaleska
Filariasis Incidence Estimation based on a Household survey for long term effects in an Endemic Area in India (Arun Gogia)			
Coffee/tea			
			Compression in chronic oedema-Orthopedic aspects or venous system. Th.Stumptner
			Prophylactic compression after breast cancer surgery K. Ochalek
			Comparison of handling, pressure and wearing comfort of different compression devices for decongestion therapy K.Protz
			Treatment protocol on stasis edema in poorly mobile nursing home patients JP.Benigni
			Which compression for mild to moderate C3 patients ? D.Rastel
			Compression to reduce edema in a patient with arterial occlusive disease C.Sanchez

Saturday

	Theatre/plenary room	Odyssee	La Fontaine	Trinidad
08:00 - 09:00	MEDI RUN			
		Patient day		
09.30 - 11.00	**Plenary session V: Novel treatment Chair Margaret Sneddon**			
09.30-09.45	Opening of Patient Day			
09.45-10.05	Paralympic athlete motivational speech (Marc vander Kuilen) : how to get from drama to dream.			
10.05-10.30	Plea for better understanding and interaction between patient and professional (Jannie Oskam NL)			
10.30-11.00	Invited speaker: Stanley Rockson "Novel treatments for lymphoedema: drugs and surgical scaffolds"			
11.00 - 11.30	Coffee/tea and Fashion show			
11.30 - 12.45	**Abstract session: Therapy general Chair Dorit Tidhar**	**Lymphoedema**	**Lipoedema**	**Abstract session: Breast cancer lymphoedema Chair Wouter Hoelen**
	Invited speaker: Nele Devoogdt "The role of manual lymph drainage (MLD) in the prevention and treatment of lymphoedema: the research evidence"	Using technology to improve lymphoedema self care (Melanie Thomas, UK)	Lipoedeem & chirurgie (Robert Boonen, NL)	A Prospective Study on the Impact of Ipsilateral Intravenous Chemotherapy Infusions on the Risk of Breast Cancer-Related Lymphedema: Implications for Current Guidelines (Alphonse G. Taghian)
		How to live a self managing life with lymphoedema? (Sarah Jouanny, FR)	Results of lipoedema survey Lipoedema UK (Sharie Fetzer, UK)	Compression treatment for arm lymphoedema following breast cancer treatment, RCT study. Preliminary results (Karin Johansson)
	Piling on the pressure - Proven! (Janet Massey)	Living with lymphoedema based on the new definition of health (Stef Slavujevic, NL)	Review lipoedema guidelines (Ellen Kuiper, NL)	Proprioception sense in lymphedema affected upper limb (Sandro Michelini)
	Effect of decongestive lymphatic therapy on dermal backflow pattern visualised by lymphofluoroscopy (Sarah Thomis)			Effect of Nordic Walking on the upper limb volume in normal and BCRL women (Jean-Paul Belgrado)
	Treatment algorithm for management of lymphedema (Kenley Schmidt)			Range of Motion (ROM) Outcomes among Women Receiving a Lymphedema-prevention Intervention Following Axillary Node Dissection for Breast Cancer Treatment: (Alliance) CALGB 70305 (Jane Armer)
12.45 -13.30	Lunch and Fashion show			

Saturday

Sun room	Sky room	Smoking room / Grand Ballroom deck	Grand Ballroom
MEDI RUN			
			Abstract session: Breast cancer lymphoedema Chair Tobias Bertsch
			The Efficacy of Phase-1 Complete Decongestive Therapy in a Combined Manner in Breast Cancer-related Lymphedema Patients: Relationship with Functional Status and Quality of Life (Pinar Borman)
			Assessing the presence of breast lymphoedema following breast cancer treatment: Preliminary results (Katie Riches)
			The Association of Upper Extremity Symptoms and Breast Cancer-Related Lymphedema (BCRL): A Longitudinal Analysis of Subjective and Objective Data (Cheryl Brunelle)
Lunch and Fashion show			

Saturday

	Theatre/plenary room	Odyssee	La Fontaine	Trinidad
		Patient day		
		Primary lymphoedema	**Secondary lymphoedema**	**Lipoedema**
13.30 - 15.00	**Plenary session VI: Cellulitis** **Chair Isabelle Quèrè**	An evaluation of a paediatric lymphoedema service - a family centred approach (Elizabeth Coveney)	Distress and self compassion among women with cancer-related lymphoedema in Australia (Malou van Zanten, AU)	Beyond Lipedema: Living Your Best Life with the Disease They Call FAT (Catherine Seo, Leslyn Keith, Joanna Dudek)
	Invited speaker: Vaughan Keeley "Guidelines for managing cellulitis and research priorities"	How to take care of patients with paediatric lymphoedema (Johannes Veldkamp)	The prevalence, incidence and QoL impact of lymphoedema after treatment for vulvar or vaginal cancer (Elise Gane, AU)	Quality of life in relation to physical activity in patients with lipoedema (preliminary results) (Jose van Esch-Smeenge, NL)
	Invited speaker: Robert Damstra "Compression in cellulitis"	Implementation of night compression in the management of lymphoedema in daily practice (Andrea Brennan, US)	Compresseion theraphy (Tim Wentel, NL)	Lipoedema Workout (Barbara Boots and Margot Suelmann, NL)
	Invited speaker: MG Aggithaya "Cellulitis in lymphatic Filariasis"	Parents story having a child with primary lymphoedema (Lisanne Stone en Joost Mulders, NL)	What do women want and practitioners expect from lymphoedema treatment? (Eunice Jeffs, UK)	
15.00 - 15.30	**Coffee/tea**			
15.30 -16.00	**Plenary session VII: Future projects & Outcome measures**			
16.00-16.30	Invited speaker: Christine Moffatt "Update on ILF Outcomes project"		**Pain & the Brain, Barriers for self-management (Annemarieke Fleming, NL)**	
16.30-17.00	Invited speaker: Isabelle Quèrè "ILF Childrens project"			
	ILF & NLNet closure, announcement of ILF 2019		**Closure of Patient Day**	


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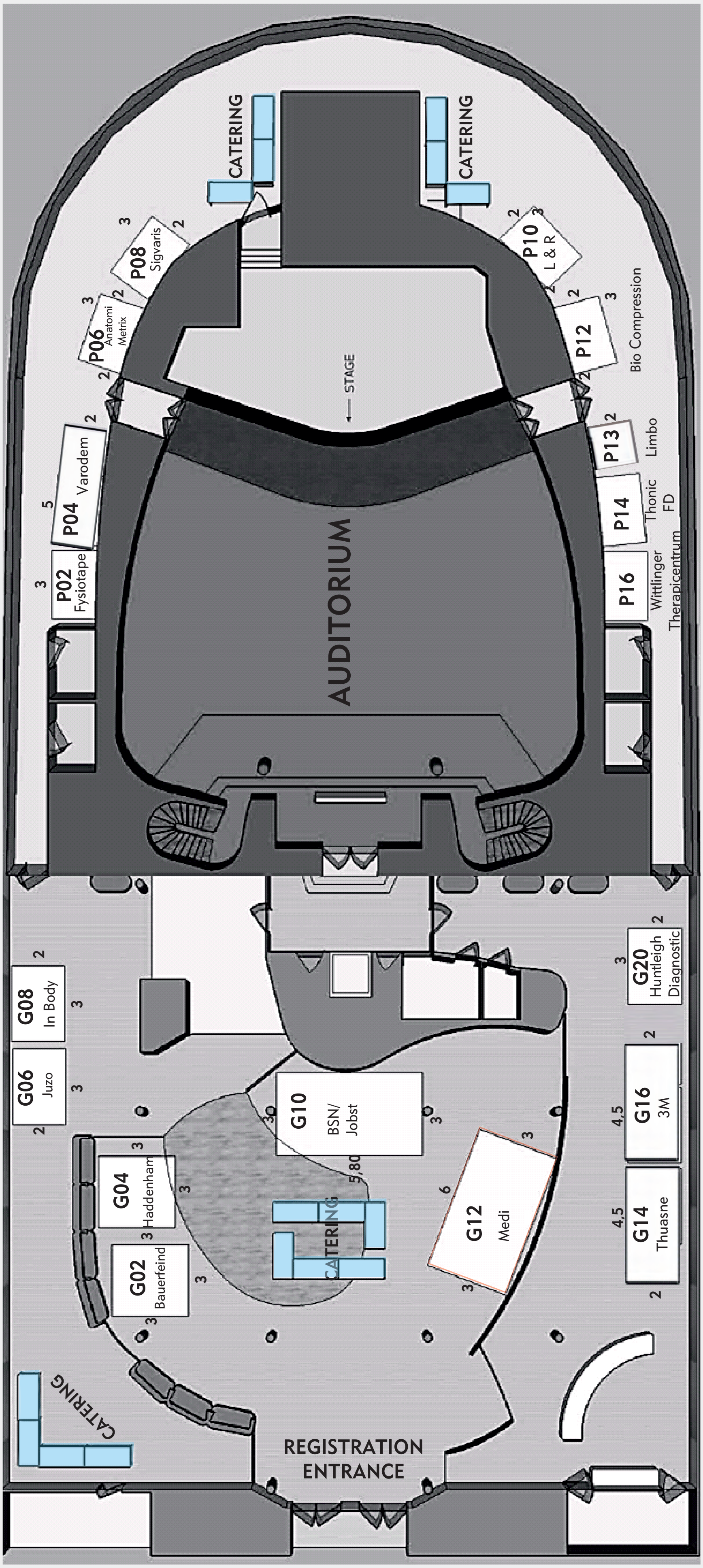

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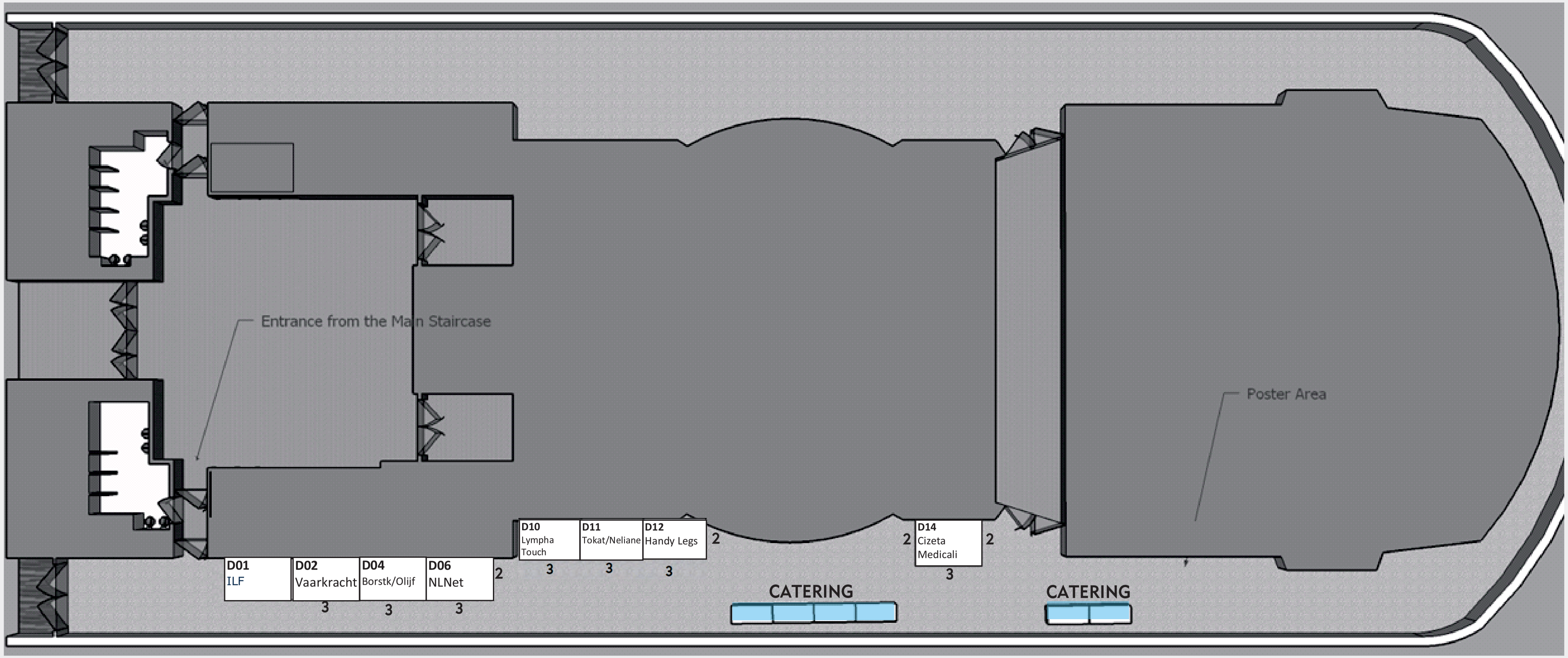
Entrance from the Main Staircase
Poster Area
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ILF
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D12
Handy Legs
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Cizeta Medicali
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Sponsor directory

No.	Sponsorship	Company	Company Description
G10	Platinum	BSN-JOBST www.jobst.com	*About BSN medical – An Essity company* *JOBST® is a brand of BSN medical, an Essity company and global leader in wound care & related vascular diseases, lymphology and non-invasive orthopaedic products. BSN aims to provide an integrated therapy-driven approach – grounded in a broad portfolio of products, enhanced by insights into current therapeutic areas and complemented by a progressive approach to partnerships.* *Its well-known brands such as Leukoplast®, Cutimed®, JOBST®, Delta Cast®, Delta Lite® and Actimove® are among the most trusted in healthcare. With its comprehensive product portfolio, BSN medical addresses patients' needs in the most prevalent conditions in wound care and vascular diseases and orthopaedic treatments.* *BSN medical has been acquired by Essity AB (former SCA) in April 2017.*
G12	Platinum	Medi www.mediuk.co.uk	*Medi is one of the world's leading manufacturers of compression hosiery. medi supplies medical compression and antiembolism stockings, lymphedema sleeves, wound care products and orthopaedic products.*
G16	Gold	3M www.3m.com	*At 3M, we apply science in collaborative ways to improve lives daily. Our 90,000 employees connect with customers all around the world in our local subsidiaries. Extensive research, design and testing led 3M scientists to develop 3M™ Coban™ 2 Layer Compression System - a breakthrough in compression bandaging with the potential to change the practice of lymphedema intensive therapy.* *At 3M, we apply science in collaborative ways to improve lives daily. Our 90,000 employees connect with customers all around the world in our local subsidiaries. Extensive research, design and testing led 3M scientists to develop 3M™ Coban™ 2 Layer Compression System - a breakthrough in compression bandaging with the potential to change the practice of lymphedema intensive therapy.*
G02	Gold	Bauerfeind www.bauerfeind.com	*Bauerfeind AG manufactures medical aids, such as supports, orthoses, compression stockings and foot orthoses. Its high quality products make an important contribution towards maintaining and restoring health and are available from specialty medical retailers. The family business, founded in 1929 in Zeulenroda (Thuringia, Germany) is one of the market leaders in its industry. Bauerfeind employs a staff of around 2,000 worldwide. However, the products are exclusively "Made in Germany" and are partly hand-made. Awards for design and materials affirm the high product quality.*
G14	Gold	Thuasne www.thuasne.com	*Founded in 1847, THUASNE is a globally recognized creator, manufacturer and distributor of wearable medical devices, including braces, supports and medical garments.* *Thuasne has developed innovative lymphedema solutions, adapted to the different stages of this pathology.* *The MOBIDERM anti-edema device, supported by medical evidences, intends to improve the flow of lymphatic fluid and the drainage of the limb.* *MOBIDERM technology can be used within reducing bandages or incoporated into mobilising garments. Our recent innovative MOBIDERM AUTOFIT solutions provide easy to put on and comfortable garments, to optimise the long term control of lymphedema and to enhance patient's autonomy.*

No.	Sponsorship	Company	Company Description
G06	Silver	Juzo www.juzo.com	*At Juzo, we put all our experience and passion into developing medical aids that accompany patients during their treatment. Our compression garments, supports and orthoses are manufactured using state-of-the-art technologies and offer patients a tailored solution to their specific needs. We employ around 1000 people worldwide and offer products for the areas of lymphology, phlebology, scar therapy and orthopedics which are manufactured at the headquarters in Aichach (Germany) and being exported to over 60 countries. We are giving our best every day to ensure that our products improve the patients' quality of life and provide lasting relief for their symptoms.*
P08	Silver	Sigvaris www.sigvaris.com	*SIGVARIS is the global market leader in the manufacture of medical compression garments.*
D14	Bronze	Cizeta Medicali www.cizetamedicali.com	*Cizeta Medicali S.p.A. is the italian leader manufacturer of medical stockings, with a policy based on a continuos research of new solutions for venous and lymphatic deseases, identified in innovative and high quality products, certified by prestigious International institutions.*
G04	Bronze	Haddenham healthcare www.hadhealth.com	*Haddenham Healthcare are specialists in providing proven and market leading products for the treatment of patients with Lymphoedema, Lipoedema, Chronic Oedema and Wound Care.*

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Invited speaker abstracts

THE DEMO-GRAPHIC AND CLINICAL CHARACTERISTICS OF TURKISH PATIENTS WITH LYMPHEDEMA: LIMPRINT-TURKEY FINAL DATA

P Borman, M Denizli, A Yaman, M Dalyan, S Unsal-Delialioğlu, F Ayhan, B Duyur Çakıt, S Vural, S Eyigör, O Özdemir.

INTRODUCTION Turkey; represented by Anatolian Lymphedema Association and Hacettepe University Lymphedema Research and Practice Center has taken part in LIMPRINT study since two years. Four lymphedema centers including; University of Hacettepe Practice and Research Center-Department of PMR, Ankara Training and Research Hospital, Ankara Rehabilitation Training and Research Hospital and Ege University Hospital Dept of PMR were actively participated in this study.

METHODS All centers have been approved by their local ethical committee for this study. The coordinator of Turkey was the chair of ALA and director of the HU Lymphedema Practice and Research Center-Dr Borman. All the LIMPRINT questionnaires translated to Turkish. The QoL questionnaires LYMQOL-ARM and LYMQOL-LEG did not have Turkish validation. The cross-cultural Turkish validation studies of the LYMPQOL-ARM and LEG questionnaires were also performed by the mean time. Then the Turkish forms were sent to the included centers. All the centers filled the questionnaires and sent them by ordinary mail to the coordinator, as soon as they have reached to sufficient number of patients (minimum 30). Data entry was made from one center (Hacettepe University) with different codes for different centers.

RESULTS There were 655 patients from 4 centers. Most of the patients were recruited from specialist lymphedema services. The majority of patients were female, nonobese, having full range of movement and walking independently. Most of the patients were in 45-64 age category. The most common comobity was diabetes followed by peripheral arterial disease. The classification of LE was mostly secondary and due to cancer, followed by venous insuffiency, lipedema, immobility and obesity.The duration of LE was less than 5 years in majority of the patients . The cellulitis and infection or hospitalization for infection were not common. The site of swelling was upper extremity in most of the patients and the majority of patients did not have any wound. One of the most striking points was the lack of any given treatment or advice before the presentation of lymphedema in majority of the patients (71,5%). The most common treatment was compression garment (47,6%)/compression bandages (40,5%) followed by exercise (55,2%) skin care advice (56%), massage (49,6%). A great number of patients expressed that their swelling was not under control. Most of the patients suggested that lymphedema treatment (CDT) was available for free (but not the bandages and compression garments) within a reasonable travelling distance. Many patients denoted that the distance did not prevent this patient from accessing specialized centers.

CONCLUSION These final data reflects that upper extremity LE is common in Turkish lymphedema patients and the major cause is cancer treatment and they suffer since a long time. The most striking result is most of the patients have uncontrolled LE and did not get any treatment before. Turkish patients had less wound which may be due to the center characterstics that most of them were PMR clinics, not dermatology or vascular surgery. In conclusion, the awareness of lynphedema is low and there is an unmet need for diagnosis and treatment of Turkish patients. Although most of the patients had social health security, the reimbursement of treatment materials and/or compression garments, and the reach to these centres may be difficult more than estimated. National health policies and planning are needed for the prevention, diagnosis and treatment of this suffering condition.

THE MEANING OF SUCCESS IN LYMPHEDEMA MANAGEMENT: A QUALITATIVE AND A QUANTITATIVE PERSPECTIVE

Dorit Tidhar

This workshop will discuss the meaningfulness of the outcomes of lymphedema management (volume, quality of life, function, strength, infection and more) through distribution-based and anchor-based methods. What is considered to be a success for the health system? for the therapist? for the patients? A qualitative research which examined the meaning of success will present the thoughts, feelings and values of people who have lymphedema, and what is the meaning of success for them in the intensive phase of therapy and in the long-term management phase. Finally, the recommended way is to validate the distribution-based with the anchor-based methods.

A PROSPECTIVE STUDY TO IDENTIFY FACTORS THAT PREDICT THE PERFORMANCE OF THE 3M COBAN 2 COMPRESSION SYSTEM (COBAN 2 SYSTEM) AND STANDARD COMPRESSION USED WITHIN DECONGESTIVE LYMPHATIC THERAPY IN PATIENTS WITH LYMPHOEDEMA

Peter J Franks, on behalf of the International Lymphoedema Framework and Lymphoedema Observational Study Group

This prospective cohort study was undertaken in four countries (eight sites), with participants treated with intensive therapy of up to 28 days using either Coban 2 or standard care as used by the centres. The principal analysis identified which patient factors were associated with an improved limb volume reduction in either arm or leg lymphoedema (LD). For the purposes of the analysis two methods of assessing limb volume were used

- Absolute reduction in limb volume (ml)
- Percentage reduction in limb volume

Independent variables considered for inclusion into the models were

- Demographics: age, gender
- Level of Obesity (BMI)
- Medical History: Diabetes, renal disease, heart disease, arthritis, peripheral arterial disease, chronic venous insufficiency
- Disease factors: lymphoedema classification, history of cellulitis, site of swelling, degree of fibrosis, ISL classification, presence of wound, lymphorrhoea, current cellulitis.

In total 264 participants were recruited of whom 252 had at least one follow up assessment. Mean (sd) volume reduction was 1142 (1889) ml in leg LD, and 367 (636) ml in arm LD. Independent factors associated with greater limb volume reduction in the total group were presence of osteoarthritis; PAD; leg LD and initial limb volume. For percentage reduction the factors were ISL severity, presence of osteoarthritis, lymphorrhoea, increasing age and shorter duration of LD. For the Coban 2 group independent factors associated with greater limb volume reduction were poor mobility, leg LD and the initial leg volume. For the standard care group the factors were presence of a wound, peripheral arterial disease, increasing age, initial leg volume and shorter duration of LD.

Understanding why some patients improve more than others during intensive therapy is important in developing optimal care for patients with LD.

SURGERY OF ADVANCED LYMPHOEDEMA

Harry Voesten

Although the gold standard in lymphoedema is non-operative compression therapy, in advanced stage surgery is inevitable.

As lymphedema can occur primary or secondary and unilaterally or bilateraly problems can be quite challenging:

The manifestations on different parts of the body can vary from pure volume difference, to weeping blisters, papillomatosis or erysipelas.

Resulting problems in locomotion, social life, sexual function etc. all interfere with quality of life.

The only proven surgical method to reduce volume difference completely in extremities is circumferential suction-assisted lipectomy (CSAL) in combination with lifelong wearing of measured to fit compression garment.

Serious progress has been made in surgery of midline lymphedema , lymphekysts, weeping blisters, papillomatosis.

Even common surgical problems in lymphoedematous extremities can be treated by surgery without lymphoedema getting worse provided a good pre- and postoperative compression treatment is carried out in a clinical multidisciplinary setting.

LYMPHEDEMA IN HEART FAILURE PATIENTS

Dorit Tidhar

Most patients with lymphedema who have co-morbidities are excluded from randomized control studies as it is difficult to determine causation between intervention and outcome if co-morbidities may influence the results. Any hemodynamic instabilities such as in renal failure and heart failure, pulmonary hypertension may cause limb edema or exacerbate an existing lymphedema. Furthermore, these patients are prescribed with medications which may cause or exacerbate edema. We will discuss an algorithm which can help a lymphedema physiotherapist in decide who, how and when to treat and whom to refer back to the physician for further investigation and discussion.

QUALITY OF LIFE FOR LYMPHOEDEMA PATIENTS UNDERGOING SURGICAL TREATMENT

Alex Munnoch

It is well known that lymphoedema affects quality of life (QoL). Much has been published on the impact of lymphoedema and on the improvements associated with various therapies. Most of this relates to breast cancer related lymphoedema, some to lower limb cancer related, but virtually nothing related to primary lymphoedema. There is also very little published on the impact of surgical management of lymphoedema on QoL.

This presentation will review the various QoL questionnaires in use, the published papers relating to surgical management and present the author's own experience of managing lymphoedema with liposuction and compression. Data will be presented on the variability of QoL perception by patients, the impairment experienced despite maximal conservative therapy, and the changes experienced following surgical intervention.

ULTRASONOGRAPHY AND THERMOGRAPHY AS NEW METHODS OF ASSESSING CELLULITIS WITH LYMPHOEDEMA

Misako Dai1), Gojiro Nakagami2)3), Takeo Minematsu3)4), Junko Sugama5), Hiromi Sanada2)3), Isabelle Quere6)

1) Department of Clinical Nursing, Institute of Medical, Pharmaceutical and Health sciences, Kanazawa University
2) Department of Gerontological Nursing/Wound Care Management, Division of Health Sciences and Nursing, Graduate School of Medicine, The University of Tokyo
3) Division of Care Innovation Global Nursing Research Center Graduate School of Medicine, The University of Tokyo
4) Department of Skincare Science, Graduate School of Medicine, The University of Tokyo
5) Advanced Health Care Science Research Unit Innovative Integrated Bio-Research Core Institute for Frontier Science Initiative, Kanazawa University
6) Centre Hospitalier Universitaire de Montpellier

Abstract: Recurrent cellulitis (and erysipelas) is a cause of worsening lymphoedema. Therefore, cellulitis should be prevented as part of lymphoedema management. In patients with lymphoedema, lymphatic circulation is abnormal and protein-rich lymph accumulates. We previously used high-frequency ultrasonography in a case-control study of patients with lymphoedema and a history of cellulitis. We found that dermal structure differed between the patients with history of cellulitis and without. Comprehensive assessment of the skin, including the structure of the subcutaneous tissue and immunological function, is required to prevent cellulitis. Such assessment is suggested as part of a management strategy to prevent recurrent cellulitis. Therefore, we established a new project that aims to prevent recurrent cellulitis in patients with lymphoedema. We applied ultrasonography and thermography to reveal some risk factors of cellulitis in such patients. Here, we will present the results of this case study using these non-invasive, safe, and clinically useful modalities.

Speaker Information: Dr. Misako Dai, PhD, RN, PHN is a specialist of lymphoedema and assistant professor at Kanazawa University, Japan. She has developed vibration care and new ultrasonographic assessment methodology to improve lymphoedema management. She has received three awards from ILF for her studies, which have been published. She served as chief secretariat of the 4th and 7th ILF conferences in Japan. She then headed the LIMPINT study in Japan with Prof. Junko Sugama.

PRIMARY LYMPHOEDEMA

Kristiana Gordon

Primary lymphoedema will arise from a genetically determined abnormality of the lymphatic system. Primary lymphoedema was previously classified purely on age of onset, but the discovery of several causal genes has changed the diagnostic approach, which is now based on clinical phenotyping and genotyping. We now recognise that "primary lymphoedema" is a presenting complaint and not a single condition. There are recognisable patterns of age of onset, distribution, and associated health problems. Primary lymphoedema can be divided into five different categories: 1) lymphoedema associated with syndromic disorders; 2) localised or generalised lymphoedema with systemic/visceral lymphatic abnormalities; 3) lymphoedema in association with disturbed growth and/or cutaneous/vascular anomalies; 4) congenital lymphoedema; 5) late-onset primary lymphoedema. Accurate diagnosis can lead to the identification of the underlying genetic cause, which will lead to better information about the natural history, associated problems, recurrence risks and, hopefully, targeted treatment. The St George's research team have developed a diagnostic algorithm to aid the clinician in their management of patients with primary lymphoedema, and this will be the focus of Dr Gordon's talk.

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2) Connell F, Gordon K, Brice G, *et al.* The classification and diagnostic algorithm for primary lymphatic dysplasia: an update from 2010 to include molecular findings. *Clin Genet* 2013;84(4):303–14.

A MIXED METHOD STUDY TO EXPLORE THE PERCEPTIONS OF SELF-MANAGEMENT IN CHILDREN, ADOLESCENTS PARENTS AND PROFESSIONALS: AN ILF RESEARCH INITIATIVE

Aimee Auberluck

This presentation will disseminate the initial findings from a mixed methods study exploring the practice of self-management of Lymphoedema (LO) amongst Children, Young People (CYP) and professionals. Our primary objective was to establish the perceived barriers and facilitators to self-management of LO. We wanted to begin to understand what self-management in LO looked like to patients, families and professionals; how LO is managed and the impact of this. We also wanted to explore any cultural differences and establish whether a week long summer camp could provide support and agency to all those involved in the self-management of LO. Utilising a mixed methods design, Focus groups, Questionnaires, Observations, Drawings and Photographs captured the lived experience of those self-manging LO. Initial findings would suggest that Children are robust in self-manging their condition employing a variety of coping mechanisms but that parents and professionals would sometimes benefit from additional support.

OBESITY RELATED LYMPHEDEMA – UNDERESTIMATED AND UNPOPULAR

Tobias Bertsch

The increasing worldwide prevalence of obesity will have a dramatic increase of obese patients with lymphedema as a result a topic which is completely underestimated, a topic which is poorly represented at conferences but also in scientific publications.

But at the same time the obese patient with lymphedema is also a very unpopular patient, unpopular in medical practices, clinics, as well as among lymph therapists.

Unpopular surely due to the well known resentments towards severe obese people, unpopular but also due to the helplessness how we feel - medical professionals - stand facing these patients.

The purpose of this lecture is on the one hand to share scientific facts about obesity and related lymphedema, on the other hand I would give you a feeling for that topic OBESITY, a topic that will have an increasing importance for your work in the next few years.

ONCOLOGY REHABILITATION AND SECONDARY LYMPHOEDEMA: THE PROSPECTIVE SURVEILLANCE MODEL

Nicole L. Stout DPT, CLT-LANA, FAPTA

Description: A comprehensive model of cancer survivorship care that focuses on improving physical function during and after cancer treatment, known as the Prospective Surveillance Model (PSM). The PSM was presented in depth in a supplemental issue of *Cancer* in 2012 and has served as the foundation for guidelines for early identification and management of lymphedema. The PSM has 3 goals: 1) to establish an interval surveillance program that enables repeat assessment points overtime to promote early identification of changes indicative of emerging functional impairment, 2) to facilitate engagement with individuals diagnosed with cancer for education and guidance to maintain function through treatment, and 3) to direct rehabilitation for physical impairments related to cancer. New guidelines published in 2016 recommend this model of care as an optimal construct for the early identification of lymphedema. The purpose of this symposium is to revisit the goals of the PSM providing evidence of effectiveness through implementation and to highlight areas of the PSM that need additional supporting evidence. Timing, frequency and duration of the proposed model will be discussed as well as recommendations as to how the model can be integrated into the cancer continuum across all cancer pathologies, progressing from the groundwork done in breast cancer.

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LIPOSUCTION IN LYMPHEDEMA PATIENTS – A 25 YEARS' PROSPECTIVE STUDY WITHOUT RECURRENCE HÅKAN BRORSON, MD, PHD, EMMA HANSSON MD MA PHD, ERIK JENSE MD, CAROLIN FRECCERO MD PHD

Håkan Brorson MD PhD[1,2], Karin Ohlin ROT[2], Barbro Svensson RPT LT[2], Mattias Hoffner MD PhD[3]

[1] Department of Clinical Sciences, Lund University
[2] Department, Plastic and Reconstructive Surgery, Skåne University Hospital
[3] Department of Clinical Sciences, Lund University; Department of Surgery, Blekinge Hospital, Karlskrona

Lymphedema leads – already within the first year – to deposition of subcutaneous adipose tissue. Liposuction for non-pitting chronic large lymphedemas is useful when patients have been optimally managed with conservative treatment in order to transform a pitting edema to a non-pitting edema. If the excess volume – now comprising of excess adipose tissue – is still bothering, liposuction is an excellent option leading to complete reduction. Just as after conservative treatment compression garments are needed postoperatively. Microsurgical reconstructions, although attractive as a physiological concept, cannot provide complete reduction in chronic large non-pitting lymphedemas because they do not eliminate the newly formed subcutaneous adipose tissue collections.

Introduction___ Patients with chronic non-pitting lymphedema do not respond to conservative treatment or microsurgical procedures because the diminished lymph flow and inflammation result in the formation of excess subcutaneous adipose tissue, which cannot be removed by these methods. All patients had received conservative treatment before surgery without further reduction. All were wearing compression garments before surgery. Aspirate and leg volumes were recorded.

Materials and Methods *Arms:* 158 women with non-pitting edema, a mean age of 64 (range, 39-89) years and a mean duration of arm swelling of 9 (range, 1-38) years underwent liposuction. Mean age at breast cancer operation, mean interval between breast cancer operation and lymphedema start, and duration of lymphedema were 52 years (range, 33-86), 3 years (range, 0-32), and 9 years (range, 1-38) respectively. Aspirate and arm volumes were recorded.

