Programme and abstracts

Diabetic Foot Study Group

19th Scientific Meeting

6 - 8 September 2024
Valencia · Spain

www.dfsg.org

DFSG Secretariat
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www.dfsg.org

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ALMENDRAS
GARRAPIÑADAS

Welcome to DFSG 2024 in Valencia!

Dear participant,
We are thrilled to have you join us for the 19th meeting of the Diabetic Foot Study Group in this beautiful city. Over the next three days, you'll have the opportunity to engage with top experts in the field of diabetic foot care and get updated on the latest research initiatives happening throughout Europe.

Our programme is packed with informative sessions covering key topics such as Epidemiology, Clinical Science, Diagnostics, Foot Clinics, Orthopaedic Surgery, and much more.

We are very proud to call the DFSG a true interdisciplinary collaboration, uniting diabetologists, podiatrists, nurses, surgeons, and all specialists dedicated to enhancing the lives of diabetic patients with foot complications. As the DFSG Executive Committee, we extend our warmest welcome to you.

We hope you have a rewarding and enjoyable experience at the conference. Dive into the discussions, make meaningful connections, and make the most of your time here in Valencia!

DFSG Executive Committee

Committee	Members
Chairperson **Nikolaos Papanas** Greece	**José Luis Lázaro-Martínez** Spain
Vice Chairperson **Anna Trocha** Germany	**Esther García Morales** Spain
Scientific Secretary **Frances Game** United Kingdom	**Enrico Brocco** Italy
Treasurer **Roberto Anichini** Italy	**Prashanth Vas** United Kingdom
	Sicco Bus Netherlands

General information

CONFERENCE VENUE
Meliá Valencia,
Av. de les Corts Valencianes, 52,
Benicalap, 46015 València, Spain

CONTACT
DFSG Secretariat
Nordre Fasanvej 113, 1 floor
2000 Frederiksberg C
Denmark
T: +45 70 20 03 05
dfsg@dfsg.org
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BADGES
All participants and exhibitors should wear the name badge in the conference area at all times. The badge must be visible.

DISTANCES
- 0,3 km from Bus, taxi, metro or tram stop
- 4 km from Old city centre
- 8,7 km from Valencia International Airport

CERTIFICATES OF ATTENDANCE
Certificates of attendance will be available as self-print after the conference. A link will be provided by e-mail to all participants.

LANGUAGE
The language for the DFSG 2024 conference is English. There is no translation available in any session.

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

LUNCH AND COFFEE
Lunch and coffee are available in the exhibition area. See programme for exact time of breaks.

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

NO SMOKING POLICY
Smoking is prohibited in the venue. There are dedicated outdoor smoking areas available.

PARKING
Parking lots are on a first-come, first-serve basis, costing 22 Euros per day for hotel guests. You can also park on an hourly basis, and the rates are as follows:
- 0-30 min 8 cents/min
- 31-60 min 4,5 cents/min
- 1-9 hrs 3,5 cens/min
- 9 hrs or more 3 cents/ min

Maximum charge per day 25 Euros for non guests. Parking Height: 2.15 m.

PHOTOGRAPHING
Photographing is prohibited during sessions: Please respect the intellectual property rights of the presenter.

POSTERS
Posters can be mounted from Friday 6th September 2024, 11.30 and must be removed by the end of the conference on Sunday 8th September 2024, 16.00
The posters will be affixed to the poster boards with adhesive which will be provided to you by the conference staff.

PRIZES AND AWARDS

Oral abstract prize

The 5 best oral abstracts will be presented on Saturday 7th September 2024. Participants will have the opportunity to vote for the best presentation after the 5 presentations.

Poster prize

The poster prize winner will be chosen from the posters in the session "Top 8 poster abstracts", which takes place Saturday 7th September.

Life Time Achievement Award

The DFSG Lifetime Achievement award will be announced in the Life Time Achievement Award Session, Friday 6th September 2024.

SPEAKER INFORMATION

Please bring your presentation to the Plenary Room, Valentia B and C, before your session starts. We recommend you upload your presentation at least 2 Hours before your session. A technician will be present to assist in the upload if necessary.
Please bring your presentation on a USB. Use of personal laptops is not allowed. Unless otherwise agreed all presentations will be deleted after the conference to secure that no copyright issues will arise at the end of the conference.

WIFI

Wifi name: Melia Events
Password: Eventsvalencia

CONFERENCE HOURS

Friday 6th September

11:30 - 18:30	Registration
12:30-18:25	Scientific sessions
14:30-19:25	Exhibition
18:25-19:25	Welcome networking in the exhibition *(open to all delegates)*

Saturday 7th September

07:00	DFSG Diabetes Run/ walk, 5 km *(open to all delegates, no pre-registration)*
08:30 - 18:15	Registration
09:00 - 18:10	Scientific sessions
08:30 - 15:55	Exhibition
18:15 - 18:50	DFSG Business Meeting *(for DFSG members only)*
20:30 - 00:15	Conference Dinner

Venue: Palau Alameda
Bus transfer is included.

Departure Melia Hotel:	20:00
Departure Palau Alameda:	00:15

If participants wish to stay, returning to the hotel will be on their own cost.

Not included in the registration fee. Tickets must be purchased before the conference.

Sunday 8th September

07:45 - 8:45	Morning workshop
08:30 - 15:15	Registration
09:00-15.45	Scientific sessions
09:00-14:00	Exhibition
15:45 - 16:30	Goodbye networking in the hotel lobby *(open to all delegates)*

Rise and Shine

with a morning run or walk in Valencia!

7th September
Time: 7:00 AM

Date	Saturday, 7th September
Time	7:00 AM
Distance	5 km
Water and Maps	Available in the hotel lobby.
Registration	No need to pre-register. Just show up and join the fun!

We hope you will join us!

Kickstart your day with a morning run or walk through the charming streets of Valencia! Join your colleagues for this refreshing activity and experience the city as it awakens. This is the perfect opportunity to energize your body, clear your mind, and take in the beautiful morning sights of Valencia before a long day of sessions.

Whether you're an avid runner or prefer a leisurely walk, everyone is welcome. We look forward to seeing you!

Social Events

WELCOME NETWORKING
Friday 6th September, 18:25-19:25

The welcome networking takes place in the exhibition area. Join your colleagues for snacks and wine/soft drinks. Please note that the event is not a dinner.

Included in the registration fee, no pre-registration necessary.

MORNING RUN
Saturday 7th September, 7:00

Start the day by running or walking a route of 5 km around Valencia. We meet in the hotel lobby.

Included in the registration fee, no pre-registration necessary.

CONFERENCE DINNER
Saturday 17th September, 20:30-00:15

Venue: Palau Alameda, Carrer de Muñoz Seca, 2, Valencia, Spain

Experience a night of great food, music, and networking. Your ticket covers a welcome drink, a delectable 3-course dinner with your choice of wine or soft drinks, coffee and tea to round off the evening, and a lively DJ to keep you dancing all night long.

Don't worry about transportation - a bus will be available at 20:00 from Melia hotel to take you to the Palau Alameda and back.

Not included in registration fee. Tickets must be purchased before the conference (77 EUR incl VAT). If you have not secured your ticket, ask at the registration counter if there are still available tickets.

GOODBYE NETWORKING
Sunday 8th September, 15:45-16:30

Enjoy a snack and drink in the hotel lobby before leaving.

Included in the registration fee, no pre-registration necessary.

DFSG Executive Committee 2024

Chairperson
Nikolaos Papanas
Greece

Vice Chairperson
Anna Trocha
Germany

Treasurer
Roberto Anichini
Italy

Scientific Secretary
Frances Game
United Kingdom

Members

José Luis Lázaro-Martínez
Spain

Enrico Brocco
Italy

Sicco Bus
Netherlands

Esther García Morales
Spain

Prashanth Vas
United Kingdom

DFSG membership

Diabetologists, orthopaedic and vascular surgeons, podiatrists, specialist nurses and other medical specialists with an interest in caring for diabetic patients with foot problems form the main body of Members of the Diabetic Foot Study Group.

How does one become a member?

One must have an abstract accepted for oral or poster presentation at a DFSG Scientific Meeting. One must present this abstract in person, either as first author, or co-author at the same meeting.

Only after successful presentation can one apply to the DFSG secretariat, dfsg@dfsg.org within 2 months after the conference or onsite at the conference to become a member of the DFSG.

- *DFSG Members do not pay a yearly membership fee. They can register for DFSG Scientific Meeting at a reduced rate.*
- *DFSG Members are entitled to participate in the Scientific and Business Meetings of the Group, to vote and to elect the Executive Committee.*
- *DFSG Members have to attend at least one out of every three Scientific Meetings following each other or else they forfeit their membership.*
- *Please note that membership of EASD does not mean automatic membership of DFSG.*

Programme

Time	No.	Title	Speaker
11:30		**Registration desk opens**	
12:30-12:40		**Opening of DFSG 2024** Room: Valentia B+C	**DFSG Chairperson Nikolaos Papanas**
12:40-13:50		**Oral presentations: Infection** Room: Valentia B+C	**Chairs: Nikolaos Papanas, José Luis Lazaro Martinez**
	OP01	ANEMIC PATIENTS SUFFERING FROM DIABETIC FOOT SHOW AN HIGHER SUSCEPTIBILITY TO MULTIDRUG RESISTANT BACTERIA.	Francesco Giangreco, Italy
	OP02	THE EFFECT OF CHRONIC KIDNEY DISEASE ON CLINICAL OUTCOMES FOR PATIENTS WITH MODERATE AND SEVERE DIABETIC FOOT INFECTIONS	Arthur Tarricone, United States
	OP03	SYSTEMATIC INTRAOPERATIVE BONE SAMPLING INCREASES HEALING CHANCES IN DIABETIC FOOT OSTEOMYELITIS.	Elisabetta Lacopi, Italy
	OP04	THE USE OF ADJUVANT LOCAL APPLICATION OF ANTIBIOTIC-IMPREGNATED CALCIUM SULPHATE IS SIMPLE, PRACTICAL, AND SAFE IN MULTIPLE CLINICAL PHENOTYPES OF DIABETIC FOOT ULCERATION COMPLICATED BY INFECTION WHEN UNDERTAKEN IN A MULTI-DISCIPLINARY SETTING.	Maureen Bates, United Kingdom
	OP05	CODIFI2: RANDOMISED CONTROLLED TRIAL TO COMPARE CLINICAL AND COST-EFFECTIVENESS OF SWABS VERSUS TISSUE SAMPLES TO INFORM MANAGEMENT OF INFECTED DIABETIC FOOT ULCERS	Frances Game, United Kingdom
	OP06	RISK FACTORS FOR RE-INFECTION AFTER TREATMENT FOR DIABETIC FOOT OSTEOMYELITIS	Mario Reyes, United States
13:50-13:55		**Short break**	
13:55-14:55		**Oral presentations: Revascularisation** Room: Valentia B+C	**Chairs: Fran Game, Enrico Brocco**
	OP07	WHAT IS THE BEST NON-INVASIVE TEST, USED FOR PERIPHERAL ARTERIAL DISEASE DIAGNOSIS, TO PREDICT DIABETIC FOOT ULCER HEALING IN PATIENTS WHO UNDERWENT ENDOVASCULAR REVASCULARIZATION?	Francisco Javier Álvaro Afonso, Spain
	OP08	PREDICTIVE FACTORS OF MAJOR AMPUTATION IN PATIENTS WITH DIABETIC FOOT ULCERS RECEIVING PERIPHERAL BLOOD MONONUCLEAR CELL	Ermanno Bellizzi, Italy
	OP09	A NEW OPPORTUNITY TO TREAT NO-OPTIONS FOOT ISCHEMIC LESIONS IN DIABETIC PATIENTS: THE TRANSVERSE TIBIAL TRANSPORT SYSTEM.	Antonella Pace, Italy
	OP10	INEFFICIENCIES IN PATHWAYS TO SPECIALIST CARE FOR PEOPLE WITH DIABETES MELLITUS REQUIRING LOWER LIMB ANGIOPLASTY	Daina Walton, United Kingdom
14:55-15:30		**Coffee break in exhibition area**	

Time	No.	Title	Speaker
15:30-16:30		**Industry symposium: Mölnlycke** Room: Valentia B+C	
		Optimising topical hemoglobin therapy for managing diabetes-related foot ulcers: Utilising a clinical decision support tool for timely, patient-specific treatment.	Matthew Malone José Luis Lázaro-Martínez Susanna Roe
16:30-16:35		**Short break**	
16:35-17:05		**Life Time Achievement Award session** Room: Valentia B+C The DFSG Life Time Achievement Award is awarded to recognize outstanding late-career health care professionals who have made significant contributions to the field of diabetic foot care.	**Chair: Klaus Kirketerp-Møller**
		Introduction to the Life Time Achievement Award recipient	Klaus Kirketerp-Møller, Denmark
17:05-18:25		**Oral presentations: Epidemiology, Diagnostics, DNOAP** Room: Valentia B+C	**Chairs: Prash Vas, Ralf Lobmann**
	OP11	THE COST OF PODIATRIC CARE IN CZECH REPUBLIC – A MULTICENTRAL STUDY	Vladimíra Fejfarová, Czech Republic
	OP12	RISK SCORE OF LOWER-LIMB AMPUTATION AND INCIDENCE OF MAJOR KIDNEY AND CARDIOVASCULAR EVENTS IN PATIENTS WITH TYPE 1 DIABETES	Kamel Mohammedi, France
	OP13	EVALUATION OF TISSUE PERFUSION USING INDOCYANINE GREEN FLUORESCEIN ANGIOGRAPHY IN DIABETIC FOOT PATIENTS AFTER ENDOVASCULAR TREATMENT	Zera Dzhemilova, Russian Federation
	OP14	QUANTIFYING MECHANICAL AND MORPHOLOGICAL PROPERTIES OF PLANTAR FOOT SOFT TISSUES: A SYSTEMATIC REVIEW OF METHODS AND THEIR CLINIMETRIC PROPERTIES	Alessandro Vicentini, Netherlands
	OP15	INDIVIDUAL INFLUENCE OF FRACTURES AND DISLOCATIONS IN SEVERITY OF ROCKERBOTTOM DEFORMITY IN PATIENTS WITH CHARCOT FOOT.	Raul Molines Barroso, Spain
	OP16	DIFFUSION WEIGHTED IMAGING (DWI) AND APPARENT DIFFUSION COEFFICIENT (ADC) IN ASSESSING DISEASE ACTIVITY IN THE CHARCOT FOOT.	Giacomo Aringhieri, Italy
	OP17	SOCIO-CULTURAL PROFILE OF A COHORT OF CHARCOT NEURO-OSTEOARTROPATHY (CNO) PATIENTS AND ITS IMPACT ON STABILITY ACHIEVEMENT.	Chiara Goretti, Italy
18:25-19:25		**Welcome networking in the exhibition** (included in the registration fee)	

Time	No.	Title	Speaker
07:00		**DFSG Diabetes Run/Walk, 5 km, open to all participants. No pre-registration necessary.**	
09:00-10:25		**Oral presentations: Biomechanics** Room: Valentia B+C	**Chairs: Sicco Bus, Anna Trocha**
	OP18	CLINICAL EFFICACY OF A CONTRALATERAL SHOE LIFT IN PATIENTS WITH DIABETIC FOOT ULCERS: A RANDOMIZED CONTROLLED TRIAL	Mateo López Moral, Spain
	OP19	PROGNOSTIC VALUE OF PEAK PLANTAR PRESSURE FOR REMISSION OF CHARCOT NEURO-OSTEOARTHROPATHY	Victoria Milbourn, Netherlands
	OP20	ASSOCIATING SCALAR AND MULTIDIMENSIONAL PLANTAR PRESSURE PARAMETERS FOR ASSESSING OFFLOADING EFFECTIVENESS OF CUSTOM-MADE FOOTWEAR IN PEOPLE WITH DIABETES	Lisa Vossen, Netherlands
	OP21	ADHERENCE TO AN EVIDENCE-BASED CUSTOM-MADE FOOTWEAR DESIGN PROTOCOL IN DAILY PRACTICE AND ITS ASSOCIATION WITH PLANTAR PRESSURE IN PEOPLE WITH DIABETES AND PERIPHERAL NEUROPATHY	Stein Exterkate, Netherlands
	OP22	CUMULATIVE PLANTAR TISSUE STRESS AND ITS ASSOCIATION WITH PROSPECTIVE PLANTAR FOOT ULCERATION IN PEOPLE WITH DIABETES	Chantal M. Hulshof, Netherlands
	OP23	EXPLORING UNKNOWNS IN FOOTWEAR DESIGN FOR INDIVIDUALS WITH DIABETES AT MODERATE TO HIGH-RISK OF FOOT ULCERATION: A KNOWLEDGE GAP ANALYSIS	Isabella Gigante, Netherlands
	OP24	PROMISING INITIAL RESULTS OF NON-REMOVABLE, NON-RESTRICTIVE OFFLOADING DEVICES FOR DIABETIC FOREFOOT ULCERS	Gustav Jarl, Sweden
10:25-11:00		**Coffee break in exhibition area**	
11:00-12:30		**Oral Award Presentations - Top 5 abstracts** Room: Valentia B+C	**Chairs: Nikolaos Papanas, Fran Game**
	TOP 5 ORAL OP25	GENOME WIDE ASSOCIATION META STUDY OF DIABETIC FOOT ULCERS	Tarunveer S. Ahluwalia, Denmark
	TOP 5 ORAL OP26	INDEPENDENCY AFTER LOWER EXTREMITY AMPUTATION. PRESCRIPTION OF A FUNCTIONAL PROSTHESIS AFTER MAJOR AMPUTATION, AND DEGREE OF INDEPENDENT LIVING AFTER MINOR AND MAJOR AMPUTATION IN BELGIUM IN THE PERIOD 2009-2018.	Patrick Lauwers, Belgium
	TOP 5 ORAL OP27	18 YEARS OF SHARED CARE FOR 60,908 PEOPLE WITH DFS IMPROVED OUTCOMES, EXCEPT FOR TREATMENT DURATION	Dirk Hochlenert, Germany
	TOP 5 ORAL OP28	TRANSFORMATION OF THE TRADITIONAL MULTIDISCIPLINARY DIABETIC FOOT CLINIC INTO A FOOT UNIT: FOLLOW-ON RESULTS OF A SERVICE EVALUATION	Meghana Kavarthapu, United Kingdom