Legs: 96 patients with an age of 52 years (range, 17-76) and a duration of leg swelling of 14 years (range, 2-50) underwent liposuction due to non-pitting, chronic lymphedema. There were 29 primary (PL), and 27 secondary lymphedemas (SL) following cancer therapy. Age at cancer treatment and interval between cancer treatment and lymphedema start were 43 years (range, 20-65), and 3 years (range, 0-26) respectively. Age at onset of PL was 32 years (range, 4-63).

Results *Arms:* Aspirate mean volume was 1768 ml (SD 634) with an adipose tissue concentration of 95 % (SD 10) in the tourniquet fraction. Preoperative mean excess volume was 1528 ml (SD 734). Postoperative mean reduction was 103 % (SD 27) at 3 months and 115% (SD 28) at 1 year, and more than 100% during 23 years' follow-up, i.e. the lymphedematous arm was somewhat smaller than the healthy arm. The preoperative mean ratio between the volumes of the edematous and healthy arms was 1.5 (SD 0,2), rapidly declining to 1.0 (SD 0,1) at 3 months, and less than 1 after 6 months (Figure 1)

Legs: Aspirate volume was 3672 ml (SD 1675) with an adipose tissue concentration of 93% (SD 10) in the tourniquet fraction. Preoperative excess volume was 3775 ml (SD 1892). Postoperative mean reduction was 80% (SD 24) at 3 months and 101% (SD 22) at 1 year, and more than 100% during 13 years' follow-up, i.e. the lymphedematous leg was somewhat smaller than the healthy one. The preoperative mean ratio between the volumes of the edematous and healthy legs was 1.4 (SD 0,2), rapidly declining to 1.0 (SD 0,1) at 1 year and less than 1 after one year (Figure 2)

Conclusion These long-term results demonstrate that liposuction is an effective method for treatment of chronic, non-pitting lymphedemas in patients who have failed conservative treatment. Because of adipose tissue hypertrophy, it is the only known method that completely reduces excess volume at all stages of arm lymphedema. The removal of hypertrophied adipose tissue, induced by inflammation and slow or absent lymph flow is a prerequisite to complete reduction. The newly reduced volume is maintained through constant (24-hour) use of compression garments postoperatively

Fig. 1. A 32-years-old woman with a non-pitting secondary leg lymphedema of 7 070 ml since 12 years following treatment of a synovial sarcoma in the right groin (left). Postoperative result 6 months after liposuction (right).

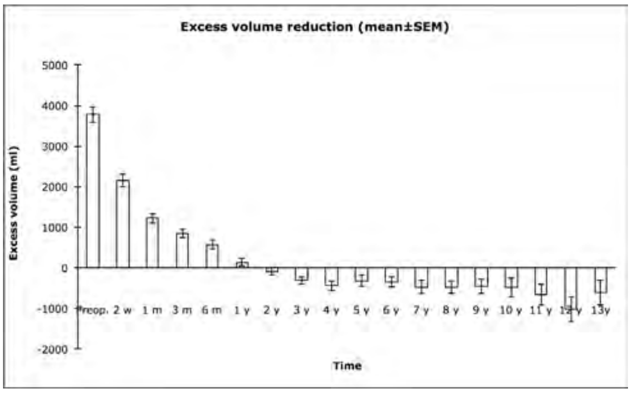

Fig. 2. Mean pre- and postoperative excess volume reduction following liposuction of arm lymphedema.

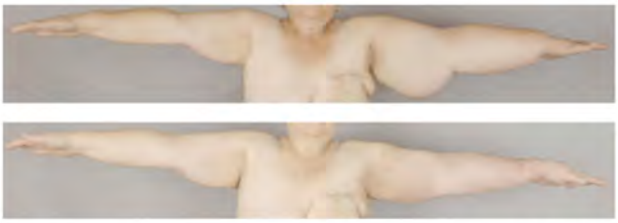

Fig. 1. A 57-years-old woman with a non-pitting secondary leg lymphedema of 4 235 ml since 5 years following breast cancer treatment. Complete reduction 6 months after liposuction (below)

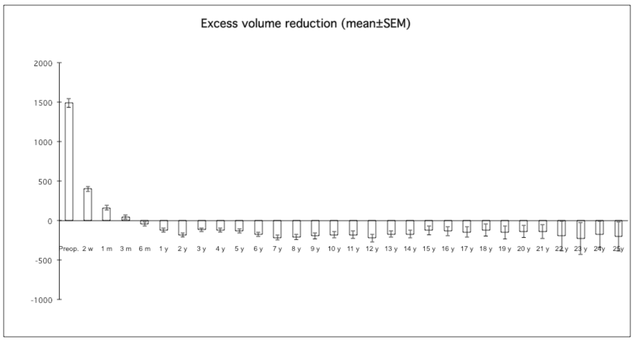

Fig. 4. Mean pre- and postoperative excess volume reduction following liposuction of leg lymphedema.

AQUA LYMPHATIC THERAPY IN THE MANAGEMENT OF LYMPHEDEMA AND LIPEDEMA

Dorit Tidhar

Water is good for lymphedema and moving through water is even better. This lecture will discuss the following principles of water and the ways we can use them to help reduce swelling: 1) the buoyancy force as an assistive to movement, but also as a resistive force; 2) the hydrostatic pressure which pushes fluid through our vessels and spaces of the body; 3) viscosity that will stroke us but also resist to movement and 4) temperature - is it really important? These principles, combined in a sequence of exercises of Aqua Lymphatic Therapy, will discuss the treatment of patients with lymphedema and lipedema.

CLINICAL DIAGNOSIS OF LYMPHOEDEMA (LYMPHO-FLUOROSCOPY)

Nele Devoogdt

Proposal of change title in: **The added value of imaging of the lymphatic system through near-infrared fluorescence imaging in the treatment of lymphoedema**

Since a number of years, a new imaging technique has been introduced to visualise the superficial lymphatic system, i.e. near-infrared fluorescence imaging or also called lymphofluoroscopy. This technique is very valuable since the images of the lymphatic system are immediately available for patient and therapist. Moreover, it gives detailed information about the patient-specific lymphatic architecture. A lymph collector is visualised as a linear pattern. In case of an obstruction of a lymph collector, a dermal rerouting pattern appears. A lymphofluoroscopy can be useful to improve the conservative treatment of a patient with lymphoedema. For example, it can be applied to improve the technique of manual lymph drainage and to adjust the compression material. It can also be useful as a guide for lymphatic surgery (e.g. lymphovenous anastomosis).

LIPOEDEMA - FACTS AND FICTION

Tobias Bertsch

There are so many statements about this topic lipedema, statements or claims, which we all hear from experts and lipedema patients, statements which are completely different from what I – what my colleagues in the Foeldi Clinic - experience in our clinical practise with lipedema patients, statements where we have to ask, whether they are facts or fiction.

This lecture will focus on the scientific evidence of some of these popular statements about lipedema

LIPOSUCTION IN THE MANAGEMENT OF LIPOEDEMA

Wilfried Schmeller

For lipoedema nowadays both conservative and surgical treatment options are available. Manual lymphatic drainage and compression (combined decongestive therapy) reduces oedema and complaints. Tumescent liposuction reduces circumscribed subcutaneous fatty volumes and improves body proportions, oedema, pain and bruising.

Liposuction should be used, when - in spite of consequent conservative therapy - a progression of signs and symptoms of the disease occurs. Then patients notice an increase of fatty subcutaneous volume, often with an increase of weight, and a worsening of oedema and pain.

Following liposuction(s) an obvious improvement of body shape (disappearance of the disproportion) and of complaints with a distinct enhancement in the quality of life can be noticed. Long-term studies showed a persistant improvement for more than 8 years. About one third of the operated patients did not need combined decongestive therapy anymore; two third of them used it less often than before.

The right combination of conservative and surgical therapies is the key for the success in the treatment of lipoedema.

THE ROLE OF MANUAL LYMPH DRAINAGE (MLD) IN THE PREVENTION AND TREATMENT OF LYMPHOEDEMA: THE RESEARCH EVIDENCE

Nele Devoogdt

The added value of traditional MLD to preventive measures and exercises for the prevention of breast cancer-related lymphoedema is rather small. The preventive effect of MLD on development of other kinds of cancer-related lymphoedema has never been investigated. Consequently, if no lymphoedema is present, it is not necessary to apply preventive MLD.

In addition, the benefit of traditional MLD as part of the decongestive lymphatic therapy for the treatment of upper limb lymphoedema is also rather small. Individuals with mild-to-moderate (vs moderate-to-severe) arm lymphoedema benefit the most. The effect of MLD for the treatment of lymphoedema of the lower limb or other body parts has never been investigated.

More research about the clinical effect of MLD with subgroup analyses is necessary to confirm this.

Oral abstracts

[1] HOW ARE OCCUPATIONAL THERAPISTS PRACTICING IN THE AREA OF CHRONIC OEDEMA AND LYMPHOEDEMA IN IRELAND?

Clare O'Sullivan[1], Emma O'Leary[1]

[1] *University College Cork*

Aim: The purpose of this research study is to explore how occupational therapists are practicing in chronic oedema and lymphoedema in Ireland. Chronic oedema and lymphoedema have been shown to have a significant impact on occupations and activities, indicating that the occupational therapist's role is of great importance in its management, and therefore warrants further research.

Methods: Data will be collected through conduction of an online survey of occupational therapists practicing in Ireland regarding their experiences through the Association of Occupational Therapists in Ireland, and Manual Lymph Drainage Ireland.

Results: Data collection will take place between January and March 2018, as such there are no current results for this study.

Conclusion: There is currently a limited understanding as to how occupational therapists are practicing in the area of chronic oedema / lymphoedema in Ireland, with a lack in best practice guidelines. Results of this study will indicate how occupational therapists in Ireland are practicing, and whether this is in line with international guidelines of best practice. This will create a platform for further research in this area in Ireland.

[2] REVISION OF THE LYMPHEDEMA FUNCTIONING, DISABILITY AND HEALTH QUESTIONNAIRE FOR UPPER LIMB LYMPHEDEMA (LYMPH-ICF-UL): VALIDITY AND RELIABILITY

Tessa De Vrieze[1], Lore Vos[2], An De Groef[3], Nick Gebruers[4], Nele Devoogdt[3]

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[2] *Katholieke Universiteit Leuven; Universiteit Antwerpen*
[3] *Katholieke Universiteit Leuven*
[4] *Universiteit Antwerpen*

Background: Lymphedema is a dreaded and frequent (DiSipio e.a.2013) complication, affecting a patient's life in various ways. The Lymphedema Functioning, Disability and Health questionnaire for upper limb lymphedema (Lymph-ICF) is a valid and reliable tool to assess lymphedema-related problems in functioning after breast cancer treatment(Devoogdt e.a.2011). However, simplification of the scoring system was warranted. Therefore, a revised version implementing a numeric rating scale was tested for its clinimetric properties.

Aim: Investigation of reliability and validity of the Lymph-ICF-UL.

Methods: The Lymph-ICF-UL was completed twice, within 24h, by 56 participants with objective lymphedema. Additionally, the 36-item Short Form Health Survey (SF-36) was completed as well. Approval was obtained by the Ethical Committee of the University Hospitals of Leuven (EudraCT Number 2015-004822-33).

Results: Intraclass correlation coefficients for test-retest reliability ranged from .79 to .95. Cronbach's alpha coefficients for internal consistency were higher than .80. There were no systematic changes from the first test to the second test, and measurement variability was acceptable. Face and content validity was good. Finally, construct validity was established. 4 out of 5 expected domains of the Lymph-ICF-UL showed a moderate correlation with expected corresponding domains of the SF-36, showing good convergent validity. Furthermore, divergent validity was also good, since 7 out of 9 hypotheses were accepted.

Conclusion: The Lymph-ICF-UL is a reliable and valid questionnaire using a simplified scoring procedure to assess impairments in function, activity limitations, and participation restrictions of patients with arm lymphedema after breast cancer treatment. Investigation of the responsiveness of the Lymph-ICF-UL is ongoing.

[3] DOES THE LYMPHOEDEMA GENITOURINARY CANCER QUESTIONNAIRE (LGUCQ) FACILITATE SYMPTOM DISCLOSURE FROM MEN?

Rhian Noble-Jones[1], Melanie Thomas[2]

[1] *University of Glasgow*
[2] *Abertawe Bro Morgannwg University Hospital; Lymphoedema Network Wales; Cimla Health Centre*

Introduction: The impact of health-seeking behaviour in men in relation to diagnosis of genital oedema after treatment for genitourinary cancer, has not been explored. Previous work suggests that written self-complete tools enable men to disclose more sensitive information than they would verbally (Sampurno et al 2016. Clinical Genitourinary Cancer 14:4).

Aim: To explore whether the introduction of a patient and professional co-developed and validated tool, the LGUCQ (Noble-Jones et al 2014 BJN 23:18), would facilitate greater disclosure of genital oedema symptoms when used as an addition to the patient care pathway.

Method: Male patients from three Health Boards in Wales, who had treatment for cancers of the prostate (locally advanced), bladder (muscle invasive), penis (node invasive treatment), testes (treatment to retroperitoneal lymph nodes) were included. At review appointments with a clinician or nurse specialist (October 2017 – February 2018), men were invited to complete the LGUCQ. Participating patients, clinicians, nurse specialists and lymphoedema specialists were invited for interview. The qualitative data underwent framework analysis. Ethics NHSREC 17/NW/0492.

Results: Men described the realisation of lymphoedema after cancer as a shock, but that having the opportunity to respond to pertinent questions on the LGUCQ helped to normalise their experience, and enable more open discussion of symptoms. Views of the healthcare professionals affirmed the practical utility of the LGUCQ for early symptom recognition and timely referral.

Conclusion: Integration of LGUCQ into routine clinical management could improve outcomes through enhanced patient voice; further research is needed.

[4] THE RELIABILITY AND VALIDITY OF LYMPHEDEMA QUALITY OF LIFE QUESTIONNAIRE-LEG (LYMQOL-LEG) IN TURKISH PATIENTS WITH LOWER LIMP LYMPHEDEMA

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[2] *Biostatistics, University of Hacettepe, Faculty of Medicine, Department of Biostatistics*

Background/purpose: Lymphedema can impact on quality of life with regard to an individiual's physical, psychosocial, emotional and social well-being.LYMQOL is a disease specific patient-reported outcome measure developed in UK and validated in different languages.This study aimed to adapt the LYMQOL-Leg to Turkish and to test its reliability and validity in patients with lower limb lymhedema.

Methods: In this study we undertook a cross-cultural validation of the LYMQOL-Leg among Turkish patients with lower limb lymphedema. The study was conducted in Lymphedema Unit, Physical Medicine and Rehabilitation Department of Hacettepe University, between May 2015 and October 2017.Turkish LYMQOL-Leg was obtained using translation-backward-translation method and administered to patients with lower limb lymphedema, along with SF36, EORTC-QLQ-C30 and LEFS questionnaires.Test-retest interval of 7 days was used to assess the reliability.Intra-class correlation coefficients (ICC) were used to determine test-retest reliability of the scores on 5 domains of LYMQOL-Leg.Cronbach alpha coefficients were used to determine internal consistency of the entire questionnaire and of each domain.We used the Pearson correlation coefficient for normally distributed scores and the Spearman correlation coefficient for other scores.

Results: 138 patients with lower limb lymphedema completed the questionnairesInternal consistency (based on a Cronbach alpha score of 0.85-0.90) and test-retest reliability(based on an intra-class correlation coefficient of 0.68-0.85) of the LYMQOL-Leg were found to be high ($p<0.001$).External construct validity was highly confirmed by expected correlations with comparator scales SF36, EORTC-QLQ-C30 and LEFS,within most parameters ($p<0.01$).

Conclusion: Turkish version of the LYMQOL-Leg is a valid and reliable tool for evaluating quality of life in patients with lower limb lymphedema.

Keywords: Lymphedema, quality of life, validity

[5] LOCAL SKIN COOLING TO TREAT AND REDUCE BREAST CANCER-RELATED LYMPHEDEMA AND FIBROSIS OF THE ARM OR BREAST

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[2] *Total Lymphedema Care; South Florida Breast Cancer Rehab Center*

Based on preliminary observations that topical cooling appeared to soften lymphedematous and fibrotic tissue, our goal was to systematically and quantitatively evaluate this effect. For this purpose, topical cooling was used as part of treatment of lymphedematous and fibrotic skin of women with breast cancer related lymphedema (BCRL) and localized fibrosis. Skin tissue hardness was assessed via the force required to indent skin to 4 mm (F4.0) and 1.3 mm (F1.3) and skin water was assessed by measurements of tissue dielectric constant (TDC). Measurements were done before cooling, after cooling, and after a single treatment session in 20 women with arm involvement and in 12 women with breast involvement. Pre-cooled arm and breast skin temperatures (mean ± SD) of 32.4 ± 1.4 °C and 33.8 ± 1.0 °C were reduced to 23.7 ± 2.0 °C and 24.7 ± 1.6 °C respectively via application of cold washcloths. Cooling was associated with a significant ($p<0.001$) decrease in F4.0 and F1.3 at arm and breast sites. At arm sites, force reductions ranged from 24% to 28% depending on indentation depth. Although the precise mechanism linking cooling to softening is as yet not fully understood, the fact that tissue is softened carries with it many potential benefits to patient and therapist. The near immediate tissue softening is associated with less pressure on underlying nerve endings and less input to sensory nerves thereby interrupting the pain cycle resulting in rapid pain relief offering the patient hope and encouragement on their therapeutic journey.

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[6] VALIDITY AND RELIABILITY OF THE BREAST EDEMA QUESTIONNAIRE (BREQ) FOR THE ASSESSMENT AND FOLLOW-UP OF BREAST EDEMA

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[2] *Universiteit Antwerpen; Antwerp University Hospital*

Introduction: Currently, no consensus on the definition of breast edema nor a standardized measurement tool for breast edema is available.

Aim: To determine the validity and reliability of the newly developed BrEQ questionnaire for the assessment of breast edema.

Methods: Relevant information about breast edema was collected 1) through a systematic review of the literature, 2) information of experts and breast edema patients. The pilot version of the questionnaire was tested by a response group and adjusted whenever necessary. Clinimetric properties of the questionnaire was tested in a group of breast cancer patients. Criterion validity was tested by correlating the questionnaire with the skin thickness measured with ultrasound.

Results: In the first part of the questionnaire symptoms of breast edema are scored on a scale from 0 to 10: pain, heaviness, swelling, tensed skin, redness, pitting sign, enlarged skin pores and hardness. Taking into account the ICF, several activities and participations are scored from 0 to 10 in part two. The questionnaire was completed by 39 women. Ultrasound showed that 5 women had breast edema. Content validity gave good results. Even in this phase of the research, convergent validity already showed the trend that patients with a thicker skin at the level of the operated breast scored higher on the breast edema symptoms. Test-retest reliability is good for all the questions, accept for the item “redness”.

Conclusion: The BrEQ has good test-retest reliability. The preliminary results already provide a trend towards the BrEQ’s validity.

[7] ACCURACY OF A SINGLE MEASUREMENT SITE FOR SELF-MONITORING OF PATIENTS WITH BREAST CANCER AT RISK FOR LYMPHEDEMA

Janine Hidding[1], Carien Beurskens[2], Marijke de Vries[3], Ria Nijhuis-van der Sanden[2], Hanneke van Laarhoven[4], Philip van der Wees[2]

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[2] Radboud University Medical Center
[3] Avans+
[4] Amsterdam Medical Center; Radboud University Medical Center

Aims: Early detection of breast cancer-related lymphedema through simple self-monitoring techniques may lead to early treatment and improved outcomes.

Description: Prospective study of circumference measurements before, during and after adjuvant chemotherapy with docetaxel, doxorubicin and cyclophosphamide. Volume was calculated using the 10 cm interval circumference measurement method and percentage difference between arms, for volume and circumference, was determined. First, the most valid single measurement location was determined by calculating Pearson's correlations coefficient relative to volume. Second, to evaluate responsiveness to change over four time points, outcomes of the selected single measurement and volume were analyzed by repeated measures ANOVA. Third, area under the curve (AUC) was used to determine the optimal sensitivity and specificity of the selected single measurement site. Relationship between lymphedema and heaviness and swelling was analyzed using Phi-coefficient.

Outcome: The measurement point 30 cm proximal to the styloid process showed the highest correlation with percentage difference volume (r= 0.80) and detected increased percentage difference between arms after treatment. Analyses showed high accuracy (AUC=0.94), and good sensitivity (0.85) and specificity (0.85) using a cut-off score of 4% difference between arms. A moderate correlation between feelings of heaviness and swelling to lymphedema was observed ($r\phi=0.64$).

Evaluation of impact: Circumference difference between arms of 4% measured at 30 cm proximal to the styloid process can be used as surveillance site for monitoring of patients at risk for lymphedema and may contribute to early diagnosis. Feelings of heaviness or swelling have moderate relationship with lymphedema, which needs confirmation in clinical practice.

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[8] LYMPHEDEMA RESULTS OF ALLIANCE Z1071 (AMERICAN COLLEGE OF SURGEONS ONCOLOGY GROUP [ACOSOG]: SELF-REPORTED SYMPTOMS AND LIMB VOLUME CHANGES FOR BREAST CANCER SURVIVORS TREATED WITH NEOADJUVANT CHEMOTHERAPY AND AXILLARY DISSECTION

Jane Armer[1], Karla Ballman[2], Linda McCall[3], Vera Suman[4], Yuanlu Sun[1], Tipparat Udmuangpia[1], Kelly Hunt[5], Elizabeth Mittendorf[5], David Byrd[6], Thomas Julian[7], Judy Boughey[8]

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[5] MD Anderson Cancer Center, University of Texas
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[7] Allegheny Health Network
[8] Mayo Clinic

Introduction: Secondary lymphedema is a major treatment side-effect for women diagnosed with breast cancer who undergo axillary dissection. This prospective longitudinal substudy assessed limb volume, circumferences, and self-reported symptoms of breast cancer survivors treated with neoadjuvant chemotherapy and axillary dissection enrolled on the Alliance Z1071 trial.

Objectives: The aim of this Alliance substudy was to assess lymphedema occurrence following neoadjuvant chemotherapy and axillary dissection by measuring limb volume, circumferences, and symptoms.

Methods: Z1071-enrolled patients with cT0-T4,N1-2 disease were eligible to enroll in the primary study. Limb volume, circumferences, and related symptoms were assessed at pre-surgery, 1-2 weeks post-surgery, and followed for 36 months. Lymphedema definitions were volume increase ≥10% or limb circumference increase ≥2cm. Symptoms were assessed by the Lymphedema Breast Cancer Questionnaire (LBCQ), a validated and reliable tool.

Results: Lymphedema data were analyzed on 488 patients (median age = 49 years ([ange 23–78 years]). At 36 months post-surgery, lymphedema incidence was 60.3% (95% CI: 55.0%-66.2%) by ≥10% limb volume increase and 75.4% (95% CI: 70.8%-80.2%) by ≥2cm circumference increase. Weighted kappa coefficient was 0.27 (95% CI: 0.18-0.36), indicating modest agreement between the two criteria. Arm swelling and arm heaviness had a 3-year 25-31% cumulative incidence, respectively. Self-reported lymphedema symptoms were relatively stable after 18 months. There was limited agreement with weighted kappa coefficients (0.05-0.09) comparing volume or ≥2cm increase to reported heaviness and/or swelling.

Conclusions: As reported elsewhere, lymphedema is common after axillary dissection. This is one of the few studies to examine lymphedema in patients with breast cancer treated with neoadjuvant chemotherapy. Self-reported lymphedema symptoms decrease from post-op over 18 months after surgery, thereafter remaining stable. Incidence varies by definition (arm measurements/ symptoms), indicating both are important to assess. Findings underscore value of prospective clinical surveillance from pre-op to 36 months and both limb and symptom assessment.

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[9] DEVELOPING A DEDICATED LYMPHEDEMA CLINIC: THE IMPACT ON THE POPULATION OF QATAR

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[2] Hamad Medical Corporation
[3] University Health Network

Background: Dedicated lymphedema (LE) services were not available in the State of Qatar prior to 2013. Patients had two choices - either travel abroad with government support to receive treatment or stay in Qatar and live with their physical & psychosocial stress.

Aims: To develop an internationally recognized gold-standard service in the State of Qatar to decrease the burden on patients and the country.

Description: Physiotherapy (PT) department at Qatar's government funded cancer center realized the burden on the patient and country of not having a dedicated LE service. PTs sought to receive training and went abroad to gain recognized qualification. LE clinic officially opened in 2013. Members are working with multidisciplinary teams and the international medical affairs committee. Further service improvements were possible due to an international collaboration with the Canadian health services between 2016-2018. Other international activities included knowledge sharing in conferences and receiving patients with complex cases from other countries. In this presentation we will share the timeline of clinic development activities, referral criteria, patient pathway, and the financial impact.

Evaluation: Patients no longer need to travel abroad for treatment reducing the burden on the patient, family and country. The clinic has received Qatar's prestigious award in 2016 for developing the first LE management clinic in the country.

Next Steps: To be the first Middle Eastern country recognized as a National Lymphedema Framework from the International Lymphedema Framework (ILF); our goal is to host the first ILF conference in the Middle East in 2020.

[10] PERCEPTIONS OF LIVING WITH LYMPHOEDEMA IN SINGAPORE

Elizabeth Jiahui Chan[1]

[1] Kk Women's & Children's Hospital

Introduction: As breast cancer and gynaecological cancer survivorship improves and increases, a growing number of patients are left to overcome long term side effects such a secondary lymphoedema.

Aim of study: This qualitative study aims to explore and compare how women with breast cancer and gynaecological cancer cope with living with lymphoedema in Singapore.

Methods: After approval from the institutional ethics review board, twelve women who were clinically diagnosed with lymphoedema participated in two face-to-face interviews. A semi-structured interview was conducted to explore their perceptions of lymphoedema, their treatment experience and the challenges they faced. The interviews were audio-taped, transcribed and thematic analysis was done using the codes by three independent coders. Themes and codes were further validated by participants in a second interview.

Results: All participants felt resigned to living with chronic and irreversible lymphoedema. They struggled with finding suitable attire and footwear to hide their swollen limbs. Those with gynaecological cancer were particularly affected by the lack of suitable footwear and were more self conscious about their clothes. Compared to breast cancer patients, they were more likely to adhere to treatment in order to maintain mobility and independence. Those with breast cancer preferred preoperative education to be done.

Conclusion: Whilst the experience of living with lymphoedema in Singapore seemed similar to that reported in other countries, there seemed to be some differences between the perceptions of breast and gynaecological cancer patients.

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[11] RESULTS AND TOLERANCE OF COMPRESSION THERAPY IN A TROPICAL ENVIRONMENT

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[1] All India Institute of Medical Sciences ; Lymphatic Education and Research Network; Sanwari Bai Surgical Centre
[2] Society for Administration of Telemedicine and Healthcare Informatics; Sanwari Bai Surgical Centre

Objectives: Retrograde analysis of efficacy and tolerance for Compression therapy in a tropical setting.

Method: Retrospective analysis through an EMR of care outcomes using CDT as well as surgery for lymphoedema and ulcer patients in India.

Care protocol: Patients were first assessed for diagnosis and staging. All were counselled on the treatment plan with emphasis on need of continued home care. Photographs and Circumference measurements were taken for volume assessment. Ulcer assessment was separately done as required. All were given Long term Benzathine Penicillin unless allergic.

Compression therapy choices at initiation was Multi Layer Lymphoedema Bandaging (MLLB) and Intermittent Pneumatic Compression (IPC). Patients carried the same MLLB sets for maintenance at home after 4-7 days. Some could afford continuation of IPC at home. Garments were ordered once limb size was stable. Ulcer patients were not treated any differently except for dressing and avoidance of more expensive MLLB components till the ulcer healed.

Results: Out of 668 total patients, there was satisfactory long and medium term outcomes with 50% reduction in volume. There were 53 patients with ulcers. All except 3 ulcers healed completely within 2 to 6 weeks including 2 patients with an over 12 history. Ulcer improvement was concomitant with volume reduction.

Conclusion: Role of sweating as well as ulcers in a tropical environment is overrated and does not affect adherence to compression therapy.

[12] LYMPHOEDEMA AWARENESS IN INTERNATIONAL HEALTH AND DEVELOPMENT

Tamara Kosevic[1]

[1] Princess Grace Hospital

Introduction: In developing and third world countries, lymphoedema is rarely recognized, if at all, with an increase in demand for diagnosis and treatment as a secondary disease. Accordingly, consultants, GPs, health care professionals, and even patients and their families are seeking out treatment options through any available source. Already lacking in equipment and specialised staff who understand the management of lymphoedema, the health care services in developing countries are faced with the consequences of inappropriate treatment.

Description: Lymphoedema has attained the status of an important, and unique international health care problem and thereby provided for cooperation with relevant bodies, as well as successful pilot projects aimed at promoting awareness, establishing process guidelines, and delivering compression garments aid to countries where low family incomes is the norm.

Implications: Lymphoedema Awareness in International Health and Development (LAIHD) is a budding idea; the possible fruition of its ideals is an amazing story. Pioneering, reaching out and dealing with a lot of different challenges, LAIHD has applied interesting strategies to promote awareness through local health organizations, NGOs, and support groups. Its goal was focused on reaching groups of patients in need, especially those with low incomes or degraded in societies around the world.

Conclusion: LAIHD wants to continue to promote, support and spread recognition of the importance of lymphoedema awareness and its role as a unique area of expertise that is vital in maintaining and evolving better healthcare standards worldwide.

[13] THE DEVELOPMENT OF LYMPHOEDEMA NETWORK WALES

Melanie Thomas[1]

[1] Lymphoedema Network Wales; Cimla Health and Social Care Centre; Cimla

New developments / Trends in Lymphoedema

Aims: Lymphoedema Network Wales was developed in 2011, after receiving a £1 million recurring investment from Welsh Government to implement its Lymphoedema Strategy (2009). The Network consists of a National Clinical Lead post and three other national lymphoedema specialists who support the seven lymphoedema health board services in Wales. In total, over 71 lymphoedema posts cover a population of 3.2 million people.

Description: Within Wales, the focus of lymphoedema service delivery is on ‘prudent health care’, working with patients and only doing what is necessary to gain a good result.

Centring the service on evidence-based practice is vital to ensure possible patient outcomes. The network has grown considerably over the past six years and is recognised as a forward-thinking and proactive network. When the service commenced, it was assumed that the prevalence of lymphoedema would be 2 per 1000, giving an expectation of around 6,000 patients. Since 2011, the prevalence has grown considerably with now an estimated 5.49 per 1000 and approximately 18,000 patients.

Evaluation, indicating any patient involvement: Ensuring the capture of accurate performance data, all services provide monthly information to the LNW project manager. Key performance data show increasing referrals and caseloads, as well as changing complexities. The number of patients with complex conditions is increasing, whereas mild, moderate and at risk are slowly decreasing. This highlights the changing picture of the types of patients attending the lymphoedema services. As we have collected all different kinds of performance data over the last six years, we can conclusively show the changes in service demands. LNW is a forward-thinking establishment, and the benefits of data collection do support extra funding.

[14] THE DEMOGRAPHIC PROPERTIES OF THE PATIENTS REFERRING TO LYMPHEDEMA UNIT IN A UNIVERSITY HOSPITAL

Pinar Borman[1], Ayşegül Yaman[1], Merve Denizli[2]

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[2] University of Hacettepe, Faculty of Medicine, Department of Physical Medicine and Rehabilitation

Background/Aim: Lymphedema is a major healthcare problem in both developed and developing countries. It can be due-to-primary and secondary causes. The aim of this study was to evaluate the etiological frequency and characteristics of lymphedema patients who presented to lymphedema unit between November 2015–December 2017.

Methods: All patients referring to lymphedema unit were screened. The demographic and clinical characteristics were recorded.

Results: A total of 565 patients with lymphedema were presented to-our lymphedema unit during 2 years (mean age:54.12±11.75years). 10.5% patients had primary-and-89.5% had secondary lymphedema. 542 (95.9%) patients were female (mean-age:54.3±11.5 years) and 23 (4.1%) were male-(mean age:49.5±15.5 years). 33.5% of the patients were obese and 4.5% were morbid obese. Most of the patients with secondary lymphedema had upper-extremity-lymphedema due cancer-surgery(84.6%).The etiology-of-lower-limb lymphedema was also cancer in majority-of-patients(43%), followed by phlebolymphedema (30%) and lipedema (12%). The duration of lymphedema was more than six months in most-of-the patients (77.1%) and the stage of lymphedema was commonly spontaneous irreversible (63.1%). 44.6% of the patients did not receive any therapy for lymphedema.

Conclusion: A great amount of patients referring to our lymphedema unit had secondary upper extremity lymphedema due to breast cancer surgery. Most-of-the lower extremity lymphedema patients had endometrial-carcinoma surgery. The referring time to lymphedema unit was long and lymphedema stage was progressed at submission in majority of the patients. We suggest educational activities for awareness of lymphedema for both patients and health care providers, especially in cancer surgery wards in order to facilitate early reference to the lymphedema units.