Time	No.	Title	Speaker
	TOP 5 ORAL OP29	LONG-TERM EFFICACY OF AUTOLOGOUS CELL THERAPY, REPEATED PTA AND CONSERVATIVE TREATMENT IN PEOPLE WITH DIABETES AND CHRONIC LIMB-THREATENING ISCHEMIA	Michal Dubsky, Czech Republic
12:30-13:30		**Lunch break in exhibition area**	
12:30-13:30		**Smith & Nephew focus group** Meeting room 8 **By invitation only**	
13:30-14:00		**Podartis symposium** Room: Valentia B+C	**Chairs: Luigi Uccioli, Venu Kavarthapu**
		What's New in Diabetic Foot Offloading?	Sicco Bus, Netherlands
		Which parameter matters when selecting a Diabetic foot Offloading?	José Luis Lázaro-Martínez, Spain
14:00-14:05		**Short break**	
14:05-14:20		**Bonalive symposium** Room: Valentia B+C	
		Clinical Experiences with S53P4 Bioactive Glass in the Management of Diabetic Foot Syndrome	Karol Sutoris, Vladimira Fejfarova
14:20-14:25		**Short break**	
14:25-15:25		**Poster discussion I, 4 parallel sessions** Room: Valentia B+C	
14:25-15:25		**Poster Session A: Top 8 posters** Room: Valentia B+C	**Chair: Fran Game**
	TOP 8 POSTER PP01	WOUND HEALING EFFICACY AND OUTCOME IN PATIENTS WITH INFECTED DIABETIC FOOT ULCER AND GAS GANGRENE	Zulfiqarali G. Abbas, Tanzania
	TOP 8 POSTER PP02	TITLE: IMPACT OF CONTINUOUS TOPICAL OXYGEN THERAPY ON BIOFILM GENE EXPRESSION IN A PORCINE TISSUE MODEL	Emma Woodmansey, United Kingdom
	TOP 8 POSTER PP03	DIAGNOSTIC PERFORMANCE OF ATHEROGENIC INDEX OF PLASMA FOR PREDICTING DIABETIC FOOT OSTEOMYELITIS WITH PERIPHERAL ARTERY DISEASE	Sebastián Flores Escobar, Spain
	TOP 8 POSTER PP04	SHOULD WE IMPLEMENT PEAK PLANTAR PRESSURE MEASUREMENT PRIOR TO AND FOLLOWING SURGERY?	Klaus Kirketerp-Møller, Denmark
	TOP 8 POSTER PP05	PERCUTANEOUS BONE BIOPSY (PBB) IN OUTPATIENTS WITH DIABETIC FOOT OSTEOMYELITIS (DFO) UNRESPONSIVE TO STANDARD TREATMENT PERFORMED BY A DIABETOLOGIST IN A TERTIARY CENTER	Johana Venerová, Czech Republic
	TOP 8 POSTER PP06	IS TAZOCIN INDUCED AKI A GENUINE PROBLEM IN DIABETIC FOOT INFECTIONS?	Joanne Patterson, United Kingdom

Time	No.	Title	Speaker
	TOP 8 POSTER PP07	ORTHOPEDIC SURGERY IN THE MANAGEMENT OF CHARCOT MIDFOOT DEFORMITY: A SINGLE-CENTER EXPERIENCE	Veronika Woskova, Czech Republic
	TOP 8 POSTER PP08	TRENDS IN FIRST DIABETIC FOOT DISEASE OUTCOME IN A TYPE-1 AND TYPE-2 DIABETES POPULATION: A DANISH REGISTER-BASED COHORT STUDY	Abhilasha Akerkar, Denmark
14:25-15:25		**Poster Session B: Infection** Room: Valentia B+C	**Chair: Enrico Brocco**
	PP09	HARNESSING THE POWER OF OUR IMMUNE SYSTEM: THE ANTIBIOFILM MODE OF ACTION OF NITRIC OXIDE	Daniel Metcalf, United Kingdom
	PP10	DOES DALBAVANCIN HAVE A LOW RECURRENCE RATE AGAINST GRAM-POSITIVE BACTERIA IN DIABETIC FOOT ULCER INFECTIONS?	Joanna Tanner, United Kingdom
	PP11	THE DECEPTIVE NATURE OF DIABETIC FOOT ULCERS: UNRAVELING HEMATOGENOUS COMPLICATIONS	Diogo Brandão Neves, Portugal
	PP12	FUSARIUM PROLIFERATUM OSTEOMYELITIS IN PATIENT WITH TYPE 2 DIABETES	Stavroula-Panagiota Lontou, Greece
	PP13	RARE CAUSES OF PROCALCITONIN LEVEL ELEVATION IN PATIENTS WITH DIABETIC FOOT INFECTION	Aleksandr Farmanov, Russian Federation
	PP14	LINEZOLID USEAGE AND OUTCOMES IN THE MANAGEMENT OF DIABETIC FOOT INFECTIONS	Alok Tiwari, United Kingdom
	PP15	INFECTED DIABETIC FOOT ULCERS: ARE THEY ALWAYS WHAT THEY LOOK LIKE?	Stella Papachristou, United Kingdom
	PP16	HARNESSING THE POWER OF OUR IMMUNE SYSTEM: THE ANTIMICROBIAL MODE OF ACTION OF NITRIC OXIDE	Jonathan Roberts, United Kingdom
14:25-15:25		**Poster Session C: Foot Clinics** Room: Valentia B+C	**Chair: Sicco Bus**
	PP17	COULD ANTIBIOTIC BONE GRAFT SUBSTITUTES REDUCE REULCERATION RATES IN PATIENTS WITH DIABETIC FOOT OSTEOMYELITIS AFTER METATARSAL HEAD RESECTION SURGERY? A PRELIMINARY STUDY	Esther Garcia Morales, Spain
	PP18	IMPLEMENTATION OF A PRESSURE MEASUREMENT SYSTEM, A DATA DRIVEN APPROACH	Anne Rasmussen, Denmark
	PP19	OFFLOADING STRATEGIES USED FOR PLANTAR DIABETIC FOOT ULCERS AND THEIR OUTCOMES IN REAL-LIFE CLINICAL PRACTICE	Afram Rumanes, Netherlands
	PP20	FOOTPRINTS OF PROGRESS: INSIGHTS FROM A DIABETES VASCULAR MULTI-DISCIPLINARY FOOT CLINIC	Harriet Morgan, United Kingdom

Time	No.	Title	Speaker
	PP21	A REVIEW OF THE QUALITY OF DOCUMENTATION OF ANNUAL DIABETES FOOT CHECKS IN IDENTIFYING THE RISK OF ULCERATION IN A UK PRIMARY CARE SETTING	Reena Patel, United Kingdom
	PP22	DIABETIC FOOT CARE AWARENESS AND CHECKLIST USAGE IN A MULTIDISCIPLINARY DIABETIC FOOT CLINIC	Parveen Doddamani, United Kingdom
	PP23	OPAT IN THE DIABETIC FOOT: REVIEW OF THE DELIVERY MODEL AND OUTCOMES OF A DIABETES SPECIALIST PODIATRIST AND AN ANTIMICROBIAL PHARMACIST LED CLINIC BASED AT KETTERING GENERAL HOSPITAL.	Paula Grannon, United Kingdom
	PP24	IMPROVING REGIONAL DIABETIC FOOT MANAGEMENT PATHWAYS: LESSONS FROM THE UK	Isaac Kobe, United Kingdom
	PP25	SHOULD TOTAL CONTACT CASTING BE A KEY SKILL FOR EVERY PODIATRIST?	Nina Petrova, United Kingdom
	PP26	DIABETIC FOOT UNITS IN SPAIN: UNDERSTANDING THE REALITY THROUGH QUESTIONNAIRE-BASED ANALYSIS	José Luis Lázaro-Martínez, Spain
14:25-15:25		**Poster Session D: Wound healing and outcome** Room: Valentia B+C	**Chair: Vladimíra Fejfarová**
	PP27	IMPACT OF A NITRIC OXIDE GENERATING TREATMENT IN DIABETIC FOOT ULCERS SEGMENTED BY WOUND AGE AND INFECTION STATUS: A POST-HOC ANALYSIS	Chris Manu, United Kingdom
	PP28	CLINICAL EVALUATION OF A TOPICAL AEROSOL OF HIGHLY PURIFIED PORCINE HEMOGLOBIN IN DIABETIC FOOT ULCERS: A PROSPECTIVE CASE SERIES	Yolanda García Álvarez, Spain
	PP29	THE USE OF CONTINUOUS TOPICAL OXYGEN THERAPY IN COMBINATION WITH CELLULAR, ACELLULAR AND MATRIX-LIKE PRODUCTS TO TREAT COMPLEX, CHRONIC WOUNDS: A RETROSPECTIVE CASE SERIES	Lisa Thomas, United Kingdom
	PP30	AUTOLOGOUS STAMP-SHAPED SKIN MICROGRAFTS IN SEVERELY INFECTED DIABETIC FOOT. A PROSPECTIVE CASE SERIES.	Juan Pedro Sanchez Rios, Spain
	PP31	THE CONJURING OF ANEMIA AND MULTIDRUG RESISTANT BACTERIA ON HEALING CHANCES IN DIABETIC FOOT (DF) PATIENTS.	Letizia Pieruzzi, Italy
	PP32	RECURRENCE RATES AFTER HEALING IN PATIENTS WITH NEUROISCHEMIC DIABETIC FOOT ULCERS HEALED WITH AND WITHOUT SUCROSE OCTASULFATE IMPREGNATED DRESSINGS. A ONE-YEAR COMPARATIVE PROSPECTIVE STUDY	José Luis Lázaro-Martínez, Spain
	PP33	OUTCOME AND RECURRENCE RATES OF DIABETIC FOOT ULCERS FOLLOWING TREATMENT OF A TOTAL CONTACT CAST AND BOHLER IRON.	Jacqueline Mildred, United Kingdom

Time	No.	Title	Speaker
	PP34	RETROSPECTIVE REVIEW OF THE USE OF ARGON COLD PLASMA THERAPY IN NON-HEALING DIABETIC FOOT ULCERS OVER A 3-YEAR PERIOD WITHIN A DGH DIABETIC FOOT MDT SERVICE	Jemma Cruickshank, United Kingdom
	PP35	NAVIGATING BEHAVIOURAL CHALLENGES IN CHRONIC WOUND MANAGEMENT: ADDRESSING ADHERENCE IN NON-COMPLIANT PATIENTS	Mary Gray, United Kingdom
	PP36	INCIDENCE AND RISK FACTORS FOR DEHISCED SURGICAL WOUNDS AFTER SURGERY FOR DIABETIC FOOT INFECTIONS	Mario Reyes, United Kingdom
15:25-15:55		**Coffee break in exhibition area**	
15:55 -16:10		**Industry symposium: URGO** Room: Valentia B+C	
		A global analysis of the cost-effectiveness of healing matrices	Chris Manu, United Kingdom
16:10-16:15		**Short break**	
16:15-16:30		**Industry symposium: Biocomposites** Room: Valentia B+C	
		Local application of calcium sulfate antibiotic carrier in diabetic foot ulcers and complex wounds	Prash Vas Maureen Bates, United Kingdom
16:30-16:35		**Short break**	
16:35-16:50		**Award Ceremony** Room: Valentia B+C	**Chair: Anna Trocha**
		Winners of the Oral Awards and Poster Prize are announced	
16:50-18:10		**Oral presentations: Orthopaedic Surgery** Room: Valentia B+C	**Chairs: Klaus Kirketerp-Møller, Alberto Piaggesi**
	OP30	BONE GRAFT IN THE TREATMENT OF DIABETIC FOOT OSTEOMYELITIS	Roberto da Ros, Italy
	OP31	TIME CRITICAL CHARCOT FOOT RECONSTRUCTIONS CAN STILL BE PERFORMED IN THE ABSENCE OF PREOPERATIVE GLYCAEMIC CONTROL WHEN DELIVERED BY MDT	Erika Vainieri, United Kingdom
	OP32	EXPERIMETAL BONE TISSUE SUBSTITUTION IN DIABETIC OSTEOMYELITIS	Karol Sutoris, Czech Republic
	OP33	CHARCOT NEURO-OSTEOARTHROPATHY: A SINGLE CENTER EXPERIENCE AT A UNITED STATES METROPOLITAN ACADEMIC CENTER	Katherine Raspovic, United States
	OP34	HEALTH DISPARITY AND INEQUITY IN AMPUTATION RATES IN UNDERREPRESENTED MINORITY PATIENTS WITH DIABETIC FOOT ULCERS	Dane Wukich, United States

SATURDAY 7 SEPTEMBER 2024

Time	No.	Title	Speaker
	OP35	THE MANAGEMENT OF DIABETIC ANKLE FRACTURES – 5-YEAR OUTCOMES OF EXTENDED FIXATION TECHNIQUES.	Raju Ahluwalia, United Kingdom
	OP36	THE ALL-MEDIAL APPROACH IN SEVERE PLANO-VALGUS FOOT & ANKLE DEFORMITY WITH SUBTALAR DISLOCATION. ANATOMY, INDICATIONS, AND OUTCOMES OF A PROMISING NEW TECHNIQUE IN CHARCOT RECONSTRUCTION.	Raju Ahluwalia, United Kingdom
18:10-18:15		**Short break**	
18:15-18:50		**Business Meeting and Assembly** For members of DFSG only. Room: Valentia B+C	
20:30-00:00		**Conference Dinner** Venue: Palau Alameda. Bus transfer is included. Departure Melia Hotel: 20:00. Departure Palau Alameda 00:15. Not included in the registration fee. Tickets must be purchased before the conference	

Time	No.	Title	Speaker
7:45-8:45		**Morning workshop: New approaches in non-removable offloading of diabetic foot ulcers** Room: Valentia B+C If you are an early starter, we recommend you attend this morning hands-on workshop before the sessions begin at 9:00.	Dirk Hochlenert, Germany Gustav Jarl, Sweden
9:00-10:45		**Oral presentations: Wound healing and outcome** Room: Valentia B+C	**Chairs: José Luis Lazaro Martinez, Vladimíra Fejfarová**
	OP37	IMPACT OF WOUND HYGIENE INCORPORATING AN ANTIBIOFILM GELLING FIBRE DRESSING ON HARD-TO-HEAL WOUNDS IN A SPANISH POPULATION	Diego Sevilla Martinez, Spain
	OP38	TO SAVE OR NOT TO SAVE A NON-FUNCTIONAL LIMB... HOW PROMINENT IS THIS PROBLEM?	Oleg Udovichenko, Israel
	OP39	METABOLIC DECOMPENSATION CORRELATES WITH WORSE OUTCOMES IN DIABETIC FOOT PATIENTS.	Alberto Piaggesi, Italy
	OP40	IMPACT OF IMMUNOSUPPRESSIVE THERAPY ON HEALING OF DIABETIC FOOT IN TRANSPLANT PATIENTS	Andrea Němcová, Czech Republic
	OP41	THE EFFECT OF DIABETES CONTROL ON THE HEALING OF NEWLY DEVELOPED DIABETIC FOOT ULCERS	Radka Jarosikova, Czech Republic
	OP42	HEALING WOUNDS SAVES LIVES; HEALING WITHIN 12WEEKS HAVE A BETTER FIVE-YEAR MORTALITY COMPARED TO THOSE WITH NON-HEALING WOUNDS	Sarah Davies, United Kingdom
	OP44	IMPACT OF WIFI COMPOSITE SCORE AND DIABETES CONTROL ON THE HEALING OF HEEL DIABETIC FOOT ULCERS	Šimon Kopp, Czech Republic
	OP45	ASSESSMENT OF WOUND HEALING IN PATIENTS WITH ISCHEMIC DIABETIC FOOT TREATED BY AUTOLOGOUS CELL THERAPY	Dominika Sojakova, Czech Republic
10:45-11:15		**Coffee break in exhibition area**	
11:15-12:05		**Poster discussion II, 4 parallel sessions** Room: Valentia B+C	
11:15-12:05		**Poster Session E: Diagnostics, Classification** Room: Valentia B+C	**Chair: Esther García Morales**
	PP37	DYNAMIC MEASURES OF OXYGENATION IN DIABETIC FOOT WOUNDS – A PILOT STUDY USING FUNCTIONAL NEAR INFRARED SPECTROSCOPY	Ryan Teh, Australia
	PP38	EVALUATING A FLUORESCENCE IMAGING DEVICE TO AID IN DIAGNOSING DIABETIC FOOT INFECTION: AN AUDIT ON FLUORESCENCE FINDING, SIGNS OF INFECTION, AND MICROBIOLOGY IN A MULTIDISCIPLINARY DIABETIC FOOT CLINIC	Patricia Lee, United Kingdom
	PP39	THERMOGRAPHIC IMAGING AS AN AID IN DIAGNOSING PATIENTS AT RISK OF DIABETIC FOOT	Irene Sanz Corbalán, Spain

Time	No.	Title	Speaker
	PP40	MONITORING WOUND STATUS USING MULTI-PARAMETER OPTICAL FIBRE SENSORS	Katie Gray, United Kingdom
	PP41	NEUROPATHY SCREENING IN DIABETOLOGISTS' CLINICAL PRACTICE - RECOMMENDATIONS AND REALITY	Jarmila Jirkovska, Czech Republic
	PP42	THERMOGRAPHY: A RELIABLE TOOL FOR THE DETECTION OF DIABETES FOOT COMPLICATIONS?	Alfred Gatt, Malta
	PP43	A CLUSTER ANALYSIS FOR STRATIFYING DIABETIC FOOT ULCERS AND THE ASSOCIATIONS WITH ULCER HEALING AND PATIENT OUTCOME.	Roozbeh Naemi, United Kingdom
	PP44	CLINICAL SIGNIFICANCE OF THE AID CLASSIFICATION IN DIABETIC FOOT ULCERS: AWARENESS OF ARTERIOPATHY, BACTERIAL INFECTION AND FOOT DEFORMITY	Shinobu Ayabe, Japan
11:15-12:05		**Poster Session F: Biomechanics** Room: Valentia B+C	**Chair: Maureen Bates**
	PP45	COMPARING OFFLOADING EFFECTS OF TOTAL CONTACT SOFTCASTS AND CONVENTIONAL TOTAL CONTACT CASTS FOR PLANTAR DIABETIC FOOT ULCERS	Kor Hutting, Netherlands
	PP47	THE EFFECT OF AN OFF-THE-SHELF AFO ON IN-SHOE PLANTAR PRESSURE	Kamran Shakir, Italy
	PP48	BOHLER IRON OFFLOADER CASTS (BIOC) VS TOTAL CONTACT CASTS (TCC) FOR THE TREATMENT OF DIABETIC FOOT ULCERS - A PILOT STUDY	Sharan Sambhwani, United Kingdom
	PP49	CHALLENGES AND BENEFITS OF IMPLEMENTING A PEAK PLANTAR PRESSURE MAPPING SYSTEM	Louise Barth, Denmark
11:15-12:05		**Poster Session G: Orthopaedic Surgery, Revascularization, DNOAP** Room: Valentia B+C	**Chair: Prash Vas**
	PP50	THE CONSEQUENCES OF SEVERE NEUROPATHY AND OSTEOPOROSIS IN A YOUNG ADULT WITH TYPE 1 DIABETES– HOW BAD CAN IT GO AT THE AGE OF 25?	Wegin Tang, United Kingdom
	PP51	THE EFFICACY OF ANGIOPLASTY FOR WOUND HEALING IN DIABETIC PATIENTS WITH BELOW THE KNEE PERIPHERAL ARTERIAL DISEASE	Hakan Uncu, Turkey
	PP53	RENAL MORBIDITY AND EFFECTIVENESS OF TIBIAL ANGIOPLASTY IN REVASCULARISATION FOR PATIENTS WITH DIABETIC FOOT INFECTION	Isaac Kobe, United Kingdom
	PP54	THE CASE: THE INTERNAL AND EXTERNAL FIXATION ARE EFFECTIVE METHOD FOR DNOAP WITH ULCER.	Yuta Terabe, Japan