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[15] LYMPHATIC ANOMALIES IN CARDIO-FACIO-CUTANEOUS SYNDROME (KRAS MUTATIONS): CASE REPORT OF THREE PAEDIATRIC CASES AND A REVIEW OF THE LITERATURE

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[2] .
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Cardio-Facio-Cutaneous Syndrome (CFCS) is a rare autosomal dominant genetic disorder and well known within different kind of medical disciplines. The germline gene mutations influence the RAS-Mitogen Activated Protein Kinase (MAPK) signalling pathway. Lymphatic anomalies and primary lymphedema (PLE) are rare and not well defined as possible CFCS characteristics. Lymphatic anomalies are chronic, progressive features which can consist of swelling, skin changes, infections or internal lymphatic disturbances with a final stage associated with significant morbidity and a reduced quality of life. To increase the level of awareness we report the lymphatic phenotype and genotype among three individual cases of children with CFCS and a review of the literature. This report provides an additional view on the incidence of lymphatic anomalies in the sexes. The children (1 boy and 2 girls) showed PLE of the lower limb, genital swelling, frequent systemic or visceral involvement and (sub)cutaneous symptoms. Infectious dermatological complications such as erysipelas and verrucae plantaris were frequently seen. The early recognition, treatment and long-lasting follow-up of lymphatic and cutaneous features in CFCS are important for the prevention of co-morbidity, long-term complications and surgical procedures of irreversible lymphedema changes.

Keywords: primary lymphedema, Cardio-Facio-Cutaneous Syndrome, KRAS mutation, lower limb, genitals, dermatology.

[16] AN EVALUATION OF A PAEDIATRIC LYMPHOEDEMA SERVICE -- A FAMILY CENTRED APPROACH

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Introduction: A new service for children with lymphoedema began in 2015. Previously children with lymphoedema in Wales did not have a clear pathway of care. Some were seen in adult services following receipt of special commissioning grants.

Aims: This qualitative study aimed to discover the perspectives of children, young people and their families on the new paediatric lymphoedema service.

Methods: Ethical approval was sought and granted to interview children and young people aged 7-25 years, and their parents. All those currently involved in the service were invited to take part. Those wishing to participate were invited by the research team to be interviewed at an agreed location. Ages of participants ranged from 7-22 years. Parents were present with those under 16 years. 2 parents were interviewed without their children as they were below age 7. Interviews were recorded and transcribed. Data was analysed using Braun & Clarke's (2006) Framework for thematic analysis.

Results: The areas reported on were Diagnosis; Treatment; Public awareness; Body image; Transition to adulthood; Local paediatric lymphoedema service; Meeting with others.

Conclusions: Prior to receiving a diagnosis a general lack of awareness among healthcare professionals about lymphoedema causes distress to parents. Parents and young people appreciate having local clinics for their children and young people to receive advice on their condition. Children and young people are determined to get on with their lives despite having to manage lymphoedema. Innovative ways were expressed to improve public awareness of lymphoedema.

[17] THE INCIDENCE AND DETECTION OF PLANTER OEDEMA

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Introduction: Near Infrared lymphofluoroscopy imaging can identify planter oedema. This finding is present in 50% of a previous cohort of lower limb lymphoedema patients who had NIRFLI. The use of tissue dielectric constant analysis (TDC) allows for the measurement of superficial tissue fluid. The combination of NIRFLI and TDC using LymphScanner, has allowed the assessment of planter oedema in a convenience sample of lower limbs.

Aim of Audit: To identify the incidence of planter oedema and ascertain if TDC is a suitable tool for identification.

Standards being Audited: No pre-existing data for planter oedema. A TDC ratio of 1.2 will be used.

Methods: An assessment tool was developed to capture the type of oedema, the perception of existence of planter oedema at assessment, foot temperature and TDC measurements in 3 places of the sole. The identification of planter oedema was accepted as a TDC value of above 47% or ratio volume of 1.2 to the contralateral limb if unilateral oedema. Where possible NIRFLI was used to conclude the presence of planter oedema. The cohort consist of a convenience sample of 20 oedema patients and 40 'normal' subjects who were attending for pedicle and not thought to have oedema. This is to identify if oedema exists due to other causes such as; heat, mobility, footwear or cyclical changes.

Results: The early results demonstrate that TDC is a useful tool to identify planter oedema and this is quantified through NIRFL.

Conclusion: Early identification of planter oedema and implementation of treatment could reduce the impact of mobility issues in this group. Planter oedema should be routinely assessed in all patients when using NIRFLI. This study is the precursor to treatment decisions which may include the use of orthotist shoe inserts for the prevention of or treatment of lymphoedema.

[18] LYMPHOEDEMA: USEFULNESS OF THE ECHO-COLOUR-DOPPLER DIAGNOSTICS

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Aims: The author confirms the usefulness of Echo-colour-doppler diagnostics, in patients affected with upper and lower limb lymphoedema.

Description of initiative: The diagnosis of lymphoedema is essentially clinical, that leads to the compilation of a specific clinical report, however, we must not ignore the usefulness of Echo-colour-Doppler diagnostics, non-invasive and repeatable diagnostic approach, using adequate high linear frequency probe, in lymphological field. The instrument available is provided with the "Siescape panoramic reconstruction" function, a system option allowing the acquisition of bi-dimensional ultrasound images with an extended visualisation field.

Outcome: Echo-Colour-Doppler diagnostics allows to reach differentiated diagnoses to determine the origin of the upper and lower limbs oedema (deep venous thrombosis, post-thrombotic syndrome, Backer cist with intermittent venous compression, etc.). It provides important indications on morphological characteristics-vascularisation of lympho-nodes, presence of vascularised neo-formations in oncological patients, subclavian-venous obstacle discharge after oncological surgery, etc.). Furthermore, it allows us to analyse the structural characteristics of oedematous tissue (thickness, echogenicity). It is also interesting to note how it is possible to observe an increase of the calibre-flow of the superficial and deep veins in the lymphoedematous limb, proof of the venous-lymphatic twinning useful in the case of lymphatic system insufficiency.

Evaluation: Echo-Colour-Doppler diagnostics provides important data which lead to an improvement in lymphoedema management, helping the lymphologist and physiotherapist in the choice of precise strategies and, therefore, the setting up of personalised therapeutic programmes, with subsequent therapeutic optimisation. It also useful for therapeutic monitoring to verify the validity of treatment effectuated and in follow-up.

[19] VERSATILITY OF INDOCYANINE GREEN FLUORESCENCE LYMPHOGRAPHY IN THE OUTPATIENT SETTING

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Introduction: Indocyanine green (ICG) fluorescence lymphography was initially introduced to assist lymphovenous anastomosis (LVA) surgery by mapping lymphatic vessels to determine connection sites. However, its application to the conservative outpatient setting has not yet been established. Macquarie University's ALERT program offers two clinics that use ICG lymphography for assessment and management of lymphoedema in the conservative and surgical setting.

Description: In the diagnostic clinic, the technique is used to assess a patient's lymphatic condition and identify drainage regions. After the initial scanning period of 5 to 10 minutes, manual lymphatic drainage (MLD) is performed by a certified lymphoedema therapist for 45 minutes. ICG imaging is video-recorded and still images are taken. The lymphatics are mapped onto the patient's skin with coloured markers. In the surgical assessment clinic, ICG lymphography is performed in the same fashion on patients considering surgical management options.

Outcomes: The initial scan can provide information about which lymphatic vessels are functional. The combination of ICG lymphography and MLD can provide additional information about what type of lymph structures carry ICG and to which regions. The resulting diagram and mapping photos are shared with the patient's local therapist to provide potentially useful information about how MLD can be personalised. ICG lymphography in the surgical assessment clinic can assist with pre-selection of patients eligible for LVA or lymph node transfer (LNT).

Evaluation: ICG lymphography can be beneficial for lymphoedema patients under both conservative and surgical management.

[20] VENOUS CONGESTION AND LYMPHOEDEMAENOUS CONGESTION AND LYMPHOEDEMA

Alex Munnoch[1]

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Lymphoedema usually occurs as a result of impaired lymphatic drainage. However, venous congestion can result in an overload of a functioning/struggling lymphatic system leading to peripheral oedema. The commonest reason for this is venous incompetence, resulting in varicose veins. Other causes include thrombosis, anatomical variation and external compression for which a variety of causes have been documented. Subsequent to lymph node dissection for cancer management, and associated radiotherapy, fibrosis and scarring can result in compression/occlusion of axillary and iliac veins. The surgical insult on the lymphatic system is often attributed as the cause for lymphoedema, forgetting the secondary effect on the veins and the principles of Starling’s law.

A Medline & Google Scholar search was undertaken using the key words “vein” and “lymphoedema”(both spellings) in association with “obstruction”, “compression” or “obstruction”. From this relevant articles in English were reviewed for aetiology and management.

Axillary vein scar release for lymphoedema was first described in the 1970’s, and remains a vital component of treatment in the modern era of lymph node transfer or fat grafting. Iliac vein stenting has been demonstrated to be effective in the management of May-Thurner syndrome and post-cancer lymphoedema. Other aetiologies may be managed with simple decompression.

This presentation will review the anatomy of the axillary and iliac veins, the described aetiologies, and the current therapeutic strategies.

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[21] VALUES AND LIMITS OF SURGERY IN PRIMARY AND SECONDARY LYMPHEDEMA

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Surgical treatment in Lymphedema is an approach proposed in synergy with the physical treatment that still requires further investigation regarding the actual indications. 95 patients with lymphedema were studied (23 males and 72 females, aged between 19 and 74 years, 31 primary and 64 secondary, 35 to lower limbs, 60 to upper limbs with average period between clinical onset of the disease and surgery for 3.8 years (0.3 to 11 years). The observation was performed on a minimum follow-up of 1 year from the intervention.

The observed results suggest that the indications for intervention must be further investigated in order to avoid (taking into account same technique, operator and clinical status) the high incidence of non-success compared to the persistent clinical improvement (though maintained also with the continuation of the physical treatment and of the permanent elastic garment); the observation is in line with what is recommended by the ISL Consensus Document and other guidelines and partly justifies the decision of some states not to recognize the surgical treatment itself as effective.

	Derivative Microsurgery	Reconstructive Microsurgery	Limph node transplantation	Supermicro-surgery	Liposuction
Primary OK		2		3	1
Primary indifferent	2	8	1	7	1
Primary KO		3	1	2	1
Secondary OK		8	1	11	5
Secondary indifferent	1	6	1	10	1
Secondary KO	1	7	1	10	1
OK: persistent volume and consistency reduction - limphangitis regression Indifferent No changes in volume and consistency or incidence of lymphangitis KO Increase in volume and / or consistency - lymphangitic complications					

[22] THE IMPACT OF LYMPHATIC VENOUS ANASTOMOSIS (LVA) SURGERY AT THE WELSH NATIONAL CENTRE

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[4] *Lymphoedema Network Wales ; Cimla Health and Social Care Centre ; Cimla*
[5] *Morriston Hospital*

Introduction/Background: In 2011, £1m was awarded to the lymphoedema network in Wales to establish a national lymphoedema strategy. The aim was to standardise the discrepancy in diagnosis and treatment of lymphoedema in Wales. In 2015, Lymphatic Venous Anastomosis (LVA) surgery implementation was granted, one of two centres providing this surgery in the NHS.

Methods: Surgical outcomes were reviewed with specific focus on patient concerns. Patients were reviewed at set intervals post-surgery. Objective and subjective physical measures were utilised i.e. episodes of cellulitis, time out of garment, volume reduction and visual analogue scores for pain and heaviness. Psychological outcomes were assessed by health status measures (EQ-5D-5L) and distress scales.

Results: 71 patients underwent LVA surgery between September 2015-2017. The mean age was 54 with a female preponderance. The total episodes of cellulitis recorded was 275 with 23 admissions prior to LVA. This fell to 8 episodes with a single admission. 15 patients ceased garment wear, 18 patients reduced use by 50% and 12 patients by 25%. 15 Patients were discharged from the service. The visual analogue score showed a significant difference in both pain and heaviness post-surgery associated with a downward trend of both circumference and parameter readings. Patients' perspective on body image, sexuality and anxiety showed a positive response.

Conclusion: LVA is single cog in lymphoedema management which is not appropriate for all. It has shown promising outcomes thus far in Wales, meeting patient expectations and improving quality of life.

[23] ICF CORE SETS FOR LYMPHEDEMA IN DAILY PRACTICE: A CASE REPORT

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[1] *Centre for Physical Therapy 't Gilde*

Introduction: For understanding the challenges of patients with lymphedema it is important to describe functioning and to measure the effectiveness of treatment in changing functioning. The International Classification of Functioning, Disability and Health (ICF) offers an international framework to classify functioning of persons in their personal environment. ICF Core Sets are lists of selected ICF categories concerning those important aspects of functioning that are most likely to be affected by a specific health problem or disease. These Core Sets make it easier and faster to describe and communicate the patient's problems and to define treatment goals.

Description: In this presentation a new way of reporting the functional status of the lymphedema patient will be shown. ICF Core Sets can be a guideline in the clinical reasoning to come to treatment goals and monitor the treatment process. A case report of a patient with lymphedema after cellulitis will be presented to demonstrate the use of the ICF Core Sets in daily practice. By means of an electronic tool (e-tool), standardized data of the patients' functioning and environmental factors can be systematically collected and token in at one glance.

Implication: The use of the core set in this patient shows that this could be a useful tool to quickly get an impression of the status of a patient using a patient centred approach.

Conclusion: Existing electronic patient files should be remodeled including the ICF Core Sets for lymphedema.

Key words: ICF, Functioning, Patient Centred Approach

[24] EATING TO STARVE LYMPHEDEMA

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[1] *Lymph Notes*

Eat to starve lymphedema by choosing ’fighting foods’ instead of foods that contribute to disease progression, infection risk, and related conditions. We reviewed the research literature using a systems thinking approach to identify physiological linkages between food choices and factors influencing lymphedema symptoms and progression, medical conditions contributing to lymphedema, or lymph volume.

Learn five ways that nutritional factors increase lymph volumes and impair lymph drainage and which foods to eat or avoid to support healthy lymphatic system function. Therapists and other health care providers will learn how they can help their patients learn to eat more wisely.

We see nutrition as an essential part of lymphedema and lipedema treatment with the same importance as the traditional pillars of Complex Decongestive Therapy (CDT): skin care, compression, lymphatic drainage, and exercise. Nutrition alone is not adequate treatment, but many people will gain little benefit from CDT without changing their eating pattern.

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[25] CHOICE OF LYMPHATIC MICROSURGERY PROCEDURE GUIDED BY PATHOLOGICAL TRANSPORT INDEX ON LYMPHOSCINTIGRAPHY

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Objective: Microsurgery is firmly established as an effective long-term treatment for peripheral lymphedema but we need to clarify which type of microsurgery is the most appropriate for which patient. The authors examined 248 patients by lymphoscintigraphy in order to develop a surgical treatment algorithm based on grade of lymphatic impairment.

Method and Materials: Patients with lymphedema (48 unilateral arm, 86 unilateral leg, 114 bilateral leg) underwent segmental lymphoscintigraphy. The transport index (TI) was calculated to categorize the flow of the superficial and deep vessels as normal (<10) or pathological (≥10). Patients with normal scans were excluded from the study. These scores were tested with a 3-way ANOVA to examine the relationship between affected limb, deep or superficial pathways, and primary or secondary lymphedema. The relationship between clinical presentation and TI was also investigated.

Results: In general, across primary and secondary lymphedema, the deep lymphatic pathways were more adversely affected with worse TI for the lower limbs and the superficial pathways for arm lymphedema. Patients with unilateral clinical presentation can have bilateral TI abnormalities. The vast majority of patients (88-98%) had either the deep vessels alone or both the superficial and deep vessels with pathological TI.

Conclusions: Given that most patients have a patholgical TI for the deep lymphatic vessels, a surgical approach that anastomoses only the superficial vessels is unlikely to be effective. The authors propose a new treatment algorithm for lymphatic microsurgery based on the pattern of pathological lymphoscintigraphy TI.

[26] LYMPHATIC VESSEL SPARING LIPOSUCTION FOR ADVANCED STAGES OF PERIPHERAL LYMPHEDEMA

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Background: Peripheral lymphedema remains poorly recognized and chronic lymphedema is associated with fibrotic tissue changes and adipose formation that is irreversible when untreated. Lymphatic Microsurgery provides a functional repair to overcome obstacles in lymphatic flow by helping to resolve the lymphstasis that contributes markedly to swelling. Notwithstanding the success of the microsurgery, there often remains significant adipose tissue in the affected limb in advanced lymphedema, giving rise to residual lymphstasis and increased risk of infection. The author discusses a Fibro-Lipo-Lymph-Aspiration technique to improve this chronic swelling, using a Lymph Vessel Sparing Procedure (FLLA-LVSP).

Methods: In cases of advanced lymphedema, multiple lymphatics are anastomosed with telescopic technique to tributary vein, for example, the axillary vein or saphenous vein, depending on the affected limb. In a subsequent surgery, we use the FLLA-LVSP where microlymphography highlights the lymphatic pathways and the excess adipose tissue is carefully aspirated

Results: For 350 advanced cases involving the upper limb, there was an average pre-surgery excess volume of 22.36%, which reduced to 2.74% after the FLLA-LVSP (Z-score=-6.73, $p<0.001$). Similarly, for the lower limb, there was an average pre-surgery excess limb volume of 23.24% and a reduction to 2.84% post-operatively (Z-score=-3.42, $p<0.01$).

Conclusion: MLVA techniques when performed at a single-site produce excellent outcomes, giving the possibility of complete restoration of lymphatic flow in the early stages of when tissue changes are minimal. In cases of advanced lymphedema, FLLA-LVSP is efficient with immediate cosmetic results. More importantly, removal of excess tissue is completed without further damage to lymphatic vessels.

[27] IMAGING OF LYMPHATIC AND INTERSTITIAL SPACE IN LYMPHEDEMA- NECESSITY TO USE COMBINED METHODS

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Since the early 50-ties of the twentieth century only few specific clinical methods of imaging of limb lymphatics are being used in human clinic. Each of the applied modalities provides different images due to different physical chemistry and distribution of tracer, methods used for its detection in tissues, their sensitivity and specificity and clinical type of lymph vessel pathology.

Aim: The advantages and disadvantages of the most commonly used three methods of imaging: the iodinated oil X-ray, isotopic and NIRF ICG lympangiographies are presented.

Methods: The study was based on a retrospective and recent collections of lymphangiograms from large cohorts of patients (over 1000) Imaging of lymph nodes has not been included as it is requiring different interpretation compared with vessels.

Results: Lipiodol X-ray lymphography depicted the entire lymphatic vasculature including 100 micron lymphatics. Lymphoscintigraphy showed main trunks and collateral lymphatics. NIRF ICG lymphography enabled observation of lymph flow and edema fluid movement during compression.

Conclusions: Composite evaluation of X-ray, isotopic and fluorescent lymphographic images or as it is noe practiced the isotope and NIRF ICG lymphographies provide most clinically important information. Special attention was directed at methods enabling early diagnosis of imminent lymphedema especially in cases with cancer therapy-related lymphedema. Groups of typical images obtained with the three methods are presented.

[28] NEAR INFRARED LYMPHOFLUOROSCOPY IMAGING (NIRLFI) ; OUTCOMES AND DRAINAGE PATHWAYS FROM OUR FIRST 60 UK PATIENTS

Jane Wigg[1]

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Introduction: Near Infrared Fluoroscopy Lymphatic Imaging (NIRFLI) is used to identify lymphatic failure, assist diagnosis and optimalise manual lymphatic drainage (MLD). This technique is used to identify lymphatic drainage pathways assisting with MLD and self-care.

Presentation: Following the NIRFLI of 60 patients, audit has taken place to assess the direction of lymphatic pathways. Within MLD, patients are drained on anatomical pathways gained previously from lymphoscintigraphy or autopsy that are considered as working. This audit presents the results of real-time imaging pathways.

Outcomes: Following NIRFLI, drainage routes are monitored. Outcomes are recorded on database, video, and photography. Consent is gained from all patients. Pathways are drawn on the patients for reference and used for treatment or lymphatic drainage. Data analysis provides evidence of 50% upper limb patients have pitting, 18% drain to the clavicle and 77% drain to the ipsilateral axilla. Lower limb oedema have 40% planter oedema and 70% drain to the ipsilateral inguinal and 43% to the genitalia either causing oedema or as dermal rerouting.

Clinical implications: Knowledge of the frequency of pathways allows for the process of MLD to be designed to provide the most efficient treatment session and improves cost effectiveness. In addition the early identification allows for early surgical intervention (Vandermeeren et al 2017). It should be remembered that presently numbers are low so percentages should be used with caution.

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[29] EARLY DETECTION OF SECONDARY LYMPHEDEMAAFTER CANCER TREATMENTS

Jean-Paul Belgrado[1], Liesbeth Vandermeeren[2], Sophie Vankerckhove[2], Jean-Baptise Valsamis[3], Birgit Carly[4], Dina Hertens[5], Barbara Beier[5], Soumia Etbaz[6], Fabienne Liebens[5]

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Introduction: All patients undergoing an axillary dissection, are at risk to develop a secondary lymphedema. Currently, lymphedema is diagnosed after its clinical onset.

Sensitive detecting tools are needed to identify accurately pre-clinical signs of secondary lymphedema. Near infrared fluorescence lymphatic imaging (NIRFLI) could be the answer to this need. NIRFLI exams on lymphedematous compared to healthy subjects highlight that the superficial lymphatic architecture shows typical abnormalities.

This study aims to confirm the possibility to detect secondary lymphedema at a subclinical stage.

Method: Breast cancer patients are recruited before surgery. They undergo a high accurate volumetry of both upper limbs and NIRFLI of the limb of the operated side, before surgery and then, 10 days, 3 months, 6 months, 1 year and 2 years after surgery. The evolution of volumetry and lymphatic architecture are stated and compared along the time.

Results: On 71 consecutive patients, 7 present changes in NIRFLI and developed lymphedema afterwards. 3 presents only minor changes in NIRFLI and up until now has not developed lymphedema. The 61 other patients have no change in NIRFLI and no lymphedema.

Conclusion: Primary results indicate that NIRFLI seems to be a promising sensitive tool to detect the imminent risk of development of secondary lymphedema. Continuous follow-up and an increased number of patients would strengthen these results.

[30] AXILLARY WEB SYNDROME, BREAST PAIN, SWELLING AND SEROMA APPEARING SEVEN MONTHS POST LUMPECTMY AND RADIATION

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Research Objective: To describe signs, symptoms and lymphatic physical therapy intervention for a unique case, with Axillary Web Syndrome (AWS), breast swelling, pain and seroma after breast-cancer treatments. Studies of AWS and seroma are rare and lack guidelines for physical therapy (PT).

Design: A case study.

Setting: Private Lymphedema PT clinic.

Participant: A 65-year-old female underwent intraoperative radiation therapy and whole breast radiation, after left breast lumpectomy for invasive ductal carcinoma. Seven months later symptoms developed and, during treatment, AWS and breast seroma were identified by a physical therapist certified in lymphedema treatment.

Intervention: Treatment goals were to reduce breast swelling, pain, and improve shoulder movement. Intervention included manual lymph drainage, left upper limb stretching, self-lymphatic drainage and stretching exercise instruction. A compression bra was ordered; daily activities and an exercise program were encouraged.

Main Outcome Measures: Shoulder range of movement, arm and breast pain, breast swelling, arm volume.

Results: Continuous improvement in shoulder pain with movement, reduced breast swelling and pain.

Conclusions: As evidence for treatment guidelines post breast cancer treatments are lacking, follow-up and alertness to change in the patient's condition are recommended. Treatment is chosen according to signs and symptoms. Realistic expectations may reduce patients' frustration and improve coping strategy and compliance with self-treatment. Future clinical studies to support these conclusions are required.

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[31] FEASIBILITY OF CONDUCTING RCT OF EFFECTIVENESS OF TREATMENT FOR WOMEN PRESENTING WITH EARLY UNTREATED BREAST CANCER-RELATED ARM LYMPHOEDEMA

Eunice Jeffs[1], Cath Taylor[2], Emma Ream[2], Arnie Purushotham[3], Debra Bick[3]

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[3] *King's College London*

Introduction: Two-phase decongestive lymphoedema treatment (DLT) is recommended practice worldwide, however, no RCTs of effectiveness have targeted women with untreated early breast cancer-related arm lymphoedema (BCRL).

Aim: To assess feasibility of conducting a definitive RCT of DLT for women presenting with untreated BCRL <12 months duration.

Method: Women were recruited from two UK lymphoedema services. Clinical data, including symptom severity and treatment offered, were collected at baseline, one and three months later. Data on women's perspectives collected through history-taking and questionnaires. Semi-structured interviews were conducted with six recruited women and six lymphoedema practitioners.

Data analysis: descriptive statistics, Framework Analysis. Ethics approval granted.

Results: Forty-five women were recruited from prospective screening of 121 referrals to two lymphoedema services (19% had early untreated BCRL, with 4% recruited) and 404 casenote reviews of women receiving BCRL treatment. Retention and data completeness were high.

'Usual' lymphoedema care comprised hosiery, exercise and arm care advice; common variations included self-massage, kinesio-taping.

Women were keen to try anything to reduce symptoms, but considered intermittent pneumatic compression therapy with flat-knit hosiery a more acceptable intervention than multi-layer bandaging. Practitioners raised as an issue capacity to provide DLT in a future RCT; in principle they supported early DLT, but considered self-management adequate to treat mild-moderate symptoms. Priority outcomes proposed for a future RCT included: limb volume, arm function, quality of life.

Conclusion: Participants supported the need for a future RCT. If a definitive RCT is to be undertaken, sufficient resources are needed to cover intervention treatments and multi-centre recruitment.

[32] EVALUATION OF THE RELIABILITY OF FOUR MEASURING METHODS OF HAND'S PERIMETER AND VOLUME : BUOYANCY FORCES VALGRADO SYSTEM, CIRCUMFERENCE MEASUREMENT, FIGURE-OF-EIGHT METHOD AND MANU3METRIX SCANNER

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Introduction: Precise measuring of the hand is complex because of its geometry.

Aim of the study: Verify the reliability and the accuracy of four existing devices to measure perimeters and volume of the hand:
Manu3 Scanner - BFValGrado - circumference measurement- Figure-of-Eight.

Method: The study was approved by the local ethical committee of the academic hospital, CHU St-Pierre.
Both upper limbs of two groups of voluntary women, 21 healthy and 21 women with secondary BCRL were measured with all methods. The results of these groups were compared to the measurings of a manikin arm.
Each measuring was performed twice by each of two independent examiners. Consumed time for each measurement was recorded. We are still enlarging the sample of volunteers.

Preliminary Results: Correlation was significant between:
Manu3-volumetry (r=0,796), Manu3-Figure of 8 (r=0,817), Manu3-perimeter (r=0,873), Figure of 8-volumetry (r=0,993).
BFValGrado was the fastest and accuratest method (2'17 +/- 0,46).
The intra- and inter-rater reliability for each method was statistically significant.

Discussion: Each technique has its own strength and weakness. It will be detailed during presentation.

Conclusion: BFValGrado is the most accurate for volume measurement and small volume variation.
Circumference measuring is specific for arm's geometry, manufacture the contention and follow up of the edema's reduction in specific areas.
Manu3 offers later data-analysis, volume and perimetric measurements.
Figure-of-Eight is valuable for relative volumetry measurements (r=0,993), except fingers.

[33] WHAT DO WOMEN WANT AND PRACTITIONERS EXPECT FROM LYMPHOEDEMA TREATMENT? VIEWS OF LYMPHOEDEMA PRACTITIONERS AND WOMEN WITH BREAST CANCER-RELATED ARM LYMPHOEDEMA

Eunice Jeffs[1], Cath Taylor[2], Emma Ream[2], Arnie Purushotham[3], Debra Bick[3]

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Introduction: Little is known about what women and practitioners expect from treatment of breast cancer-related lymphoedema (BCRL) or women's perceptions of treatment outcomes.

Aim: Explore women's and practitioner's hopes, expectations and experiences of UK BCRL treatment and perceptions of treatment outcomes.

Method: Mixed methods design:

- Study 1: five focus groups; two with women receiving BCRL treatment and three with lymphoedema practitioners. Thirteen women and 13 practitioners participated.
- Study 2: An observational study of UK BCRL treatment; 39 women completed free text questions (three months apart) to identify personal treatment goals, satisfaction with treatment, perceptions of treatment outcomes. Six respondents and six lymphoedema practitioners were also interviewed.
- Data analysed using Framework Analysis.
- Ethics approval granted.

Results: Women's treatment goals were to reduce and control swelling; undertake desired activities; avoid injury/ cellulitis. Some were unsure what treatment could achieve. Practitioners focused on achieving independent patient self-management, but did not consider full decongestion of swelling (latency) could be achieved; phase I decongestive lymphoedema treatment was reserved for women with severe symptoms.

Participants reported some benefit/reduction with self-care/hosiery, but experienced difficulties obtaining correct hosiery via community prescribers. Most women were satisfied with treatment outcomes, despite challenges accessing follow-up appointments and treatment burden associated with hosiery.

Conclusion: Women's goals are multi-faceted. Many learn to live with lymphoedema but want to be oedema-free. Practitioners lacked clarity about treatment outcomes, making it difficult to offer clear guidance to women.

Acceptability of hosiery, and access to long-term hosiery provision are needed to maximise treatment adherence and minimise cost.

[34]TOWARDSLYMPHOEDEMASELF-MANAGEMENT: A QUALITATIVE SYSTEMATIC LITERATURE REVIEW

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Aim: This study aims to describe the transition people with lymphoedema go through as they become more confident and competent in self-managing their condition.

Methods: A systematic literature review process was undertaken. Electronic databases Pubmed, Cochranelibrary, CINAHL, Embase and MEDLINE were searched for qualitative studies published in the last ten years. 875 articles were retrieved and screened following the PRISMA protocol. 30 articles met eligibility criteria: conduct in-depth qualitative research methods and provide comprehensive descriptions of the self-management experience of their participants with lymphoedema. These articles were thematically synthesised and coded in Nvivo, by following three phases of theme generation.

Outcome: The data analysis demonstrated that people with lymphoedema experience multidimensional stages in achieving various levels of expertise, motivation and habits for self-management. Themes expressing those stages emerged within categories including: competence, autonomy, routine, identity, acceptance and support. Behavioural change theories, that are identified to correspond with this transition, are discussed to further describe these stages.

Evaluation of impact: Self-management is an important component of successful lymphoedema care. This study provides insightful information about how people develop necessary skills and integrate self-management into their life, as well as the barriers they face. This understanding is crucial to design services and products that support those at the beginning of this transitional period, and to help them become competent and confident enough to manage their condition.

This study is part of wider doctoral research, aiming to co-design self-management support systems to facilitate the transition towards successful management of lymphoedema.

[35] REDUCING COMPRESSION GARMENT WASTE, HARM AND VARIATION IN LYMPHOEDEMA SERVICES IN WALES

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Aims: Lymphoedema is a chronic swelling affecting over 18,000 people in Wales. Compression garments are the mainstay of treatment. Lymphoedema Network Wales investigated whether the development of an All Wales Compression Garment Contract and a National Formulary for Wales would ensure that the garments procured or dispensed are the right products for the best outcome and at the right price.

Description: All the services in Wales used different manufacturers at very different prices. This lack of standardisation caused significant disparity in financial and patient outcomes. Many garments supplied were not always suitable for patients and resulted in poor compliance. Garments dispensed by pharmacies were frequently wrong and in general HCP's lacked knowledge of the different styles, sizes, colour and fabrics available. Specialists admitted feeling overwhelmed and were unaware of the cost of garments. A National Contract/ Formulary was recommended with the initiation of a contract specification and meetings with all manufacturers. Bench-top and Surgical Material Testing Laboratory evaluation occurred ensuring garments were providing the best outcome.

Evaluation: All garments were tested before being analysed for the price. Surprisingly, 29% of all garments tested failed in not having exerted the pressures required. This resulted in garments only passing testing being placed on the contract. This process ensured the best garments were bought at the best price and providing the correct pressures. The financial benefits of the contract have saved £135,000 per annum. A National Compression Garment Formulary consisting of over 120 pages is now available with indications for all different types of compression and is often described as the easiest guide to compression.

[36] THE PREVALENCE, INCIDENCE AND QUALITY OF LIFE IMPACT OF LYMPHOEDEMA AFTER TREATMENT FOR VULVAR OR VAGINAL CANCER

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Introduction: Incidence of lymphedema appears to be higher in women with vulvar/vaginal cancer compared with other forms of gynaecological cancer. The objective of this work was to determine the point prevalence and incidence of lymphedema in women with vulvar/vaginal cancer and to describe symptom burden and quality of life (QOL).

Methods: Prospective longitudinal cohort study (2 years) conducted in Brisbane, Australia, including adult women with newly diagnosed vulvar/vaginal cancer. The primary outcome was self-reported swelling of the legs, vulvar, or pelvis/abdomen, or a clinical diagnosis of lymphoedema. Severity of associated symptoms and QOL (Functional Assessment of Cancer Therapy-General) were also reported.

Results: All participants (n=20 vulvar, n=2 vaginal; mean(SD) age: 57(12) years) received surgery, and 8 (36%) also received adjuvant therapy. By 24-months post-diagnosis, only 2 (9%) women had no evidence of lymphoedema; all others either self-reported swelling (n=10, 45%), had a clinical diagnosis (n=1, 5%), or both (n=9, 41%). ≥3 symptoms of moderate or greater intensity were reported by 7 (44%) women at 2-years. The presence of lower limb symptoms (including mild intensity) was associated with reduced QOL (any symptom: QOL estimate=-13.29; 95% CI=-19.30, -7.27; p<0.001).