Time	No.	Title	Speaker
11:15-12:05		**Poster Session H: Basic and clinical science, Epidemiology, Uremia** Room: Valentia B+C	**Chair: Roberto Anichini**
	PP58	PATIENTS WITH DIABETIC FOOT SYNDROME AND COMPRESSION THERAPY: A LOT IS POSSIBLE!	Ralf Lobmann, Germany
	PP59	EVALUATION OF THE PRESENT PERSPECTIVE ON DIABETIC FOOT SYNDROME AND HEALTH EDUCATION AND ANALYSIS OF THE IMPACT OF EDUCATIONAL INTERVENTIONS: A SYSTEMATIC REVIEW AND META-ANALYSIS.	Aroa Tardáguila García, Spain
	PP60	RELIABILITY OF STRAIN ELASTOGRAPHY IN THE ASSESSMENTS OF PLANTAR SOFT TISSUES AND ACHILLES TENDON IN PEOPLE WITH DIABETES AND A RECENTLY HEALED FOOT ULCER	Benedictine Khor, United Kingdom
	PP61	INFLUENCE OF THE ETHNIC ORIGIN ON THE DISEASE SEVERITY AND TREATMENT RESULTS OF THE DIABETIC FOOT PATIENTS IN NORTHERN ISRAEL	Nour Kabha, Israel
	PP62	MORTALITY IN PATIENTS WITH DIABETIC FOOT ULCER: A SINGLE-CENTRE, RETROSPECTIVE REVIEW OF 176 CASES OVER 1 YEAR	Luqman Safwan Bin Che Mohd Fauzi, United Kingdom
	PP63	RECURRENCE RISK IN CHARCOT NEURO-OSTEOARTHROPATHY AND HIGH RISK PATIENTS IN A ONE-YEAR FOLLOW UP.	Andrea Mancini, Italy
	PP64	FROM KIDNEYS TO TOES: EXPLORING DIABETES, RENAL THERAPY, AND AMPUTATIONS	Sheena Thayyil, United Kingdom
12:05-12:10		**Short break**	
12:10-12:25		**Industry symposium: Integra** Room: Valentia B+C	
		The Use of a Novel Dermal Repair Medical Device in Diabetic Foot Ulcers: pivotal experiences	Alberto Piaggesi, Italy
12:25-12:30		**Short break**	
12:30-12:45		**Update from the DFSG Research Group: Prevention of the first ulcer** Room: Valentia B+C	**Chairs: Fran Game, Anna Trocha**
		Update from the DFSG Research Group: Prevention of the first ulcer. Jarmila Jirkovska, Czech Republic Daina Walton, United Kingdom Elisabetta Iacopi, Italy Johan Røikjer, Denmark Matilde Monteiro-Soares, Portugal	

Time	No.	Title	Speaker
12:45-13:40		**Lunch break in exhibition area**	
13:40-14:40		**Oral presentations: Foot Clinics** Room: Valentia B+C	**Chairs: Nina Petrova, Zulfiqarali Abbas**
	OP46	CLINICAL OUTCOMES OF ONE VERSUS MULTIPLE METATARSAL HEAD RESECTION IN PATIENTS WITH DIABETES RELATED FOOT ULCERS. IS IT SAFE TO PERFORM SEVERAL METATARSAL HEAD RESECTIONS?	Marta García-Madrid Martín de Almagro, Spain
	OP47	ESTABLISHING AN ENHANCED TERTIARY REVIEW PATHWAY FOR DIABETIC FOOT ULCER USING A CENTRALISED ELECTRONIC DATABASE.	Lucy Stopher, Australia
	OP48	CHALLENGES IN THE MANAGEMENT OF DIABETIC FOOT INFECTIONS COMPLICATED BY THE PRESENCE OF CARBAPENEMASE PRODUCING ORGANISMS (CPO) IN A MULTIDISCIPLINARY DIABETIC FOOT CLINIC (MDTFC)	Amy Morrison, United Kingdom
	OP49	RISK FACTORS FOR RECURRENCE OR NEW ULCER IN CONTRALATERAL FOOT IN HEALED DIABETIC PATIENTS	Andrea Michelli, Italy
	OP50	PERSISTENT HIGH MORTALITY IN PATIENTS PRESENTING WITH NEW DIABETES RELATED FOOT ULCERATION: MORE SO IN THOSE UNDER PRIMARY CARE FOR THEIR DIABETES FOLLOW-UP	Hetal Patel, United Kingdom
14:40-15:35		**Oral presentations: Basic and clinical science** Room: Valentia B+C	**Chairs: Roberto Anichini, Chris Manu**
	OP51	THE ASSOCIATION BETWEEN HEALTH-RELATED QUALITY OF LIFE AND PHYSICAL ACTIVITY IN PEOPLE WITH DIABETES AT HIGH RISK OF FOOT ULCERATION	Jaap van Netten, Netherlands
	OP52	CHANGES IN CORNEAL MORPHOLOGY IN PATIENTS AFTER COMBINED PANCREATIC KIDNEY TRANSPLANTATION: NEUROPATHIC DIABETIC FOOT AND CORNEAL EROSION	Ekaterina Artemova, Russian Federation
	OP53	CAN ADVANCES IN MATERIAL SCIENCE EXPLAIN WHY OSTEOCLASTS GENERATED IN VITRO FROM PEOPLE WITH AN ACTIVE CHARCOT FOOT RESORB BONE EXCESSIVELY?	Zelong Yan, United Kingdom
	OP54	UNCUT DIAMONDS OR FOOLS GOLD? THE USE OF NON-INVASIVE NEUROMODULATION IN THE MANAGEMENT OF PAINFUL DIABETIC NEUROPATHY - A SYSTEMATIC REVIEW AND META-ANALYSIS OF ELECTRICAL AND LIGHT BASED THERAPIES.	Dima Al-Muhtaseb, United Kingdom
15:35-15:45		**Closing of DFSG 2024** Room: Valentia B+C	**DFSG Chairperson Anna Trocha**
15:45-16:30		**Goodbye networking** Hotel Lobby	

Oral Abstracts

[OP01] ANEMIC PATIENTS SUFFERING FROM DIABETIC FOOT SHOW AN HIGHER SUSCEPTIBILITY TO MULTIDRUG RESISTANT BACTERIA

Francesco Giangreco[1], Elisabetta Iacopi[1], Manuela Pogliaghi[2], Alessandro Leonildi[3], Letizia Pieruzzi[1], Chiara Goretti[1], Simona Barnini[3], Marco Falcone[2], Alberto Piaggesi[1]

[1]Pisa University Hospital, Diabetic Foot Clinic, Pisa, Italy, [2]Pisa University Hospital, Infectious Disease UNit, Pisa, Italy, [3]Pisa University Hospital, Microbiology Unit, Pisa, Italy

Aim: Our study aimed to test if anemia could be related with an increased prevalence of multidrug resistant bacteria (MDR) in Diabetic Foot (DF) infection.

Method: We retrospectively analysed all patients admitted in our Department in 2022 for DF, dividing them in two groups according to presence (Group A) or absence (Group B) of anemia, defined as both total Hemoglobin concentration (HB) and red blood cells count (RBC). We compared then groups for prevalence of MDR and resistance profiles and for their different impact on healing rate (HR), healing time (HT) and recurrence rate (RR) in the two groups.

Results / Discussion: We derived data of 280 patients: 164 patients in Group A [58.6%; age 70.7±11.2 yrs; male/female 77.4/22.6%; DM1/DM2 6.9/93.1%; Hba1c 57.8±19.1 mmol/mol; diabetes duration (DD) 21.2±12.4 yrs] and 116 in Group B (41.1%; age 71.1±10.7 yrs; male/female 73.2/26.8%; DM1/DM2 8.1/91.9%; Hba1c 59.1±17.2mmol/mol; DD 19.9±13.8 yrs). We evaluated the prevalence of the most represented bacterial strains: Staphylococcus Aureus (SA) was detected in 31.1% in Group A vs 21.6% in Group B ($p<0.001$): with prevalence of Meticillino-resistant SA of 28.4% vs 18.2% respectively ($p<0.001$). Pseudomonas Aeruginosa (PA) was present in 18.3% of patient in Group A and in 14% of Group B ($p<0.05$). No difference between two Groups in terms of resistance profile of PA. Enterobacteriaceae (EN) was detected in 16.4% of patients in Group A and in 11.2% of patients in Group B ($p<0.05$) and we observed EN resistance to Fluoroquinolones in 53% of patients in Group A and 27% of patients in Group B ($p<0.005$) and EN producer of Extended Spectrum beta lactamase in 39% of patients in Group A vs 17% of patients in Group B ($p<0.002$).

Conclusion: Our results suggest a higher susceptibility to MDR bacteria infection in DF ulcers in anemic patients.

[OP02] THE EFFECT OF CHRONIC KIDNEY DISEASE ON CLINICAL OUTCOMES FOR PATIENTS WITH MODERATE AND SEVERE DIABETIC FOOT INFECTIONS

Arthur Tarricone[1], Mario Reyes[2], Lee Rogers[1], Lawrence Lavery[2]

[1]University of Texas Health sciences , San Antonio , United States, [2]University of Texas Southwestern, Da, United States

Objective: To evaluate the association of Chronic Kidney Disease and clinical outcomes in patients admitted to hospital with diabetic foot infections.

Methods: This was a retrospective study of 344 patients with moderate and severe diabetic foot infections (219 patients with CKD 1-2; 63 patients with CKD 3; and 62 with CKD 4-5). Patients were grouped according to their Glomerular Filtration Rate (GFR). We established 3 groups: Patients with GFR > 59mL/min; GFR 30-59mL/min; and GFR <30. We evaluated wound healing, readmission, reinfection rates, mortality, vascular interventions, length of hospitalization, and surgical interventions. Outcomes were compared using multivariable regression analysis in RStudio.

Results: Multivariate analysis revealed that patients with severe renal impairment had higher rates of peripheral arterial disease (GFR>60: n=42 (65%) , GFR30-60: n=47 (75%) , GFR<30: n=54 (87%) p< 0.01) and lower hemoglobin levels (GFR>60: 12.0 [10.9:13.4] , GFR30-60: 10.3[9.1:11.6], GFR<30 9.8 :[8.5:11.0] p< 0.01). We found that patients with diabetes and severe renal impairment at admission had significantly lower glycosylated hemoglobin levels (GFR>60: 9.4% [7.6:11.4] , GFR30-60: 8.5% [6.8-10.3], GFR<30 7.15% :[6.1:8.6] p< 0.01). There was no difference in severity of infections at admission between the three groups. We found that diabetic patients with higher levels of renal impairment had higher mortality rates (GFR>60: n=4 (1.9%) , GFR30-60: n=2(3.2%), GFR<30: n=5 (8.1%) p< 0.01). and higher rates of re-admission (GFR>60: n=45 (21%) , GFR30-60: n=18 (29%), GFR<30: n=30 (48%) p< 0.01)). We did not find a difference in healing or days to heal between the three groups.

Conclusions: Patients with severe renal impairment who were admitted to hospital with moderate and severe diabetic foot infections had higher mortality rates and higher readmission risk than those without severe renal impairment.

Figure 1. Kaplan Meir Curve for Wound Healing by CKD Level

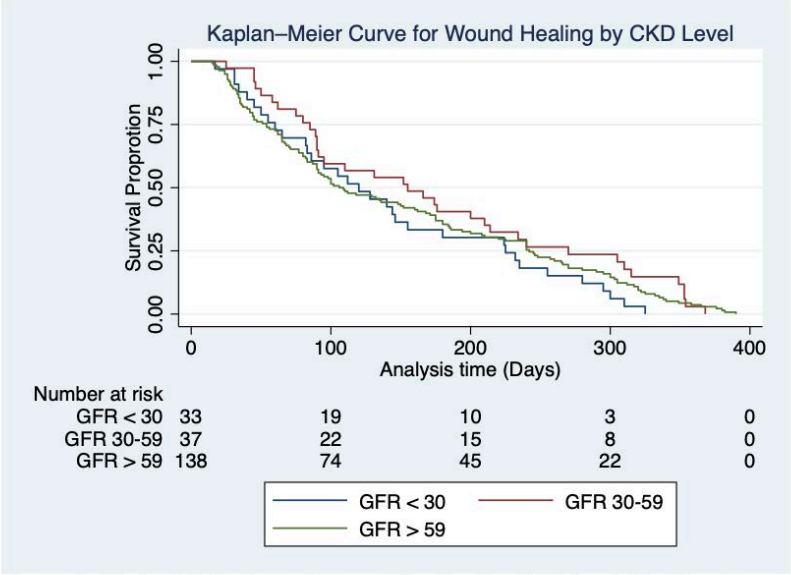


Figure 1: Kaplan Meier Curve for wound healing by CKD level. The Y-axis represents the proportion of wounds healed and the X-axis represents the time (days). CKD levels were separated by glomerular filtration rate (GFR), with GFR<30 (blue), GFR 30-59 (green), and GFR>59 (red). There was no significant difference in time until wound healing between each group (p=0.365).

[OP03] SYSTEMATIC INTRAOPERATIVE BONE SAMPLING INCREASES HEALING CHANCES IN DIABETIC FOOT OSTEOMYELITIS

Elisabetta Iacopi[1], Francesco Giangreco[1], Alessandro Leonildi[2], Valerio Ortenzi[3], Manuela Pogliaghi[4], Letizia Pieruzzi[1], Chiara Goretti[1], Simona Barnini[2], Marco Falcone[4], Antonio Giuseppe Naccarato[3], Alberto Piaggesi[1]

[1]Pisa University Hospital, Diabetic Foot Clinic, Pisa, Italy, [2]Pisa University Hospital, Microbiology Unit, Pisa, Italy, [3]Pisa University Hospital, Histology and Anatomo-Pathology Service, Department of Translational Research, Pisa, Italy, [4]Pisa University Hospital, Infectious disease Unit, Pisa, Italy

Aim: We aimed to evaluate if a proactive multidisciplinary diagnostic program could improve outcomes in the management of multidrug resistant (MDR) diabetic foot (DF) osteomyelitis (OM).

Method: We evaluated data of all the consecutive patients who underwent surgical procedure for OM between July and December 2022 in our department (Group A). Intraoperative bone specimens were collected for microbiological and histological analysis on whose results antibacterial therapy was decided. The controls were patients admitted between January and June 2022 with the same indications (Group B), but without systematic intraoperative bone sampling. Clinical and demographic characteristics, procedures, healing rate (HR), healing time (HT) and recurrence rate (RR) were compared between the groups.

Results / Discussion: We derived data from 165 patients: 84 in Group A [50.9%; Male/female 79.3/20.7%; age 70.2±11.2 yrs; Type 1/2 diabetes 6.3/93.7%; diabetes duration (DD) 21.5±12.4 yrs; Hba1c 57.8±19.4 mmol/mol; BMI 27.6±5.1 kg/m^2] and 81 in Group B [49.1%; Male/female 82.7/17.3%; age 70.5±11.6 yrs; Type 1/2 diabetes 5.2/94.8%; DD 19.5±11.6 yrs; Hba1c 60.4±21.8 mmol/mol; BMI 27.3±4.8 kg/m^2]. Group A had a higher healing rate at six months (84.9% vs 66.9%, p<0.002), a shorter healing time (65±52 days vs 126±92 days, pz<0.001) and a lower recurrence rate at 1 year of follow up (32.5% vs 58.7%, p<0.05) compared to Group B. In Group A a higher prevalence of infections were polymicrobial (51.1 vs 35%, p<0.002). We observed a higher prevalence of Ps. Aeruginosa (19.7 vs 11.1%, p<0.05) and a lower prevalence of Staph Aureus (22.3 vs 29.6%, p<0.05) in Group A vs Group B.

Conclusion: Systematic intraoperative bone sampling for culture and histology, and consequent antibiotic adjustment, increases healing rates and reduces healing times and recurrences rates in DF patients undergoing surgical debridement for OM.

[OP04] THE USE OF ADJUVANT LOCAL APPLICATION OF ANTIBIOTIC-IMPREGNATED CALCIUM SULPHATE IS SIMPLE, PRACTICAL, AND SAFE IN MULTIPLE CLINICAL PHENOTYPES OF DIABETIC FOOT ULCERATION COMPLICATED BY INFECTION WHEN UNDERTAKEN IN A MULTI-DISCIPLINARY SETTING

Maureen Bates[1], Timothy Jemmott[1], Wegin Tang[1], Erika Vainieri[1], Michael Edmonds[1], Nina Petrova[1], Chris Manu[1], Aileen Boyd[1], Prash Vas[1 2]

[1]King's College Hospital, London, United Kingdom, [2]Guy's and St Thomas' Hospitals , London, United Kingdom

Aim: To evaluate if the application of locally biodegradable calcium sulphate beads, loaded with antibiotics (ALCS), can be practically undertaken within a diabetic foot clinic and evaluate adverse events. Secondary aims included an assessment of systemic antibiotic use and impact on wound healing.

Method: DFU complicated by infection (IDSA 3 or lower, acute or chronic) were considered as long as there was no evidence of non-viable osteomyelitis. After meticulous clinic debridement, the ALCS beads were applied. All individuals were offered careful offloading based on need and tolerability.

Results: A total of 56 patients were included in the initial evaluation. The mean age was 61±15 years (range 49-77). Mixed gram-positive and gram-negative isolates (45%) predominated, followed by S. aureus only (25%) and Gram-negative only isolates (20%). We identified 3 key clinical phenotypes where ALCS was used in the evaluation – **difficult-to-heal DFU with chronic local infection** (56%), **Chronic DFU with no surgical options** (26%) and **new acutely infected DFU** (18%). Vancomycin/gentamicin combination was used the most (82%) with gentamicin only (10%) and vancomycin only (8%). Overall, ALCS application was well tolerated; only localised peri-wound reactions were noted in 4% not requiring treatment discontinuation.

Systemic antibiotics were used in 78% for the first two weeks and continued in 48% for an additional 2 weeks. Therapy failure leading to hospitalisation did not occur.

Among those with 26 weeks' follow up, the percentage of complete healing was 62%, with a mean healing duration of 13.3±7.1 weeks. The PAR reduction at 6 weeks was 32.0±17.2% for the whole group.

Conclusions: Our evaluation of ALCS has observed it is ***safe and feasible*** to be offered within a multi-disciplinary diabetic foot service for complex infected DFU phenotypes. Larger studies, ideally randomised, are required to investigate the observed benefits and to determine which DFU benefit the most.

[OP05] CODIFI2: RANDOMISED CONTROLLED TRIAL TO COMPARE CLINICAL AND COST-EFFECTIVENESS OF SWABS VERSUS TISSUE SAMPLES TO INFORM MANAGEMENT OF INFECTED DIABETIC FOOT ULCERS

Frances Game[1], Chris Bojke[2], Sarah Brown[2], Colin Everett[2], Henrietta Konwea[2], Angela Oates[3], Michael Backhouse[4], Howard Collier[2], Joanna Dennett[2], Rachael Gilberts[2], Benjamin A. Lipsky[5], Jane Nixon[2], David Russell[2], Andrea Nelson[6]

[1]University Hospitals of Derby and Burton NHS Foundation Trust, Derby, United Kingdom, [2]University of Leeds, Leeds , United Kingdom, [3]Leeds Beckett University, Leeds , United Kingdom, [4]University of Warwick, Warwick, United Kingdom, [5]University of Washington, Washington, United States, [6]Glasgow Caledonian University, Glasgow, United Kingdom

Aim: To compare clinical and health economic outcomes of wound swabbing versus tissue sampling for diabetic foot ulcers (DFU) complicated by mild or moderate infection.

Method: Multicentre, prospective, non-blind, parallel group, RCT comparing time to healing , proportion healed (healing assessed blind), antimicrobial regimen, hospitalisation, mortality, quality of life, and cost-effectiveness of swab versus tissue sampling. Randomisation (centralised and independent) was 1:1 to groups: minimisation by site, number of DFUs, aetiology, size, location & duration. Follow-up 52-104 weeks. Target was 730 participants (90% power to detect treatment effect of 12.5% in proportions healed at 52-weeks).

Results / Discussion: 149 participants (75 Swab, 74 Tissue) recruited from 21 UK sites (2019–2022). Cumulative incidence of confirmed healing by 52 weeks was 45.3% (95%CI 33.5%-56.4%) for swab vs 44.6% (95% CI 33.0-55.6%) for tissue. Hazard ratio (HR) for healing (tissue vs swab) was 1.01 (95% CI 0.65-1.55). Antibiotic changes were 19.4%-for tissue vs 15.1% for swab. Median (IQR) days in hospital was 17 (12-39) for swab and 16 (10-32) for tissue. During follow-up 17 swab & 7 tissue participants died. Overall, 18.7% and 24.3% participants in the swab and tissue groups respectively had an amputation (major or minor). Quality of life (DFS-SF) was similar between groups. Costs in tissue group were greater than swabbing across antibiotics, hospitalisation, and other costs. Swabbing was associated with higher EQ-5D-based QALYs at all timepoints and lower costs at weeks 26 and 52.

Conclusion: Whilst underpowered to determine whether employing swab vs tissue sampling affected the ulcer healing rate or time to healing, any such differences are likely small. As tissue sampling was associated with higher costs, lower QALYs and no evidence of clinical benefit, swab dominated over tissue sampling in the cost-effectiveness analysis.

Funder: UK NIHR HTA 16/163/04

Trial registry number: ISRCTN74929588

[OP06] RISK FACTORS FOR RE-INFECTION AFTER TREATMENT FOR DIABETIC FOOT OSTEOMYELITIS

Arthur Tarricone[1], Mario Reyes[2], Lawrence Lavery[2], Lee Rogers[1]

[1]University of Texas Health sciences , San Antonio , United States, [2]University of Texas Southwestern, Dallas, United States

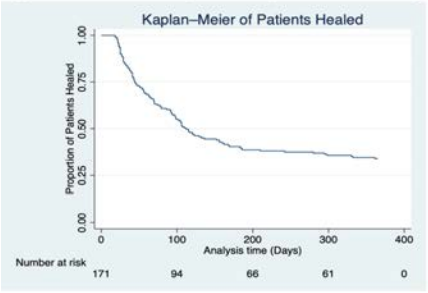
Objectives: To evaluate risk factors for re-infection in patients after treatment for diabetic foot osteomyelitis (DFO).

Methods: We used patient level pooled data from two randomized controlled trials (RTCs) that evaluated patients with diabetic foot infections. We evaluated 171 patients with osteomyelitis (OM) confirmed with bone culture or histopathology. Data from the 12-month follow-up were used to determine clinical outcomes.

Results: Risk factors for re-infection were history of myocardial infarction (MI), history of amputation, wounds that did not heal and a toe brachial index (TBI) < 0.40. Patients with a history of previous MI were 4.6 times more likely to experience a re-infection compared to those who did not have a history of MI (OR 4.6, 95% CI 1.2-17.0, p=0.02), and patients with a history of amputation were 2 times more likely to experience a reinfection (OR 2.0, 95% CI 1.0-4.0, p=0.04). Patients with wounds that did not heal were 2.8 times more likely to have reinfection (OR 2.8, 95% CI 1.4-4.5. p<0.01).

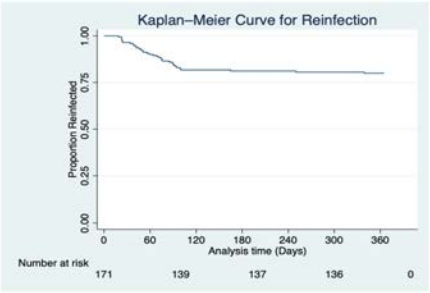
Conclusions: This study found that a history of MI, prior amputation, non-healing wounds, and a TBI<0.40) were all risk factors for re-infection after treatment for diabetic foot osteomyelitis.

Figure 1: KM Curve of days until complete wound healing.



Legend: The above describes the survival curve until wound healed across all 171 subjects. The mean time to wound healing was 76.4 ± 73.1 days

Figure 2: KM Curve of days until reinfection



Legend: The above describes the survival curve until reinfection across all 171 subjects. The mean time to reinfection was 75.7 ± 62.8 days

[OP07] WHAT IS THE BEST NON-INVASIVE TEST, USED FOR PERIPHERAL ARTERIAL DISEASE DIAGNOSIS, TO PREDICT DIABETIC FOOT ULCER HEALING IN PATIENTS WHO UNDERWENT ENDOVASCULAR REVASCULARIZATION?

Francisco Javier Álvaro Afonso[1], Yolanda García Álvarez[2], Sebastián Flores Escobar[2], Esther Alicia Garcia Morales[3], Irene Sanz Corbalán[4], José Luis Lázaro-Martínez[2]

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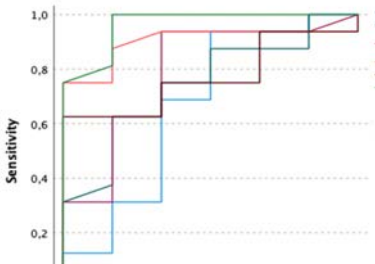
Aim: to analyze the best non-invasive test prognosis marker in patients with diabetic foot ulcer (DFU) who underwent endovascular revascularization based on clinical outcomes such as ulcer healing.

Method: A multicentric prospective study in a total of 28 participants with ischemic or neuroischemic DFU who underwent an endovascular revascularization during the period between 2022 and 2023 was performed. After the inclusion and before endovascular revascularization, non-invasive tests were performed using PeriFlux System 600 (Visit 0). Patients were followed-up for at least 6-months period after revascularization and non-invasive test were performed at 4 week (visit 1). The primary clinical outcome was wound healing. Wound healing was considered when patient present a total epithelization of the DFU confirmed at least 2 weeks after wound closure.

Results / Discussion: During the 6 months follow up 71.43% (n=20) of DFU healed. Figure 1 depicts ROC curves for non-invasive tests based on ulcer healing with the optimal prognosis cut-off points based on sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), positive likelihood ratio (PLR) and negative likelihood ratio (NLR).



Test	Cut-off point	Sensitivity	Specificity	PPV	NPV	PLR	NLR
AP	68 mmHg	0.55	0.87	0.92	0.56	4.40	0.51
TP	46 mmHg	0.70	0.75	0.87	0.50	2.80	0.4
APBI	0.70	0.25	0.87	0.83	0.32	2.0	0.86
TPBI	0.37	0.60	0.87	0.92	0.46	4.8	0.46
$TcPO_2$	24 mmHg	0.89	0.75	0.89	0.75	3.58	0.14
SPP	37 mmHg	0.58	0.83	0.91	0.42	3.53	0.49

Conclusion: the best non-invasive tests for prognosis ulcer healing were transcutaneous pressure of oxygen ($TcPO_2$) and toe pressure with an optimal prognosis cut-off point for healing ulcer of 24 mmHg and 46 mmHg respectively. These results highlight the role of microcirculation in healing of patients with diabetic foot ulcers.

[OP08] PREDICTIVE FACTORS OF MAJOR AMPUTATION IN PATIENTS WITH DIABETIC FOOT ULCERS RECEIVING PERIPHERAL BLOOD MONONUCLEAR CELL

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Aim: Peripheral blood mononuclear cell (PB-MNC) therapy is an adjuvant treatment for patients with diabetic foot ulcers (DFUs) and no-option critical limb ischaemia (NO-CLI). The aim of this study was to evaluate the factors influencing the effectiveness of PB-MNC.

Method: The study is a prospective, noncontrolled study including patients with DFUs and NO-CLI treated with PB-MNC therapy. NO-CLI was defined by revascularization failure with desert foot (absence of any artery below-the-ankle) or partial desert foot (absence of wound related artery with TcPO2 < 30 mmHg). Patients were divided in 2 groups: amputees and not amputees after 1 year of follow-up. Clinical, wounds and vascular features were recorded and compared between the 2 groups. Then, factors influencing the clinical response to the PB-MNC were evaluated.

Results / Discussion: Sixty-four patient were included. The mean age was 73.8±5.8, all patients had type 2 diabetes, 75% were male, 81% showed infected DFUs, 93.7% had a gangrene. Survival with limb salvage was recorded in 75% of cases, major amputation in 12.5% and mortality in 12.5%. Amputees in comparison to not amputees had a higher rate of desert foot (100%vs25%,p<0.0001), higher post-procedural pain (5.7±1.9vs2.2±1.3,p<0.0001), lower TcPO2 values after PB-MNC (30±8vs43±8mmHg,p0.0001) and higher rate of heel DFUs (75%vs21.4%,p 0.002). The presence of desert foot before PB-MNC, heel DFUs and the persistence of post-procedural pain were independent predictors of major amputation

Conclusion: The current study showed that PB-MNC therapy resulted less effective in patients who had pre-procedural desert foot, heel ulcers and the persistence of post-procedural pain.

[OP09] A NEW OPPORTUNITY TO TREAT NO-OPTIONS FOOT ISCHEMIC LESIONS IN DIABETIC PATIENTS: THE TRANSVERSE TIBIAL TRANSPORT SYSTEM

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Aim: The possibility to correct diabetic foot ischemia induced lower limbs revascularization in growing numbers of diabetic patients with and critical limb ischemia. This led to find out in many of them the so called No-Option foot, absence of treatable arteries. Tranverse Tibial Transport (TTT) system allows us to exert a parcellar tibial corticotomy exploiting the ability of bone reconstruction reaction to increase growth factors excretion both for bone and for vascular and soft tissues.

Method: since May, 2022 in our Hospitals we treated 6 No-Option feet in which gangrene or deep lesion were threatening limb. TTT was applied to each patient after an angiographic evaluation and a revascularization attempt with a diagnosis of No-Option foot but with at least a patent artery till the ankle. We evaluated TcPO2 and Visual Analogue Scale administering it to patients at time 0 (pre-operatory) and respectively 2, 4 and 8 weeks post-op (TcPO2) and at time 0, post-op and after 2 weeks (VAS)

Results / Discussion: 4 patients presented forefoot gangrene, one big toe gangrene and the last one big toe distal necrotic lesion. Two of them underwent to Chopart amputation, two to transmetatarsal amputation, one to 1st ray amputation and one to dressings. All of them healed.

	Pt 1	Pt2	Pt3	Pt4	Pt5	Pt6
TcPO2 preop	18	27	16	14	18	18
2 weeks	20	57	38	20	39	48
4 weeks	46	56	65	48	48	44
8 weeks	42	47	60	45	45	46
VAS preop	7	9	8	10	9	8
postop	6	7	5	7	10	6
2 weeks	5	1	0	4	2	2

Conclusion: Although the number of patients is very small to discuss of statistically significant results, the healing of lesions in such No-Option feet appears very encouraging to increase the number of treated patients.

[OP10] INEFFICIENCIES IN PATHWAYS TO SPECIALIST CARE FOR PEOPLE WITH DIABETES MELLITUS REQUIRING LOWER LIMB ANGIOPLASTY

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Aim: To investigate the source of referral and pathway to specialist care for people with diabetes mellitus (DM) undergoing lower limb angioplasty.

Method: A retrospective, single-centre, service evaluation from February 2018 to March 2019 of people undergoing lower limb endovascular revascularization. Closed or duplicate participant records were excluded. Electronic patient clinical and tracking records were accessed to capture demographics, medical history, clinical outcomes of ulcer healing, major amputation, and death at one year, source of referral and pathway to specialist care.

Results: Of 34 records screened, data were included for 30 participants: 63% male, mean (±standard deviation) age 74 ± 9 years, 90% had Type 2 DM. Of the total, 83% presented with a diabetes-related foot ulcer and 5% with intact feet. Referrals were directed to the vascular team or multidisciplinary foot team (MDfT). The sources of referral were: 37% General Practitioner, 33% Accident & Emergency, 13% inpatient, 7% unidentified and 3% each from a community podiatrist, private hospital, and secondary hospital respectively. Over 47% had accessed two or more healthcare services prior to being referred to a specialist service. No statistically significant association between route to specialist assessment and mortality in this limited cohort was identified (p=0.1936, two-sided Fisher's exact test); further analysis including more recent referrals is currently underway. At one year, 57% had healed, 33% had died and 3% had undergone major amputation.

Conclusion: Nearly 50% of referrals for lower limb angioplasty occurred as an inpatient or after presenting to emergency services despite two or more prior limb-related contacts with healthcare professionals. This suggests an urgent need to improve vascular assessment for people with DM in all care settings within this region and to ensure healthcare professionals are empowered to refer patients based on this to the MDfT.

[OP11] THE COST OF PODIATRIC CARE IN CZECH REPUBLIC – A MULTICENTRAL STUDY

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Aim: The aim of this prospective multicentre study was to determine the direct and indirect costs associated with longitudinal podiatric care in selected foot clinics over the Czech Republic.

Method: In total 119 patients with DF ulcers (DFUs, mean age 68±11years, diabetes duration 19±11 years, HbA1c 62±14 mmol/mol, WIfI composite score 3±2; 33% of patients had new DFU; 37% previous amputations and 50% peripheral arterial disease-PAD) from 10 podiatric foot clinics from entire Czech Republic have been enrolled into this economic analysis. Direct and indirect costs associated with diagnostic and treatment methods performed in study patients including angiological, radiological and microbiological examinations, blood sampling, local therapy, antibiotics, surgical procedures, off-loading and further expenditures(patient transports, doctor's visits, home care assistants, etc) were monitored during a period of 6 months using an electronic database.

Results: The average costs for podiatric care was 2648±3714EUR (median 1411EUR)/1patient/6months. The largest cost portions were spent on therapy procedures(46%), hospital services(18%), antibiotics and further expenditures(14%). Significantly more expensive were patients hospitalized during study period in contrast to outpatient ones (7923±5572 vs.1304 ±1256EUR;p<0.01).The most expensive were hospital services, therapeutical procedures, antibiotic and local therapies in hospitalized patients compared to outpatients, where the most expensive costs were connected to therapeutical procedures (74% of total financial sum). Patients with newly developed DFUs or with PAD were not significantly more expensive to those without new DFUs/PAD. WIfI composite score (mostly W) was the only parameter significantly correlated with total podiatric costs (r=0.434;95%CI 0.279-0.559;p<0.0001), other subjects characteristics (age, diabetes or DFUs duration, HbA1c) did not correlate significantly with podiatric financial demands**.**

Conclusion: Total expenditures to podiatric care increase nearly 3, maximally 9 times the total costs spend on Czech diabetic citizens. The most expensive are patients hospitalised for DF, whose podiatric costs demands increase nearly 5times.The most significant indicator for podiatric financial demands is WIfI composition score.*NU20-01-00078,NW24-09-00184 and LX22NPO5104*

[OP12] RISK SCORE OF LOWER-LIMB AMPUTATION AND INCIDENCE OF MAJOR KIDNEY AND CARDIOVASCULAR EVENTS IN PATIENTS WITH TYPE 1 DIABETES

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Aim: To develop a 10-year risk score for predicting lower-limb amputation (LLA); and to determine whether this risk score can predict different diabetes complications, including end-stage renal disease (ESRD) and cardiovascular disease (CVD), in people with type 1 diabetes.

Method: We used data from 3 French and Belgian prospective cohorts of participants with type 1 diabetes. Candidate predictors included routinely measured clinical factors and conditions at baseline. LLA was defined as limb-amputation above the metatarsophalangeal joint due to non-traumatic causes; ESRD as eGFR<15 ml/min/1.73m ^{2} or need for renal replacement therapy or transplantation; and CVD as myocardial infarction, heart failure, or stroke. Cox proportional hazards models with forward selection were used to identify independent predictors of LLA. Intercepts and beta coefficients derived from the final Cox model were used to construct a 10-year risk score for LLA. Harrell C-statistics were used to assess the prognostic performance of the score in predicting outcomes.