Conclusion: The majority of women receiving treatment for vulvar/vaginal cancer experience lymphoedema. Symptoms of swelling are associated with lower QOL. Monitoring of swelling via patient self-report may identify women at risk of low QOL outcomes.

[37] DISTRESS AND SELF COMPASSION AMONG WOMEN WITH CANCER-RELATED LYMPHOEDEMA IN AUSTRALIA

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Lymphoedema is a prevalent sequela of cancer treatment, is incurable, and leads to concerning levels of psychological morbidity. Low levels of self-compassion are evident in the breast cancer-related lymphoedema population. Self-compassion is the ability to accept oneself, or show self-directed empathy, when experiencing psychological difficulties. Previous work has shown that a focused writing intervention within this population improves self-compassion and decreased body image disturbance.

The present study aims to evaluate whether a self-compassion focused writing intervention ("My Changed Body", Sherman et al 2013) involving acceptance of bodily changes following treatment for cancer can decrease levels of distress among women with all cancer related lymphoedema.

This RCT will aim to include 150 female participants that have cancer-related secondary lymphoedema about which they have some concern and associated negative affect.

Ethics approval SBHREC 7638 2/6/2017.

Participants to date have been randomised into two groups. The control group has received 'usual care', a lymphoedema-specific educational, information-only condition. The intervention group has been asked to perform a writing exercise designed to enhance self-compassion. Both groups have completed questionnaires that assessed positive and negative affect, self-compassion, psychological distress, body image disturbance, body appreciation, and sexual functioning. These measures were repeated at 1-week, 3-month & 6-months post-randomisation.

To date 101 participants are included; 54 in the intervention group and 47 randomised controls. Baseline data collection will be finalised on the 1st of March 2018.

The final baseline results and the available follow up data will be collated and presented at the ILF conference in Rotterdam.

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[38] THE INCIDENCE AND EFFECTS OF LOWER LIMB LYMPHEDEMA IN WOMEN TREATED FOR GYNAECOLOGICAL CANCER IN SOUTH AFRICA

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Introduction: Cervical cancer is the most common of all the gynaecological cancers and responsible for nearly 30% of cancer in Black South African women.[1] Despite this high incidence, lymphedema is an under researched cancer related problem in Africa [2].

Aims: To describe the lymphedema related symptoms and the incidence and stages of lower limb lymphedema among women treated with radiotherapy for gynaecological cancer.

Methods: A quantitative survey and calculated sample size (n=155) was used. Convenience sampling selected the sample. The GCLQ (short form) served as data collection instrument and 10cm interval circumferential girth measurements were taken. The data were analysed using descriptive statistics.

Results: The majority of the women (60%; n=93) were between the ages 40 and 60 and had cervical cancer. More than 40% (41.3%; n=64) had limited movement of the hip, 47.7% (n=74) had aching legs; 35.5% (n=55) reported swelling; 29.7% (n=46) had lymphedema, primarily Stage I. There was statistical significance association between brachytherapy and lymphedema (p=0.030) and the type of gynaecological cancer and lymphedema (X^2 (2) = 8.2084, p= 0.017). Having lymphedema resulted primarily in lifestyle changes, sadness, irritability and loss of sexual desire.

Conclusion: Approximately 1 in 3 women developed lymphedema after receiving radiotherapy for gynaecological cancer. Unfortunately the lymphedema was not managed and resulted in irritability and sadness.

1. NATIONAL INSTITUTE FOR OCCUPATIONAL HEALTH. 2014. Cancer in South Africa 2013 Full Report. Available: http://www.nioh.ac.za/?page=cancer_statistics&id=163 [Accessed 20th December 2017].

2. MAREE JE, HERBERT V, HUISKAMP A. 2017. Cancer Nursing Research Output in Africa 2005 to 2014: An Integrative Review. Cancer Nursing, 40(1):E36-44.

[39] EFFECT OF NORDIC WALKING ON THE UPPER LIMB VOLUME IN NORMAL AND BCRL WOMEN

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Introduction: The effect of physical activity on the increase or decrease of upper limb lymphedema is still discussed.

Aim of the study: Verifying whether the volume of the upper limbs is modified after Nordic walking versus normal walking versus Nordic walking associated with a multi-component bandage.

Method: The study was approved by the local ethical committee and registered in the EudraCT.

Two groups of voluntary women, one composed by healthy women, the other one by women suffering of a secondary lymphedema, undertake, with one week apart, and on a random basis, three different walking sessions on a same walking path of 13km.

The volume of both upper limbs are measured, by segments, thanks to the BFValGrado method, a fast, sensitive and accurate system based on Archimedes principle, as well as by perometry. The limbs are measured before and at the end of each walking session.

Results: Preliminary results based on seven voluntary BCRL patients and seven healthy volunteers show a significant increase of both upper limbs in the BCRL group.

In the BCRL group the limbs did not increase after Nordic walking.

When patients walked with sticks and a multi component bandage, the oedematous limb decreased.

Conclusion: Nordic walking does not increase the volume of the lymphedematous arm in BCRL patients. The addition of a multi-component bandage reduces significantly the volume of the limb after a standardized 13km walk. The study is still in progress.

[40] MICROSURGICAL PROCEDURES FOR UNRESPONSIVE GROIN LYMPHOCELE ASSOCIATED TO LEG LYMPHEDEMA

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Introduction: Lymphoceles may often complicate groin lymph node dissection related to cancer treatment. Conservative treatment is the first choice but not always successful. Different surgical methods have been used to treat lymphoceles, but they mainly consist in closing afferent lymphatics often causing the worsening of peripheral lymph stasis and related limb lymphedema.

Aims of the study: We assessed the efficacy of a diagnostic and therapeutic protocol to manage inguinal lymphoceles consisting of lymphoscintigraphy (LS) and microsurgical procedures.

Methods: 24 groin lymphoceles (10 associated with leg lymphedema) were studied by LS preoperatively and treated by complete excision of lymphocele and microsurgical lymphatic-venous anastomoses between afferent lymphatics and a collateral branch of great saphenous vein. Lower limb lymphatics were identified intraoperatively using Patent Blue dye injection.

Results: 14 patients without lymphedema had complete healing of lymphocele and no appearance of lower limb postoperative lymphedema. The other 10 patients with associated secondary lymphedema had complete disappearance of lymphocele and a remarkable reduction of leg volume. 5 of them completely recovered without the need of any compression garment, after the first year postoperatively.

Conclusions: Inguinal lymphocele nonresponsive to conservative treatment can advantageously be studied by LS and successfully treated by microsurgical reconstructive procedures.

[41] SUPER-MICROSURGICAL LYMPHATICOVENOUS ANASTOMOSIS (LVA) FOR GLUTEAL LYMPHEDEMA SECONDARY TO HIP REPLACEMENT

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Lymphedema of the gluteal region is an uncommon condition and may arise after orthopedic and cosmetic surgery. It causes functional problems and is difficult to treat conservatively due to the anatomical characteristics of the affected region. Surgical treatment is required for lymphedema refractory to conservative treatments. We report the first case of gluteal lymphedema successfully treated with super-microsurgical lymphaticovenous anastomosis (LVA).

A 65-year-old woman presented with lymphedema of the right gluteal region after total hip replacement. She suffered from pronounced swelling, sensation of tension when wearing clothes; sitting was uncomfortable. Conservative treatment performed for several months was not effective. Lymphscintigraphy showed dermal backflow at the level of the right gluteal region. Indocyanine Green was used for pre-operative vessel marking. LVAs were performed at two sites: the gluteal region and the level of the greater trochanter. The patency of the anastomoses was confirmed intra-operatively by use of near-infrared technique. The swelling at the right hip region decreased and the sensation of tension disappeared postoperatively. The patient was able to wear normal clohthes again and to sit without discomfort. Eight months post-operative, the patient had no distress and was satisfied with the result of normal hip size.

Although LVA is an established treatment option for lymphedema, its efficacy in the treatment of gluteal lymphedema should be replicated by others. Thanks to its minimal invasive nature, LVA is particularly indicated for lymphedema at 'unusual' regions that is difficult to treat conservatively because of its anatomy.

[42] LYMPHEDEMA OF LOWER LIMBS CAN BE SUCCESSFULLY CONTROLLED BY IMPLANTED SILICONE BYPASS TUBINGS

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Objectives: We propose to drain edema fluid accumulations by creating artificial pathways to non-obstructed regions by implantation of "silicone lymphatics".

Aim: To present the 3 to over 7 years follow up results of therapy of lymphedema by subcutaneous implantation of silicone tubings in lower and upper limbs.

Methods: In a group of 150 patients with obstructive limb lymphedema after pelvic or axillary lymphadenectomy and irradiation because of uterine or breast cancer, following unsuccessful conservative therapy, "silicone lymphatics" were implanted subcutaneously.

Results: There was: a) immediate decrease of limb circumference and volume within days after implantation and stabilization of size for years, b) decrease of tissue stiffness enabling easy limb movements, c) maintenance of patency of tubings bypassing the lymph flow obstruction site, d) edema fluid flow into tubings upon external massage and its movement to tissues where it could be absorbed, e) lack of reaction to foreign body and control of inflammation using low doses of penicillin.

Conclusions: Simplicity of surgical procedure, fast decrease of limb edema and lack of tissue reaction to implant make the method worth applying in advanced stages of lymphedema in cohorts of patients in every surgical ward.

[43] RANDOMIZED STUDY TO COMPARE EFFICACY OF SHORT STRETCH BANDAGE SYSTEMS FROM KOB WITH LOCALLY USED COTTON CREPE BANDAGES IN THE TREATMENT OF LOWER LIMB LYMPHOEDEMA

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Aims and Objectives: Primary Objectives: To assess and compare the effectiveness of the KOB short stretch bandage (530) with multilayer local cotton crepe compression bandage system in the treatment of lower limb lymphoedema.
Secondary Objectives: To assess and compare the following parameters between the two arms of the study: Decrease in Swelling, Pain during walking, Quality of life, Handling of bandage, Ease of use.

Patients and Methods: Patients affectd by leg lymphedema were randomly assigned to receive short stretch bandage (treament group) or a local cotton crepe compression (control group).
Inclusion criteria: Male/Female patients of age 18 and above suffering from lower limb, secondary lymphoedema were included.
Exclusion criteria: Patients suffering from arterial disease or undergoing additional therapy /treatment.
Intervention or therapy arms: Patients in the therapy arm were treated with a bandage system comprising of stockinette + cotton role + KOB short stretch bandage.
Control arm: Patients in the control arm were treated with cotton role and stockinette along with local cotton/crepe bandages.
Bandage application was done by trained staff. They ensured through a Picopress® that a 40 mm Hg sub bandage pressure was obtained. Patients were called for revaluation of sub-bandage pressure signs of slippage with retying as required. Girth charting was done at different levels of the limb in cm. These were repeated with every bandage which was every week till the end of the first month. At the end of the month, patients were provided with short stretch bandages which were washable and could be reused. Further monitoring continued for another three months.
Ethics Committee: Cleared from the AIIMS ethics committee.

Results: 12 of 72 patients found suitable after preliminary evaluation, did not consent. The balance 60 patients, randomized to 30 for each group consisted of 33 males and 27 females. Ages ranged between 18 to 60 years. Most had associated symptoms in the form of fever, inflammation, swelling, ulceration and pain in the legs. Duration of symptoms was minimum three months, but most were over five years. Showed partial or complete Lymphatic blockade in all. Lymphedema was of significantly higher grade in the study group with four patients having florid Elephentiasis Baseline lab investigations were normal in all.

All patients improved in volume Average reduction in study group was 51.3% and in control group-37.75% (NS) . There was relief in pain in all and no affect on joint mobility. The only significant difference was a need of a higher number of bandages control arm (average seven) as compared to three for the study) to achieve the desired pressure. There was associated higher amount of slippage with need for reapplication. Compliance to the bandages was however good and equal in both the groups.

In Conclusion: Both types of bandages can provide required pressure to effectively treat lymphoedema.

[44] HYDROMECHANICS OF EDEMA FLUID UNDER ELASTIC MATERIAL COMPRESSION

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In compression procedures the externally applied force is disseminated according to the surface area and is resisted in epidermis by keratinocytes, basal membrane, blood capillaries and lymph in the subepidermal plexus and in dermis by elastic and collagen fibers, fibroblasts and adipocytes, blood vessels, and interstitial fluid between cells and fibers. Moreover, the tissue structure differs at various limb levels. Aim of the study. To measure the hydromechanics parameters in and under the compressed skin and visualize edema fluid mobilization. Methods and material. Skin dielectric constant (water concentration, %), tissue bioimpedance (Ldex index), stiffness measured with durometer (1.25 mm depth, newtons), and deep tissue tonometry (10.0 mm depth, kg/sq.cm), tissue fluid pressure (wick-in- needle method, mmHg), tissue fluid mobilization force test (volume) , near infra-red indocyanine green (ICG, fluorescence level) and isotopic lymphographies (fluid location and flow, radioactivity level), in-tissue angio contrast medium distribution (tissue channels), and ultrasonography and MRI imaging (mobile fluid to solid tissue ratio, tissue structure) were applied in 50 patients with obstructive lymphedema of limbs. Results. Representative data and images of all tests will be shown. Conclusions. To evaluate the effectiveness of therapeutic compression of edematous limbs integrated data obtained by all available electric conductivity, hydromechanics and visualization methods are necessary.

[45] THE EFFECT OF COMPRESSION WITH A NON-ELASTIC COMPRESSION DEVICE IN PATIENTS UNDERGOING A TOTAL KNEE ARTHROPLASTY, COMPARED WITH USUAL CARE. A PILOT STUDY WITH 39 PARTICIPANTS.

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Although Total Knee Replacement is a successful operation in the treatment of osteoarthritis, patients can experience swelling, pain, a decrease in knee-extension strength and loss of range of motion, all contributing to a decline in functional performance. (Holm, B 2010). Compression therapy is a frequently used modality in the postoperative treatment to reduce swelling, although the literature is not consistent about the effects.(T.M. Brock 2015).

Our experiences with compression, combined with self-management in the treatment of lymphedema create possibilities for a transition of this treatment modality to orthopedic surgery. Regarding the type of bandage, inelastic compression bandages show a low, tolerable resting pressure and a more effective activation of the deep venous system and calf muscle pump with ambulation (working pressure) compared to elastic materials. The Reduction Kit (by medi ®) is a non-elastic compression device, suitable for self-management. The device allows full ROM, so ambulation and exercise will not be impaired.

It is hypothesized that immediate postoperative compression and prolonging the period of use until 6 weeks postoperatively will prevent excessive swelling and initiate an earlier reduction. Reduced swelling would improve range of motion, knee extension strength, reduces pain, supporting the rehabilitation process.

The primary outcome measure is Volume. Secondary outcome measures concern pain, ROM, functional recovery and wound aspects.

Results show a positive effect on volume in favor of the treatment group, while functional results lack so far. In our opinion these findings support the need for further research.

[46] QUALITY OF LIFE IN RELATION TO PHYSICAL ACTIVITY IN PATIENTS WITH LIPEDEMA (PRELIMINARY RESULTS)

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Introduction/ background: Patients with lipedema often tell a story about lack of effect of exercise, fatigue, limitations in functioning, inability to work and loss of activity level. Loss of muscle weakness and decrease in exercise capacity is seen in research. All these limitations in daily activities and life can be highly demotivating and may lead to physical distress and decrease of Quality of Life. Increasing muscle strength, re-conditioning and re-activation of the patient completed with a more, healthy lifestyle may be essential components of conservative treatment to improve quality of life.

Aims of the study: The aim of the study was to investigate the impact of lipedema on Quality of Life in relation to physical activity. The secondary aim of the study was to investigate in what degree patients with lipedema suffer from fatigue and the development of fatigue by increasing physical activity.

Methods: All patients with lipedema in the Dutch Expertise Centre of Lymphovascular Medicine were included between September 2016 and December 2017. QoL was measured with the SF-36, fatigue was measured with the MVI. Muscle strength was measured with the MicroFET and exercise capacity with the 6MWT. All questionnaires and tests were assessed three times, at 0, 3 and 6 months.

Results: At this time 300 patients with lipedema are included in the study.

Conclusions: This is the first study with measurements in several domains of the ICF to give a better insight in problems in patients with lipedema. This might lead to a more specific treatment strategy.

[47] UPPER EXTREMITY LIPEDEMA (TYPE IV) IN A MALE PATIENT: A CASE REPORT OF A RARE CONDITION

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Definition: Lipedema can be described as a “fat”disorder which affects adipose tissue characterized with an anormal fat deposition in subcutenous. Lipedema mostly affects women, however, there are males also affected with lipedema. Reports indicate that nearly 11% of women affected by lipedema, however, there is no report regarding the epidemiology of male population. In addition to this, lipedema mostly affects lower extremities bilaterally.

Reason for report: In routine clinical practice, lipedema commonly seen on women with their lower extremities bilaterally affected. However, type IV lipedema which is characterized with bilateral upper extremity lipedema is not seen in frequent.

Case: 73 years old male were referenced to our clinic for bilateral upper extremity swelling which separates both hands. Up to forty years he has been suffered with this condition. No medical history was found associated with cancer. Physical examination shows a rigid swelling which is characterized with negative Godet’s sign and Stemmer’s sign. Easy bruising and tenderness was reported by himself. Heaviness feeling was found as 7/10 according to the visual analog scale.

Discussion: Lipedema frequently confused with obesity, therefore patients with lipedema are not able to find proper treatment strategies. Even with optimal diet modifications along with exercise interventions, condition does not improve due to adipocyte hypertrophy is resistant to these interventions. Although current knowledge focus on mostly women, men can also be affected. Providing the knowledge upon upper extremity lipedema may create awareness so that those with type IV lipedema might be referenced to specific health care and education.

[48] LIPEDEMA AND METABOLIC DISEASE

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Lipedema is a disease that affects the female sex and often presents a character of familiarity. It's frequent association with diabetic familiarity, disorders of glucose metabolism, changes in thyroid function and changes in the menstrual cycle. In 147 patients with clinical stage II Lipedema (aged 19 to 54 years, with a mean age of onset of the clinical form at 18.7 years) the following associations were observed: Hyperinsulinism (mainly post-prandial) in 69 cases (46.9%): Hypothyroidism in 48 cases (32.65%); Thyroiditis of Hashimoto in 32 cases (21.8%); changes in the menstrual cycle (mainly rhythm disorders) in 72 cases (49%). The data show, besides the probable genetic predisposition of the affected subjects, also a possible one co-responsibility in the genesis of the disease of alterations in the functioning of the thyroid gland, of glucose metabolism, and estrogen-progestogen disorders that deserve further research for the better definition of the etiopathogenesis itself of the affection and the consequent, possible, therapeutic approach.

[49] REVIEW LIPOEDEMA GUIDELINES

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Over the past few years, several lipoedema guidelines* have been published. Either best practice guidelines or evidence based guidelines. The author reviewed the Dutch, UK and German guidelines and looked into several important factors. The amount and value of the literature used, differences and similarities in outcomes of establishing diagnosis, assessments, management and treatment options. Is it possible to attach more value on one of the guidelines or can the differences be ascribed on cultural differences?

Conclusion: Based on the outcomes can we secure the best treatment options for our patients?

*Richtlijn Lipoedeem ©2013 Nederlandse Vereniging voor Dermatologie en Venerologie
*Best Practice Guidelines © Wounds UK, March 2017
*S1-Leitlinie Lipödem, aktueller Stand 10/2015, AWMF online

[50] ON THE GROUND EDUCATION PROJECT RESULTS AND RECOMMENDATIONS

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[2] *Lymphoedema Network Wales*

Aims: The aim of the 'On the Ground Education' Programme was to deliver education directly to community nurses within their day-to-day workload, incorporating films and an accredited work based education unit. Lymphoedema specialists worked directly with community nurses to assess and treat patients with chronic oedema instantly. Consequently, educating staff and treating patients with chronic oedema at the same time.

Description: Confusion over compression and whether a Doppler test was required significantly delayed patients' treatment and led to waste harm and variation. Thus an output became the creation of the "Chronic Oedema Wet Leg Pathway." Working closely with the nurses allowed for reflection and enabled prompt effective management. The project identified 55% of the 1000 community patient caseload had chronic oedema varying from mild to complex .18% of these patients had one or more episodes of cellulitis.

Evaluation, indicating any patient involvement: Due to prompt management and increased knowledge the data demonstrates a 54% reduction in nurse visits ($p=0.0001$), 89% reduction in cellulitis episodes ($p=0.05$) and 63% savings in dressings ($p=0.0001$). The EQ-5D-5 utility scores improved from 0.401 (SD 0.254) at baseline to 0.537 (SD 0.231) at the three-month follow-up review. The mean difference of 0.136 (95% CI -0.098-0.174) was statistically significant ($p= <0.001$)

Although these results indicate positive outcomes once the lymphoedema specialist left the team the community nurses resorted back to old practices. This would suggest that a dedicated community lymphoedema specialist is imperative to sustaining this improvement. Lymphoedema Network Wales is working with health boards within Wales to further develop this programme of work.

[51] AMERICAN LYMPHEDEMA FRAMEWORK PROJECT (ALFP) OPEN-SPACE STAKEHOLDER MEETINGS: AIMING TO SHAPE THE FUTURE OF LYMPHEDEMA CARE IN THE UNITED STATES AND THE WORLD

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[1] *University of Missouri Sinclair School of Nursing*

Introduction: The ALFP has held several Stakeholders Conferences since 2009 with a goal of introducing and fostering partnerships between and among lymphedema stakeholders (patients, advocates, therapists, researchers, educators, physicians, nurses, and industry representatives) to develop lymphedema best practice initiatives in clinical care, health policy, education, and research.

Methods: The open-space method, self-managed work groups where leadership is shared, diversity encouraged, and personal empowerment achieved, has been the meeting format. In small groups each individual shares his or her thoughts about the topic, consensus is reached, and each group reports to the other groups. New groups are then formed to prioritize action steps to address the concerns and ideas identified.

Results: The top seven priorities identified in 2014 were: establish criteria for health provider education; promote evidence-based practice for LE management; create awareness of LE and related lymphatic system disorders; establish credibility of the ALFP; develop research efforts to refine diagnostic standards and provide evidence for effective treatment; enhance patient education, support, and self-management; and improve reimbursement.

Conclusions: The meetings confirmed that priority issues in LE remain the same. Awareness/ education was the highest issue/barrier. Between 2009 and 2014, "establishing the credibility for the ALFP" has gone from the top priority to the last, as the ALFP has collaborated on 11 systematic reviews, developed a minimum data set, established a lymphedema therapist database, and developed mobile devices for self-assessment. Future stakeholder meetings are planned to further engage the lymphedema community in prioritizing next steps in moving the field forward.

[52] CREATION OF AN E-LEARNING LYMPHOEDEMA MODULE

Karen Morgan[1]

[1] Lymphoedema Network Wales ; Cimla Health and Social Care Centre ; Cimla

Introduction: Lymphoedema Network Wales collaborated with patients and industry to create an ELearning module to raise awareness of lymphoedema and chronic oedema.

Aims: The overarching aim of an ELearning module would be to raise awareness of lymphoedema prompting early referral and management from all health care professionals and carers working within social care.

Rationale: With restrictions on study leave, an ELearning package could raise awareness of the importance of skincare, weight management, exercise and movement in timely way. An ELearning package could be watched on any mobile device and could support increased knowledge on self-management and early referral.

Description: The ELearning module was created jointly with Lymphoedema Network Wales, patients; digital media company 'Pocket Medic'. This module is suitable for doctors, nurses, allied health professionals as well as social care, governments and pre/post graduate students at University.

The module takes 25 minutes to complete and incorporates films of people living with lymphoedema, graphical illustrations and reflective questions. The module also provides information on referring patients to lymphoedema services and additional education available.

Evaluation: The ELearning module has been piloted and initial evaluation and feedback from users is extremely positive. Formal launch will be in March 2018. This ELearning package could easily be translated for use in other countries. Within the platform is also the availability to monitor the benefits from students as well as six monthly reports on activity. As time is precious this may be an innovative way to increase awareness of lymphoedema.

[53] DEVELOPMENT OF THE CHRONIC OEDEMA "WET LEG" PATHWAY AND EDUCATIONAL FILM TO SUPPORT IMPLEMENTATION

Karen Morgan[1], Melanie Thomas [2]

[1] Lymphoedema Network Wales ; Cimla Health and Social Care Centre ; Cimla

[2] Lymphoedema Network Wales

Introduction: Chronic oedema and 'wet legs' are often inappropriately managed, which has led to unnecessary harm and also impacts on patient's health and wellbeing. The development of the chronic oedema Wet Leg Pathway and the creation of an educational film to support its implementation was an output from the Welsh Government 'On the Ground Education' Project (OGEP).

Aims: The aim of the Chronic Oedema Wet Leg Pathway was to empower and guide community nurses in the early identification and prompt efficient management of chronic oedema.

Rationale: Although Lymphoedema Network Wales had developed written guidelines with pictorial references, many nurses asked for a video film. Thus, to enhance development, collaboration with a multimedia company has produced a short educational film demonstrating the application of the three levels of support within the wet leg pathway. Improving knowledge will reduce leaking legs, promote wound healing, and decrease cellulitis risk.

Description: The educational film can be viewed on any mobile device and is supported by the written guidelines. It is an easy tool to improve education and empower HCP's.

Evaluation: The Chronic Oedema Wet leg Pathway was launched in May 2017 and has been adopted by many areas throughout the UK. The results of following this simple pathway i 63% reduction in dressing cost, 89% reduced cellulitis episodes and 54% reduced community nurse visits (*n=100*). The educational video has evaluated well, demonstrating further the benefits of using technology and collaborating with patients and industry to deliver education.

[54] PASSION; WHAT ARE THE REASONS HEALTH CARE PROFESSIONALS LOOSE THEIR PASSION AND HOW TO FIND IT

Jane Wigg[1]

[1] *Lymphoedema Training Academy; Education*

Aims: More nurses are leaving their chosen career than being recruited. This give a deficit of nurses in the UK. In addition, we are struggling to recruit and keep our nursing workforce. The RCN sites several reasons for this. Working within a training environment allows for this to be seen easily when delegates attending courses are generally above 40 years of age. Many healthcare professionals burn out or lose their passion for their career. A survey was carried of 130 Lymphoedema therapists working within lymphoedema at differing levels to ascertain the reasons and any common ground for loosing ones' passion.

Description: 130 therapists were asked 2 simple work-related questions as to 'what they understood by passion' and 'why do you lose it'. The surveys were completed and analysed using content analysis.

Evaluation: Following the analysis of 130 surveys, five themes were identified as the 'what is passion' and nine reasons of 'why you lose it'. Themes about being overworked and undervalued by managers and colleagues with 10% being bullied. Reasons also cited as finance and resources. The theme of passion was described as helping people, achieving goals, caring and feeling successful. This presentation with outline the demotivators and introduce the solutions to help you identify how the 'negative voice in your head' is choosing for feelings and how you can choose to stay passionate about any aspect of your life.

[55] USING TECHNOLOGY TO IMPROVE LYMPHOEDEMA SELF CARE

Melanie Thomas[1]

[1] *Lymphoedema Network Wales; Cimla Health and Social Care Centre; Cimla*

Aims / Rationale: As the lymphoedema service caseloads increased, innovative solutions were sought to co-create health with patients. In 2016, Lymphoedema Network Wales was awarded a grant from the Welsh Government Technology Fund. The aim was to use technology to improve access to reliable information for people with lymphoedema. Currently, 80% population have a smartphone/tablet, with 89% using them daily for internet/applications. Thus the hypothesis was whether a series of educational films would enable patients to improve self-management through increased knowledge.

Description of initiative: Following recruitment of a media film company, a total of eighteen films were launched in March 2017 ranging from exercise, travelling with lymphoedema, reducing the risk, SLD, MLD and healthy eating to name a few. Each film contains clips from healthcare professionals, patients and graphic illustrations providing information relevant to the topic and lasts 5-10 minutes. One film 'A Child's View' uses the voices of children with lymphoedema over animated pictures.

Outcome / impact: Patients have reported the films are informative, helpful and extremely useful in their ongoing care. HCP's have also accessed them to improve education. The films have been accessed by patients and HCP's in Wales over 7,000 times.

Evaluation: Some technical glitches have occurred in the host platform, but this has been overcome with films now being prescribed directly. The data so far has indicated that lymphoedema knowledge has improved by 82% and classes for SLD sessions have decreased by 50%. Patients can also be discharged with the series of films promoting self-care knowledge.

[56] EVALUATING THE TRIPUDIO MOVEMENT SYSTEM WITHIN A LYMPHOEDEMA SELF-MANAGEMENT PROGRAMME: A THIRD SECTOR SERVICE DEVELOPMENT INITIATIVE

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The Haven, a third sector organisation in the UK, has delivered a five-week lymphoedema self-management group course since 2010 (McGowan et al 2013). Eight Haven staff and volunteers underwent training in the Tripudio Movement System, as a service enhancement initiative, to provide further choice for Haven clients wishing to self-manage their lymphoedema. Tripudio is a system of exercise to music that influences the lymphatic, cardiovascular and connective tissue systems.

Aim: To evaluate the impact of a series of Tripudio classes on clients with lymphoedema.

Description: Following a three day training course, Haven staff and volunteers delivered a pilot series of Tripudio classes in a variety of venues in Lanarkshire, to enhance the self-management programme. Clients who attended a minimum of three Tripudio classes took part in a service evaluation activity, including individual telephone interviews and two discussion groups. Ethical approval was not required as this was an evaluation of a third sector service development project.

Evaluation: The presentation/poster reports on the findings from this evaluation with Haven clients, showing the influence of Tripudio in improving health and wellbeing, increasing the clients' confidence in exercising, along with the social aspects of the group exercise approach. Other recommendations in delivering this type of service development initiative are identified in the poster, including: costs; venue accessibility; and marketing.

References: McGowan A, Williams A, Davidson F, Williams J. (2013) A self-management group programme for people with lymphoedema: experience from a third sector project. British Journal of Community Nursing, Chronic Oedema Supplement 6, 18, ppS6-12.

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[57] KEYS TO ENHANCE PATIENTS' ADHERENCE TO COMPRESSION THERAPY

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Introduction: Despite the effectiveness of compression therapy **(CT)** in the veno-lymphatic insufficiency.(1-4), therapists are often facing a lack of patients' adherence.(5)

Aims & Rationale: We need to understand the multiple causes of non-adherence in order to get the patient's commitment.

Description: A 20 months preliminary study was conducted over patients with veno-lymphatic insufficiency. 21 patients matched the inclusion criteria:

- Hospitalised for venous or lymphatic insufficiencies.
- Suffering for at least 3 years
- Reluctant to CT : **decided to stop it or never accepted it**

All the patients answered a survey to clarify why they were reluctant to CT.

Evaluation: Primary causes of non-adherence and solutions:

Lack of understanding and trust: to avoid isolation of the patient it is essential to establish the confidence. e.g. when Manual lymphatic drainage (MLD) is done by experts and that the patient can observe a volume reduction. This will positively impact his acceptance also to other aspects of treatment.

- **Psychosocial reasons**: the cost-effectiveness must be systematically highlighted and the aesthetic aspect not neglected.
- **High pressure** are not always necessary, especially when the whole treatment is respected (MLD, exercises, hygiene/lifestyle, tips, …).
  "Less pressure is much better than no pressure". This will help solving the **discomfort** and the **difficulty** of **wearing** the garment.
- **Skin irritation** (e.g. in case of Urticaria Factitia), the physician can prescribe anti histaminic.
- **Erroneous circumferential measurements**: the PeriKit allowed to have accurate measurements, to ensure:
  - the best fit of the garment
  - The follow-up the limb volume changes
  - Periodical adjustment of the treatment

After accepting to follow the procedure, 16/21 patients complied with the CT. These observations, when validated by an upcoming study, might allow a different approach to current standards by combining treatment efficacy and patients' acceptance.

[58] A PERSPECTIVE ON ADDRESSING PATIENT-REPORTED BARRIERS TO LYMPHEDEMA SELF-BANDAGING BY UTILIZING THE THERAPEUTICS OF COMMUNICATION

Naomi Dolgoy[1]

[1] *University of Alberta*

Self-bandaging for self-management of lymphedema shows positive long-term outcomes. In a multi-centre randomized-controlled-trial examining use of night-time compression, participants refused trial participation, listing lack of confidence in self-bandaging and negative burden on lifestyle. This difference between positive research-reported outcomes and negative patient-reported perspectives poses a significant question concerning how healthcare professionals and patients communicate about lymphedema self-bandaging interventions—namely, how do we clinically address this disparity and effectively implement self-bandaging?

Healthcare-communication is pinnacle to research and improvement of healthcare systems. Recent advancements in healthcare-communication report patient-centred terminology is highly effective in clinical interventions. A formal literature search (ESCBO, CINHL, OVID, MEDLINE) conducted in January-March 2017 resulted in no findings formally reporting on therapeutic-communication-pathways in lymphedema self-bandaging. A systematic review on impacts of communication strategies on outcomes in chronic-condition management, including cancer, reports benefits of patient-empowerment in long-term interventions; the preliminary results of the therapeutic use of communication pathways includes better patient understanding, trust, and agreement. These results affect intermediate outcomes, such as adherence to interventions, which in turn influence overall wellness and health practices.

Exploring how communication supports participation in self-bandaging interventions, this presentation (1) reviews current research, (2) describes terminology and approaches typically used in self-bandaging interventions, from standard medical-models versus other patient-centred care pathways, and (3) offers practical strategies for approaching self-bandaging using these alternative frameworks to support concepts of patient autonomy, hope, and resilience. This session will introduce healthcare professionals to concepts of a progressive lexicon to help address and overcome patient barriers to effective self-bandaging regimens.

[59] EFFECTIVENESS OF IPC CAN BE SHOWN ON NIRF ICG LYMPHOGRAPHY

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Picture of edema fluid flow during compression would allow the therapist to use force adjusted to the tissue volume and stiffness as well as identify sites of abundant accumulation of fluid. Aim. To visualize tissue edema fluid flow during manual drainage, intermittent pneumatic compression and bandaging. Material and methods. Twenty patients with post-surgical (after hysterectomy and radiotherapy in uterine cancer and mastectomy in breast cancer) lymphedema of lower and upper limbs, ten patients with postthrombotic leg edema and 5 cases with venous ulcers were investigated. Study was carried out in 3 groups: group I, manual lymphatic drainage (thumb or hand), group II, intermittent pneumatic compression (8 chamber sleeve, each chamber inflated to 50, 80, 100 and 120 mmHg for 50 sec) and group III, bandaging generating interface pressure of 40-50 mmHg. ICG lymphangiography was done during each type of compression at a known force (pressure). Results. a) the possibility of real time observation of edema fluid movement, b) threshold pressures necessary to move edema fluid to be over 80 mmHg in the compression device and reaching 40 mmHg in tissue fluid, c) inefficacy of compression in some cases despite of applying high force, d) accumulation of fluid around but not in ulcer bed.

[60] EXPLOITING 3D SCANNING TECHNOLOGY IN LYMPHOEDEMA FOR ACCURATE AND FAST MEASUREMENTS OF VOLUME AND SHAPE

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[3] Swansea University

Introduction: Diagnosis of lymphoedema is aided by means of one or more measurement tests; the most commonly used in the UK is the 4cm circumferential measurements utilising a tape measure, however, it is recognised as being unreliable due to interrater and intrarater variability.

Use of an off-the-shelf PC motion sensor was explored for use in volumetric reconstruction in lymphoedema, with initial tests on healthy volunteers indicating imaging times of 10 seconds or less, leading to highly accurate shape and volumetric data.

Aims: To test the reliability and accuracy of results obtained from 3D camera imaging.

Methods: A purposeful population of 20 new patients with unilateral upper limb lymphoedema. Exclusion criteria includes reduced shoulder movement, inability to meet review commitment, and other comorbidities exacerbating lymphoedema. Ethical approval granted June 2016, R&D approval gained August 2016.

Physical examinations performed at initial assessment, and at two, four and six-month review include 4cm circumferential measurements, perometry and 3D imaging.

Estimates of differences between the methods was calculated through analysing the data collected using mixed-design analyses of variance.

Results: Ten participants have completed the study with recruitment ongoing.

Collaboration with Swansea University in deciphering camera data identifies good correlation in volume differences between all three tests (within 95% confidence interval).

Data gained through regression methodology to detect change in limb shape demonstrated good sensitivity.

Results for the use of the 3D camera identify good inter- and intra-rata reliability.

Conclusions: Preliminary results show correlation in volume differences and good sensitivity to change in limb shape.

[61] ANALYSIS OF UNILATERAL UPPER LIMB LYMPHOEDEMA USING A 3D CAMERA

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[3] Lymphoedema Network Wales; Cimla Health & Social Care Centre

Aims: The aim of this study was to explore how 3D images of limbs can aid the diagnosis and monitoring of lymphoedema.

Description of initiative: A 3D camera is used to scan patients with unilateral lymphoedema of the upper limb as part of a service evaluation for LVA. Advanced concepts from computational mechanics and image analysis are used to analyse the 3D limb images to extract information on limb shape and to evaluate the implications of shape on the use of garments.

Outcome/impact: The 3D scans of the patient's healthy and affected arm were subtracted to generate oedema maps that identify the locations of swelling on the arm. The same methods can be used to identify changes in swelling on the same arm in longitudinal studies. Furthermore, new metrics for measuring the "shape" of an arm were introduced that are invariant to arm volume. This provides an additional criterion to assess lymphoedema. Finally, mechanical simulations of the pressure exerted by garments, demonstrated the influence of arm shape on sub-garment and sub-cutaneous stress and strain distributions. These findings surprisingly illustrated that subcutaneous stresses might be considerably different from sub-garment pressures, which could challenge our current understanding on lymphatic drainage through garments.

Part of this work was published in:

K. Karakashian, L. Shaban, C. Pike, R. van Loon, Investigation of shape with patients suffering from unilateral lymphoedema, Annals of Biomed. Engng, doi:10.1007/s10439-017-1929-y , 2017

[62] PATIENT EXPERIENCE OF LYMHPOEDEMA CARE

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Introduction: Lymphoedema is an under-recognized and under-treated condition estimated to affect up to one million Canadians. A previous chart review examined the characteristics of 326 people living with lymphoedema. This is a follow-up study.

Objective: To better understand patient's experience with lymphoedema care.

Method: The study was approved by Western University Ethics Board. At a regular clinic visit over a 6-month period, patients were provided with information and agreed to be contacted for a telephone survey. Of 68 patients contacted twenty-two (32%) completed the survey. The survey included questions about diagnosis, sources of information, treatment, and perceived deficiencies in care.

Results: All patients had lower leg lymphoedema and were receiving active treatment. Most (91%) did not know what lymphoedema was prior to diagnosis. Most patients (68%) received information from a health care provider. Only 36% of patients had home care nurses administering their treatment. On average, patients rated their satisfaction with management as 8.3 (± 2.1) out of 10. Only 4 patients (19%) stated they encountered difficulty accessing care. Fourteen patients (64%) suggested ways to improve lymphoedema care. Lack of awareness and access to information was the most prominent theme within these survey responses.

Conclusion: Most patients were unaware they had lymphoedema prior to referral the clinic. Patients surveyed were highly satisfied with their care. A significant portion were able to self-manage their disease. Lack of awareness in general and by other healthcare providers was a common theme. The study is limited by small numbers.

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[63] DEVELOPMENT OF LYMPHOEDEMA MDT AND COMPLEX CLINICS

Cheryl Pike[1]

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Introduction: With the introduction of LVA surgery, monthly meetings were introduced to discuss fluorescence lymphography (FL) scans. Due to an increase in referrals for surgical opinion for lymphoedema, the MDT was expanded to include cases for surgical options and later developed into additional Complex Clinics.

Aims: To assess and determine the most appropriate conservative treatment with or without surgical option.

Description: Monthly meetings held between the Consultant Plastic Surgeon and the National Lymphoedema Specialists were introduced to discuss FL scans for LVA surgery, and for the surgeon to make contact with patients due for imminent LVA surgery. This meeting expanded to include referrals for surgical opinion for lymphoedema; thus, patients were invited to attend the clinic for a joint assessment. Due to the identified need for more advanced conservative treatment, Complex Clinics were introduced.

Evaluation: Lymphoedema surgical MDTs commenced February 2016 and currently 30 patients have been assessed:

- 5 had liposuction
- 4 are scheduled for liposuction
- 1 had axillary scar resection with lymph node transfer
- 20 had conservative treatment reviewed and changed, no surgery required

Due to high volume of advanced conservative treatment needs, a new 'Complex Clinic' was introduced in February 2017 led by the National Lymphoedema Specialists. Patient's conservative treatment is reviewed, and if surgery is a considered an option, they are referred into the Lymphoedema MDT.

Conclusions: The MDT has demonstrated excellent collaboration where all parties have learnt different assessment skills that are transferable into other clinical settings. Patients gain a revised conservative management plan with or without the option of surgical intervention.

[64] PREVALENCE OF LOCAL OEDEMA SURROUNDING DIABETIC FOOT ULCERS

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Introduction and aim: The lymphatic system may play an important role in wound development and healing. Therefore, the aim of this study was to determine the prevalence of local oedema surrounding diabetic foot ulcers.

Method: Local water content was measured by determining the tissue dielectric constant (TDC) with a moisturemeter (2.5 mm depth) on 13 diabetic foot ulcers. Three locations were measured: directly surrounding the wound, the foot dorsum and medial site of the ankle, of both the affected and the unaffected limb. Measurements of affected and unaffected limbs and normal reference values from literature were compared with T-tests (paired and unpaired).

Results: TDC values surrounding diabetic foot ulcers were significantly increased compared to the same location on the unaffected foot. Furthermore, TDC values of the foot dorsum of the affected limb were significantly increased compared to the unaffected limb, as well as compared with normal reference values from literature. TDC values of the medial site of the ankle did not differ significantly between the affected and unaffected limb, but both groups show significantly higher values than normal reference values from literature.

Conclusion: Based on the current data in a small number of patients, it can be concluded that patients with diabetic foot ulcers show signs of local oedema directly around the wound, but also on the foot dorsum. This stresses the need for better recognition of oedema around diabetic foot ulcers and possible support better lymphatic flow to aid their healing.

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[65] A NEW DEVICE TO IMPROVE SKIN TISSUE OXYGENATION: THE NEXT GENERATION OF PORTABLE REHABILITATION TOOLS?

Justine Whitaker[1]

[1] *University of Central Lancashire; And Northern Lymphology Ltd*

Introduction: Intermittent pneumatic compression (IPC) is an alternative method of compression treatment designed to compress the calf, mimicking the action of muscles to actively promote venous return. IPC has been shown to reduce venous stasis and increase blood flow and skin tissue oxygenation (StO^2), promoting healthy tissue.

Aim: This quantitative study explored the efficacy of a new portable two chambered IPC device on tissue oxygenation in long and upright sitting in healthy adults.

Method: Twenty-nine healthy participants aged 18-60. Screened using the Physical Activity Readiness Questionnaire. This study was approved by the University's Ethics Committee. IPC applied at pre-set pressure of 50mmHg once/minute, holding for 4.5 seconds. Two seating positions were tested in separate one hour sessions a minimum of two days apart. StO_2 was recorded during a pre/post 10min rest period with an active 20 minute IPC pump. A repeated measures analyses of variance was performed, followed by post-hoc pairwise comparisons.

Results: A significant difference was seen between the two seating positions ($p=0.003$) long sitting showed a 12% higher increase in StO_2 than chair sitting. Post-hoc pairwise comparisons showed significant differences ($p<0.009$) from baseline, throughout the intervention and continuing up to 10 minutes' post IPC-intervention, indicating a continued effect of the device after a short intervention.

Conclusion: This IPC device significantly improves skin-tissue oxygenation levels. Increasing StO_2 through short-intervention sessions with this portable device has the potential to improve tissue health. Due to its compact portable low cost nature, it has the ability to encourage self-management programmes for patients with oedema and venous disease.

[66] ADAVNCED POSTMASTECTOMY LYMPHEDEMA IS SUCCESSFULLY TREATED UB SLICONE TUBING ARM PIT BYPASSES

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[2] *Central Clinical Hospital Warsaw*

Objectives: In advanced cases of lymphedema main lymphatics are obstructed and tissue fluid accumulates in interstitial spaces forming fluid "lakes"and "channels". The only solution for fluid drainage would be creating artificial channel for flow away to the non-obstructed regions.

Aim: To form artificial pathways for edema fluid flow by subcutaneous implantation of silicone tubes bypassing armpit.

Material and methods: Implantation was carried out in 65 patients with lymphedema after mastectomy, axillary lymphadenectomy and radiotherapy, stage II and III. Conservative treatment for at least 12 months remained without success. Tubes were placed from hand dorsum, through forearm and arm to scapular region. Implantation was followed by routine arm sleeve compression. Prophylactic long term penicillin was administered. The follow up is at present 36 months. External compression remained same as before implantation.

Results: a) implanted tubes brought about fast evacuation of excess tissue fluid, b) most decrease in circumference, volume and stiffness occurred in first two weeks, c) lymphoscintigraphy tracer accumulated in tubes and around them, e) free fluid was seen on ultrasonography at both ends of tubes and in between , e) no postoperative infection complications or tubing expulsion.

Conclusions: We propose a multimodality method comprising implantation (30 min operation), limb compression to generate fluid pressure gradient for flow and prevention of inflammation by administration of long-term penicillin.

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[67] SPECT/CT LYMPHOSCINTIGRAPHY FOR LYMPHATIC VENOUS ANASTOMOSIS IN PERIPHERAL LYMPHEDEMA

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Introduction: Lymphatic venous anastomosis (LVA) using ICG near-infrared fluorescence lymphography (NIF) is a useful method in surgical treatments for patients with peripheral lymphedema. However, NIF lymphography has limitations in probing for tissues in thick areas, such as thigh. To solve this problem Single Photon Emission Computed Tomography-CT SPECT/CT helped us to detect the functional lymphatic vessels at the thick subcutaneous layer. In this paper we propose the use of SPECT/CT with or without navigation system for perioperative identification of lymph vessels in thick subcutaneous areas in treatment of the lower extremity lymphedema with LVA.

Methods: Between November 2016 and February 2017 14 lower limb lymphedema patients who underwent LVA with (group A) or without navigation system (group B) were included. The lymphatic vessel identification rate, the number of anastomoses and preparation time were compared.

Results: The identification rate of lymphatic vessel was 90% and 73% in group A and B. The number of anastomoses was 5.0 and 4.5 in group A and B. Preparation time was 83 and 72 minutes in group A and B. There were no statistical differences in both groups. The lymph vessels in deep tissue where ICG NIF could not point out could be identified by SPECT/CT with and without navigation.

Conclusion: SPECT/CT helps surgeons to understand positions of the lymphatic vessels in LVA three-dimensionally regardless with or without navigation system.

[68] DEBULKING SURGERY FOR LYMPHEDEMA - 13 YEARS EXPERIENCE WITH LIPOSUCTION

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Introduction: Excess lymphatic fluid stimulates fat hypertrophy. Traditional debulking surgeries excised skin & fibrofatty tissue, with variable improvement in limb volume, often with poor cosmetic outcome. Brorson demonstrated that good outcomes could be obtained using liposuction & postoperative compression.

Methods: Since 2005, over 500 patients have been referred to a surgical lymphoedema clinic. Clinical review includes limb volume calculation and assessment of fluid content using the pitting test. Patients with a volume excess >1000mls, minimal pitting & compliant with compression garments were offered liposuction. Surgery was performed following Brorson's technique, with compression garments being applied immediately

Results: 100 patients have undergone surgery (27 arms, 76 legs). Mean excess arm volume was 1362mls preoperatively (range 586 - 2854). 1618mls was removed (600 – 2950) and percentage reduction was as follows: 3 months 87% (n=27), 1 year 94% (n=23), 2 years 104% (n=20), 4 years 109%(n=15), 6 years 121%(n=10), 8 years 124% (n=8), 10 years 122% (n=7). Mean excess leg volume was 4191mls preoperatively (range 575 – 12150) and percentage reduction was as follows: 3 months 85% (n=75), 1 year 89% (n=66), 2 years 94% (n=44), 4 years 93% (n=26), 6 years 95% (n=12), 8 years 90% (n=6). When comparing primary and secondary leg lymphoedema, it becomes apparent that superior results are obtained with the latter group of patients.

Conclusion: Liposuction and continuous compression is a reproducible procedure which, unlike other surgical techniques, can achieve total reduction of the excess limb volume. This is more effective in secondary lymphoedema, and can also be beneficial in the presence of lymphatic cysts.

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[69] TREATMENT OF RECURRENT LYMPHOCELE AND SEVERE LYMPHORRHEA AFTER ONCOLOGIC SURGERY

Guido Giacalone[1], Takumi Yamamoto[2], Florence Belva[1], Nobuko Hayashi[3], Nana Yamamoto[4], Akitatsu Hayashi[5]

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Lymphoceles with or without persistent lymphorrhea are common complications after lymph node dissection for oncological conditions.

Although conservative treatment by means of repetitive needle aspirations and compressive bandaging is the first treatment, it is often complicated by infections and long hospital stay. Moreover, the recurrence rate is high, even when combined with injection of sclerosing agents. Also, there is a risk of imposing lymphedema after obliteration of the normal lymphatic vessels. Therefore, in cases refractory to conservative treatment, lymphatic microsurgery is indicated since it addresses the pathophysiology of the condition by restoring the lymph flow.

We present the results of 13 patients unresponsive to conservative management who were treated successfully with lymphaticovenous anastomosis (LVA) at the groin (n=7), axilla (n=1), leg (n=3), scrotum (n=2).

In 10 patients with persistent lymphorrhea, the damaged lymphatic vessel could be anastomosed to a recipient vein after exploration of the lymphocele by means of ICG lymphofluoroscopy.

In 3 patients with intractable lymphorrhea or recurrent lymphocele, no exploration of the lymphocele was performed but a LVA performed in the vicinity of the lymphocele resulted in a complete stop of lymphatic leakage.

All patients suffered from lymphedema diagnosed by means of lymphscintigraphy.

Lymphaticovenous anastomosis with or without exploration of the lymphocele by ICG offers a curative solution for lymphocele and lymphorrhea, not responsive to conservative treatment. Moreover, LVA is a minimal invasive procedure and has the advantage to prevent the worsening of lymphedema since it maintains the lymphatic drainage.

[70] IMPACT OF 12 WEEKS OF INTERMITTENT PNEUMATIC COMPRESSION (IPC) ON THE QUALITY OF LIFE OF PATIENTS WITH LOWER LIMB LYMPHOEDEMA

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Introduction/Background: More often than not we focus on the objective outcomes of lymphoedema treatment, that is changes in the limb size, fluids and fibrosis but for many patients the impact of treatment on their quality of life including satisfaction with the treatment and on pain levels is most important.

Aim: To examine the impact of IPC on Quality of life, symptoms, function, appearance and mood.

Methods: 41 patients with leg lymphoedema who completed 12 weeks of one hour IPC (Tactile Technologies) use daily were monitored at baseline, 3 days, 4, 8 and 12 weeks. Assessment of the Quality of Life was undertaken by a combination of Medical History at entry and the MYMOB, LYMQOL and Brief Pain Inventory tools, a compliance and complications log and a device satisfaction questionnaire at entry and at week 12. This talk focuses on the LYMQOL and on item level responses combined together in the categories of Function, Appearance, Symptoms and Mood.

Results: QOL improved over the treatment period (p = 0.021). Pre-post treatment comparisons on the item level responses were: Function p = 0.029; Symptoms p = 0.013; Mood p = 0.064 and Appearance p =0.12. Anecdotal comments such as ".the ankle and thigh look good, the calf is a normal colour."." I don't get the constant discomfort at night " from the patients will be presented.

Conclusion: A positive treatment outcome effect was demonstrated with regard to patient responses to questions concerning occupation, appearance, self-feeling and overall QOL score. This suggests that IPC is a useful additional treatment which can have a positive impact on the quality of life of those with lower limb lymphoedema and indicates that limb size and volume reduction, while important, is not the only outcome criteria we should be examining when treating lymphoedema.

[71] LINFOROLL- TISSUE MASSAGING DEVICE - TISSUE EVENTS DIRECTLY OBSERVED DURING MASSAGE

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We showed previously the Linforoll device, the first ever construction for manual edema, fluid drainage allowing standardization of applied force depending on the local anatomy of soft tissues and their tonicity, timing of applied force, unidirectional fluid movement, detecting sites of increased tissue hydraulic resistance already during first run of device. Aim.To show the effect of Linforoll on tissue elasticity, water concentration and edema fluid flow on fluorescent lymphography. Methods. Study was carried out on 20 patients, lower limb lymphedema stage II. Skin durometry (Delfin, Finland) subcutaneous tissue tonometry and skin water concentration (Delfin, Finland) in the calf and NIRF ICG lymphography (Hamamatsu, Japan). Twenty massaging strokes at 120 mmHg during 2 minutes. Results. Mid-calf skin stiffness decreased from 0.14 Newton to 0.09, subcutis from 1.4 to 1.0 kg/sq.cm, skin water concentration from 55.0 to 42.0 %. NIRF ICG curve showed decrease from 42% to 36%. Conclusions. Linforoll massaging under controlled pressure brought about evident decrease in tissue stiffness and water content. Movement away of edema fluid could be evaluated quantitatively. Data are not only information for the therapist but also as a convincing evidence for patient.

[72] COMPARISON OF DIELECTRIC VALUES OF PATIENTS WITH LIPEDEMA AND THOSE WITH LOWER LIMB LYMPHEDEMA

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Background: Dielectric values which are directly linked to sub-tissue fluid proportion has been shown to a beneficial objective method to quantify lymphedema. However, this method has not been investigated thoroughly in lipedema. Dielectric values might be useful to differentiate lipedema or lipo-lymphedema from pure lymphedema.

Aims of study: As far as we know, there is only one study that investigates dielectric values whether those can be used to diffentiate lipedema from lymphedema. This study aims to evaluate dielectric values of extremities of patients with lipedema and those with lower limb lymphedema.

Methods: 26 patients (14 Lipedema, 12 lower limb lymphedema) were evaluated by Moisture Meter D Compact (MMDc, Delfin Technologies, Finland) in three reference points (Malleol, Midpoint of malleol and knee, 20 cm upper point of the knee) on the medial side of the lower extremities bilaterally. Three samples were collected for each reference point from 2.5 mm depth. Ratios were calculated by dividing affected side's dielectric value to unaffected side's. Independent samples t and Mann-Whitney U tests were used to analyze the data.

Results: All reference points' ratios were found statistically significant between patients with lipedema and lymphedema. (Proximal to distal for all reference points, p=0.002, p=0.009 and p=0.012, respectively). Patients with lymphedema had higher ratios.

Conclusions: In clinical settings, although lipedema and lymphedema can easily be differentiated yet in some patients especially with lipo-lymphedema, differentiation might be ambiguous. Dielectric values not only can be useful for differentiation, but also useful to track changes related to treatment.

[73] A HEALTH PROFILE IN PATIENTS WITH LIPEDEMA

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Aims: Patients with lipedema often suffer from several complaints which can be of physical and mental interest. It is important to objectify the subjective complaints of the lipedema patient. The ICF model can be a helpful tool to set up a complete health profile for the patient. A complete health profile can provide a good entrance to set treatment goals.

Description: In the Dutch Expertise Centre for Lymphovascular Medicine we set up a complete health profile for our patients with lipedema. In this matter it is important to compose a data set of repeated clinimetric measurements, recommended by the Dutch Lipedema guidelines which should be performed in patients who are diagnosed with lipedema. These clinimetric instruments are used to diagnose and evaluate limitations in body structures and function, activities and participation, personal factors and environmental factors, following the ICF domains. Patient story and clinimetric outcomes measured by the physical therapist are combined in the ICF model. Together this will lead to a health profile of the patient. By repeating the clinimetrics in time, the patient and health care provider together can evaluate in time, and if needed customize the program.

Evaluation: Using the ICF while working with patients with lipedema, patient tailored treatment is given which will lead to an improvement of functioning and QoL in association of their health condition. In the ICF model the expectation or wish of the patient gets a central place during treatment.

[74] DOES TUMESCENT LIPOSUCTION DIMINISH THE LYMPHATIC FUNCTION IN THE LEGS OF LIPOEDEMA PATIENTS?

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Background: Lymphatic insufficiency might play a significant role in the pathophysiology of lipoedema. Liposuction is up to now the best treatment. As liposuction is invasive, the technique could destruct parts of the lymphatic system and by this aggrevate the lymphatic component and/or induce lymphoedema. We investigated the function of the lymphatic system in lipoedema patients before and after tumescent liposuction and thus whether tumescent liposuction can be regarded as a safe treatment.

Methods: Lymphoscintigraphy, a routine clinical investigation for patients referred with a diagnosis of lymphoedema was performed, to quantify the lymph outflow of 117 lipoedema patients. Mean clearance percentages of radioactive protein loaded after 1 minute with respect to the total injected dose and corrected for decay of the radiopharmaceutical in the subcutaneous lymphatics were used as functional quantitative parameters as well as the clearance percentages and inguinal uptake 2 hours post injection. The results of lymphatic function in lipoedema patients were compared with values obtained from normal healthy volunteers.
We also compared 50 lymphoscintigraphies out of the previous 117 lipoedema patients before and 6 months after tumescent liposuction. The diagnosis of lipoedema of the legs was established by clinical history and physical examination.

Results: All lipoedema patients were female. The mean age of 117 lipoedema patients at the time of the lymphoscintigraphy was 40.9 years (range 21.0-64.1 years). Clearance 2 hours post injection in the right respectively left foot was disturbed (=abnormal+questionable) in 79.5 resp. 87.2% and normal in 20.5 resp. 12.8% compared to normal volunteers The inguinal uptake 2 hours post injection in the right respectively left groin was disturbed in 60.3 resp. 64.7% and normal in 39.7 resp. 35.3% compared to normal healthy volunteers The clearance and inguinal uptake correlation coefficient between right and left after 2 hours were both 0.39.

The mean age of the 50 lipoedema patients where lymphoscintigraphy was performed before and 6 months after tumescent liposuction was 42.2 years (range 24.1-57.9 years) at the date of the first lymphoscintigraphy. Mean clearance and inguinal uptake after tumescent liposuction was slightly improved, 0.01 (p=0.37) versus 0.02 (p=0.02) respectively. This is statistically not relevant in clearance.
The clearance and inguinal uptake correlation coefficient between right and left after 2 hours after tumescent liposuction was 0.51 versus 0.47.

Conclusion: Lipoedema legs have a delayed lymph-transport.
Tumescent liposuction does not diminish the lymphatic function in lipoedema patients
and thus tumescent liposuction can be regarded as a safe treatment.
There is a moderate correlation of lymphatic function in lipoedema patients according to Dance and Reidy's^{2004} between right and left. This means that lymphatic function in lipoedema patients before and after liposuction is rather symmetrical.

[75] FILARIASIS INCIDENCE ESTIMATION BASED ON A HOUSEHOLD SURVEY FOR LONG TERM EFFECTS IN AN ENDEMIC AREA IN INDIA

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Introduction and background: Lymphatic Filariasis (LF) is one of the Neglected Tropical Diseases with an estimated 1250 million population at risk globally. It has 120 million patients and 40 million having long term affects in the form of Lymphoedema and Hydrocoel.(1)(2,3) make it one of the contributors to the highest cause of disability – mental health(4)particularly lymphedema and hydrocele. Depressive illness has been recognised as a prevalent disability in those with the disease because of the stigmatising nature of the condition. No estimates of the burden of depressive illness of any neglected tropical disease have been undertaken to date despite the recognition that such diseases have major consequences for mental health not only for patients but also their caregivers.\n\nMETHODS: We developed a mathematical model to calculate the burden of Disability- Adjusted Life Years (DALY. Despite the WHO-supported Mass Drug Administration (MDA) programme LF continues to be endemic in many parts of Uttar Pradesh, including Sitapur district.

A previous line listing in 13 /188 known villages in Pisawan block of Sitapur had recorded 261 cases. A physical examination of 95 of these by a surgeon confirmed 90% accuracy. This was as against 398 known cases for the entire block as per government records.

The morbidity management camp showed some results (5), encouraging us to reach out to more areas but wanted to be sure that mismatch between our expected incidence - around 60000 plus cases in Sitapur was not a one off as the government statistics showed 4117.

Methods: All houses were surveyed for any person suspected or known to having Lymphoedema or Hydrocoel in 40 clusters. These were randomly selected to represent the entire block of Pisavan randomised selection

Results: 1696 households were found affected with 1851 patients -595 females all Lymphoedema and 1296 Males (907 with Hydrocoel, 301, Lymphoedema and 47 with both Hydrocoel and Lymphoedema) suggestive of overall incidence 4-5% of the population or of 180000 cases in Sitapur District UP, India

In Conclusion: LF appears to be a significant problem in Pisawan block. A multi-pronged intervention must be taken up to prevent the transmission of LF and to provide therapy for people suffering from its effects.

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[76] PILING ON THE PRESSURE - PROVEN!

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Introduction/background: Additive compressive pressure on the legs could be considered excessively risky. Evidence is particularly needed in hypomobile patients with chronic oedema who have little or no lymphatic pump action of the calf. Ultrasound measurements of the skin component depths provide an evidence-based tool (Ref.1) for assessing benefit and excluding potential harm.

The aim/objective: To evaluate the safety and effectiveness of increasing leg skin pressures with ultrasound measurement of lymphostatic fibrosclerosis (thickening of the corium and/or subcutis).

Methods: According to PICO criteria, guidelines (Ref. 2) and with statistical control, a randomized controlled study in 52 female patients from three Lymphology centres was carried out over 6-months. Patients with primary lymphoedema were divided into two groups for treatment with manual decongestive therapy, compression hosiery and Intermittent Compression Therapy (ICT). One group wore inserts in hosiery, additionally compressing sites vulnerable to fibrosclerosis, including during ICT.

Results: Patients reported a better quality of life, with reduction of pain.

Clinically, 20 patients using inserts showed improvement compared to 5 from the control group. Using ultrasound, all 26 patients in the profile inlay showed reduction in both corium and subcutis, with 21 in the control group with reduced corium and subcutis, and 18 in corium.

Conclusion: The long-term objective of treatment of primary lymphoedema is to prevent secondary complications such as decreasing mobility, chronic wounds and cellulitis. This study shows that in hypomobile patients, additive pressure applied using various modalities results in benefit without harm.

[77] EFFECT OF DECONGESTIVE LYMPHATIC THERAPY ON DERMAL BACKFLOW PATTERN VISUALISED BY LYMPHOFLUOROSCOPY

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Background: Lymphedema is a severe complication of breast cancer treatment. Decongestive lymphatic therapy (DLT) remains the gold standard for treatment of lymphedema. A lymphofluoroscopy can evaluate the lymphatic architecture and may help guiding the therapy. This technique permits to describe three different dermal backflow patterns in function of the severity of the lymphedema e.g. splash, stardust and diffuse pattern.

Aims of the study: The aim of the study is to analyze the effect of DLT on the different dermal backflow patterns seen with ICG fluoroscopy.

Methods: 58 patients were included in this study. The study was approved by the Ethical Committee UZ/KU Leuven. All patients received DLT consisting of an intensive phase during 3 weeks, with multi-layer bandaging, skin care, exercises and manual lymph drainage, and a secondary maintenance phase during 6 months. Repeated measures analysis of variances were used. The ICG fluoroscopy was performed in a standardized way. A subdivision of the upper arm and forearm in four regions, the dorsal and ventral hand, the fingers, the dorsal or ventral trunk were used. Each region corresponded to a score of 1 (max 13 points).

Results: Our results show a clear reduction of lymphedema volume after the intensive phase. There also was a downgrading of the severity of the dermal backflow pattern after the maintenance phase from a stardust pattern to a splash pattern.

Conclusions: Decongestive therapy is able to diminish the volume of the limb but also to downgrade the dermal backflow pattern seen with ICG fluoroscopy.

[78] TREATMENT ALGORITHM FOR MANAGEMENT OF LYMPHEDEMA

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Background: The lymphedema clinician has a large array of treatment options for their patients with lymphedema. These include Manual Lymph Drainage Massage, numerous forms of compression including pneumatic compression pumps, microvascular surgeries, as well as other options. Unfortunately, there is very little scientific evidence to guide the clinician on the most beneficial and cost effective treatment plan. Therefore, there is limited standardization among lymphedema clinicians, and treatment decisions are based on individual preferences. This approach may contribute to decreased patient compliance, poor outcomes, and excessive expense.

Aim: To develop a more standardized practice among lymphedema clinicians that is efficacious and cost effective.

Description: I will discuss a treatment algorithm that I use in the lymphedema clinic at Mayo Clinic Rochester, Minnesota. A stepwise approach will be discussed incorporating various treatment options. This approach is likely the most cost effective without excluding options that may be beneficial but not definitively proven.

[79] A PROSPECTIVE STUDY ON THE IMPACT OF IPSILATERAL INTRAVENOUS CHEMOTHERAPY INFUSIONS ON THE RISK OF BREAST CANCER-RELATED LYMPHEDEMA: IMPLICATIONS FOR CURRENT GUIDELINES

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Background: Breast cancer-related lymphedema (BCRL) precautionary recommendations are commonly provided to patients undergoing treatment for breast cancer despite minimal high-level evidence supporting or refuting their effectiveness.

Aim: To examine whether undergoing ipsilateral arm chemotherapy infusions via peripheral intravenous catheters (PIVCs) increased the risk of BCRL.

Methods: Between 2005-2016, 1210 patients treated for unilateral or bilateral breast cancer were prospectively screened for arm lymphedema with a Perometer pre-operatively and every 3-8 months post-operatively. BCRL was defined as $\geq$10% arm volume increase relative to baseline. Treatment-related information, including chemotherapy administration method, was obtained via chart review. Generalized Estimating Equations were applied to determine whether developing lymphedema was associated with chemotherapy regimen or other factors.

Results: Among 1210 patients with 1373 at-risk arms and a median post-operative follow-up of 41 months, multivariate analysis showed that patients receiving adjuvant chemotherapy via ipsilateral PIVCs were not at an increased risk of BCRL compared to those receiving chemotherapy without ipsilateral PIVCs (p=0.9895). BMI$\geq$30 vs. BMI<30 kg/m^2 at diagnosis (p<0.001), axillary lymph node dissection vs. sentinel lymph node biopsy (p<0.001), and regional lymph node radiation vs. breast/chest wall radiation only (p=0.028) were significantly associated with BCRL.