Results/Discussion: Among 1074 participants (female 44.8%, age 40±13 years, diabetes duration 23±11 years), LLA, ESRD, and CVD occurred in 81 (7.5%), 105 (10.2%), and 151 (14.1%) participants, respectively, during a median follow-up of 13 years. Independent predictors of incident LLA included prior CVD, diabetes duration, HbA1c, systolic blood pressure, and estimated glomerular filtration rate, which were used to construct the 10-year risk score. Each 1-SD risk score increased the risk of LLA, ESRD, and CVD by 4.9 (95% CI, 3.2-8.0), 4.8 (3.4-7.2), and 3.2 (2.5-4.1) times, respectively. The LLA-risk score provided a high c-statistic index in predicting future LLA (0.83 [95% CI, 0.79-0.87]), ESRD (0.81 [0.77-0.85]), and CVD (0.78 [0.75-0.82]).

Conclusion: The LLA-risk score includes routinely measured clinical factors and conditions, and helps identify not only people with type 1 diabetes at high risk for LEA, but also those at high risk for future ESRD and CVD.

[OP13] EVALUATION OF TISSUE PERFUSION USING INDOCYANINE GREEN FLUORESCEIN ANGIOGRAPHY IN DIABETIC FOOT PATIENTS AFTER ENDOVASCULAR TREATMENT

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Aim: to evaluate the fluorescence angiography (FA) with indocyanine green (ICG) parameters and their dynamics in diabetic patients with chronic limb-threatening ischemia (CLTI) before and after endovascular treatment.

Method: a single-center prospective non-blinded study was conducted with the inclusion of 47 diabetic foot patients with CLTI. $TcpO_2$ and FA-ICG were done before and after angioplasty. Foot zones of interests were the area of minimum and maximum fluorescence, the area of largest part of the foot. Quantitative parameters for FA-ICG were Tstart (sec) – the time of occurrence of min fluorescence in the zones of interest after the introduction of ICG (Istart); Tmax (sec) – the time to achieve max fluorescence after the introduction of ICG (Imax); Tmax -Tstart (sec) – the difference in the time of reaching Imax and Istart.

Results / Discussion: $TcpO_2$ values indicated the presence of CLTI before revascularization. Technical success of revascularization was achieved in 45 patients. In postoperative period, statistically significant changes in $TcpO_2$ and all quantitative parameters were obtained. For the best zone of fluorescence there were decreasing of ICG parameters before and after revascularization: Tstart from 21,5 [16;36] to 17,5 [11,5; 22,5] sec, Tmax from 54 [37;70] to 36 [26,5;42,5] sec; Tmax -Tstart from 23,5 [20;39] to 19 [14;22] sec

Conclusion: FA-ICG evaluate the visual and quantitative characteristics of perfusion of soft tissues of the foot. Reducing the time to reach the fluorescent substance in the areas of interest makes it possible to assume the restoration of the main blood flow to the foot. Further investigations are warranted to determine threshold values to predict wound healing and indications for revascularization.

[OP14] QUANTIFYING MECHANICAL AND MORPHOLOGICAL PROPERTIES OF PLANTAR FOOT SOFT TISSUES: A SYSTEMATIC REVIEW OF METHODS AND THEIR CLINIMETRIC PROPERTIES

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Aim: The mechanical and morphological properties of soft tissues are pivotal in the development of diabetes-related foot ulceration as they are associated with diminished protection and tissue breakdown. Since it is unknown which technique has the best clinimetric attributes to quantify these properties, we aimed to systematically review the reliability and validity of existing methodologies.

Method: We systematically searched records in Medline and Embase according to MOOSE and PRISMA guidelines. Articles assessing the plantar foot soft tissues mechanical (stiffness, elasticity) and/or morphological (thickness) properties in-vivo in adults were included. The full text of the articles reporting the clinimetric properties of the methodologies were further analyzed. Finally, published cut-off data were used to interpret the reported reliability and validity assessments.

Results/Discussion: In total, 3857 papers were screened for eligibility, resulting in 127 full-text articles assessing the plantar soft tissues mechanical and/or morpholgical properties with 36 investigating the clinimetric properties of the most used techniques. Table 1 shows results for the 36 studies by technique and clinimetric property outcomes, revealing high heterogeneity with 6 techniques for mechanical and 4 for morphological properties. Clinimetric assessments are largely incomplete, often with only one study per assessment reported. Four studies examined criterion validity, with two confirming ultrasound's reliability and validity in measuring soft tissue thickness. For mechanical properties, only durometer and Shear Wave Elastography (SWE) were evaluated for both reliability and validity. Durometer reliability varies with the measurement area, whereas SWE shows promising results in evaluating soft tissues viscoelastic properties, an area where indentation-based techniques, which only assess gross tissue deformation, are limited.

Conclusion: The limited assessment of the clinimetric properties complicates the inter-study and inter-technique comparison. More research into the validity and reliability of methodologies is needed to identify the most accurate and reliable technique to quantify plantar soft tissues morphological and mechanical properties.

Clinimetric properties of the most used techniques for plantar foot soft tissues mechanical and morphological properties assessment									
				Number of studies	Number of studies reporting the clinimetric properties	Number of studies investigating the clinimetric properties	Reliability			Validity
							Intra-rater	Inter-rater	Test-Retest	Criterion
Mechanical properties techniques (91 studies)	Indentometer			25	5 (20%)	2	Excellent, ICC (1)	Excellent, ICC (1)	Excellent, ICC (1)	Not investigated (2)
	Elastography	SWE		9	4 (44%)	4	Excellent, ICC (1)	Not investigated (2)	Excellent CV (2)	Perfect Correlation, R^2 - Validated with FE model (1)
		Strain E		5	2 (40%)	1	Not investigated (1)	Not investigated (1)	Excellent CV (1)	Not investigated (1)
		MRE		2	2 (100%)	2	Not investigated (2)	Not investigated (2)	Excellent Std. Dev. (1), CV (1)	Not investigated(2)
	Durometer			14	3 (21%)	3	r and ICC values dependent on foot areas (2)	ICC dependent on foot areas (1) Positive Association, r (1)	Not investigated (2), Missing values (1)	Positive Association, r - Validated with SWE (1).
	Load cell+US			6	6 (100%)	5	Not investigated (6)	Not investigated (6)	Excellent, ICC (2), CV (2) Good-Moderate, ICC (1)	Not investigated (6)
Morphological properties techniques (55 studies)	Ultrasound			59	22 (37%)	15	Excellent, ICC (6), CV (1)	Excellent, ICC (5)	Excellent, ICC (3), CV (1)	Positive Association, r (2) - Validated with MRI and Radiography
	MRI			18	3 (17%)	2	Excellent , ICC (1)	Excellent, ICC (1)	Excellent, ICC (2)	Not investigated (2)
	Computed Tomography	CT		3	1 (33%)	0	Not investigated (1)	Not investigated (1)	Not investigated (1)	Not investigated (1)
		SXCT		2	1 (50%)	1	Not investigated (1)	Not investigated (1)	Good, Std. Dev. (1)	Not investigated (1)
		DECT		1	1 (100%)	1	Not investigated (1)	Excellent, ICC (1)	Not investigated (1)	Not investigated (1)

Tab. 1: Reported clinimetric properties of the most used measurement techniques to assess plantar foot soft tissues mechanical (orange) and morphological (blue) properties.
The number of papers that investigated the reliability and/or validity of each measurement technique is reported within brackets.

Legend: DECT (Dual-Energy Computed Tomography), MRE (Magnetic Resonance Elastography), MRI (Magnetic Resonance Imaging), SWE (Shear Wave Elastography), SXCT (Spiral X-Ray Computed Tomography), US (Ultrasound).

Cut-off values for reliability reported with ICC (Intra Class Correlation) are defined as follows: Excellent (ICC > 0.90); Good (ICC 0.75-0.90); Moderate (ICC 0.50 – 0.75); Poor (ICC < 0.50).
Cut-off values for reliability reported with CV (Coefficient of Variation) are not reported in any of the studies.
Cut-off values for reliability reported with Std. Dev (Standard Deviation) are not reported in any of the studies.
Cut-off values for reliability and validity reported with r (Correlation coefficient) are defined as follows: Negative Association (r = -1) Weak Association (r = 0) and Positive Association (r=1).
Cut-off values for validity reported with R^2 (Coefficient of determination) are defined as follows: No Correlation ($R^2 = 0$) and Perfect Correlation ($R^2 = 1$).

[OP15] INDIVIDUAL INFLUENCE OF FRACTURES AND DISLOCATIONS IN SEVERITY OF ROCKERBOTTOM DEFORMITY IN PATIENTS WITH CHARCOT FOOT

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Aim: The objective of this study was to identify the bone fractures and joint dislocations more associated with severity of arch collapse in patients with of Charcot foot involving midfoot.

Method: A retrospective study was performed in patients with midfoot deformity of Charcot foot attended in a specialized diabetic foot unit between September 2018 and march 2024. We included 28 patients (N=29 feet) with type 1 or type 2 diabetes, age > 18 years, stage III of Eichenholtz classification and Type I-III Schon classification. Talar-first metatarsal and calcaneal pitch angles and cuboid height were used to evaluate the grade of midfoot deformity in a weightbearing lateral radiograph. Two investigators evaluated the bone fracture and joint dislocation involved in weightbearing antero-posterior and lateral radiographs.

Results / Discussion: Thirteen (46%) feet showed pattern 1, 9(31%) pattern 2 and 7 (25%) pattern 3 of Schon classification, respectively. One foot had a combination of pattern 1 and 2. Sixty-six percent (n=19) of feet had midfoot ulceration. In the multivariate analysis, plantarflexion of talar-first metatarsal angle was predicted by navicular-medial cuneiform dislocation (p = 0.007 [-20.620- -3.683]), increasing of calcaneal pitch negative angle by fragmentation of cuboid (p = 0.003 [-15.568- -3.626]) and increasing of cuboid negative height by navicular-medial cuneiform and medial cuneiform-first metatarsal dislocations (p = 0.040 [-12.779- -0.317], p=0.002 [-13.437- -3.267], respectively).

Conclusion: Bone fractures and dislocations in the sagittal plane seem to contribute to the midfoot collapse, however navicular-medial cuneiform dislocation/non-union and cuboid fragmentation predict the severe rocker bottom deformity in Charcot foot.

[OP16] DIFFUSION WEIGHTED IMAGING (DWI) AND APPARENT DIFFUSION COEFFICIENT (ADC) IN ASSESSING DISEASE ACTIVITY IN THE CHARCOT FOOT

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Aim: The aim of our study was to evaluate the role of DWI and ADC, new magnetic resonance imaging (MRI) biomarkers in early detecting disease activity in patients with Charcot neuro-osteoarthropathy (CNO) and to analyze its correlation with clinical stabilization.

Method: We retrospectively searched CNO patients suffering from an acute episode during the last 4 years (2020-2023) evaluated with MRI, including DWI, at diagnosis and at clinical stabilization. MR protocol included T1-weighted, fast spin echo inversion recovery (FSE-IR), and DWI sequences (b values: 0 and 800). ADC maps were calculated, and Regions of Interest (ROIs) were set on the ADC maps respectively on the bone with the highest and the lowest signal intensity (SI) on DWI and FSE-IR images (bone marrow oedema). SI Ratio and ADC Ratio were calculated using the following formula: (affected bone - unaffected bone)/unaffected bone. We compared these MR parameters with dorsal and plantar temperature differences at baseline and with time of stabilization.

Results / Discussion: We evaluated data from 38 patients (male/female % 28.9/71.1; mean age 69.4±8.7 yrs; type 1/2 diabetes 26.3/73.7%, Duration of diabetes 24.6±17.1 yrs). At diagnosis delta temperature was 2.3±1.8°C in plantar region and 1,6±1,9°C in dorsal area; at stabilization the temperature difference was 0.9±0.7°C in plantar surface and 0.9±0.7°C in dorsal region.

ADC ratio and ADC of bone marrow oedema showed a significant correlation with plantar temperature delta ($p<0.005$). Regarding correlation between FSE-IR ratio and plantar temperature delta only a trend was observed ($p=0,081$). No significant correlation with dorsal temperature, as well as with stabilization time.

Conclusion: The finding of ADC correlation with bone marrow oedema is new and interesting since it opens the possibility as an early predictor of stabilization in CNO patients, to be confirmed by further more dimensioned prospective studies.

[OP17] SOCIO-CULTURAL PROFILE OF A COHORT OF CHARCOT NEURO-OSTEOARTROPATHY (CNO) PATIENTS AND ITS IMPACT ON STABILITY ACHIEVEMENT

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Aim: Our study aimed to test the impact of sociocultural characteristics of patients with CNO on the clinical evolution of the disease.

Method: We retrospectively collected data of patients affected by CNO with an acute episode in last four years (2020 - 2023). Clinical, demographic characteristics and sociocultural informations including distance from the clinic, residential area (urban, suburban or rural), level of education, family support and employment were collected and correlated with clinical and radiological stabilization.

Results/Discussion: We studied 52 patients (male/female 36.5/63.5%, aged 69.1±9.7 yrs, duration of diabetes at CNO diagnosis 18.7±15.4 yrs, type 1/2 diabetes 23.1/76.9%). The distance from the clinic was 62.4±89.1 km. The residential environment was urban in 25.0% of patients, suburban in 28.8% and rural in 46.2%. The average number of years of education was 10.1±4.8 years. 15.4% of patients lived alone, 38.4% with spouse or single relative and 46.2% with sons. At diagnosis, 46.2% of patients were still working and 53.8% were retired from 5.2±5.7 years.

Time of stabilization, clinical 282.3±224.1 and radiological 264.8±272.0 days respectively, positively correlates to the distance from our clinic ($p<0.001$) and inversely to years of education ($p<0.001$). Time of stabilization was conditioned by residential area ($p<0.02$ urban vs others and $p<0.005$ suburban vs rural), family support ($p<0.04$), and employment: who were still working at diagnosis had a longer stabilization time ($p<0.02$), while in retired ones, it positively correlated with years of rest ($p<0.02$).

Cox multivariate regression confirmed the prognostic role of distance from the clinic (HR 1.77, CI 95% 1.16-2.51, $p=0.028$), residential environment (HR 1.81, CI 95% 1.24-2.01, $p=0.022$) and level of education (HR 0.65, CI 95% 0.26-0.81, $p=0.017$).

Conclusion: Sociocultural conditions have a significant impact on CNO history. In particular, patients with greater barriers to access to specialistic care and condition awareness have worse clinical and radiological outcomes.

[OP18] CLINICAL EFFICACY OF A CONTRALATERAL SHOE LIFT IN PATIENTS WITH DIABETIC FOOT ULCERS: A RANDOMIZED CONTROLLED TRIAL

Mateo López Moral[1], Marta García-Madrid Martín de Almagro[1], Irene Sanz Corbalán[1], Aroa Tardáguila García[1], Raul Molines Barroso[1], José Luis Lázaro-Martínez[1]

[1]Diabetic Foot Unit, Facultad de Enfermería, Fisioterapia y Podología. Universidad Complutense de Madrid, Madrid, Spain

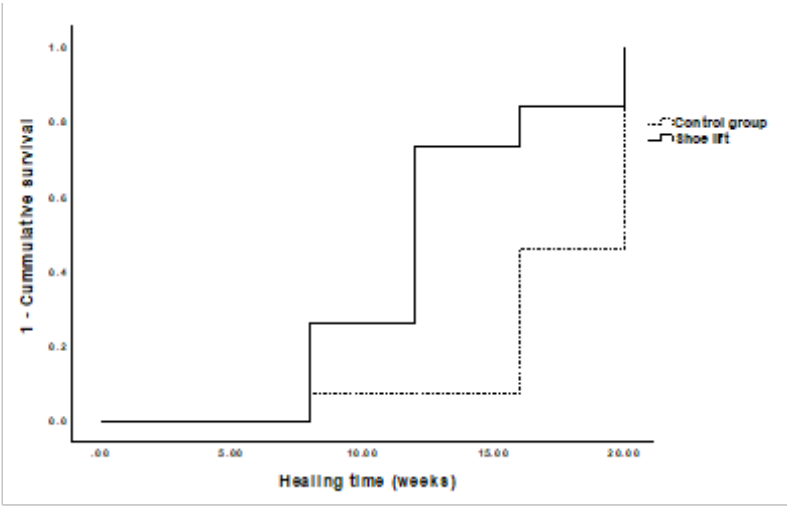
Aim: the aim of the present study is to evaluate the clinical efficacy of combining the offloading device with contralateral shoe lift to compensate the limb-length discrepancy in patients with plantar diabetes-related foot ulcers (DFU).

Method: between March 2021 and December 2023 we conducted a randomized controlled parallel (1:1) clinical trial on 42 consecutive patients with diabetes and an active DFU. ClinicalTrial.gov (Reg. no.: NCT04117269). Participants were randomly assigned to treatment group, limb-length discrepancy compensation with a shoe-lift in the therapeutic footwear of the contralateral limb, and control group that do not receive limb-length discrepancy compensation. Primary outcome measures included healing rate at 20-weeks and wound area reduction (WAR). Secondary outcome measures included minor amputation, new ulcer in the contralateral limb, perceived comfort, and hip pain. Monitoring of adherence and physical activity was evaluated with two pedometer devices, one of the pedometers, placed inside the bandage and the other in the offloading device through non-removable straps.

Results/Discussion: on an intention-to-treat basis, 15 (71.4%) and 19 (90.5%) in the control and experimental groups resulted in DFU healing, (P=.0023). Among the group with >80% adherence to the offloading device, multivariate analysis showed that the shoe lift improved ulcer survival healing-time in diabetes patients with active DFU (P=0.044; 95% CI, 1.022 - 4.411; hazard ratio 2.12) (fig 1). Additionally, the use of a shoe lift reduced minor amputation and occurrence of new ulcers, in the contralateral limb (P=.035 and P=.033 respectively). Hip pain and perceived comfort improved with the use of a shoe lift (P<.001).

Conclusion: we recommend the use of a shoe lift to reduce time to heal in patients with diabetes and an active plantar diabetic foot ulcer. The use of a shoe lift reduce late complications such as new ulcers in the contralateral limb and minor amputations.