Conclusion: In this cohort of patients, ipsilateral arm chemotherapy infusions via PIVCs do not significantly increase the risk for BCRL. As patients undergoing treatment for breast cancer may be concerned about the risk of developing BCRL, these data can be used to mitigate patient worry for those who have isolated procedures done on their ipsilateral arm(s).

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[80] COMPRESSION TREATMENT FOR ARM LYMPHOEDEMA FOLLOWING BREAST CANCER TREATMENT, RCT STUDY. PRELIMINARY RESULTS

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Introduction: Breast cancer patients at high risk for development of arm lymphedema (AL) are scanned 1 month post-surgery and again 3-4 months post-RT for early diagnosis and compression treatment. This program has been effective to maintain AL at a minimum in a 10-year follow-up where 80% never exceeded lymphedema relative volume (LRV) 10%.

Aim: We hypothesized that mild AL can be treated only with self-care and no compression, without deterioration.

Methods: Mild AL is defined as (LRV) 5-8% using water displacement method and/or TDC ratio>1.45 for upper arm and >1.3 for forearm using MoisterMeterD. Sixty patients have so far been included, randomized to either no compression treatment (NCT) or daily treatment with standard compression sleeve ccl 1(CT). Both groups get information on self-care. Follow-up are made after 1, 2, 3, 6, 9 and 12 months. Descriptive statistics. Ethical approval has been obtained.

Results: Fifty-two patients have completed the study. In the NCT group (n=26) 27% have increased $\geq$2%LRV and therefore started CT, and 27% have increased $\geq$10%LRV and started compression ccl2 treatment. In the CT group (n=26) no increased of LRV was found in any patient at 6 months. Thus the compression was removed for one month but 26% had to resume compression and 15% increased $\geq$10%LRV. At 12 months 46% in NCT group and 74% in CT group could manage without compression sleeve.

Conclusion: Preliminary results indicate that an initial treatment for 6 months with compression sleeve ccl1 is beneficial for treatment of mild AL, compared to no compression.

[81] PROPRIOCEPTION SENSE IN LYMPHEDEMA AFFECTED UPPER LIMB

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The study has the aim of providing prove of the affected proprioception in lymphedema affected limbs. Blindfolded subjects sat at a table with their forearms positioned on paddles. The hinges of the paddles were aligned with the elbow joint and had electronic goniometer to measure the angle in positioning the forearm. Paddles could be moved by an electric servomotor with a slow angular speed that could be hardly appreciated by the muscle spindles. Subjects have to guess the position of the affected arm, in comparison with the other one, studying the position sense of the lymphedema affected arm. The study investigated 50 women affected by secondary upper limb lymphedema, measuring, besides the difference in terms of degrees of arch of movement in comparison with the unaffected arm, also the duration of lymphedema and the circumference of the forearm.

The results are matched with a control group of 50 unaffected women, providing prove of compromised proprioception in lymphedema affected arms, depending more, as the data show, on the duration of lymphedema than on the size of the lymphedematous arm.

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[82] ASSESSMENT OF ARM LYMPHEDEMA USING TISSUE DIELECTRIC CONSTANT (TDC) TECHNIQUE IN PATIENTS PREVIOUSLY TREATED FOR BREAST CANCER WITHOUT PRE-SURGERY MEASUREMENTS

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Background: Differences in arm volume depend on arm dominance and is mainly due to a greater muscle mass of the dominant arm. Such natural arm volume differences are one reason that volume and bioimpedance estimates need pre-surgery measurements. Otherwise, appropriate corrections for handedness, as well as patient's subjective assessment of tightness and heaviness together with palpated increased thickness of the subcutaneous tissue is needed for diagnosis. Other edema assessment methods may not be so dependent.

Aims of study: To determine the role of handedness when TDC is used to assess lymphedema in women previously treated for breast cancer (BC) but for whom pre-treatment TDC measurements were not done.

Methods: Using water displacement method (WDM), dominant-non-dominant arm volume differences were determined pre-surgery in 61 BC patients. In 62 other non-cancer female patients, skin tissue water was determined with the MoistureMeterD Compact on anterior forearm skin 5 cm distally from antecubital fossa. Subjects signed an institutional review board approved informed consent.

Results: The mean arm volume ratios by WDM were 1.013 ± 0.035 for right-handers and 1.013 ± 0.023 for left-handers. Corresponding TDC ratios were 1.013 ± 0.070 and 1.011 ± 0.082 with a combined left and right-hander ratio of 1.015 ± 0.075.

Conclusions: TDC ratios of subjects closely match patient pre-surgery volume ratios suggesting a potentially useful correspondence between parameters needing further study. The small overall inter-arm TDC ratio difference of 1.5% suggests that TDC measurements, only made after surgery, should not be interpreted as ratio changes unless this threshold exceed.

[83] RANGE OF MOTION (ROM) OUTCOMES AMONG WOMEN RECEIVING A LYMPHEDEMA-PREVENTION INTERVENTION FOLLOWING AXILLARY NODE DISSECTION FOR BREAST CANCER TREATMENT: (ALLIANCE) CALGB 70305

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Background: Axillary node dissection (AND) often results in restrictions in range of motion (ROM), temporarily or permanently. The objective of this secondary analysis was to determine if a lymphedema (LE) prevention program would impact ROM in the affected and unaffected arms.

Methods: As part of the Lymphedema Education and Prevention (LEAP) study (CALGB 70305), women from participating sites (N=41) were randomized to either the "education-only" (E-O) (n=253) group (information about LE signs/symptoms and risk-reduction strategies) or "education+exercise" (E+E) (n=315) group (education-plus-arm-stretching-and-breathing-exercises;physical therapist [PT] visit). Self-administered surveys eliciting how high patients could reach at pre-surgery, 12-, and 18-months post-surgery were used to assess ROM self-reports for each arm. Between-group ROM differences were compared using chi-square tests pre-surgery, and 12- and 18-months post-surgery, and adjusted analyses examining the affected arm were conducted.

Results: At 12 months, women in the "education+exercise" group reported greater ROM (left: 91% vs 84%, p=0.16; right: 90% vs 83%, p=0.02), compared to women in the "education-only" group. The odds of reporting full ROM at 12- and 18-months vs. baseline for each group after adjusting for BMI, surgery-type, AND/SND, affected arm/dominant arm, radiation, chemotherapy was E+E: 5.623; 7.075; E-O: 1.389; 1.549, p-value for interaction between time period and intervention = <0.0001.

Conclusions: Women participating in a LE-prevention intervention regained full ROM in both arms sooner than women who did not receive the exercise intervention. All women receiving AND should receive PT to regain ROM quickly post-surgery to help maintain physical functioning.

Support: U10CA180821, U10CA180882, UG1CA189823; UG1CA189823 (NCORP); ClinicalTrials.gov

Identifier: NCT00376597

[84] THE EFFICACY OF PHASE-1 COMPLETE DECONGESTIVE THERAPY IN A COMBINED MANNER IN BREAST CANCER-RELATED LYMPHEDEMA PATIENTS: RELATIONSHIP WITH FUNCTIONAL STATUS AND QUALITY OF LIFE

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Background/Aim: The aim of this study was to evaluate the effects of complex decongestive therapy (CDT) in patients with breast cancer-related lymphedema (BCRL), in regard to volume reduction, functional status and quality of life (QoL).

Methods: Sixty-five patients with unilateral BCRL were included. The demographic variables focusing on lymphedema were recorded. All patients received combined phase 1 CDT including skin care, manual lymphatic drainage, multilayer bandaging and supervised exercises, five times a week for three weeks, as a total of 15 sessions. Patients were assessed by limb volumes and excess volumes according to geometric approximation derived from serial circumference-measurements of the limb, prior and at the end of third week. The functional disability was evaluated by quick disability of arm, shoulder and hand questionnaire (DASH). QoL was assessed by the European Organization for Research and Treatment of Cancer-CoreCancer Quality of Life Questionnaire (EORTC-QLQ-C30) and its breast cancer module (EORTC-QLQ-BR23).

Results: Sixty-five females with mean age of 54.42±10.8 years were included. The median duration of lymphedema was 12.2 months. There were 26 patients in stage1, 34 in stage2 and 5 patients in stage3. The mean baseline limb and excess volumes were significantly decreased at the end of combined therapies (3352±641cm^3 vs 2841±524.6cm^3 and 32.36±18.5% vs 18.14±11.5%, p=0.000,respectively). The DASH and EORTC-QLQ-C30 and BR23 scores were also decreased significantly ($p<0.05$). The mean volume reduction level was related negatively with the duration of and the stage of lymphedema.

Conclusion: In conclusion phase-1 CDT in a combined manner, performed daily for 3 weeks, greatly reduces the limb volumes as well as improves the disability and QoL,especially when performed earlier, in patients with BCRL.

[85] ASSESSING THE PRESENCE OF BREAST LYMPHOEDEMA FOLLOWING BREAST CANCER TREATMENT: PRELIMINARY RESULTS

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Introduction: It has been recognised that patients undergoing treatment for breast cancer are at risk of lymphoedema of the arm. Lymphoedema also affects the breast but is not as well studied.

Aims: To test the validity of the measurement techniques; ultrasound, tissue dielectric constant and tonometry against the "gold standard" of clinician examination, in identifying breast lymphoedema.

To identify and validate signs and symptoms associated with breast oedema.

Methods: This study applied a case control method, enabling comparisons between participants with and without breast lymphoedema to be made. Women attending the lymphoedema or breast service were approached. A sample size calculation was been performed identifying that a sample of 86 patients was required.

The presence or absence of lymphoedema was determined following blinded clinical examination. The study assessments were performed by a different member of the study team.

Results: Breast lymphoedema was confirmed in 40 women (44.9%) with the lower half of the breast most commonly affected. Increased age, larger Bra size, increased number of positive lymph nodes, axillary surgery, receipt of chemotherapy and increased NPI were all associated with breast lymphoedema ($p<0.05$). Ultrasound and TDC measurements were significantly higher in the lymphoedema group ($p<0.05$). Receiver Operator Characteristic (ROC) curves demonstrated that the these techniques can distinguish between oedematous and non-oedematous breasts.

Conclusion: Breast lymphoedema is a problem for a significant proportion of women following breast cancer treatment. Bra size, BMI and disease severity appear to be related to this Ultrasound and TDC provide objective methods for assessment.

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[86] THE ASSOCIATION OF UPPER EXTREMITY SYMPTOMS AND BREAST CANCER-RELATED LYMPHEDEMA (BCRL): A LONGITUDINAL ANALYSIS OF SUBJECTIVE AND OBJECTIVE DATA

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Background: Patients with BCRL have lower quality of life than those without BCRL. Symptoms are associated with higher risk of BCRL and may reflect developing BCRL.

Aims: To determine the temporal relationship between symptom onset and increased relative volume change (RVC), and whether certain symptoms indicate risk of progressive BCRL.

Methods: This is a longitudinal, prospective, IRB-approved study of 886 patients treated for breast cancer. Patients had pre-operative and follow-up perometry, and completed ≥1 symptom surveys. Symptoms studied were associated with BCRL, and 3740 surveys were analyzed (median 3, range 1,24). Subjects were stratified by maximum RVC.

Results: 745 of 886 patients reported symptoms. Of those with symptoms at <3%, 3-<5% and 5-<10% RVC, 3.8%, 11% and 22% of subjects progressed to BCRL ≥10% respectively whereas 6.6%, 6.7%, and 12.3% of subjects without symptoms progressed to BCRL ≥10% respectively (OR=0.56, p=0.1218, OR 1.73, p=0.2525, OR=2.1, p=0.0958). On multivariate analysis, the groups reporting change in arm size and sleeve size were more likely to progress to higher levels of edema (≥10% and 5-<10% edema respectively) than to <3% edema (p<0.001, OR 3.09; p<0.001, OR 0.39).

Conclusions: Patients report symptoms prior to onset of clinically apparent swelling, some of which put patients at higher risk of progressive lymphedema. These patients are not typically screened or treated. Symptoms should be incorporated alongside objective data and clinical examination into all screening for BCRL, with the goal of early diagnosis and treatment. Consideration should be made to incorporate symptoms into the diagnostic criteria for BCRL.

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[P1] PHLEBOLYMPHEDEMA: UNRECOGNIZED AND UNDERTREATED

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Phlebolymphedema is a condition of mixed venous and lymphatic insufficiency. It is usually not recognized and usually not treated. The lymphatic and venous systems are intimately interrelated. In the presence of venous hypertension, which is characteristic of most venous disorders, the increase in lymphatic flow becomes much greater than the lymph transport capacity. Hence, a failure of one system gives additional burdening/loading to the other system, and a long-term failure of one system results in total failure of these 'inseparable' dual systems altogether and the insufficiency becomes "phlebolymphatic," generating a new "combined" venous-lymphatic condition.

The view venous capillaries are normally in a state of sustained reabsorption is widely taught as an established fact. This view has been revised. There is no net reabsorption of the interstitial fluid by venous microvessels. Tissue fluid balance depends on lymph flow. Venous insufficiency maintains an increased filtration and permeability of blood capillaries. Thus, venous insufficiency is a continuous source of excess interstitial fluid, which overfills and in the end damages lymphatic vessels. Lymphatics may frequently fail in venous disease, especially in chronic venous insufficiency. Conservative treatment, utilizing decongestive lymphedema therapy including manual lymphatic drainage, skin/wound care, decongestive exercises, compression therapy and self-care management is recommended for phlebolymphedema. Independent handling of adjustable compression wraps seemed to improve the clinical outcome and is a promising step toward self-management involving effective compression. Therefore, phlebolymphedema, when recognized, is a treatable condition.

[P2] LIPOEDAME, A MULTIDISCIPLINAIR LIFESTYLE PILOT PROJECT LIPOEDEMA IN AMERONGEN

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Introduction: we've followed 8 women diagnosed with lipoedema for a period of 6 months who were unhappy with their body and lifestyle.

Aim: to see the impact on quality of life (QoL) and physical activities by providing a free multidisciplinair targeted health program.

Rationale: a tailor made health program together with peers, might improve a more healthy life, QoL and positively impact their daughters life in future.

Description: A weekly program of 1,5 hour of physiscal excersises and a 'walking group' for 1 hour were provided. Every 4 weeks we have offered an additional introduction hour of other physical activities, like Yoga, Tai Chi, Pilates, dancing on music, etc. and an dietician attended for questions and advice. Psycological support was provided and follow up available on request. Tips, trics and walking appointments were shared in a group chat.
We measured the physical condition (weight, sizes, muscle tissue and strenght, 6MWT, etc.) QoL questionaires (SF-36 and MVI) and weekly minutes of physical activities at 0 and 6 months and used BIOmed.

Evaluation: After 6 months we were able to evaluate 6 participants and found an increase on QoL (average: SF-36: 11,7 points and MVI: 0,67), the total number of physical activities increased with 154 minutes per week and we found a positive impact on extracellulair moisture.
Evaluation 5 months after closure of this pilot: 5 participants still have a higher level of physical activities, are happy that they have participated in this pilot and will advice others positively.

[P3] THE LYMPHOEDEMA RESEARCH PRIORITISATION PARTNERSHIP

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Background: More research is needed to strengthen the evidence base for lymphoedema management. It is critical however, that patients and healthcare professionals (HCPs) are involved in prioritising research to ensure it is relevant, meets their needs and is not biased by commercial interests.

Aims: The Lymphoedema Research Prioritisation Partnership, in conjunction with the Lymphoedema Support Network, a national patient support group and the British Lymphology Society, aimed to set research priorities for the treatment and management of lymphoedema in the UK, in collaboration with patients, carers and HCPs.

Methods: Using the James Lind Alliance methodology, a national survey was conducted to gather unanswered questions about lymphoedema management, these were thematically analysed, collated and verified by an in-depth evidence review and formatted into broad research questions, which were then prioritised through an online Delphi survey. Ethical approval was gained from the University of Plymouth.

Results: The initial survey generated 631 submissions from 213 participants, 485 were within scope. These were collated into 12 themes; 101 submissions were answered by existing research and an additional 78 questions added from the literature. The remaining submissions were collated into 126 broad research questions and prioritised over four rounds of a Delphi survey by 27 patients, 3 carers and 31 HCPs to reach consensus on the top 10 research priorities.

Conclusions: This study has reached consensus on the top 10 research priorities for lymphoedema management in the UK which it is hoped will generate research to improve the lives of those living with lymphoedema.

[P4] USING TELEHEALTH TO SUPPORT PEOPLE WITH LYMPHOEDEMA IN A REMOTE AND RURAL AREA

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[1] *NHS Highland*

Supporting self-management across a sparsely populated, large geographical area presents challenges. During 2017 NHS Highland piloted the use of Florence text messaging service to provide ongoing support to people with lymphoedema.

The aim of the pilot was to evaluate the acceptability and usefulness of texts as a means of providing information and self-management tips to enhance the information provided to patients at their clinic appointment.

Florence is a simple, automated interactive NHS telehealth service using mobile phone text messages to support people with a wide range of long term conditions. It can be used to monitor symptoms and provide information, advice and support to help patients manage their condition.

The Florence protocol, including its length, content of the messages and their frequency was developed by the lymphoedema team with patient input. The protocol included monitoring questions regarding the size of the affected limb and frequency of garment use. Texts were sent twice weekly initially, reducing in frequency over the 20 weeks of the protocol. Links to video clips covering garment application, simple lymphatic massage and exercise were included.

Formal feedback from text and written questionnaires is limited at present due to the small number of patients completing the protocol so far but has been positive. Informal feedback from patients has been positive and has led to proposed changes to the protocol. In particular, the monitoring questions were felt to be unhelpful and will be reduced in future versions.

[P5] LIMITED USABILITY OF LYMPHOSCINTIGRAPHY IN FOLLOW-UP OF PRIMARY LYMPHOEDEMA

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The diagnosis of primary lymphoedema and the initiation of appropriate treatment is usually significantly delayed. We emphasize the role of LS as a gold standard in diagnosing primary lymphoedema and its limited usefulness for supplementary assessment in monitoring treatment outcomes.

Clinical case: Patient 49 years old after a long journey, she noticed swelling in the area of the right ankle. The size of the edema was initially different, but later it gradually increased. It was only 8 years since the beginning of the disease, after another visit to the surgeon, LS was performed. Disturbances in the formation of lymphatic vessels and lymph nodes of the right leg were detected. After diagnosis, she was treated intensively physiotherapistically with clinical and metric improvement. For objective observation, LS (2013) was repeated, but no differences were detected compared to LS (2006) However, the functional and clinical improvement after physiotherapy was high. The biggest differences between measurements before and after intensive physiotherapy at the groin, thigh, ankle and foot level are significant ($p < 0.05$).

Conclusions: LS allow an objective assessment of lymphatic edema in patients undergoing intensive physiotherapy. In our patient, LS was performed at the beginning and during therapy, but gave almost identical results. Despite the lack of scintigraphic improvement during intensive therapy, the metric measurements of the affected limb were significantly reduced, subjectively felt much better, the limb mobility / functioning was significantly improved, and the swollen tissues were much softer. It seems that it is particularly important to extend the diagnostic methods. The probable reason for the contrast between scintigraphy and clinical improvement is not entirely clear and should be the subject of further research and it seems that the lack of regression of lymphoscintigraphic disease should not be the only indication for detention or modify physical therapy in such advanced cases.

[P6] SECONDARY LYMPHOEDEMA AFTER TRAUMA IS NOT SO RARE

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Introduction: At outpatient department for lymphoedema at Dermatovenerological clinic, University Medical Centre Ljubljana we are noticing that there are more and more patients whit secondary lymphoedema after various injuries, mostly of limbs.

Purpose: To define the necessity of compression therapy with short-elastic bandages in patients after limb trauma, where edema lasts for several weeks or longer than expected.

Methods: The study involved 6patients after injuries and surgeries of upper and lower limbs, where the swelling has lasted from 3weeks and up to 3 months. The Stemmer's sign was positive, edema was elastic. The quality of life of the patients was significantly worse with a severe feeling of tension in the swollen limb, stark pain and poor mobility. The patients were treated with self-adhesive, short-elastic bandages for a week. The circumferences of edematose limbs were measured before applying and after the removing of the bandages in standard places. Pain intensity was assessed using the VASscale.

Results: The average circumferences of edematose limbs after a week, was reduced by 5.33cm in all places of measurement. The DLQIvalue, which was the only validated questionnaire available at the time of study, has in average fallen down for 12 points. After therapy edema have no longer impact on patients' life quality. All patients continued with Class II compression garments. The pain assessment score has also fallen down from the initial score of 10 down to 3.

Conclusion: Although our study was small, it shows the necessity for appropriate and rapid compression therapy in patients with various limb trauma, to the extent the injury permits it. With that, not only would the patient's life quality improve, decrease pain, but it would also prevent the formation of lymphedema.

[P7] FEASIBILITY OF RECRUITMENT TO A PILOT TRIAL EXAMINING THE EFFECTS OF EARLY COMPRESSION AND EXERCISE IN WOMEN TREATED FOR GYNECOLOGICAL CANCER

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Background: There is limited knowledge on appropriate strategies to reduce the risk of lymphedema development in various cancer populations. However, there currently exist few trials testing potentially effective interventions. Understanding factors influencing recruitment may enhance the quality of future research in this area.

Objective: Our objective is to report on the feasibility of recruitment to a pilot trial examining the effects of early compression therapy with individualized exercise in women treated for gynecological cancer.

Methods: The pilot study is currently in progress at the McGill University Health Centre and Jewish General Hospital in Montreal, Canada. Women diagnosed with endometrial (grade 2/3 or high grade type), cervical (stage 1b1/2a) or vulvar (stage 1/2/3) cancer and scheduled to undergo surgical lymph node dissection were approached. Exclusion criteria included recurrent or metastatic disease, sentinel lymph node dissection, pre-existing lymphedema and body mass index of ≥40. Recruitment rate, reasons for exclusion and baseline characteristics of study participants were recorded.

Results: Over a three-year period (2015-2018), we approached 107 potentially eligible participants and recruited 50 women to the study. Reasons for exclusion included declined participation, unmet inclusion criteria and incomplete pre-operative study assessments. Included participants had diagnoses of endometrial (n=32), cervical (n=13) and vulvar (n=5) cancers.

Conclusion: This presentation will provide knowledge on the feasibility of recruitment to a pilot trial studying an intervention for the prevention and enhanced management of lower limb lymphedema after gynecological cancer and guide future research that may contribute to the development of post-operative recommendations for this population.

[P8] SURVEILLANCE PROGRAM FOR EARLY LYMPHOEDEMA DIAGNOSIS FOLLOWING CANCER TREATMENT

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The survival rate of cancer patients are continuously increasing. The risk for lymphoedema (LE) increase with lymph node dissection and radiotherapy with overall incidence of 30-50%.

Aim: In Sweden each of six health care regions, has a Regional Cancer Centre (RCC) aiming at support and development of cancer care. The south RCC in Sweden, including 1.8 million inhabitants, will now introduce a surveillance program for early LE diagnosis at all hospitals in the region, and to create evidence based and pragmatic guidelines for LE treatment, with successively implementation for all cancer survivors at risk of LE.

Description: The patients at risk will be identified and included in the program. LE status are determined 4 weeks post-surgery and 3-4 months after completion of radiotherapy. A 10-year follow-up of such a program for breast cancer survivors (n=292) has been evaluated, showing that 90% of the patients diagnosed with arm lymphedema (incidence 38.7%) can be kept on an LE relative volume of less than 20%, and in about 30% of the LE patients the LE volume is reduced below 5% due to early treatment including compression sleeve daytime and self-care.

Evaluation: The surveillance program will be based on the evaluated program for breast cancer patients but include all patients at risk of LE, who will be similarly evaluated. After LE diagnosis the patient will enter a treatment program including regular follow-up visits to the hospital and basic educated in the lymphatic system, treatment, and self-care including exercise and weight control.

[P9] IMPLEMENTATION OF NIGHT COMPRESSION IN THE MANAGEMENT OF LYMPHEDEMA IN DAILY PRACTICE

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Introduction: Lymphedema affects a patient´s life day and night. Fluctuation of swelling, aching, pain, heaviness, and uncomfortable feelings disturbing sleep have been reported. To gain further experience in the implementation of night compression as complementary therapy for lymphoedema, a series of case reports comprising the management of day lymphedema plus night-time compression were conducted in different countries.

Description: After initial decongestion phase, 12 patients in Germany, UK and USA received day-time lymphoedema treatment according to their medical condition and individual needs and additionally applied compression during night-time / at rest using a novel flat-knitted compression garment.

Patient's experiences regarding the benefits and drawbacks of night compression were collected.

Results: Although the patients were highly heterogeneous in respect of their ethology and medical history, they experienced compression at night-time / at rest as to be beneficial which also motivated them to consequently wear the day garment. Only in three cases initial help was required to don the compression garments. The easy handling of the garment supported patient`s self-management and immediately led to an increase in independence Major drawbacks like lack of comfort, pain or disturbance of sleep were not observed.

Conclusion: Patients perceived the addition of night-time compression to be beneficial. Custom-made night-compression enabled patients to manage their lymphoedema during the night, supporting their self-management and wellbeing throughout the day.

[P10] STUDY ON THE EFFECTS ON COMPRESSION AFTER LYMPHATIC VENOUS ANASTOMOSIS FOR THE PATIENTS WITH BREAST CANCER RELATED LYMPHEDEMA

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Introduction: Lymphatic venous anastomosis (LVA) has been widely adopted for one of surgical treatments in breast cancer related lymphedema. However, it is still unknown how to continue or discontinue putting compression garments after LVA. In this paper we report volume changes of the affected limb and rate of discontinuity in use of compression garments from the viewpoint of patient care in out patient office.

Methods: 41 patients with breast cancer related lymphedema were included. They had LVA with the average of 4 anastomoses. Near infrared fluorescence lymphography was performed about 6 months after LVA to evaluate lymph-flow changes. We investigated volume changes of the affected limbs at the same timing. If there was no sign of deterioration, we recommended discontinuity to put compression garments. We divided them into two groups, continuity (group A) and discontinuity (group B). Volume changes before and 1 year after LVA were compared in each group retrospectively.

Results: Out of 41 patients 29 (71%) discontinued to put garments and 12 (29%) continued. The volume changed from1513.9mL to 1494.9mL in group A and from 1407mL to 1393.2mL in group B. There were no statistical differences.

Discussion: Decreasing of contents in compression is not considered after LVA. It is important for the patients to become free from compression, which can increase QOL of the patients. In this study it seemed to be important to urge the patients with LVA to discontinue to put compression garments.

[P11] EARLY SCREENING OF SECONDARY LYMPHEDEMA POST PELVIC LYMPH NODES DISSECTION IN WOMEN WITH GYNAECOLOGICAL CANCER IN SINGAPORE

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Lymphedema is the excessive accumulation of protein-rich fluid when the demand for lymphatic drainage exceeds the capacity of lymphatic circulation. Lymphadenectomy alone is one of the main risk factors accounting for 20% of secondary lymphedemas. Studies have also shown that with the increase in lymph nodes removal, the risk of developing lymphedema is higher.

Early screening and detection for this chronic condition has been cited in countries such as Australia, Europe etc. However, this is lacking and under reported in Singapore and probably also in South-East Asia.

Studies have shown that most lymphedema develop within the first few years after surgery. We aim to evaluate the effectiveness of an early screening clinic in diagnosing and providing early treatment for secondary lymphedema. In so doing, aim to prevent the number of late stage lymphedema from developing.

The KK Women's and Children's Hospital started an early screening program since 2008 for patients who underwent gynaecological surgery with lymphadenectomy. Majority of these patients were seen preoperatively and had baseline leg measurements done. They were followed up by the physiotherapist within the first 3 days, and subsequently at 3 months, 9 months and 21 months after surgery. To date, the clinic sees an average of 780 patients a year.

[P12] BEAUTY AND THE BEAST: A PLEA FOR BEAUTY IN THE TREATMENT OF SECONDARY LYMPHOEDEMA

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Rationale: Therapeutic compression sleeves are a central and effective component of treatment for secondary lymphoedema, but compliance is low. Different factors have been identified that interfere with adherence, such as financial issues, difficulties applying the compression sleeves, discomfort (warmth, skin abrasions, …), and not in the least aesthetic objections. Especially in the case of secondary lymphoedema resulting from breast cancer treatment, patients are often struggling with body image issues related to mastectomy, although they are able to cover scars with clothing and prostheses. Having to wear a therapeutic compression sleeve exposes them as 'abnormal' to the eye of the public - 'forever a patient' - and aggravates feelings of shame, leading to avoidance of social activities.

Description of initiative: Although patients often report aesthetic concerns as a reason for non-compliance, manufacturers have largely ignored the call for beauty. Indeed, from a medical perspective, technological achievements predominate. However, given the psychosocial burden the compression sleeves impose on patients, it is surprising to see patients' aspirations be unheard.

Outcome: The potential advantages of fashionable compression sleeves are considerable and far-reaching. Not in the least would fashionable compression sleeves have the potential to alleviate the feelings of shame. The direct effect would be that therapy adherence would increase because patients would no longer be wedged between compliance and a social life. In itself, increased therapy adherence creates profits: patients themselves experience less symptoms (swelling, pain) and the progression into more advanced stages is delayed, creating profits in health care expenditures.

[P13] HYDROTHERAPY FOR LIPOEDEMA/LYMPHOEDEMA - IMPROVING PATIENT OUTCOMES, SELF-MANAGEMENT AND SOCIAL INTEGRATION

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[1] *South Eastern Health and Social Care Trust*

Aims: The aim of this pilot was to ascertain if hydrotherapy classes for lymphoedema and lipoedema patients would help patients to manage their condition through weight loss, increased social integration and maintenance of limb volume.

Our service has been experiencing increased referral rates for patients with lipoedema and lymphoedema, and patients with a high body mass index. In order to manage this with the most effective use of resources, encouraging patient self-management for improved long term outcomes, we developed a programme to include our patients in hydrotherapy classes already running within the musculoskeletal physiotherapy service in our trust.

Description: Patients joined the musculoskeletal chronic pain pool class running once a week in a public leisure centre in six week cycles. Each class provides a gentle 30-45min exercise regime, led by MSK Physiotherapist, with support from lymphoedema assistant staff.

Our outcome measures monitored objective changes in patient condition (limb volume, weight, BMI) and showed subjective changes in patient perception using health and activity scores and EQ5D. Assistant staff were also trained to use motivational interviewing techniques to promote patient accountability.

Outcome: Our results show an average limb volume reduction of 12,000mls and 5kg weight loss. Subjective improvements were made in almost all outcome scores. Several patients also independently joined other health programmes on completion of their hydrotherapy.

Evaluation of impact: Our results highlight this programme improves symptoms of oedema, empowering patients to self-management their condition outside of the healthcare setting whilst increasing confidence and socialisation.

[P14] MANAGING SEVERE LIMB DISTORTION WITH A 2 LAYER, SHORT STRETCH, COHESIVE BANDAGE SYSTEM

Denise Hardy[1]

[1] *Kendal Lymphology Centre; 64 Stramongate*

Description: A 52 year-old Lady presented with severe left leg swelling of 3 years duration (an excess fluid volume of 24500mls). The physical impact and associated symptoms of her swelling (reduced function/mobility, clothing/ footwear limitations, poor skin integrity, pain/discomfort, leakage and recurrent infections) had also led to profound negative psychological distress**.**

Reason: The successful use of Multi-Layer Lymphoedema Bandaging within Decongestive Lymphatic Treatment is widely documented in helping to restore limb shape and size, reduce skin and subcutaneous changes, soften fibrotic tissues and eliminate lymphorrhoea. However, this system does have drawbacks, particularly around application time and its resulting bulkiness. An alternative approach is to use a 2 layer, short stretch, cohesive bandage system, built up to focus on particularly difficult areas, extending onto the hip/trunk, to address oedema beyond the limb.

Case (Consent given): The bandages were applied twice weekly over a 5 week period with other aspects of care incorporated – including patient education – essential to ensure successful, long-term management. After 12 appointments, the affected limb had reduced by over 14litres and measured 68% larger (as opposed to 161% pre-treatment).

Discussion: This 2-layer bandage system, designed primarily for mild-moderate swelling can be successfully utilised for more severe cases by adapting the underlying principals. Using several layers of the compression layer at reduced stretch, a semi-rigid skin is generated, with an almost perfect anatomical fit, resulting in an effective high working pressure and a well-tolerated resting pressure.

This poster will highlight the full effects of treatment and long-term self-care strategy.

[P15] STANDARDISING CARE FOR PATIENTS WITH LOWER LIMB OEDEMA IN PRIMARY CARE

Elaine McNeill[1], Pippa McCabe[1], Vivienne Murdoch[1], Lynne Whiteside

[1] South Eastern Health and Social Care Trust

Aims: 1 in 200 patients over 65 will present with lower limb oedema, this prevalence increase with age.
These patients do not meet referral criteria for Lymphoedema services but are difficult to differentiate, causing increased demand.
NHS England 2016 reports potential for cost saving and improved patient satisfaction with early diagnosis and management.
This project sought to determine how this might be possible.

Description:

- Data collection on patients with lower limb oedema from GP surgeries.
- Treatment room nurse interviews identifying current practice.
- Collaboration between TVN, Lymphoedema and GP's to develop a care pathway.
- Patient satisfaction surveys to address the patients journey.
- Pharmacy education and feedback sessions.

Evaluation:

- The care pathway received positive GP feedback and will be rolled out across GP surgeries trustwide via education sessions facilitated through GP federations.
- These sessions will also involve education re coding to facilitate future re-audit of this patient group.
- Pharmacy education was positively received with an increase in knowledge and awareness demonstrated.
- Patient information leaflets were developed as a result of treatment room questionnaires, pharmacy sessions and patient feedback. These will be available trustwide in GP surgeries, pharmacies and nursing settings complimenting verbal information given following a new diagnosis of oedema.

This large multifactorial and multidisciplinary project is ongoing with potential securement of funding for increased treatment room and Trust staffing. It has potential to produce benefits to the quality of life of patients and financial savings for the Trust and GP practices.

[P16] TALK LIPOEDEMA: EVALUATING THIRD SECTOR SELF-MANAGEMENT SUPPORT ACTIVITIES

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[1] Queen Margaret University, Edinburgh; The Haven, Lanarkshire

[2] Talk Lipoedema

Talk Lipoedema is a UK-based third sector organisation led by women with lipoedema. Lipoedema is a fat disorder, commonly presenting with disproportionate body shape, pain, poor mobility, psychological distress, and secondary lymphoedema (Wounds UK 2017). Talk Lipoedema supports and empowers women with lipoedema to self-manage, providing peer support through a variety of social media and face-to-face initiatives, including national conferences and local roadshow activities throughout the UK.

Aim: To pilot a feedback questionnaire, designed to evaluate the impact of Talk Lipoedema conferences and roadshows on the knowledge and confidence of women with lipoedema.

Description: Talk Lipoedema recognises the importance of evaluating our activities in order to continue to develop our services. An eight-item questionnaire was developed to gather feedback from attendees. Respondents completed the questionnaire before and after the 2017 conference in Birmingham, and one roadshow held in Scotland. Ethical approval was not sought as this was an evaluation of routine activities undertaken by a third sector organisation.

Outcome: A total of 48 completed questionnaires were returned at the conference and 21 from the roadshow. The poster presents simple descriptive statistics to provide information on the changes in knowledge and confidence related to key aspects of self-management.

Evaluation of impact: Significant improvements in knowledge and confidence in self-management were identified. Narrative information from women and their families also identified key benefits of the organised support events, and future opportunities for development.

References: Wounds UK (2017) Best practice guidelines; the management of lipoedema. London.

[P17] PATIENT SATISFACTION AND SELF-REPORTED OUTCOMES IN SURGICAL TREATMENT OF LOWER EXTREMITY LYMPHEDEMA

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[1] *Pusan National University School of*

[2] *Pusan National University Hospital*

Purpose: Reconstructive surgery for lower extremity lymphedema only partially restores function, and many patients are dissatisfied with results. Preoperative expectations have been shown to influence postoperative satisfaction but are poorly understood in patients with lower extremity lymphedema. Qualitative methodology can elucidate patient beliefs and attitudes, which are difficult to quantify. The purpose of this study was to examine patient-reported outcomes, including satisfaction, and to understand the patient perspective.

Methods: We used qualitative interviews and questionnaires to assess patient-reported outcomes. Members of the research team analyzed interview data using Grounded Theory methodology. Data from participants who had and did not have reconstructive surgery were compared.

Results: Ten patients participated in this study. Of the 4 participants who had radical reduction of lymphedema with preservation of perforator, 3 felt their expectations had been met and 3 were satisfied with their outcomes. Of the 3 participants who had vascularized lymphy node transfer, 1 felt their expectations had been met and 2 were satisfied with their outcomes. Reconstruction produced statistically significant improvements in volume of lower extremity and daily activity.

Conclusion: Satisfaction with surgical outcomes with lower extremity lymphedema depends heavily on whether preoperative expectations are met, but patients are unfamiliar with lymphedema and do not always know what to expect. Physicians must provide robust preoperative education to encourage realistic expectations.

[P18] THE EFFECTS OF COMPLEX DECONGESTIVE THERAPY IN THE TREATMENT OF BREAST CANCER RELATED LYMPHEDEMA ON KINESTHETIC SENSE OF HANDS, UPPER EXTREMITY FUNCTION AND QUALITY OF LIFE

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[3] *Ege University*

Background: Lymphedema (LE) is one of the serious complications that occur after breast cancer treatment. Complex decongestive therapy (CDT) is the gold standard method in the management of LE.

Aim: To investigate the effects of CDT on the kinesthetic sense of hands, upper extremity function and the quality of life in patients with breast cancer related lymphedema (BCRL).

Methods: A total of 40 patients with BCRL were assigned for the study. Kinesthetic sense of the hand, upper extremity function (DASH), quality of life (European Organization for Research and Treatment of Cancer Core-30 (EORTC- Q30)) and arm volume of all patients were evaluated before and after the treatment. All patients underwent 20 sessions (one hour) of CDT for four weeks (five days per week). Comparisons of pre- vs post-intervention values were made using the paired t- test. The hospital ethics committee had approved the study protocol.

Results: A statistically significant decrease in the volume of the involved extremity after the treatment (p =0.000) was determined. Our results showed a significant decrease in symptom score (p= 0.02) and a significant improvement in general health status and functional scales of EORTC Q30 (p= 0.000 and p= 0.036, respectively). DASH scores and visual and kinesthetic sense scores (visual and kinesthetic kinesthesia) of the patients significantly improved after the treatment (p= 0.037, p= 0.012, p= 0.000 respectively).

Conclusions: BCRL is a serious complication that may lead to impairment in the kinesthetic sense of hand and upper extremity function as well as an increase in arm volume and impairment in the quality of life. Findings suggest that CDT is an effective and safe method to achieve not only a significant volume reduction in limbs involved by LE, but also good outcomes in the management of these aforementioned issues.

[P19] THE INTERRATER RELIABILITY OF COMMON PROTOCOLS USED FOR THE ASSESSMENT OF LYMPHEDEMA

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Introduction: In clinical and scientific practice, reliably assessing the change in lymphedema is crucial. We assessed the interrater reliability for five clinical protocols for analysing lymphedema. Measurements were based upon guidelines found in literature or operating manuals.

Aims: To evaluate the interrater reliability for five predetermined measuring protocols.

Rationale: Is training required for a reliable assessment of lymphedema.

Description: In this study, 46 master students physiotherapy (M=10, F=36) participated. Five protocols (volumetry arm and -foot, moisturemeterD, perimeter arm and figure-8 of hand) to assess lymphedema were tested for the interrater reliability (ICC). Per protocol, one student was selected as subject. All other students were raters. Subjects were measured by maximum 5 raters. All raters had to execute the predetermined protocol. Therefore, they had to reproduce the whole procedure instead of only repeating the measurement as such. Statistical analysis was performed by calculating the ICC-two-way-random (absolute agreement).

Evaluation: The average age was 23.63y (± 5.08). Thirty students had already experience in carrying out the protocols. Two were working as physiotherapist. All ICC's reached a value of ≥ .90. The best reliability was found for perimeter arm (ICC .999). The least reliable protocol was figure-8 of hand (ICC .961). Students with limited or no experience in assessing lymphedema were able to reproduce the measuring procedure reliably. The current study reveals that untrained, undergraduate physiotherapists are able to produce reliable results based upon written protocols. All 5 protocols could be reproduced reliably; with the perimeter achieving the highest ICC.

[P20] DEVELOPMENT OF UK BEST PRACTICE GUIDELINES FOR THE MANAGEMENT OF LIPOEDEMA: AN EDUCATIONAL INITIATIVE

Anne Williams[1], Denise Hardy[2]

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[2] Kendal Lymphology

Introduction: Lipoedema predominately affects women and is a chronic fat and connective tissue disorder. There is poor awareness of the condition amongst health professionals in the UK. Women with lipoedema experience many psychosocial challenges, particularly related to delayed diagnosis and poor access to care (Fetzer and Fetzer 2016). There is limited research evidence to guide practice. In Spring 2017, Best Practice Guidelines for the Management of Lipoedema in the UK were published.

Aims: The document aims to be an educational resource that is comprehensive, realistic and accessible to professionals, people living with lipoedema, and those developing and commissioning services.

Rationale: A creative approach to guideline development was essential, to capture the key aspects of lipoedema management, care and support, based on best available evidence.

Description: The guidelines were developed using a collaborative partnership approach between clinicians, women with lipoedema, industry partners and Wounds UK. An Expert Working Group met in Autumn 2016 to begin the development process, and the guidelines were published in Spring 2017, following peer review. The poster reports on key messages from each section of the guideline including: epidemiology and pathophysiology; diagnosis and assessment; management; psychological support; healthy eating and weight management; skin care; compression therapy, surgical and non-surgical management.

Evaluation: The guidelines are due to be reviewed and revised within three years, following evaluation of their impact.

References: Fetzer A, Fetzer S (2016) Lipoedema UK Big Survey, Research Report

Wounds UK (2017) Best Practice Guidelines for the Management of Lipoedema, London.

[P21] THE ROLE OF PRESSOTHERAPY IN THE TREATMENT OF LYMPHEDEMA AFTER BREAST CANCER SURGERY

Dragana Bojinović-Rodić[1], Živanić Dobrinka [1], Jelena Nikolić-Pucar[1], Ana Kovačević-Gašić-Kajkut[1]

[1] *Institution of Physical Medicine and Rehabilitation "Dr Miroslav Zotović"*

Background: Secondary lymphedema of the arm is a relatively common complication after breast cancer surgery. Although complex decongestive therapy (CDT) is considered the "golden standard", there is still a controversy as to whether adding pressotherapy (intermittent pneumatic compression) is of any value.

The aim of study was to compare the efficacy of CDT against CDT combined with a pressotherapy in patients with arm lymphedema after breast cancer treatment.

Methods: This prospective, randomized study included 102 patients who were randomly assigned to a CDT group (control) or CDT+pressotherapy group (experimental). Arm circumference and Functional Analysis of Cancer Treatment- Breast 4+ (FACT-B4+) for quality of life were assessed before, immediately after 3- weeks of treatment protocol and at 3 months after the end of treatment.The statistical analyses included descriptive methods and analysis of variance (ANOVA) for repeated measures.

Results: There were no significant differences in clinical characteristics between the two groups. The ANOVA revealed significant main effect of Time for all studied variables ($p < 0.01$), but no significant group-by-time interaction ($0.08 \leq p \leq 0.99$). More specifically, there was no significant difference between the two groups in the degree of lymphedema reduction and FACT-B4+ scores either at the end of treatment or at 3-month follow-up.

Conclusions: Combining CDT with pressotherapy is no more efficacious than providing CDT alone in patients who present with arm lymphedema after breast cancer treatment.

[P22] THE ROLE OF COMPLEX DECONGESTIVE PHYSIOTHERAPY IN HEALING OF CHRONIC VENOUS ULCERS: TWO CASE STUDIES

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Description of two cases of chronic ulcers, one since 1983 one since 1967, treated with complex decongestive physiotherapy (CDP), resulting in wound healing within 2-4 months.
Chronic Ulcers can affect the limb with swelling, edema, pain, leading to delayed wound healing.
The including physiotherapy for reducing edema and pain, maintaining and restoring movement when treating chronic venous ulcers has not been researched.
Treatmetn included CDP while preventing infection and without interfering with the natural wound healing processes.

In the first case, after nine-weeks physiotherapy treatment, the wound was fully healed. Decreased pain and increased walking speed were achieved. The patient›s condition was maintained by employment of a pressure garment. The second case, after four months of treatment, the wound surface was reduced by about 2/3, wound depth reduction was achieved, pain reduction, increased participation and walking speed. The patient was able to go up and down stairs, an action not possible at the onset of treatment. (improvements were shown in Timed Up & Go, BYTY tests and VAS in both patients).

Conclusions: Medical treatment provided to chronic ulcers includes complication prevention. However, the functional implications of the wound are not always taken into consideration. Treatment of chronic ulcers must be interdisciplinary, including medicine, nursing, pharmacy, and physical therapy. The role of Physical therapy in chronic wound treatment should include reduction of edema, application of proper dressings, maintain and rehabilitation of range of motion, pain alleviation, and encouragement of active movement.

[P23] MALE BREAST CANCER WITH A BREAST CANCER RELATED LYMPHEDEMA: A CASE REPORT

Alper Tuğral[1], Yeşim Bakar[1]

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Definition: Breast cancer not only affects women but also affects males. Incidence of male breast cancer (MBC) was reported as 0.5-1% when considering all breast cancer incidence. Breast cancer related lymphedema (BCRL) is one of the most debilitating long-term complication after breast cancer surgery which needs long-term care. However, BCRL has not been thoroughly investigated in male population.

Reason for report: MBC is not common when compared to female population. In addition to this, MBC with BCRL is not common. Thus, clinical features of BCRL in MBC are a bit of benighted.

Case: 67 years old male was referenced to our clinic due to BCRL. When analyzed his medical records, 30 lymph nodes were excised during modified radical mastectomy. 21 sessions of chemotherapy and 16 sessions radiotherapy were performed. BCRL showed itself for 2 years. Sub-tissue fluid proportion ratios were found in the range of 1.16 to 1.24 for arm, 1.11 to 1.81 for forearm, 1.02 to 1.29 for inferior axilla among different penetration depths which are ranged from 0.5 mm to 5.0 mm, however these ratios were reported as in the range of 1.40-1.45 in females with BCRL in 2.5 mm depth.

Discussion: Although MBC is not seen in common, BCRL and other related complications should be enlighted in male population. Maintaining the knowledge regarding MBC not only improve self-care but also integrate the awareness related to MBC. In this manner, MBC still be the one waits to be elucidated regarding its epidemiological burden in addition to BCRL incidence.

[P24] COMMPRESION CORSETS IN TREATMENT OF PATIENTS AFTER MASTECTOMY AND LYMPHADENECTOMY. NEW OPPORTUNITIES PHYSIOTHERAPY

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[2] *Medical University of Gdańsk*

Introduction: There is no fully effective treatment for secondary lymphedema. In patients with breast cancer, lymphedema presents after axillary dissection. It typically occurs in a limb, but also in the torso. Currently used compression therapy has varying efficiency. Better solution is still missing.

Methods: The study was carried out in 50 randomly selected patients classified as candidates for surgery. They were randomly divided into two subgroups: one received compression corsets 1-month following the surgery and the other didn't. Size of truncal lymphedema was measured using ultrasound. The patients were examined four times. The follow-up was for 7 months in total. The results were statistically analyzed. Both subgroups noticed reduction of pain.

Results: Class I compression corsets are an effective treatment for lymphedema, could be used for antiedematous prevention in patients who underwent removal of axillary lymph nodes and radiotherapy, also could reduce pain associated with surgical treatment of breast cancer.

Conclusion: The aim was to find whether compression corsets therapy could prevent truncal lymphedema on the operated side after axillary lymph node dissection as the standard for breast cancer treatment and whether it is efficient in prevention and treatment of truncal lymphedema in patients who underwent mastectomy and additional radiotherapy.

[P25] A REVIEW OF BREAST CANCER-RELATED LYMPHEDEMA (BCRL) RISK-REDUCTION INTERVENTIONS FOR LATINA SURVIVORS

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Breast cancer-related lymphedema (BCRL) is a treatment sequela with the potential to negatively impact physical and psychological function. Research has demonstrated theory-based interventions can positively impact health behaviors addressing BCRL risk. Ethnic and cultural considerations can influence outcomes, but may not be well understood in minority populations. Comprising the second largest ethnic group with the fourth highest breast cancer rates in the United States, it is critical to discover and address factors increasing BCRL risk and negatively impacting long-term quality of life (QOL) for Latinas.

A literature review was undertaken to identify successful intervention strategies that address BCRL in this population. MEDLINE, Scopus, CINAHL, ONS website, and Google Scholar databases were searched.

Of 85 articles screened, 11 intervention studies addressing physical activity, diet, and QOL concerns for Latina breast cancer survivor were included. Five randomized control trials and one single-arm longitudinal study addressed physical activity and diet. One targeted stress management. Three pilot studies examined peer-supported QOL educational programs, physical activity, and emotional support. One study examined a caregiver-mediated BCRL tele-rehabilitation intervention. When identified, Social Cognitive Theory was the predominant theoretical framework. Three strategies were found to be important for mediating healthful behavior change: overcoming language barriers, observing social modeling, and enhancing self-efficacy.

This review suggests family involvement, peer mentoring, culturally-tailored educational materials, and self-care skill practice are important elements of an intervention that can lead to successful, long-term adoption of BCRL risk-reducing behaviors. Knowledge of these factors can aid health care professionals in providing effective lifetime support.

[P26] PRIMARY PRECOX LYMPHEDEMA IN UPPER EXTREMITY AND MANAGEMENT: A CASE REPORT

Elif Duygu[1], Yeşim Bakar[1]

[1] *Abant Izzet Baysal University School of Physical Therapy and Rehabilitation*

Description: Primary lymphedema results from a defect in lymphatic development and it is a rare disease affecting approximately 1/100.000 people. It is categorized by age: congenital lymphedema, praecox lymphedema, tarda lymphedema.

Reason for report: Primary lymphedema is commonly seen in lower extremity. A unilateral manifestation of primary precox lymphedema in upper extremity (PPLUE) is very rare.

Description of case: 40 year old woman presented with chronic swelling of her right dominant arm without a history of trauma, radiotherapy, surgery etc. Lymphoscintigraphy showed impaired function of lymphatics. She recently diagnosed with stage 2 lymphedema 10 years later after lymphedema occurred. Whole arm including hand which lymphedema occurred after lymphoscintigraphy was swollen. Complex Decongestive Physiotherapy (CDP) was applied for management. Before treatment, volume of arm, Quick Disabilities of Arm Hand Shoulder, Lymphedema Quality of Life Questionnaire and 24338 cm3, 63, 2.65, respectively. After treatment, values were 20314 cm3, 36, 1.60 respectively.

Discussion: In literature, few similar cases were reported and they stated isolated PPLUE is an absolute rarity in European medical literature. Onset of PPLUE usually reported in puberty. In our case, lymphedema has late onset compared to them. Management is also important in primary lymphedema. CDP increased upper extremity function, quality of life and decreased volume of arm.

Implication for practice: Early diagnosis, which had not been performed in our case, is an important factor regarding prognosis of the patient, because timely management can keep the lymphedema volume stable throughout life, improve function and quality of life.

[P27] THE USE OF VELCRO WRAPPING DEVICES TO IMPROVE OUTCOMES ON QUALITY OF LIFE OF LYMPHOEDEMA PATIENTS

Patryk Gawrysiak[1]

[1] *St Georges Hospital*

Introduction: Compression Therapy is an integral part of lymphoedema management. Lymphoedema treatment includes 2 phases: “intensive therapy”, usually in the form of short stretch bandages applied daily for several weeks, and “maintenance therapy” (post intensive), comprising of the long-term use of compression garments.

Intensive therapy is necessary for many patients, however it requires visiting hospitals/lymphoedema practitioners on a daily basis or at least 2-3 times a week, which creates issues regarding the cost of travelling, time off work and mobility. Wrapping devices could be considered as an alternative to the traditional bandaging approach as they promote self-management with very good, comparable outcomes.

Aim of case reports: To observe if outcomes are comparable or better when using Velcro wrapping devices

Standards being observed: Recent increased demand for liposuction surgeries and Decongestive Lymphatic Therapy requires careful approach. Management may include bandaging or compression garments. More recently, Velcro wrapping devices are being used.

Results: The use of velcro wraps in the post-surgical care of patients receiving liposuction at a large lymphoedema centre in London resulted in fewer complications compared to patients managed with traditional bandaging and compression garments, e.g. with pain and tolerance of compression. Comparable limb volume reduction was achieved.

Conclusions: Velcro wraps offers an alternative to traditional approaches of lymphoedema management. Velcro devices should be considered for those who prefer self-management, have limited time off work or difficulties in applying traditional compression garments.

[P28] GENETIC ANALYSIS AT PATIENTS WITH CONGENITAL PRIMARY LYMPHOEDEMA IN SLOVENIA

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[2] *Bolnišnica Golnik*

Introduction: Lymphedema is due to disorders in the transport of lymphatic fluid. Primary lymphoedema may be congenital or occur later in life.

Purpose: To identify gene mutations at Slovene patients with congenital primary lymphedema.

Methods: In the study were included families with primary lymphedema. The mutations were identified with next generation sequencing.

Results: In this study we found the mutations in the *FLT4* genes at two families and the *TSC2* mutation in one family. We found a new mutation of the *FOXC2* gen at one family.

Conclusion: For the first time in Slovenia we confirmed the well know mutations of the genes for primary congenital lymphoedema. In the further we will testing more patients with primary lymphoedema who will caming to our outpatients Departement for lymphedema.

[P29] PRIMARY LYMPHEDEMA WITH SKIN FOLDS AT TOES

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[1] *Abant Izzet Baysal University; School of Physical Therapy and Rehabilitation*

Case: Patient consulted to our department with complains about the worsening of the swelling and leakage at his lower extremities who was 27 years old male with a primary lymphoedema diagnose history of 15 years.

Reason for Report: Our patient was a rare case for our clinical practise.

Description: Following evaluations was made initially and after the treatment for the amount of the swelling, functional status, quality of life, kinesiophobia, patient benefits with manual circumferential measurement, Lower Extremity Functional Status Scale, Nottingham Health Profile, Tampa Kinesiophobia Scale, Patient Benefit Index respectively. He attended the complex decongestive therapy program for 20 sessions and each session included manual lymph drainage, skin care and compression bandaging. There was no significant difference found between the initial and post treatment evaluations except manual circumference measurements (Table.1). The patient benefit index score was medium. The main barrier for the CDT process was the skin at the nail beds of the toes was covering the toenails.

Discussion: The situation forced us to modify the bandaging of the toes. As the fluid decreased at the extremities, bandaging of the toes became complicated and the compression garment for the maintenance phase was another issue for both decision making and taking measurements. At the end of the CDT, the last question was the removal of the hanging skin over the toes by surgery.

[P30] DEVELOPMENT OF COOL ELASTIC STOCKING FOR SUMMER FOR LYMPHOEDEMA PATIENTS

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Introduction: Compression stockings are important for the management of lymphoedema. Compression therapy with stockings graded as classes I (20–30 mmHg) to IV (50–60 mmHg) can reduce capillary filtration, increase interstitial pressure, and help move excess fluid into non-compressed areas of the body. However, during summer in Japan, up to 75% of lymphoedema patients have reported finding it difficult to wear stockings because of the heat (average temperature 30°C) and humidity (70%), or because they do not find stockings fashionable, and this is a problem in terms of controlling oedema and maintaining a high quality of life.

Description: Focusing on the comfort of patients who wore elastic stockings in our previous needs survey, we established a team composed of a nursing researcher, a manufacturer, a salesperson, a fashion designer, and a coordinator to design new stockings.

As a result, we developed stockings made from Benberg^{TM} (Asahi Kasei Corporation, Japan), polyester and elastic with compression over 20.0mmHg (class I) and cool touch fabric over 0.2 W/cm^2.

Implementation: Next, we investigated the feasibility of our new elastic stockings in 15 women with lower limb lymphoedema for 3 days. More women (n=9, 60.0%) reported that our new stockings felt cooler than the standard stockings; however, 60.0% of the participants also reported tingling or burning sensations in the buttocks, compared with 13.3% for the standard type.

Conclusion: We successfully developed compression stockings that feel cooler in the summer for patients with lymphoedema, but some improvements could be made to avoid causing tingling in the buttocks.

[P31] LYMPHCARE UK'S UNIQUE APPROACH TO RAISING AWARENESS OF LYMPHOEDEMA/ LIPOEDEMA AND CHRONIC OEDEMA IN PRE REGISTRATION NURSING STUDENTS THROUGH A COMMUNITY PROVIDER PLACEMENTS INITIATIVE

Kristina Jones[1], Mary Warrilow[1]

[1] *Lymphcare UK*

Background: In the UK pre-registration nursing students generally will be placed within a District Nurse or Health Visiting team for their community allocation. LymphCare UK CIC provide comprehensive Lymphoedema services and through a pioneering conjunction with Birmingham City University have developed an alternative placement option incorporating both specialist and general community experiences.

The placement provides a "Holistic integrated experience"

- Students spend 40% of their time with their mentor achieving specific learning outcomes related to Lymphoedema/Chronic Oedema and Lipoedema management including assessment, differential diagnosis and individualised care planning.
- Students have the opportunity to attend LymphYoga, patient coffee mornings, engagement forums and survivorship events
- Community related placements with District/ Practice Nurses, Heart Failure, learning disabilities and IV teams are arranged.
- Palliative Care experience via hospice day and ward placement
- A unique opportunity to work within a nurse led Social Enterprise as an alternative provider of health services.

BCU Student - April 2016 stated they now have an "excellent and in depth knowledge developed about oedema of different sorts. I saw really holistic care happening throughout"

Staff Development:

- Joint positive experience working with BCU via placement support and audit process
- Opportunity for staff to attend mentorship training sessions forming part of the PDP and supervision process.
- Improved communication and relationships with partner organisations
- Exceptional student feedback *'Placement of excellence' award 2016* received
- Opportunity to influence the inclusion of lymphoedema/lipoedema and chronic oedema awareness into Nurse Education programmes.

[P32] DECONGESTIVE RESISTANCE EXERCISE WITH ADVANCED COMPRESSION FOR BREAST CANCER RELATED LYMPHEDEMA MANAGEMENT (DREAM): A PILOT RANDOMIZED CONTROLLED TRIAL

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[2] *University of British Columbia*
[3] *University of Alberta; Cross Cancer Institute*

Background: More than one in five women who survive breast cancer will eventually develop lymphedema. Recent studies in breast cancer lymphedema management have demonstrated that resistance exercise can improve the survivors' quality of life without exacerbating their lymphedema. However, research has not yet considered other elements of the lymphedema management regimen that may promote arm volume reduction. Using both compression and the decongestive exercise sequence in a progressive resistance exercise program has the potential to improve not only survivors' quality of life, but also their arm lymphedema volume.

Objective: A randomized controlled pilot trial was conducted to investigate the feasibility and preliminary efficacy of combining these components to improve arm lymphedema volume and quality of life.

Methods: Fifteen women with stable breast cancer related lymphedema were recruited through the Cross Cancer Institute and randomly assigned to one of the following three groups: (i) Standard care: home decongestive exercise regimen + day time compression only, (ii) Decongestive Progressive Resistance Exercise (DPRE) plus use of a daytime compression sleeve during exercise, and (iii) DPRE plus use of an adjustable compression wrap garment during exercise. Approval was obtained from the Health Research Ethics Board.

Data analysis: Analyses of data will inform point estimates and measures of variability for a future multi-center trial.

Results: The combined DPRE program with or without AC is feasible and shows preliminary efficacy in reducing arm lymphedema volume. Preliminary results will be presented.

Conclusion: Results of the pilot study form the basis of a future large-scale multi-center randomized trial.

[P33] HYPOTHESIS OF TOTAL MANAGEMENT OF THE PATIENT AFFECTED BY SECONDARY AND PRIMARY LYMPHEDEMA, DURING A WEEK " LYMPHEDEMA VILLAGE"

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[1] *Casa DI Cura Carmide*

Introduction: Our idea is that it is not enough to think about the loneliness of complex decongestive physiotherapy, but rather a holistic approach that cares for the person as a whole, considering the particular impairment of the social, psychological aspect that the pathology involves.
We therefore conducted research, control and research.
This is a study conducted by a group of experts on psychological problems.

Patients and methods: Affected by primary and secondary lymphedema, contacted in a social way, throughout the Italian national territory, the only common element is the lymphedema pathology.
From the literature we have identified correlates such as anxiety, particularly present in lymphedema patients, then at the beginning of the event we gave the test for anxiety.
Description of the treatment "Lymphedema Village".
These include water aerobics, physiotherapy sessions, health coach sessions, round tables with the doctor, guided tours in the mountain area, evening entertainment activities, involvement of the host territory with a popular day on the pathology with the participation of patients and citizens. .

Statistic analysis: Random sampling methodology, group of 12 patients, with primary and secondary , male / female. Data collection technique with questionnaire S.T.A.I -Y (Y scale, scale of state) intra-group administration before / after treatment, quantitative analysis.

Conclusions: The first data readings confirm a significant reduction in the state of anxiety, after the treatment understood as an experience of the week Lymphedema Village, where the hypothesis is that the patient with lymphedema need a complete approach,

[P34] LEG EDEMA IS A SYMPTOM OF WHAT?-CONTEMPORARY METHODS FOR DETECTION, DEFINING ETIOLOGY, CONSERVATIVE AND INVASIVE THERAPY

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Patient with leg edema appears in doctor's office and the question arises is it venous and/or lymphatic insufficiency, post-thrombotic, post- soft tissue-traumatic, post-fracture, post-surgical oncological or systemic edema. Moreover, is edema present in soft tissues, muscles, are there enlarged inguinal and iliac lymph nodes, suspected pelvis tumor, ascites or only obesity or gravitational swellings? Aim and methods .Perimetry, tonometry (superficial and deep), tissue water concentration (dielectric constant, bioimpedance), indocyanine green and isotopic lymphography, computer tomography lymphography (SPECT), MRI lymphography, intra-tissue angio contrast imaging obtained from the same patients in a group of 20 with lymphedema of lower limbs . Results. Once the etiology has been defined and tissue changes evaluated, a number of edema-decreasing modalities as compression-graded bandages and stockings and above all most modern pneumatic compression devices with regulated pressures at various limb levels were applied. In addition, antibacterial protocols, and microsurgical and "silicone lymphatic implants" desperately increasing limb functional capacity will be shown. Conclusions. Edema of limbs requires this whole set of tests in order to establish diagnosis and apply rational therapy. Tests and numerical results will be presented.

[P35] DO ADJUSTABLE VELCRO COMPRESSION WRAPS ENHANCE PATIENT CARE AND QUALITY OF LIFE, AS PART OF SUPERVISED SELF-MANAGEMENT?

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Aims: The aim of this case report is to evaluate the effectiveness of one adjustable velcro wrapping device when used as part of self-management strategies for managing lymphoedema and lipoedema.

Description: Three patients were asked to share their personal experience of living with lymphoedema and lipoedema and feedback on the impact and experiences of self-managing using adjustable velcro compression devices. They were asked to complete an evaluation of the product and document personal experiences in relation to using the device and how this impacted on day to day activities and quality of life. Data relating to limb volume was taken to ascertain if the device helped to maintain or reduce limb volume.

Outcome: Limb Volume data shows oedema is maintained or reduced. Patient reports demonstrate that introducing a velcro wrapping system as part of self-management, improved quality of life and had a positive impact on daily living.

Evaluation: The case studies discussed demonstrate the impact of living with lymphoedema and lipoedema, mentally, emotionally and physically. The patients have been empowered to self-manage their condition through access to specialist services. This impacts positively on how patients cope with the day to day aspects of their care, such as compression therapy, by promoting patient choice with garments and velcro wrapping devices, enables patients to individualise their care based on their personal goals. From the case studies it can be concluded that the introduction of velcro wrapping devices into the patients' daily routine has enhanced quality of life and the ability to self-manage.

[P36] THE EFFECTS OF A HAND-HELD NEGATIVE PRESSURE LYMPH DRAINAGE (NPLD) DEVICE ON 2 PRIMARY LYMPHOEDEMA PATIENTS OF DIFFERENT DURATIONS

Justine Whitaker[1]

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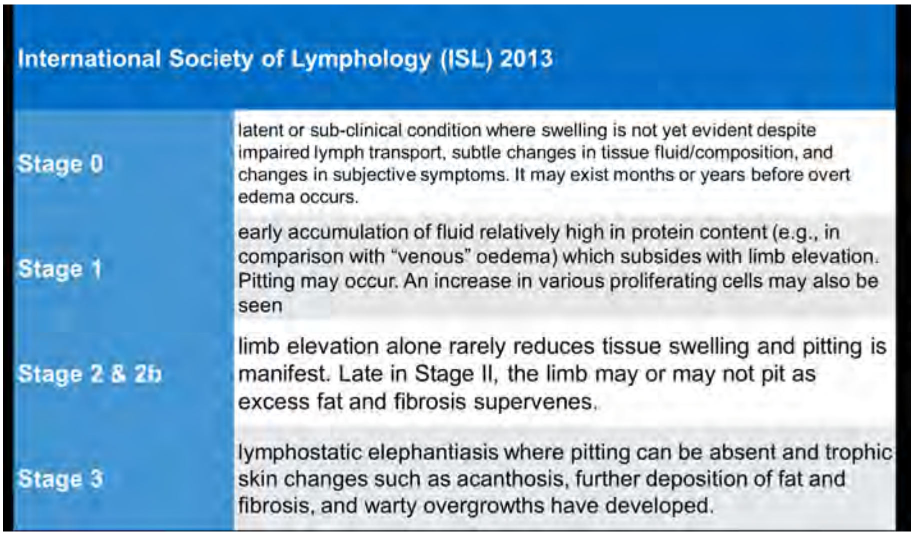
Description: Lymphoedema can be either Primary or Secondary in origin. How the tissues respond to different treatment modalities when subjected to the same intervention maybe due to the underlying nature of the tissue and fibrotic changes.