Figure 1


1 - Cummulative survival
1.0
0.8
0.6
0.4
0.2
0.0
.00
5.00
10.00
15.00
20.00
Healing time (weeks)
Control group
Shoe lift

[OP19] PROGNOSTIC VALUE OF PEAK PLANTAR PRESSURE FOR REMISSION OF CHARCOT NEURO-OSTEOARTHROPATHY

Victoria Milbourn[1 2], Sicco Bus[1 2], Nina Petrova[3], Jaap van Netten[1 2]

[1]Amsterdam UMC location University of Amsterdam , Department of Rehabilitation Medicine, Amsterdam, Netherlands, [2]Amsterdam Movement Sciences, Rehabilitation and Development, Amsterdam, Netherlands, [3]King's College Hospital NHS Foundation Trust, Diabetic Foot Clinic, London, United Kingdom

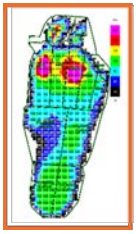
Aims: The impact of biomechanical forces on the progression of Charcot neuro-osteoarthropathy (CNO) from onset to remission remains poorly understood. We aimed to: i) investigate the association between peak plantar pressures (PPP) and remission times in CNO, and: ii) determine specific PPP thresholds as potential prognostic criteria for slow remission in CNO.

Method: We conducted a retrospective single-centre cohort analysis of 17 participants with active CNO who underwent barefoot plantar pressure measurements at diagnosis using the Emed-X system. We collected baseline demographic, clinical, and biochemical data and recorded time to remission. The association between PPP and time to remission was assessed using Spearman's ρ. ROC curves were utilised to determine the most effective PPP-cut-off for different regions to predict slow remission. We used a 120-day cut-off to differentiate fast from slow remission, reflecting our dataset's distribution.

Results/ Discussion: Participants had a mean age of 58 ± 13 years, 11 participants were female and 12 had Type 2 diabetes. We found a fair association between time to remission and PPP in the lateral mid-foot (ρ=0.458, p=0.064); no significant correlations were found for medial mid-foot, hind foot, or total foot PPP (ρ ranging from -0.001 to 0.315). The prognostic PPP threshold for slow remission in the lateral mid-foot was 141 kPa and for the total foot 600 kPa. See Table 1 for all prognostic performance metrics, suggesting moderate prognostic capabilities for slow remission, particularly when using PPP in the lateral mid-foot region.

Conclusion: No evidence of a strong association was found between higher peak PPP and slow remission in CNO. The identification of moderate prognostic values in PPP thresholds, specifically the lateral mid-foot, suggests potential clinical relevance for predicting CNO remission, warranting further investigation.

Table 1: Results of prognostic PPP thresholds for slow remission

	Region	
Performance Metric	**Total Foot**	**Lateral Midfoot**
Prognostic PPP cut-off	> 600 kPa	> 141 kPa
Sensitivity	100%	88%
Positive Predictive Value	62%	64%
Positive Likelihood Ratio	1.80	2.27
Specificity	44%	56%
Negative Predictive Value	100%	25%
Negative Likelihood Ratio	1.12	0.227
Area Under the Curve	0.79	0.70
Emed-X PPP Sample		

[OP20] ASSOCIATING SCALAR AND MULTIDIMENSIONAL PLANTAR PRESSURE PARAMETERS FOR ASSESSING OFFLOADING EFFECTIVENESS OF CUSTOM-MADE FOOTWEAR IN PEOPLE WITH DIABETES

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[1]Amsterdam UMC, University of Amsterdam, Department of Rehabilitation Medicine, Amsterdam, Netherlands, [2]Amsterdam Movement Sciences, Rehabilitation & Development, Amsterdam, Netherlands

Aim: The effectiveness of custom-made footwear in providing adequate offloading for people with diabetes is assessed using plantar pressure measurements. While data from these measurements is multidimensional, it is often only analyzed using a single value (scalar) - mostly maximum peak plantar pressure (PMax). Analyzing plantar pressure as a multidimensional parameter might enhance the value of in-shoe plantar pressure measurements and offloading assessment of footwear. The aim was to investigate the associations between multiple peak plantar pressure parameters for footwear offloading assessment and determine whether the assessment of offloading effectiveness depends on the chosen parameter.

Method: In-shoe plantar pressure was measured in 77 participants with diabetes, peripheral neuropathy and a recent ulcer or amputation history, while walking in their own custom-made footwear. Six peak plantar pressure parameters, ranging from scalar to multidimensional parameters, were extracted to quantify footwear offloading effectiveness (Fig.1). Three parameters were scalars, i.e. PMax, PTI and PGrad; the other three included temporal (PTC), spatial (PMap) and spatiotemporal dimensions (PTM). Footwear was ranked from highest to lowest value per parameter. The associations between PMax and the other five rankings were compared using Spearman's rank correlation coefficient.

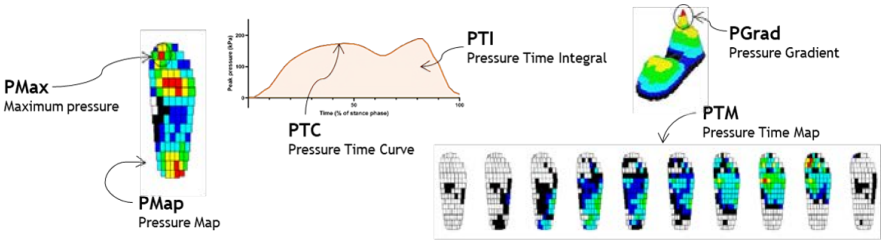

Figure 1: Visual representation of the six peak plantar pressure parameters. PMax = Maximum peak plantar pressure; PTI = Peak pressure Time Integral; PGrad: Maximum Gradient change surrounding PMax; PTC = Pressure Time Curve: maximum peak plantar pressure for each timeframe; PMap = Pressure Map: maximum peak plantar pressure for each sensor; PTM = Pressure Time Map: maximum peak plantar pressure for each sensor and each timeframe.

Results / Discussion: The rank correlation coefficient was moderate to strong between PMax and the scalar parameters PTI (ρ_{152}=0.59) and PGrad (ρ_{152}=0.70), and weak to negligible between PMax and the multidimensional parameters, i.e. PTC (ρ_{152}=0.25), PMap (ρ_{152}=0.15) and PTM (ρ_{152}=0.03).

Conclusion: The association between scalar and multidimensional peak plantar pressure parameters in footwear offloading assessment is low. This indicates that the assessment of in-shoe plantar pressure for offloading effectiveness depends on the chosen parameter. We need to unlock the potential of the multidimensionality of plantar pressure measurements for use in footwear evaluation by focusing future studies on the association between multidimensional plantar pressure parameters and clinical outcomes.

[OP21] ADHERENCE TO AN EVIDENCE-BASED CUSTOM-MADE FOOTWEAR DESIGN PROTOCOL IN DAILY PRACTICE AND ITS ASSOCIATION WITH PLANTAR PRESSURE IN PEOPLE WITH DIABETES AND PERIPHERAL NEUROPATHY

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Aim: Custom-made footwear is recommended to reduce peak plantar pressures (PPP) and prevent plantar diabetic foot ulcer recurrence. It is unclear if available evidence for pressure-relieving footwear design features are applied in daily practice. We aimed to assess adherence to evidence in footwear design in daily practice, and to investigate its association with in-shoe PPP at high-risk foot regions.

Method: People diagnosed with diabetes mellitus, stratified as IWGDF risk 3, and with prescribed custom-made footwear participating in an RCT were included. A published evidence-based custom-made footwear design protocol was used to assess adherence to the evidence. This protocol recommends shoe and insole design features required for 14 different foot deformities, all based on (in)direct evidence, or expert opinion. Design features of each included pair of custom-made footwear were assessed by the investigator. Presence and absence of protocol-recommended features were scored, resulting in an adherence score (0-100%). Recommended features with the strongest evidence weighted most heavily. In-shoe PPP were measured at individually identified high-risk regions for plantar ulceration to quantify the pressure-relieving effect. The association between protocol adherence and PPP was analysed with Pearson's correlation coefficient.

Results/Discussion: We included 66 participants (mean(SD) age 69.3(10.7); 80% male; 81% type 2 diabetes), and analysed 178 shoes. Mean(SD) protocol adherence score was 62(11)%. Mean(SD) PPP was 182.1(51.3) kPa at 208 high-risk regions. Correlation coefficient between protocol adherence score and PPP was weak and not significant, with r(176)=.11 (p=.09).

Conclusion: Adherence to an evidence-based custom-made footwear design protocol in daily practice was considered low. We found no association between protocol adherence and PPP, while mean PPP were in most cases below the 200kPa used as prevention-threshold. This suggests that full protocol adherence may not be essential, as some dominant footwear features may effectively reduce PPP, or because shoe technicians may find other adequate pressure-reducing solutions.

[OP22] CUMULATIVE PLANTAR TISSUE STRESS AND ITS ASSOCIATION WITH PROSPECTIVE PLANTAR FOOT ULCERATION IN PEOPLE WITH DIABETES

Chantal M. Hulshof[1 2], Jaap van Netten[1 2], Tessa Busch-Westbroek[1], Louise Sabelis[3], Mirjam Pijnappels[2 4], Sicco Bus[1 2]

[1]Amsterdam UMC location University of Amsterdam, Department of Rehabilitation Medicine, Amsterdam, Netherlands, [2]Amsterdam Movement Sciences, Ageing & Vitality and Rehabilitation & Development, Amsterdam, Netherlands, [3]Amsterdam UMC location Vrije Universiteit Amsterdam, Department of Rehablitation Medicine, Amsterdam, Netherlands, [4]Vrije Universiteit Amsterdam, Department of Human Movement Sciences, Amsterdam Movement Sciences, Amsterdam, Netherlands

Aim: Excessive mechanical stress is a risk factor for, but not a very strong predictor of, diabetes-related plantar foot ulceration. To better predict ulceration, it has been suggested that cumulative plantar tissue stress (CPTS) is promising, as this includes not only plantar pressure, but also weight-bearing activity and footwear adherence as determinants. Therefore, we aimed to investigate whether the level of CPTS could predict plantar foot ulceration in people with diabetes.

Method: In this 12-months prospective observational cohort study, we included 60 participants with diabetes at high risk of foot ulceration. At baseline, we assessed plantar forefoot regions for pre-ulcerative lesions and callus, measured barefoot and in-shoe plantar pressures during walking and standing, and assessed type and amount of weight-bearing activities and footwear adherence in the seven days following baseline assessment. These factors were integrated in a CPTS-model. For statistical analyses, we used odds ratios (OR) ($p<0.05$).

Results / Discussion: Twenty-two participants (37%) developed 47 plantar foot ulcers in 12 months. Mean CPTS did not differ significantly between participants with and without ulcers (1.341 (SD: 0.961) vs. 1.323 (SD: 0.812) GPa·s/day; OR: 1.025, 95% confidence interval (CI): 0.555-1.893, Figure 1), nor did peak plantar pressure, weight-bearing activity level or footwear adherence (all $p>0.05$). Mean CPTS was significantly higher in forefoot regions with a pre-ulcerative lesion or callus at baseline compared to those without (1.081 (SD: 0.779) vs. 0.716 (SD: 0.572) GPa·s/day; OR: 2.146, 95% CI: 1.558-2.954). Participants with a pre-ulcerative lesion or callus were significantly more likely to ulcerate (OR: 6.522, 95% CI: 1.327-32.060).

Conclusion: CPTS did not predict diabetes-related plantar foot ulceration. However, higher CPTS levels were associated with presence of pre-ulcerative lesions and calluses at baseline, and the latter greatly increased the risk of ulceration. These findings suggest an indirect pathway from CPTS to diabetes-related plantar foot ulceration.

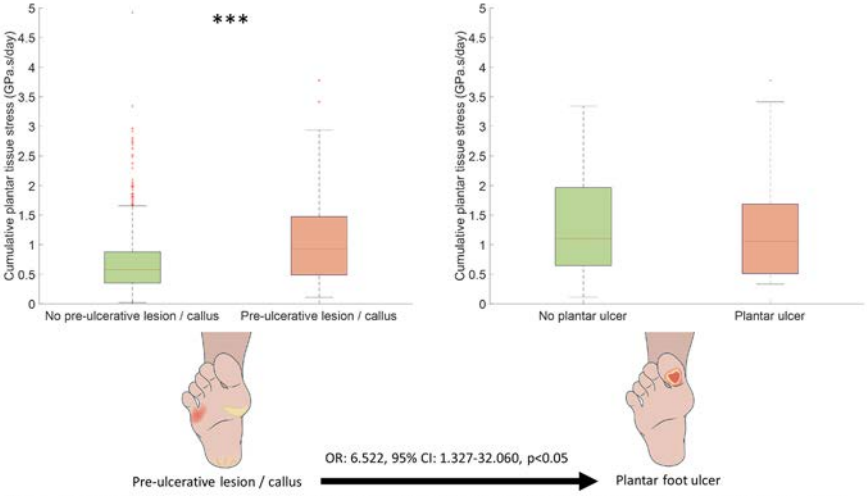

Figure 1 *– We assessed the regions of metatarsal 1, metatarsal 2-3, metatarsal 4-5, hallux and digits 2-5 on both feet for pre-ulcerative lesions and calluses. In total 574 regions were assessed (amputated regions were excluded), resulting in 89 regions with a pre-ulcerative lesion or callus. Significant differences are depicted as ****

[OP23] EXPLORING UNKNOWNS IN FOOTWEAR DESIGN FOR INDIVIDUALS WITH DIABETES AT MODERATE TO HIGH-RISK OF FOOT ULCERATION: A KNOWLEDGE GAP ANALYSIS

Isabella Gigante[1 2], Jaap van Netten[1 2], Sicco Bus[1 2]

[1]Amsterdam UMC, University of Amsterdam, Department of Rehabilitation Medicine, Amsterdam, Netherlands, [2]Amsterdam Movement Sciences, Rehabilitation and Development, Amsterdam, Netherlands

Aim: Custom-made footwear is a key recommendation for ulcer prevention in high-risk individuals with diabetes. Current footwear designs often appear based on principles derived from studies in populations that are not the target population, such as healthy individuals. This may not accurately reflect the true biomechanical and user-related requirements. To better guide future research on effective footwear design, insight is needed on what extent design features are investigated in target populations. We aimed to identify potential knowledge gaps in footwear designs for moderato to high-risk individuals.

Method: We conducted a knowledge gap analysis trough a systematic search of the literature in PubMed and EMBASE using search terms related to the interventions (Footwear) and outcomes (Biomechanical and User-related). Only experimental studies in English were included. Two reviewers screened titles, abstracts, and full-text publications for eligibility. Included publications were categorized into two population groups: individuals with diabetes at moderate to high ulcer-risk (i.e. direct evidence) and other populations (i.e. indirect evidence), alongside 16 interventions and 9 outcomes.

Results/Discussion: Of 5813 papers identified, 289 were included, with a 92% inter-observer agreement for eligibility. Direct evidence was found in 29 (10%) publications, indirect evidence in 260 (90%). User-related outcomes were studied in 24% of the publications, and biomechanical-related outcomes in 76%. The majority of the footwear design components had no (0) or limited (<5) studies for direct evidence (Table 1).

Table 1: Study volumes by footwear interventions and outcomes, categorized as direct and indirect evidence

			INTERVENTIONS																
			Footwear Components													Footwear Types			
			Sole								Upper								
			Outsole	Midsole	Outsole (rocker sole)	Insole (not specified)	Insole (metatarsal dome/pad, or bar)	Insole (heel or forefoot wedge)	Insole (medial arch support)	Insole (cover material)	Shaft	Toe box	Tongue	Fastening	Upper (not specified)	Custom-made footwear	Pre-fabricated medical grade footwear	Pre-fabricated footwear	
DIRECT EVIDENCE	Biomechanical outcomes	Pressure	1	0	2	9	0	0	0	0	0	0	0	0	0	16	4	0	32
		Shear stress	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Balance, Stability and Center of pressure	0	0	1	1	0	0	0	0	0	0	0	0	0	1	2	0	5
	User-related Outcomes	Usability and Experience	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4
		Quality of life	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Adherence	0	0	0	1	0	0	0	0	0	0	0	0	0	5	0	0	6
INDIRECT EVIDENCE	Biomechanical outcomes	Pressure	1	2	18	44	8	4	5	2	2	1	0	0	0	35	55	10	187
		Shear stress	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	2
		Balance, Stability and Center of pressure	6	5	34	23	0	9	5	38	4	0	0	0	0	28	85	35	272
	User-related Outcomes	Usability and Experience	0	5	6	22	0	10	4	1	2	0	0	0	1	22	36	10	119
		Quality of life	0	1	0	3	0	3	0	0	0	0	0	0	0	3	5	0	15
		Adherence	0	0	1	4	0	0	0	0	0	0	0	0	0	1	3	0	9
		Total number of papers	8	13	62	108	8	26	14	41	8	1	0	0	1	115	191	55	

Notes: Color codes reflect the study volume, with red = 0, orange = 1 - 8, yellow = 9 - 20, light green = 21 - 40, dark green = 41 - 85; The numbers in "Footwear Type" may overlap with "Foowear Components" as some studies are counted in both categories, these categories are not mutually exclusive

Conclusion: The knowledge of footwear design principles for individuals with diabetes at moderate to high-risk of foot ulceration relies mostly on indirect evidence, with limited evidence on user-related outcomes and lack of evidence on certain biomechanical principles as shear for this target population. This stresses the need to prioritize footwear research in the target population, to obtain more valid outcomes on footwear design efficacy.

[OP24] PROMISING INITIAL RESULTS OF NON-REMOVABLE, NON-RESTRICTIVE OFFLOADING DEVICES FOR DIABETIC FOREFOOT ULCERS

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[1]Region Örebro, Örebro University, Örebro, Sweden, [2]Region Örebro, Department of Medicine, Örebro University Hospital, Örebro, Sweden

Aim: Non-removable knee-high offloading devices are recommended to offload and heal plantar diabetic forefoot ulcers. However, these devices are not used frequently in clinical practice, partly because they impair walking and restrict daily activities. This study describes our initial clinical experiences of non-restrictive, non-removable offloading devices in terms of healing outcomes, adverse events, and patient acceptance/adherence.

Method: Two types of non-restrictive, non-removable offloading devices were used: the football dressing (1) and a non-removable custom-made insole, inspired by Hochlenert's Fif!-mobil® sole (2) and Jarl and Tranberg's "sealed shoe" (3). We treated five patients (4 men, 1 woman) with diabetes, a median age of 63 years (range 55-72), sensory neuropathy and a non-infected plantar forefoot ulcer (1st toe, n=3; MTH1, n=1; MTH5, n=1). Median ulcer diameter was 1.2 cm (0.9-1.5), median toe pressure was 81 mmHg (70-110) and median toe-brachial index was 0.66 (0.35-0.77). All patients had prescribed shoes and insoles.

Results/Discussion: Three ulcers were treated with football dressing and healed in 21-27 days without complications. One ulcer was treated with non-removable insole and healed in 22 days, but skin maceration developed on the plantar foot. One ulcer was first treated with football dressing, but as ulcer healing did not progress, treatment was changed to non-removable insole after 10 weeks, which is the ongoing treatment. All patients were able to walk with the offloading device, accepted the treatment and adhered to always wearing the device. The data collection is ongoing, and results of more cases will be presented.

Conclusion: Non-restrictive, non-removable offloading devices may effectively and safely heal plantar forefoot ulcers. The devices do not restrict mobility and are well accepted by patients. Further evaluation in randomized controlled trials is recommended.

References

(1)Rader & Barry. Int Wound J. 2008;5:69–73.
(2)Hochlenert (2023). http://cid-direct.de/blog/en/fifi-sole/
(3)Jarl & Tranberg. Diabetic Foot & Ankle. 2017;8:1348178.

TOP 5 ORAL

[OP25] GENOME WIDE ASSOCIATION META STUDY OF DIABETIC FOOT ULCERS

Tarunveer S. Ahluwalia[1 2 3], Sule Altintas[1], Abirami Veluchamy[4], Manonanthini Thangam[5], Eero Lindholm[5], Marieke Blom[6], Louise Torp Dalgaard[2], Jonas Askø Andersen[1 3 7], Christian Stevns Hansen[1], Anne Rasmussen[1], Viswanathan Mohan[8], Colin Palmer[4], Emma Ahlqvist[5], Leen 't Hart[6 9], Peter Rossing[1 3]

[1]Steno Diabetes Center Copenhagen, Herlev, Denmark, [2]Roskilde University, Roskilde, Denmark, [3]University of Copenhagen, Copenhagen, Denmark, [4]University of Dundee, Dundee, United Kingdom, [5]Lund University Diabetes Centre, Malmö, Sweden, [6]Amsterdam University Medical Center, VUmc, Amsterdam, Netherlands, [7]North Zealand Hospital, Hillerød, Denmark, [8]Madras Diabetes Research Foundation, Chennai, India, [9]Leiden University Medical Center, Leiden, Netherlands

Background and aims: Diabetic foot ulcers (DFUs) are a severe and costly complication of diabetes where foot ulceration precedes 85% of the diabetes associated amputations, globally. Albeit risk factors for DFUs include sensorimotor peripheral neuropathy (DSPN), peripheral artery disease, foot deformities, and poor glycemic control, genetics are poorly understood. We conducted the first genome-wide association meta-study (GWAS) of DFU to identify DFU risk genes in diabetic (type 1 and type 2) individuals with DSPN.

Materials and methods: A meta-analysis comprising four independent DFU GWASs from European diabetes cohorts (AfterEU, Denmark; SDR, Sweden; GoShare, Scotland; DCS, Netherlands) was conducted. This case-control study comprised a total of 980 cases (with DFU and DSPN) and 6196 controls (no history of DFU). DSPN was defined as bilateral vibration sensation threshold >=25V or absent sensation to monofilament.

Logistic regression models were applied adjusting for sex, duration of diabetes and population substructure. Summary statistics from the participating cohorts were meta-analyzed using fixed effects inverse-variance method. Top loci identified in Europeans were also assessed in the Asian Indian ancestry (191 cases, 3236 controls).

Results: We identified three common (MAF>0.2) single nucleotide polymorphisms (SNPs) that were suggestive ($p < 1\times10^{-6}$): rs11069845 (p: 7.9×10^{-7}, OR: 1.29); rs1534545 (p: 8.4×10^{-7}, OR: 1.74); and rs12129159 (p: 9.2×10^{-7}, OR: 0.73). One SNP remained nominally associated ($p_{rs1106984} < 0.10$; OR: 1.2) in Asian Indians.

Two SNPs, (intronic rs11069845 and missense rs1534545) were in ***COL4A2*** and ***ALK*** while the third (rs12129159) was located near ***HS2ST1*** and ***PKN2-AS1*** genes.

Conclusion: Three suggestive loci associated with DFU risk were identified in the current ongoing study. Two loci ***COL4A2*** and ***ALK***, have known roles in small vessel disease and neuronal development. GWAS data from additional cohorts will be combined to the current analyses towards identification of neuropathic DFU loci.

TOP 5 ORAL

[OP26] INDEPENDENCY AFTER LOWER EXTREMITY AMPUTATION. PRESCRIPTION OF A FUNCTIONAL PROSTHESIS AFTER MAJOR AMPUTATION, AND DEGREE OF INDEPENDENT LIVING AFTER MINOR AND MAJOR AMPUTATION IN BELGIUM IN THE PERIOD 2009-2018

Patrick Lauwers[1], Frank Nobels[2], Kristien Wouters[3], Johan Vanoverloop[4], Avalosse Hervé[4], Giovanni Matricali[5], Isabelle Dumont[6], Jeroen Hendriks[1], Eveline Dirinck[7]

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Aim: Lower extremity amputations (LEAs) have a high impact on mobility and capacity of independent living. Present study aimed to determine how many individuals were provided with a functional prosthesis after major LEA, and to determine how many individuals needed to move to a nursing home in the first year after minor and major LEA.

Method: Data on all Belgian citizens undergoing LEA in the decade 2009-2018 were provided by the Intermutualistic Agency. Major LEA was defined as any amputation above the level of the tarsus. Prescription of a prosthetic limb, moving to residential care, and mortality within the first year after LEA were registered. Regression analysis determined the independent effect of diabetes, age and gender on both study endpoints.

Results / Discussion: 26 526 individuals underwent one or more LEA (10 474 major LEA). Twelve months after major LEA, prosthetic prescription and mortality rates were very similar between individuals with and without diabetes. Diabetes did not affect prosthesis prescription (OR 0.98, 95%CI 0.88-1.10, p=0.78). Prosthesis prescription diminished with older age. Women had significantly less prostheses prescribed (OR 0.45, 95%CI 0.27-0.74, p=0.002). 1652 individuals (7%) changed from independent living to living in a nursing home. Diabetes did not impact on moving to a nursing home after minor (OR 1.10, 95%CI 0.94-1.29, p=0.22) or major LEA (OR 1.01, 95%CI 0.86-1.18, p=0.89). Need for a nursing home increased with older age. Women had a significant higher risk of moving to a nursing home (OR 1.50, 95%CI 1.35-1.68, p<0.001), irrespective of amputation level, presence of diabetes, and age.

Conclusion: Prescription of a functional prosthesis is mainly related to younger age and male gender; necessity to move to a nursing home is mainly related to higher age and female gender. Diabetes does not affect prescription of a prosthesis or loss of independency.

TOP 5 ORAL

[OP27] 18 YEARS OF SHARED CARE FOR 60,908 PEOPLE WITH DFS IMPROVED OUTCOMES, EXCEPT FOR TREATMENT DURATION

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Aim: From 2005, 84 certified foot clinics and outpatient facilities as well as cooperating podiatrists, orthopaedic shoemakers and community nurses in three federal states joined together to form 7 regional networks. The participants concluded special contracts with health insurance companies. Additional funding, thorough transparency measures and education of all health care professionals were the main tools to improve shared care. The four main objectives were to reduce mortality rates, above ankle amputations, treatments lasting longer than 6 months, and new ulcers in the year following wound closure. A second opinion was obtained before any major amputation.

Method: The most important characteristics of the diseases of all participants were recorded on site in a specially developed documentation programme. The quality of the data was checked every year during the intercollegiate visits. The data was collected every 3 months and the results were reported to the members of the regional network.

Results / Discussion: From 2005 to 2021, 60,908 patients were treated. Since establishment of the networks, patients have presented progressively earlier, with bone involvement decreasing from 21% in 2006 to 10% in 2021. The number of major amputations fell from 2.8% to 0.5% (fig. 1) and the number of minor amputations from 8.7% to 5.3%. Without changes, 70 % of patients were still alive and free of ulcers after 6 months. Between 6 and 9 % died before wound closure with a trend to reduction in the last 10 years. The rate of new ulcers one year after wound closure fell from 35 % to 30 %.

Conclusion: The treatment in collaborative networks is associated with a constant drop of major amputations down to 0.5%, partially due to earlier presentation without bone involvement. The time required for treatment has not improved in association with these measures.

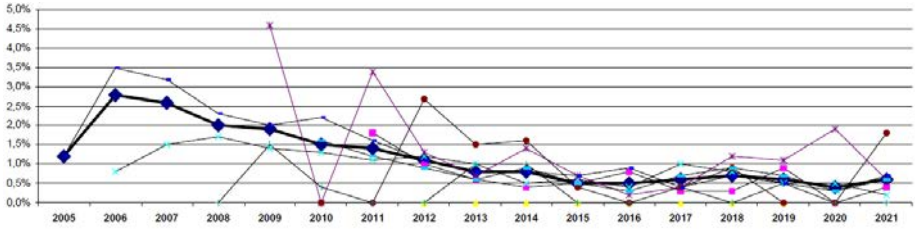

Fig. 1

TOP 5 ORAL

[OP28] TRANSFORMATION OF THE TRADITIONAL MULTIDISCIPLINARY DIABETIC FOOT CLINIC INTO A FOOT UNIT: FOLLOW-ON RESULTS OF A SERVICE EVALUATION

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Aim: With the progression of patient's complexity, the structure of the traditional diabetic foot "clinic" has also needed to change. The aim was to conduct a service evaluation to delineate the clinical demand and nature of clinic visits, within a modern multidisciplinary foot service.

Method: This was a retrospective review of all attended clinic visits over a six-week period. Appointments were extracted from the clinic database and individual electronic clinical notes were reviewed for each clinic visit. A database was then setup for theses with analysis of patient demographics, activities performed during clinic visit and clinic outcomes.

Results/Discussion: Total of 1142 attended appointments by 586 patients. Male 67%, mean age 62±14yrs, 69% with type 2 diabetes, 7% did not have diabetes. Up to 23% of patients had 3 or more appointments during the six-week period. Of the 1142 appointments, 12% of the appointments were emergency walk-ins, thus by patients turning up without a pre-booked appointment. But 1009 of the appointments were pre-booked, of which 6% were for new-patients and 94% were follow-up. All patients were seen by a podiatrist, 15% were seen jointly with the orthopaedic surgeons, and another 15% with the vascular surgeons. At least 41% needed an input from the diabetologist, 20% needed an input from diabetic foot specialist nurse, assisting in administration of antibiotics and performing blood tests. For same day clinic review, 19% of appointments had a blood test done for infection, as did 13% having foot x-rays and 5% had duplex scans. For 32% of appointments, patients were prescribed antibiotics and overall, 12% of the appointments were on parenteral antibiotics. Only (0.6%)7 appointments resulted into an admission into hospital.

Conclusion: The "clinic" functions more as a day unit with same-day and one-stop multidisciplinary management rather than the previously perceived concept of a routine clinic appointment.

TOP 5 ORAL

[OP29] LONG-TERM EFFICACY OF AUTOLOGOUS CELL THERAPY, REPEATED PTA AND CONSERVATIVE TREATMENT IN PEOPLE WITH DIABETES AND CHRONIC LIMB-THREATENING ISCHEMIA

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Aim: Data about long-term clinical outcomes of revascularization procedures, especially for autologous cell therapy (ACT), in diabetic patients with chronic limb-threatening ischemia (CLTI) is lacking. The aim of our study was to compare the mortality and amputation rates in patients with diabetic foot ulcers (DFU) and CLTI treated by ACT with patients treated by repeated percutaneous transluminal angioplasty (re-PTA) and patients treated conservatively.

Method: One-hundred and thirty patients with DFU and CLTI (defined as transcutaneous oxygen pressure – $TcPO_2$ 35mmHg after unsuccessful standard revascularization) treated in our foot clinic over 9 years were enrolled into the study. Forty-five patients were treated by ACT, 43 patients underwent re-PTA and 42 patients were treated conservatively and formed the control group. Overall survival, amputation-free survival (AFS) and major amputation rate were assessed over 7-year follow-up period.

Results/Discussion: Patients in all groups did not differ significantly in baseline demographic characteristics or comorbidities. Patients in ACT and control groups had significantly worse baseline angiograms in accordance with Graziani and GLASS (infrapopliteal region) classifications than re-PTA group (both p 0.001), but there were no differences in baseline values of $TcPO_2$ among all groups. The rate of major amputation after 7 years was significantly lower in ACT and re-PTA groups in comparison with control group (p=0.007 and p=0.001), similar results were observed in AFS – both active groups proved significantly longer AFS compared to control (p=0.008 and p=0.003). Re-PTA group showed significantly longer overall survival compared to ACT and control groups (p=0.045 and 0.009).

Conclusion: Our study showed significantly lower amputation rates and longer AFS in patients treated by ACT and re-PTA in contrast to patients treated conservatively. Overall survival was significantly longer in re-PTA group. ACT proved to be long-term effective treatment of CLTI.

Supported by the project CarDia (Programme EXCELES, Project No. LX22NPO5104)-Funded by the European Union-Next Generation EU.

[OP30] BONE GRAFT IN THE TREATMENT OF DIABETIC FOOT OSTEOMYELITIS

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Aim: To evaluate whether bone grafting, used as a scaffold to facilitate bone formation and promote wound healing, can support surgical treatment of osteomyelitis in patients with diabetic foot syndrome.

Method: Data from 2019 to 2023 regarding bone grafts in our diabetic foot clinic were collected and evaluated retrospectively. We have included all treatments for diabetic foot osteomyelitis supported by a bone graft with the aim of filling residual bone voids or to preserve the anatomical structure and function of the foot. Surgical treatment involves first removing the infected bone and then applying the bone graft.

Results / Discussion: A total of 45 patients were included in this retrospective study. Among them, 15 lesions affected the forefoot, 7 the midfoot, 18 the rearfoot, and 5 were located at the distal tibial level. The mean follow-up period was 19 ± 20 months. At follow-up, 28 (62%) patients were healed, with a mean healing time of 3.5 ± 3.1 months. No statistical differences were found between patients who healed and those who did not in terms of age, duration of diabetes, glycated hemoglobin levels, renal impairment, neuropathy, and peripheral vascular disease. The location of the lesion influenced healing outcomes, with 82% of forefoot and midfoot lesions healing compared to only 43% of rearfoot lesions showing wound resolution. Twelve patients (26%) experienced infective relapse after an average of 6.5 ± 4.5 months.

Conclusion: The use of bone grafts presents an additional conservative option for managing osteomyelitis of the diabetic foot. However, it is essential to ensure the appropriate surgical treatment of osteomyelitis before performing the bone graft. The healing rates are significantly higher for forefoot lesions, while further efforts are needed to improve outcomes in cases of heel osteomyelitis.

[OP31] TIME CRITICAL CHARCOT FOOT RECONSTRUCTIONS CAN STILL BE PERFORMED IN THE ABSENCE OF PREOPERATIVE GLYCAEMIC CONTROL WHEN DELIVERED BY MDT

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Aim: The management of perioperative glycaemic levels is considered vital for reducing postoperative complications among diabetic patients undergoing elective foot and ankle surgery. The guidelines recommend a target HbA1c of 8.5%. Patients waiting for Charcot foot deformity corrections often have impaired mobility and fail to achieve adequate pre-operative glycaemic control, and risk getting their surgeries delayed. In our Unit, the multidisciplinary team (MDT) recommends proceeding with surgery even if the target HbA1c levels are not achieved. Our aim is to review the patient outcomes among patients with diabetes and variable pre-operative glycaemic control undergoing Charcot foot reconstructions.

Method: We reviewed the clinical outcomes of consecutive patients that had undergone elective Charcot foot reconstructions with a minimum follow-up of 12 months. We also reviewed the glycaemic control achieved at 12 months post-reconstruction.

Results / Discussion: A total of 18 diabetic patients were operated on between October 2020 and August 2022, including 8 midfoot, 2 hindfoot and 8 combined hindfoot and midfoot reconstructions. There were 11 males, the mean age was 56.7 years, the mean preoperative HbA1c was 7.9%. In 7 patients, the preoperative recommended HbA1c target of 8.5% was not achieved (non-target group). There were 4 post-operative complications (a wound infection, wound discharge, new ulceration and infected blister), all resolved with conservative management. No post-operative renal and cardiac complications were recorded. After one year, 61% (n= 11) of patients were mobilising in shoes. There was no outcome difference between the groups with or without the targeted glycaemic control. The postoperative HbA1c level was lower, with the mean value of 6.6% in the target group and 8.8% in the non-target group.

Conclusion: Although preoperative glycaemic optimization should be aimed for, the time critical Charcot foot reconstructions can still be performed in the absence of targeted glycaemic control if delivered by MDT.

[OP32] EXPERIMETAL BONE TISSUE SUBSTITUTION IN DIABETIC OSTEOMYELITIS

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Aim: Correlation between chronic osteomyelitis (OM) and diabetic foot ulceration (DFU) in diabetic foot syndrome (DFS), leading to a high rate of lower limb amputations, remains critical for diabetic individuals. Proper indication and timing of bone resection surgery, along with the selection of biocompatible and bioactive bone substitutes, are equally important. Maximizing postoperative osteogenesis support is a key goal for long-term remission of OM. This study aims to present our initial experiences with bioactive glass specifically for DFS, making us the first institution in the Czech Republic and third in Europe to do so.

Method: This single-center case-control experimental study compares and analyzes our first clinical outcomes. Our sample comprises 7 patients (n=7), all with OM. Surgical treatment involved applying bioactive glass and putty (BonAlive®) to fill bone cavities anatomically in various foot regions, followed by ulceroplasty. Surgeries were conducted between April 2023 and February 2024, with an average surgical time of 79 minutes.

Results / Discussion: In total, 71% of our study subjects completely clinically and even radiologically healed. The number of postsurgical complications including surgical site infections were borderline statistically lower compared to the patients from another study cohort (29% vs. 46%; p=0.05). Early reduction of edema, absence of wound secretion or refistulization, and negative probe-to-bone test prevailed postoperatively. Bone remodeling was evident radiographically within three weeks post-surgery, with an average healing time of 6 weeks. No amputations were necessary for any patient, achieving a 100% limb salvage rate.

Conclusion: Substituting bone tissue in chronic OM with bioactive glass holds promise for preserving functional limbs affected by DFS. Further data collection is crucial for assessing its effectiveness in DFS complicated by osteomyelitic involvement, considering the challenging nature of podiatric surgical indications for bioactive ceramic materials compared to other surgical disciplines.

Acknowledgment:

Supported by the projects: NU20-01-00078, NW24-09-00184, LX22NPO5104.