Reason for report: Lymph drainage has historically and predominately done using the therapists hands following lymphatic pathways. Technology has improved and developed and this can now be done using a hand-held negative pressure device*. This was used to perform lymphatic drainage on two Primary lymphoedema patients.

Case description: Two patients with primary lymphoedema, who attend clinic to have lymph drainage specifically with this device agreed to their results presented. Patient (A) age 65 and patient (B) age 23, had limb volume measurements taken using the 4cm tape measure method pre-lymph drainage. NPLD was performed using the same sequence for one hour on each patient. Post-limb volume measurements were repeated and recorded.

Discussion: Patient (A) reduced her limb volume by 198mls. Patient (B) reduced her limb volume by 690mls. (see table)

Both patients achieved a good result. It is likely that the duration of lymphoedema (8 years) caused patient B to have a greater reduction over patient A (50 years). The stages of lymphoedema (ISL, 2013) indicate from examination that patient A was late stage 3 and patient B was stage 2.



International Society of Lymphology (ISL) 2013

Stage 0	latent or sub-clinical condition where swelling is not yet evident despite impaired lymph transport, subtle changes in tissue fluid/composition, and changes in subjective symptoms. It may exist months or years before overt edema occurs.
Stage 1	early accumulation of fluid relatively high in protein content (e.g., in comparison with "venous" oedema) which subsides with limb elevation. Pitting may occur. An increase in various proliferating cells may also be seen
Stage 2 & 2b	limb elevation alone rarely reduces tissue swelling and pitting is manifest. Late in Stage II, the limb may or may not pit as excess fat and fibrosis supervenes.
Stage 3	lymphostatic elephantiasis where pitting can be absent and trophic skin changes such as acanthosis, further deposition of fat and fibrosis, and warty overgrowths have developed.

Conclusion: This study indicates that the longer the individual has a manifest lymphoedema the more likely the nature of the tissues will change to fat and fibrosis, conversely the shorter the duration the more pitting oedema, hence fluid in the tissue. Lymph drainage is more likely to have more of an effect on water in tissues than trophic changes increasing fat accumulation.

*LymphTouch/PhysioTouch Device - HLD

[P37] SKIN VISCOELASTICITY IN PATIENTS WITH LYMPHEDEMA

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Objective: In upper limb lymphedema, ulnar side of the forearm is known to fluid accumulate. The aim of this study is to clarify the relationship the skin viscoelasticity with fluid accumulation status.

Methods: The subjects were 12 women with breast cancer-related lymphedema (BCRL). MRI was performed using the spin echo procedure to confirm the sites of fluid accumulation using T1, T2, STIR, and FLAIR. With regard to skin viscoelasticity, a skin viscoelasticity measuring device (Cutometer®) was used to measure the skin viscoelasticity of the forearm, ulnar and radial side at sites located at a distance of 5 cm from the elbow. In the evaluation of skin viscoelasticity, R6 (viscosity and elasticity ratio) was calculated.

Results: The MRI analysis revealed that fluid accumulation was almost absent in the measured sites in 4 subjects. Excluding these 4 subjects, the skin viscoelasticity in the remaining 8 subjects was investigated statistically. In the healthy limb, the radial side showed a higher value than the ulnar side. However, in the affected limb, the reverse was true; that is, the ulnar side showed a higher value than the radial side. A comparison of the ulnar side of the healthy limb and that of the affected limb revealed a significant difference.

Discussion: The results of this study suggest that in the presence of lymphedema, the skin of the ulnar side in the affected limb has a lower elasticity than does healthy skin.

[P38] A STUDY OF INCIDENCE OF AND RISK FACTORS FOR BREAST CANCER-RELATED LYMPHEDEMA IN GHANA

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[4] University of Missouri Sinclair School of Nursing

Purpose/objective: To determine the incidence of and risk factors for lymphedema after breast cancer treatment at the oncology unit of KATH, Kumasi, Ghana, between 01 January 2005 to 31 December 2008.

Methods: Breast cancer and lymphedema-related variables were collected from the medical records of breast cancer patients. Data were analyzed using descriptive statistics and chi-square tests.

Results: Among 313 patients treated for breast cancer between 2005 and 2008, 31 (9.9%) developed lymphedema after treatment. A chi-square test showed that axillary lymph node dissection was a statistically significant risk factor of lymphedema (Chi-square test value = 7.055, p value = 0.008).

Radiation and late-stage breast cancer diagnosis may have contributed in development of lymphedema, despite having p value > 0.05. Age, BMI, and hypertension were also not found to be associated with lymphedema.

Conclusion: This study provides evidence that the incidence of lymphedema was 9.9% in this medical record review, with axillary lymph node dissection found to be a statistically significant risk factor associated with lymphedema.

Implication for practice: With the majority of breast cancer patients in Ghana presenting with late-stage disease and also undergoing axillary lymph node dissection, lymphedema will continue to be a problem in Ghana. Knowing the incidence and risk factors for lymphedema not only helps in the early detection and effective management of lymphedema, but also provides baseline data for further research on lymphedema in Ghana.

[P39] NORMATIVE VALUES OF THE MOISTUREMETERD COMPACT FOR THE ASSESSMENT OF LOCAL TISSUE WATER CONTENT OF THE SKIN IN BREAST CANCER RELATED LYMPHEDEMA

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[2] Katholieke Universiteit Leuven, Universiteit Antwerpen; Universiteit Antwerpen; University of Antwerp, Department of Rehabilitation Sciences and Physiotherapy, Movant, Antwerp, Belgium
[3] Ku Leuven – University of Leuven, Department of Rehabilitation Sciences, Leuven, Belgium; Uz Leuven – University Hospitals Leuven, Department of Vascular Surgery and Department of Physical Medicine and Rehabilitation, Lymphovenous Centre, Leuven, Belgium

The MoistureMeterD device is developed to determine the tissue dielectric constant (TDC), which reflects the local water content in the tissue. Lymphedema is defined as an increase of 1.2 or more of the ratio of TDC at the affected side (AS) over the non-affected side (NAS). We wonder whether it is necessary to measure the NAS. In literature, temporal variation and normative values of TDC at different locations on the arm and trunk are not known. Moreover, concurrent validity between TDC values and pitting or skinfold thickness (SF) has not been investigated yet.

The aim of the study is: 1) to determine the normative values of TDC at 9 different anatomic locations, 2) to determine the variation of TDC on NAS at different time intervals, and 3) to examine the relation between TDC values and pitting test and SF.

In 62 women with unilateral breast cancer related lymphedema, TDC was determined (0-100%) at 9 different locations on arm and trunk on both sides. At the same locations pitting status (pitting versus non-pitting) and SF (increased versus non-increased) was evaluated.

1) Normative values differ between locations and vary from 32.6% (elbow) to 42.55% (trunk). The 95% CI is smallest at triceps (26.69-44.09) and largest at breast (25.99-57.97). 2) TDC values of NAS are stable during follow-up (3 months). 3) 6/9 and 7/9 locations with a high TDC ratio (>1.2) were significant related with a positive pitting test and skinfold, respectively. However, the agreement was fair to moderate.

It is essential to use NAS as reference and to measure at the same location as the AS. In case of longitudinal follow-up it is not necessary to measure repeatedly the NAS. MoistureMeterD measures other properties than pitting test and SF.

Approval by the Ethical Committee of UZLeuven (CME reference S58689, EudraCTNumber 2015-004822-33)

[P40] LYMPH ADVENTURE WALES - A FAMILY EVENT

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[2] Lymphoedema Network Wales; Cimla Health & Social Care Centre
[3] Lymphoedema Network Wales; Cimla Health and Social Care Centre

Aims: Lymph Adventure Wales was a day-long family event held in Wales in August 2017. The purpose was to provide an environment where children and young people with lymphoedema and their families could interact whilst having fun together. It was hoped this would allow connections for the future to decrease the sense of isolation which occurs with a rare condition. In a welcoming atmosphere, children, young people and their families could share experiences whilst playing. This also afforded opportunities for healthcare professionals to educate the group.

Description: A dedicated environment was hired for the day, providing one large gathering space and several smaller rooms for activities to occur. Activities included outdoor games and challenges in rugby and football. Circus Eruption taught circus skills which encouraged physical activity and finer motor skills. A sensory room provided a quiet space for friends and family to share. Building with Lego continued throughout the day. Fun activities like glitter tattoo, photo booth and retro games facilitated those with limited mobility. Compression garment companies were present to hear directly from patients developments they wanted to see. Pocket Medic a digital media company was commissioned to create a film on the perspectives of young people living with lymphoedema.

Evaluation, indicating any patient involvement: Participants of all ages evaluated the event using a ‘dot and target’ method. Feedback looked at four components: New information, New friends, Having fun, Feelings.

Participants gave feedback concerning preferred clinic appointment times, bullying, pain and feeling special. Evaluation was extremely positive for children and their families.

[P41] COMPARING LIMB VOLUME MEASUREMENTS IN LOWER LIMB LYMPHEDEMA (LLL) BASED ON CIRCUMFERENCE MEASUREMENTS

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Introduction: Volume measurement is considered fundamental in the management of lower limb lymphedema (LLL). In the most commonly used method for estimating the volume, the circumference is measured every 4 cm along the limb and the volume is calculated. However, measuring every 4 cm is rather time consuming.

Aim: To compare the limb volume measurements based on circumference measurements every 4 cm (C4) with measurements every 8 cm (C8), and to assess the agreement of relative volume differences between the two measuring methods.

Methods: The circumference measurements were based on retrospective data from 73 outpatient visits at the Lymphedema Unit, Skåne University Hospital, Lund, Sweden. As part of the standard procedure, each patient diagnosed with unilateral or bilateral LLL was measured according to C4. To calculate limb volume based on C4 (V4) and C8 (V8) respectively, each segment was approximated by a frustum of a cone. The relative volume differences (((V8-V4)/V4)*100) were analyzed using Bland-Altman plots.

Results: Data using C4 from both right and left limb in 39 women and 34 men were analyzed. In women, the relative volume differences were 0.3±0.6% (mean±SD) and in men 0.4±0.4 % (mean±SD). The Bland-Altman plot revealed a significant change in the mean both for women and men, consisting of a higher mean difference using V8 compared to V4.

Conclusion: The limits of agreement (-1.0 to +1.6% in women and -0.4 to +1.2% in men) are small, indicating that V8 could replace V4 in clinic work.

[P42] PATIENT EMPOWERMENT BY INCREASED KNOWLEDGE AND PRACTICE

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[1] *Svenska Odemforbundet*
[2] *Lymphcenter Sverige Ab*

Aims: Patient empowerment by increased knowledge and practice of self-management of lymphoedema/ lipoedema.

Description: SÖF has once a year, for four years, conducted a two-day workshop and a series of lectures to increase the knowledge of what the patients can do themselves to gain better control over their lymphoedema/lipoedema. It comprised engagement from several different stakeholders: a lymphoedema clinic, industry, lymph therapists and instructor of qi gong. Follow up with evaluation questionnaires.

The workshops covered:

- Basic knowledge about the lymphatic system and instructions how to perform an effective self MLD
- Compression alternatives and how to judge for yourself if the compression fits correctly.
- Physical exercise assisting the lymphatic flow, skin care and diet.
- A "try-for-yourself-introduction" to other methods supporting the lymphatic flow such as pneumatic compression, laser, lymph taping, deep oscillation and qi gong.
- An introduction to research about lymphatics, lymphedema and different treatment methods.
- Informal meetings with fellow patients and lymph therapists.

Evaluation of impact: Evaluation showed that 73% of the participants marked *very satisfied* and 18 % *satisfied* (no one marked *not very satisfied* or *dissatisfied)* and 9% did not participate since they had no lymphoedema/ lipoedema (accompanying family members). SÖF has noticed an increasing demand for workshops like this to be held more frequently and also in different parts of Sweden.

[P43] INGUINAL SEROMA POST LYMPHADENECTOMY: TREATMENT WITH MLD AND COMPRESSION

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[2] *Salut I Sport Clinic*
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[4] *Henares University Hospital; European University*

Introduction: Seroma is a collection of serum, lymph and liquid fat that accumulates under the recent surgical wound. In inguinal and ilioinguinal lymphadenectomies due to malignant melanoma, it is a frequent complication (23%), as is lymphedema present in 28% of cases.

Clinical case: A 43-year-old male with a history of malignant melanoma was located in the middle third of the right leg, which was removed in September 2016.

A PET-CT scan was performed after surgery and findings of malignancy are found in right iliac nodes. Lymph node excision was performed in November 2016. In the two weeks after surgery, a seroma of 132.8 x 118.7 mm appeared in the right inguinal region, diagnosed by ultrasound and drained without success.

At 8 weeks after surgery, he develops grade I lymphoedema in the thigh.

The patient goes to the physiotherapy clinic one year after surgery, with pain in the middle third of the thigh and right inguinal area that makes rest, heaviness and tightness difficult. Lymphoedema grade I and seroma of size 132.8 x 118.7 mm.

Objective: To reduce the seroma and control the lymphoedema of the right thigh.

Methodology: Treatment is initiated with manual lymphatic drainage, lasting one month, with the Vodder (scheme for secondary lymphoedema of the leg) and Leduc Methods, (with movements of call and resorption,) with a frequency of twice a week and it is prescribed compression garment (MEDI) with lymphapad pocket placed on the seroma.

Results: Seroma reduction was obtained at 99 x 7.3 mm, according to ultrasound control at the end of treatment and a decrease in thigh edema of 3 cm, with the patient's symptoms disappearing.

Conclusion: MLD and the compression garment has proven to be effective in reducing the seroma without surgery.

[P44] PRESENTATION OF THE LYMPHEDEMA CLINIC AT THE ONCOLOGY DEPARTEMENT OF SKÅNE UNIVERSITY HOSPITAL SWEDEN

Marita Dahl[1]

[1] *Lymphedema Unit Skåne University Hospital*

Patients referred to our clinic will enter a treatment program including regular follow-up visits to the hospital and basic educated in the lymphatic system, treatment, and self-care including exercise and weight control.

Aims: Our aim besides reducing the lymphedema is to educate the patients so that they feel secure in knowing what is the best treatment for them regarding type of compression and self-care. After two years most of our patients are stable in their lymphedema and do not require any follow-up visits.

Description: The follow-up visits are spread over two years and each visit include volume measurement, palpation and measuring for compression stockings. The patient education is held in a group-setting so that patients are able to discuss with each other.

Evaluation: We follow a standardized assessment regarding the lymphedema. The patients also get a questionnaire regarding lymphedema and quality of life. Since we are a part of the Cancerrehabilitation Unit we have the possibility to refer to our colleagues regarding amongst other things, physical training and counseling.

[P45] GROUP CARE FOR FILARIASIS IN AN ENDEMIC AREA

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[1] Society for Administration of Telemedicine and Healthcare Informatics; Sanwari Bai Surgical Centre
[2] All India Institute of Medical Sciences ; Lymphatic Education and Research Network; Sanwari Bai Surgical Centre

Introduction and Methods: In mid-2015 Sangtin, a community organization working with farmer-labourers in Sitapur district, realized that there were a huge number of people suffering Filariasis and its after effects in the region and contacted SATHI(Society for Administration of telemedicine and Healthcare Informatics –www.sathi.org) . SATHI offered help, and as a result, two major Filaria camps were organized on November 2015 and January 2017. In these camps patients were examined by specialists from SATHI, who also initiated the treatment, which included treatment with penicillin (injectable in 2015, oral in 2017), training in limb hygiene, and application with training for, compressive bandages for patients with advanced lymphoedema. Volunteers from Sangtin were trained to continue, later long term care. There were later telemedicine supported camps where outcomes were evaluated and further instructions provided as per need. Psycho-social support was provided for people with disabling conditions through group learning and counselling during initial as well as follow-up sessions.

Results: Among the total 147 patients who had undergone treatment in these camps, there was 40% reduction of limb volume immediately, which increased to 70% with continued care at home through selfcare, leg washing and continued use of compressive bandages. Patients still continue to come for follow up every 22nd of each month to Pisawan CHC – declared as Filarais day.

The project has helped in

- Estimation of cases,
- Provision of simple management guidelines for different morbidities for all levels of care.
- Training for different levels of health care staff
- Support activities
  - Capacity building
- - Monitoring and evaluation
-
- Management of acute attacks

Conclusion: Camp based group care is useful in remote locations. Continued maintenance is the key.

[P46] A NEW DEVICE TO IMPROVE SKIN TISSUE OXYGENATION: THE NEXT GENERATION OF PORTABLE REHABILITATION TOOLS?

Ambreen Chohan[1], Jill Alexander[1], Simon Abrams[1], Alex Mbuli[1], Justine Whitaker[1], Jim Richards[1]

[1] University of Central Lancashire

Introduction: Intermittent pneumatic compression (IPC) is an alternative method of compression treatment designed to compress the calf, mimicking the action of muscles to actively promote venous return. IPC has been shown to reduce venous stasis and increase blood flow and skin tissue oxygenation (StO^2), promoting healthy tissue.

Aim: This quantitative study explored the efficacy of a new portable two chambered IPC device on tissue oxygenation in long and upright sitting in healthy adults.

Method: Twenty-nine healthy participants aged 18-60. Screened using the Physical Activity Readiness Questionnaire. This study was approved by the University's Ethics Committee. IPC applied at pre-set pressure of 50mmHg once/minute, holding for 4.5 seconds. Two seating positions were tested in separate one hour sessions a minimum of two days apart. StO_2 was recorded during a pre/post 10min rest period with an active 20 minute IPC pump. A repeated measures analyses of variance was performed, followed by post-hoc pairwise comparisons.

Results: A significant difference was seen between the two seating positions ($p=0.003$) long sitting showed a 12% higher increase in StO_2 than chair sitting. Post-hoc pairwise comparisons showed significant differences ($p<0.009$) from baseline, throughout the intervention and continuing up to 10 minutes' post IPC-intervention, indicating a continued effect of the device after a short intervention.

Conclusion: This IPC device significantly improves skin-tissue oxygenation levels. Increasing StO_2 through short-intervention sessions with this portable device has the potential to improve tissue health. Due to its compact portable low cost nature, it has the ability to encourage self-management programmes for patients with oedema and venous disease.

[P47] THE ROLE AND REASONS FOR DEBRIDEMENT TO PREVENT PRESSURE DAMAGE UNDER COMPRESSION WHEN MANAGING LYMPHOEDEMA

Justine Whitaker[1]

[1] *University of Central Lancashire; And Northern Lymphology Ltd*

Introduction: Debridement is the removal of non-viable tissue. It is most commonly associated with wound care management and many types are available depending on severity of the problem. Lymphoedema isn't commonly associated with wounds, however as the disease progresses, the presentation of the skin alters offering other challenges.

Description: Skin debris can contain many contaminants. Removing non-viable tissue provides an environment that is less likely to support a heavy growth of bacteria. Hyperkeratosis seen in stages late 2b and stage 3 of the ISL stages of lymphoedema, is the formation of hard plaques of keratin on the skin. It is not known how much pressure damage is caused when Multi-layer Lymphoedema Bandaging (MLLB) is applied over this common condition.

Implications: Reducing the risk of trapping bacteria in skin debris under MLLB is an important risk factor to address to reduce incidence of cellulitis during decongestive treatment. Removing debris and hyperkeratosis through debridement also assists differential diagnosis by unearthing skin changes such as papillomatosis, confirming a lymphatic component to a chronic disorder. Pressure damage is high on the wound management agenda, prevention by removing hard skin deposits prior to applying high levels of compression needs priority consideration.

Conclusions/recommendations: Individual case studies highlight the benefits of debridement prior to MLLB. Reducing the risks of infection, pressure damage and correct diagnosis should take a high priority of care planning when managing lymphoedema. Addressing this issue at the beginning of treatment improves patients tolerance and comfort when undergoing decongestive lymphoedema treatment.

[P48] EPIDEMIOLOGICAL, CLINICAL AND THERAPEUTIC ASPECTS OF FILARIAN LYMPHOEDEMA AT RAOUL FOLLEREAU CENTER OF OUAGADOUGOU

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[4] *Raoul Follereau Center*

Introduction: Lymphatic filariasis is a neglected tropical disease (NTD) with chronic manifestations such as lymphoedema or hydrocele.

At Raoul Follereau Center of Ouagadougou (RFC), patients with filarial lymphoedema are cared with the support of the NTD program. We present the epidemiological, clinical and therapeutic aspects of the cohort of patients in this center.

Method : This is a cross-sectional descriptive study over a period of one year (2016) concerned all patients followed for filarial lymphoedema.

Results : We collected 138 patients with filarial lymphoedema, 46.37% of whom were female. The average age was 40.22 years with extremes ranging from 17 to 80 years old.

The average duration of follow-up in the center was 10 years. There were 71% of lymphoedema of one lower limb, 23.91% of bilateral lymphoedema of the lower limbs, 4,34% of upper limb lymphoedema and 2,71% of scrotal lymphodemal.

The majority evolved in the informal sector and 36.23% were housewives.

The management of lymphoedema, consisted mainly of symptomatic treatment and « washing ». We organised a monthly regrouping session, including a projection of a film on lymphatic filariasis, and awareness of the patient. Medical team used clinical examinations, screening for complications, distribution of medications for needed patients.

The evolution of followed patients is relatively good in terms of regression of acute attacks, complications and trophic skin disorders.

Social rehabitation of patients is noted since the beginning of the care.

[P49]EXTREME LYMPHOEDEMA OF THE LOWER EXTERMITY

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Over the last period of time we have seen an overproportionally high number of patients with a morbid lymphoedema in our clinical practice. This rise can be explained by an increase of heavily obese patients over the last years. Due to low self-esteem, these kind of patients present mostly at a late stage of disease with multiple live-threatening complications, demanding an interdisciplinary and cost- intensive therapeutic approach. We want to illustrate our therapeutic regime by the example of three patients from our clinic with secondary lymphoedema, stage III, of the lower extremity. Although our surgical colleagues suggested the amputation of the leg as sole therapeutic solution, we managed to reach a stable result with our complex, part conservative, part surgical approach. By that we prevented an amputation despite multiple internistic complications with partial the necessity of intensive care treatment. We were able to discharge our patients with a newly gained self-confidence finally freed from social isolation.

Hence, lymphoedema patients are a challenging patient group demanding an interdisciplinary care team. Through our treatment approach with an interdisciplinary complication management, the patients´ wish of preventing an amputation could be fulfilled.

[P50]THE DEVELOPMENT OF A GENITAL LYMPHOEDEMA CLINIC

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Genital lymphoedema is a debilitating condition. Alongside poor cosmesis, affected individuals suffer with recurrent infections, difficulty directing urinary spray, chronic leakage of lymph, and psychosexual dysfunction.

Genital lymphoedema occurs as a result of damage to the lymphatic nodes and/or vessels responsible for draining the inguinal and genital tissues (secondary lymphoedema). Whilst the commonest worldwide cause of genital lymphoedema is filariasis, other causes include: malignancy and its treatment; recurrent genital cellulitis; sexually transmitted infections; hidradenitis suppurativa; and anogenital granulomatosis (a cutaneous form of Crohn's disease).

Alternatively, genital lymphoedema may develop as a result of primary lymphoedema due to one of several genetic mutations. To date there are at least four primary lymphoedema syndromes associated with genital lymphoedema: Emberger syndrome, lymphoedema distichiasis syndrome, Hennekam syndrome and Noonan syndrome. Chylous reflux into the vulva or scrotum may result from congenitally malformed lymphatic vessels giving rise to megalymphatics, or from intestinal lymphangiectasia.

It is vital that the lymphoedema clinician is able to differentiate the various forms of genital lymphoedema. In addition to standard decongestive lymphatic therapy, patients require a bespoke treatment plan dependent upon the underlying cause e.g. longterm antibiotics, systemic steroids, immunosuppression, specialist dietician input (for patients with chylous reflux). Surgery can be offered in many cases for symptom control and debulking of debilitating lymphoedematous tissue.

A dedicated genital lymphoedema clinic has been developed within a UK lymphoedema service in order to best meet the needs of the patients. We present our multidisciplinary clinical approach to the patient with genital lymphoedema. We also present the outcomes of medical and/or surgical management of the widespread case mix treated since the service was developed 2 years ago. Patient feedback demonstrates a high level of satisfaction with the service.

[P51]LIPOFILLING OF THE AXILLA, RESULTS ON 54 PATIENTS

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Background: During ALND, adipose tissue surrounding the axillary vein is removed and the axillary sheath can be damaged, possibly impairing the local venous hemodynamic conditions contributing to the formation of a lymphovenous edema.

Objective: Reducing the edema of BCRL patients, selected following specific criteria, by underlying surgically the axillary vein with adipose tissue.

Methods: The study was approved by the local ethical committee, registered in EudraCT and NCT.

A simple surgical approach to reduce edema conditions proposed to selected BCRL patients presenting axillary vein impairment.

They underwent a lipofilling under the axillary vein. During 10 days after surgery patients underwent no treatment, nor wore sleeves. Precise volumetry was performed one day before, one and 10 days after surgery. After 10 days, the patients resumed physical treatment. Subjective symptoms (numbness, heavy arm, pain and skin tension) were evaluated.

Results: Out of 54 BCRL patients who underwent lipofilling surgery, some have seen their hand edema reduced significantly, others not, but referred an improvement in heaviness and skin tension. The reduction was observed right after surgery, and throughout ten days preceding the resumption of physical treatment. Subjective symptoms decreased directly after intervention. Most patients continued their physical treatment, but needed less compression garments. After 24 months of follow up, no complications were recorded.

Conclusions: In selected BCRL patients, axillary vein lipofilling can improve local venous hemodynamics, reducing distal hyperfiltration and the edema. The results of this pilot study need to be empowered by multicentric studies.

[P52]REPROCOMP STUDY

Pierre Gonon[1], Julie Malloizel[2], Yasmine Smati[3]

[1] *Thonic Innovation; .*
[2] *Chu Höpital Rangueil - Médecine Vasculaire*
[3] *Chu Toulouse*

Introduction/background: Dosage of compression is a challenge as application of bandages is highly operator dependant. One of the main issues is reproducibility of compression.

Aims: To compare inter-operator compression levels and intra-operator reproducibility achieved by 2 groups : Trained Staff (TS) and First-Timers (FT) with 2 long stretch bandages (LSB) and 2 short stretch bandages (SSB – Rosidal K and Thonic bandage) applied normally or stretched before application.

Methods: Each participant applied each bandage 3 times with 2 different techniques for the SSB.

To guarantee the same conditions for all participants, the interface pressure was measured on a plastic leg, using a Picopress pressure monitor. The compression values have therefore no clinical relevance.

Results: Inter-operator compression levels may vary from simple to double with no real difference between TS (39,7 to 85,1 mmHg) and FT (42,9 to 88,3 mmHg).

In terms of intra-operator reproducibilty with SSB stretched before application TS achieved the best results with Rosidal K (Median = 7,5 mmHg) but FT performed very badly (Median = 17,0 mmHg), while both groups performed well with Thonic bandage (TS : Median = 9,0 mmHg – FT : Median = 8,0 mmHg).

Conclusions: These results confirm that, with their steep hysteresis curve, traditionnal short-stretch bandages should be applied by trained staff only.

By combining the benefits of short-stretch and long-stretch bandages Thonic allows first-timers to perform as well as trained staff.

[P53]THE IMPORTANCE OF THE TREATMENT OF OVERWEIGHT (AND LOW PHYSICAL ACTIVITY) IN PATIENTS WITH AND AT RISK FOR LYMPHEDEMA

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Substantial evidence lends support to several risk factors for (arm-) lymphoedema, including extensive surgery, a high body-mass index, adjuvant therapy, and low physical activity (DiSipio, 2013). These factors should be the target for prevention strategies, especially those which can be influenced by the patient themselves. A high BMI is not just a risk factor, it is also recognized as a negative factor related to treatment response. Regarding lack of physical activities, the other main risk factor, a negative combination of high BMI and low physical activity often occurs.

Obesity has nearly tripled since 1975 worldwide. In 2016 39% of adults aged 18 years were overweight and 13% were obese (WHO 2-2018). Only 55% of the women in England reported participating in the recommended levels of physical activity in 2012. In this perspective, it is good to realize that the real percentage of women participating at the recommended level will be lower, caused by over-reporting (Howlett 2015)

Interventions targeting both obesity and lack of physical activity should be part of an integrated lymphedema treatment. This can be achieved by the intervention of a dietitian, working interdisciplinary with a physical therapist.

The dietitian takes care of a caloric balance for the patient to monitor calorie intake and expenditure and to provide dietary advice. Weight loss programs and exercise programs should be offered.

The caloric balance, being determined by body composition, age, gender and activities, combined with the nutritional intake, can turn out more positive and worsen the obesity. Lack of activities worsen the lymphedema. Active awareness of obesity or gain of weight (BMI >25-29) and interventions aimed at the reduction thereof are important. This can be achieved by the intervention of a dietitian to set up a calorie balance for the patient to monitor calorie intake and expenditure and to provide dietary advice, weight loss programs, and exercise programs in cooperation with a physiotherapist. In Nij Smellinghe hospital patients are treated for obesity in a multidisciplinair setting. The dietitian takes care of the caloric balance by reducing calories and carbohydrates and the physiotherapist encourages the patient to exercise. The method used is selfmanagement and the positive health model so that the patient is motivated to continue the treatment at home.

Final goal of the treatment should be a patient able to deal with her disease, having a healthy lifestyle and being aware of the risk of obesity and lack of physical activity.

[P54]CASE REPORT: USAGE OF KINESIOLOGY TAPING FOR MANAGEMENT OF LOWER EXTREMITY LYMPHOEDEMA IN SINGAPORE

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There has been a global growing trend on the usage of Kinesiology Taping (KTaping) for various conditions. Research on its usage for the management of oedema is also emerging. While most of the research done proves its effectiveness in the West, there is little research to show its effects in Asia where the climate is warm and humid; and the risk for developing secondary bacterial and fungal infections may be more prevalent.

A 75 year-old female of Malay ethnicity was referred to our Lymphedema Physiotherapy Clinic for management of her right leg lymphedema. Initial bioimpedence results showed a difference of 1.18 litres (right leg 4.59 litres, left leg 3.41 litres) with fibrotic skin changes to the webs of toes and dorsum of foot. Initial management involved application of Manual Lymphatic Drainage (MLD) and regular compression bandaging. Patient was also taught self-bandaging. However, she reported difficulty bending over for prolonged periods as this would aggravate her back pain. Subsequent reviews showed that she applied too much tension at the toes during self-bandaging which resulted in worsening of swelling.

KTaping was used on her toes with the aim of reducing swelling and the need for frequent re-bandaging.

Regular KTaping to patient's toes proved to reduce swelling effectively. Initial fibrotic changes to the skin were also reversed. Patient self-reported better compliance to KTaping for the toes as it was less bulky, less likely to slip out from the toes or get hooked to other materials, more convenient, climate-friendly, aesthetically tolerable and comfortable.

THE MEANING OF SUCCESS IN LYMPHEDEMA MANAGEMENT: A QUALITATIVE AND A QUANTITATIVE PERSPECTIVE

Dorit Tidhar

This workshop will discuss the meaningfulness of the outcomes of lymphedema management (volume, quality of life, function, strength, infection and more) through distribution-based and anchor-based methods. What is considered to be a success for the health system? for the therapist? for the patients? A qualitative research which examined the meaning of success will present the thoughts, feelings and values of people who have lymphedema, and what is the meaning of success for them in the intensive phase of therapy and in the long-term management phase. Finally, the recommended way is to validate the distribution-based with the anchor-based methods

APPLICABILITY AND ADDED VALUE OF THE CONCEPT OP POSITIVE HEALTH IN PATIENTS WITH COMPLEX LYMPHEDEMA

Irene Zonderland, Ad Hendrickx

Due to developments and changes related to health and healthcare, a new concept of Health has been introduced in 2012 by Machteld Huber et al: Health as the ability to adapt and to self-manage, in the face of social, physical and emotional challenges".

This concept focuses on a patient centred approach instead off the focus on the disease (like in the WHO definition of Health of 1948). The 'ability to cope', 'resilience' and 'self-management' gets a central place.

The concept distinguishes itself by the use of a broad perception of health with six dimensions: body functions, mental functions and perception, spiritual/existential dimension, quality of life, social participation and daily functioning. With a (webbased) tool patients can score their situation on the six domains on a numeric scale. By visualising the six dimensions in a "spider-web", they can see the so called "health surface". It supports patients to amplify health and to make their own choices towards important elements about their life.

Huber et al stated that patients acknowledge the new concept, as it addresses individuals as more than their condition and emphasises people's strength rather than their weaknesses.

By interviewing patients in a semi-structured way, we gathered information about the applicability and added value of this concept in the treatment of the patients in our Expertcentre for Lymphovascular Medicine. The patients we see are all patients with complex lymphedema.

During this workshop, we will share our experiences.


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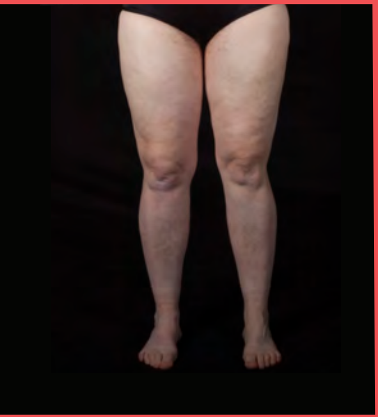

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