[OP33] CHARCOT NEURO-OSTEOARTHROPATHY: A SINGLE CENTER EXPERIENCE AT A UNITED STATES METROPOLITAN ACADEMIC CENTER

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Aim: To evaluate a tertiary surgical academic department's experience in treating patients with Charcot neuro-osteoarthropathy (CNO).

Method: Single centre registry of CNO patients was retrospectively analysed. Demographic data, comorbidities and outcomes were assessed.

Results / Discussion: 470 feet in 405 patients were identified. Demographics: males (58.7%), mean age 54.3(±10.0) years, mean BMI 34.5 (±7.5), Type 2 DM (90.7%), mean DM duration (16.9±10 years), average HgbA1C 7.7% (±2.4). Retinopathy was present in 49.8%, ESRD in 14.8% and bilateral CNO was identified in 15.4%. History of injury was reported by 27.7%. The Sanders-Frykberg anatomic classification included: Type 3 (47%), Type 2 (27%), Type 4 (24%), Type 5 (1%) and Type 1 (<1%). Fifty percent presented with an open wound or prior history of a wound and 43% presented during the active CNO phase and 57% during the inactive CNO phase. Our patients identified themselves as Hispanic (43%), Caucasian (38%), Black (17%) and Asian (2%). Ultimately 55.4% were treated with reconstructive surgery. Limb salvage in those with no previous wound history was 96.7% compared to 86.2% with history of a wound [OR 4.7 (2.2 to 10.3, <0.0001]. 125 of 138 patients (90.6%) who underwent reconstructive surgery during the inactive CNO phase had successful limb salvage compared to 106 of 111 patients (94.6%) who underwent surgery during the active CNO phase [1.82 (0.71 to 4.89) p= 0.34]. At a median follow up of 164 (76-289) weeks, 88.8% of patients were alive.

Conclusion: In our surgical referral academic practice, only 55% of patients underwent reconstructive surgery. Prevention of CNO wounds is paramount to reduce rate of major amputation as a history of a wound increased the risk of major amputation by 370%. No significant difference was observed in limb salvage rates between those who underwent reconstructive surgery during the active vs inactive stages of CNO.

[OP34] HEALTH DISPARITY AND INEQUITY IN AMPUTATION RATES IN UNDERREPRESENTED MINORITY PATIENTS WITH DIABETIC FOOT ULCERS

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Aim: To study relative risk of minor and major amputations in a large cohort of US patients with DFUs.

Method: The TriNetX research network, comprised of real-time data from US electronic health records, was queried. De-identified patient data from 2003-2024 were extracted using ICD-10-CM, Current Procedural Terminology and Veterans Affairs coding systems. Propensity score matching was performed at DFU presentation based on Age, Gender, Tobacco Use and BMI. White patients were the standard comparison control group.

Results / Discussion: 444,214 White patients, 135,937 Black patients, 53,741 White-Hispanic patients, 23, 383 Non-White Hispanic patients and 20,061 Asian patients were identified with active DFUs and followed for five years.

Minor amputations occurred in 10.1%, 6.7%, 5.9%, 4.9% and 2.3% of White Hispanic, Non-White Hispanic, Black, White, and Asian patients respectively. After matching, White-Hispanic [RR 1.86 (1.78, 1.95)], Non-White Hispanic [RR 1.23 (1.15, 1.33)] and Black [RR 1.15 (1.12, 1.19)] patients had increased five-year risk of minor amputation while Asians had significantly reduced risk of minor amputation [RR 0.46 (0.41, 0.51)] compared to White patients.

Major amputations occurred in 3.8%, 2.7%, 3.0 %, 1.9% and 1.0 % of White-Hispanic, Non-White Hispanic, Black, White, and Asian patients respectively. After matching, White Hispanic [RR 1.71 (1.65, 1.90)], Non-White Hispanic [RR 1.23 (1.10, 1.38]) and Black [RR1.49 (1.42, 1.56)] patients had increased five-year risk of major amputation while Asians had significantly reduced risk of major amputation [RR 0.48 (0.41, 0.57)] compared to White patients.

Conclusion: This large database study highlights the health disparity and health inequity in the US population with DFU. Underrepresented minorities (Hispanic and Black patients) have higher risk of both minor and major amputation at five years. We speculate that this is due to delay in presentation and lack of access to appropriate medical expertise within their community. Further longitudinal study is warranted.

[OP35] THE MANAGEMENT OF DIABETIC ANKLE FRACTURES – 5-YEAR OUTCOMES OF EXTENDED FIXATION TECHNIQUES

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[1]King's College Hospital London , Orthopaedics , London , United Kingdom

Introduction: Surgeons often hesitate to operate on an ankle fracture with diabetes due to anticipated complications. We compared complication rates among diabetes and non-diabetes patients. To evaluate the efficacy of rigid long-segment fixation methodologies as potential factors for successful outcomes.

Method: We conducted a review of ankle fractures from 2014 to 2019, cross-referencing patient records with departmental databases. Patients were observed prospectively for a minimum 5-year follow-up. HbA1c level & Charlson Comorbidity Index (CCI) profiled comorbidities. In matching for age, gender, in non-diabetes (control), non-surgically managed and surgically treated diabetes patients with standard vs. rigid fixation were compared. Regression analyses assessed predictors of negative outcomes (fixation failure, wound complications, infection, and CN). Cox proportional hazards model analyzed predictors of five-year morbidity and mortality. Ethical approval was obtained in accordance with institutional policy.

Results: 152-patients; 74-non-surgical treatment, 78-underwent surgical-fixation (31-rigid-long-segment-fixation). Patients with diabetes had higher complication risks compared to control (n=180); RR being 3.1-3.4 (P<0.002).

Patients with a CCI score <5 were younger, had lower HbA1c levels, and shorter in-patient stays (p=0.05, η^2=0.05). Forty-five patients had CCI >5 (mean ± SD = 6.03 ± 1.86); they had poorer glycaemic control (higher HbA1c levels (RR=4.6, P<0.004), longer hospital stays (mean ± SD = 27.87 ± 36.69 days; p = 0.05), increased neuropathy (RR=5.9, P<0.003), increased combined neuropathy and retinopathy (RR=6.2, P<0.0003). Surgical risks decreased with prolonged immobilization (RR=0.86) and/or rigid fixation (RR=0.65).

Over a 5yr period rigid-long-segment fixation reduced the risk of morbidity by 29.5% (hazard ratio = 1.295, 95% CI = 0.937–1.789, p = 0.033) for each unit increase in the CCI compared to non-rigid fixation surgery.

Conclusion: Diabetes has a greater risk of local morbidity following ankle fracture treatment with or without fixation. Rigid/long-segment-fixation reduces complication risks for increasing co-morbidities, providing better long-term patient outcomes.

[OP36] THE ALL-MEDIAL APPROACH IN SEVERE PLANO-VALGUS FOOT & ANKLE DEFORMITY WITH SUBTALAR DISLOCATION. ANATOMY, INDICATIONS, AND OUTCOMES OF A PROMISING NEW TECHNIQUE IN CHARCOT RECONSTRUCTION

Raju Ahluwalia[1], Basil Budair[1], Firas Raheman[1], Ines Reichert[1]

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Background: The complex challenge of reconstructing severe plano-valgus deformity of the foot and ankle, often accompanied by subtalar dislocation, is characterized by a heightened risk of lateral wound complications and significant anatomical distortions.

These cases, arise from chronic or acute Charcot neuroarthropathy necessitating careful consideration of their underlying anatomical pathology. In this study, we introduce a novel all-medial approach for correcting these deformities and provide insights gleaned from our clinical experience.

Methods: Prospectively collected data of all patients with severe foot and ankle plano-valgus deformity between May 2014-Jan 2024 treated surgically utilising an all-medial-approach was assessed for Charcot-reconstruction.

We identified 18-feet in 11 patients with an associated subtalar dislocation and describe the patho-anatomy and a single medial approach encompassing 3 surgical windows to the ankle joint, hind-foot, and mid-foot to reconstruct the deformity and stabilise the foot. Functional, radiological, and surgical outcomes are reported of the newly developed surgical approach.

Results: Average age was 58 years (ranging from 47-78). The mean follow-up duration was 32.7 months (2.7 years), ranging from 8 to 82 months. In nine feet, the posteromedial neurovascular bundle was displaced inferior-laterally, leading to attrition of the flexor hallucis longus (FHL) tendon in three feet due to entrapment between the calcaneum and talus.

Surgical intervention involved pan-talar fusion in 12-feet; medial column extension in nine feet. Only one patient experienced delayed wound healing necessitating the removal of metalwork, yet all patients were ambulatory at the two-year mark, with no instances of limb loss during the study period.

Conclusion: The novel approach outlined in this study represents a safe and effective technique for reconstructing severe plano-valgus deformities accompanied by dislocated subtalar joints in Charcot-neuropathy. The approach leads to predictable radiological and functional outcomes while circumventing the unique complications associated with traditional lateral approaches.

[OP37] IMPACT OF WOUND HYGIENE INCORPORATING AN ANTIBIOFILM GELLING FIBRE DRESSING ON HARD-TO-HEAL WOUNDS IN A SPANISH POPULATION

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Aim: To evaluate the impact of the Wound Hygiene protocol (WHP), a 4-step (cleanse, debride, refashion, and dress) biofilm-based wound management strategy, on hard-to-heal wounds in a Spanish population.

Method: A subgroup analysis of patients from Spain in a prospective, real-world study of hard-to-heal wounds managed with WHP (incorporating an antibiofilm gelling fibre dressing*) for approximately 4 weeks, or as clinically appropriate, was performed. The primary endpoint was change in wound volume from baseline to the final assessment.

Results / Discussion: 179 patients from Spain were included in this subgroup analysis (median treatment duration 30 days). Of 143 patients with baseline and final wound volume assessments, 70 (49%) had complete wound closure (100% volume reduction). Mean wound volume reduced from 73.2 cm3 at baseline to 9.1 cm3 (85% reduction) at final assessment. Exudate levels changed from predominantly high/moderate (61%) to predominantly low/none (61%). Signs of clinical infection were present in 47% at baseline and reduced to 1% at final assessment. Suspected biofilm was 75% at baseline and 15% at final assessment. At final assessment, 30% of hard-to-heal wounds had healed and 66% had improved.

Conclusion: In Spain, management with the WHP resulted in healing or improvement in nearly all hard-to-heal wounds (96%), and a notable decrease in wound volume, exudate level, suspected biofilm, and local infection. Our findings suggest that the WHP incorporating an antibiofilm dressing* is an effective treatment strategy for hard-to-heal wounds, as demonstrated in a subgroup analysis of a Spanish population.

*Aquacel® Ag+ Extra™ (Aquacel Ag Advantage in the United States).

[OP38] TO SAVE OR NOT TO SAVE A NON-FUNCTIONAL LIMB… HOW PROMINENT IS THIS PROBLEM?

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Aim: There is a general consensus (scarcely confirmed in various Guidelines) that in some cases it has no sense to save the affected limb because it is not functional. It can probably affect results of amputations reduction programs. In our study we assessed the prevalence of such patients and decisions on surgical treatment for them.

Method: We analysed retrospectively case histories of 101 patients treated for a diabetic foot ulcer / wound / gangrene in our tertiary care centre from May to December 2023. We included into Group 1 the patients with **absolutely non-functional limb**, i.e. knee contracture or paralysis. We did not consider like this the patients with activity limited to bed or after major amputations without prosthesis use. Such cases belonged to Group 2 with the rest of patients.

Results / Discussion: 14 (14%) of the patients formed the Group 1. These patients were significantly ($p<0.05$) older (83 (60-97) vs. 63 (34-85) years), 100% vs. 43% had limb ischemia, 43% vs. 8% survived contralateral major amputation.

The groups did not differ significantly in genders, lesion duration, its location, prevalence of Grade 3 ulcers, levels of HbA1c, WBC or CRP.

Treatment results (Table 1) were significantly poorer in Group 1.

	Group 1 (n=14)	**Group 2 (n=87)**
Revascularization (of all cases with ischemia)	**7% (1 of 14)**	**42% (15 of 36)**
Healed	0%	22%
Unhealed ulcer*	21%	52%
Major amputations	**14%**	**7%**
Minor amputations	7%	4%
Died	**28%**	**1%**

* Median follow-up time = 3.6 months

Conclusion: The prevalence of "non-functional limb patients" is significant. The "general consensus" about non-salvage of such limb should be reflected in the Guidelines along with a strict definition of "limb non-functionality". This (along with the patients in palliative status) should be taken into account in statistical reports concerning amputation rates and availability of revascularization.

[OP39] METABOLIC DECOMPENSATION CORRELATES WITH WORSE OUTCOMES IN DIABETIC FOOT PATIENTS

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Aim: The aim of our study was to evaluate the impact of metabolic derangement on healing chances in a cohort of severely involved DF patients.

Method: We retrospectively analysed the data of all patients admitted to our department for DF in 2021 and divided them into two groups according to whether they achieved complete healing within 6 months (group A) or not (group B). We compared the groups for clinical and demographic characteristics, blood chemistry and parameters of metabolic severity [Fibrosis 4 (FIB4) index, triglyceride/glucose ratio (TYG) and albuminuria/creatinuria ratio].

Results / Discussion: Data were obtained from 280 patients: 195 patients in Group A [69.6%; age 68.3±9.5 years; male/female 71.7/28.3%; DM1/2 11.7/88.3%; BMI 28.8±6.3 kg/m2; Hba1c 59.3±21.5 mmol/mol; diabetes duration (DD) 16.8±10.8 years] and 85 in Group B (30.4%; age 70.2±10.3 years; male/female 75.2/24.8%; DM1/2 9.4/90.6%; BMI 29.1±5.7 kg/m2; Hba1c 60.6±20.0 mmol/mol; DD 20.9±11.8 years). Group B had a longer ($p<0.04$) disease duration and a higher prevalence of ischaemic cardiopathy (46.3 vs 37.1%, $p<0.05$), hypertension (67.3 vs 58.1, $p<0.05$) and encephalopathy (19.4 vs 11.2 %, $p<0.05$). Group B had higher levels of FIB4 (1.88±1.63 vs 1.34±1.08, $p<0.002$), TYG (9.36±0.71 vs 8.77±0.64, $p<0.002$) and triglycerides (155±72 vs 131±74, $p<0.05$) and lower levels of total haemoglobin (11.4±1.5 vs 12.6±1.8). In Cox logistic multivariate regression analysis, healing was negatively influenced by FIB4 (HR 0.48, CI 95% 0.26-0.61, $p=0.0017$) and TYG (HR 0.51, CI 95% 0.30-0.79, $p=0.0022$) and positively influenced by higher total haemoglobin (HR 1.59, CI 95% 1.24-1.86, $p=0.023$). The same three parameters are also associated with healing time (FIB 4 $p<0.001$, TYG $p<0.001$ and total haemoglobin $p<0.02$).

Conclusion: Metabolic decompensation and anemia, when adequately detected, associated to a worse clinical outcomes in DF patients.

[OP40] IMPACT OF IMMUNOSUPPRESSIVE THERAPY ON HEALING OF DIABETIC FOOT IN TRANSPLANT PATIENTS

Andrea Němcová[1], Tetiana Osadcha[2], Dominika Sojakova[3], Vladimíra Fejfarová[3], Radka Jarosikova[3], Šimon Kopp[3], Veronika Woskova[1], Peter Girman[1], František Saudek[1], Michal Dubský[1]

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Aim: The use of immunosuppressive therapy is identified as one of risk factors that worsen healing of diabetic foot ulcers (DFU). The aim of our study was to assess the impact of different immunosuppressive agents (IS) on ulcer healing in patients following simultaneous pancreas and kidney transplantation (SPK).

Method: We enrolled 604 patients after SPK performed between 2000 and 2023, of whom 217 were treated in foot clinic for a newly developed ulcer. Patients were divided into a group using tacrolimus + mycophenolate mofetil (tacr+MMF) and a group using tacrolimus + sirolimus (tacr+sir). The study further compared individual IS (tacrolimus, MMF, sirolimus, and prednisone) in terms of their impact on ulcer healing. The follow-up period after newly formed ulcer was 1 year. Main endpoints of the study were ulcer-free survival and healing and change of wound size.

Results: Ulcer-free survival did not differ significantly among individual IS. In the group using tacr+MMF, the median time to the onset of ulcer was 17.6 years, while in the group using tacr+sir it was 15.4 years. After 1 year, there were significantly fewer healed ulcers in tacr+sir group compared to tacr+MMF (34.5% vs. 53.2%, p=0.009). No significant difference was found between the individual IS in terms of the change in wound size. When comparing the impact of different IS on ulcer healing, significantly fewer healed wounds were seen in patients treated with prednisone (p=0.02) and MMF (p<0.0001).

Conclusion: The results of our study showed that the use of a combination of tacrolimus and sirolimus significantly worsens healing of DFU compared to treatment with tacrolimus and MMF. Therefore, in transplant patients with a non-healing ulcer, we should consider a short-term reduction of IS dose.

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[OP41] THE EFFECT OF DIABETES CONTROL ON THE HEALING OF NEWLY DEVELOPED DIABETIC FOOT ULCERS

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Introduction: A lot of scientific publications declare that wound healing in patients with diabetes mellitus (DM) can be affected by both current and long-term diabetes control. On the other hand, the influence of diabetic control on the healing of diabetic foot ulcers (DFUs) has not been clearly demonstrated.

Aim: The aim of this retrospective study was to analyze the relationship between parameters of diabetes control (glycated hemoglobin, time in range, glycemic variability [GV], glycemia risk index and average glucose) and prognosis of the healing of DFUs.

Method: In our retrospective study we enrolled 48 patients with type 1 DM (mean age 54.5±14 years, duration of DM 35±10 years, creatinine 213±167 µmol/l) with a recent DFU between January 2017 and December 2023, who monitored their blood glucose level using continuous glucose monitoring (CGM) or flash glucose monitoring (FGM). In the case of each patient, ulcers were characterized by parameters such as length, width and depth at baseline and then after 3 and 6 months after the detection of DFUs. Final evaluation of healing of DFUs was defined as healed, non-healed DFUs, minor and major amputations. The healing of DFUs and its prognosis were correlated with the parameters of diabetes control (Spearman).

Results: 47% of patients were healed of DFUs after 6 months from detection, 42% non-healed, 9% underwent minor and 2 % major amputations. Only GV was significantly positively correlated with the depth (p=0.007; r=0.418), width (p= 0.010; r=0.401) and length (p=0,019; r=0,370) of the ulcers 6 months from the onset of the DFUs. The other observed parameters of DM control didn't significantly affect the process of wound healing.

Conclusion: Our study showed a significant association of GV with healing of DFUs, however, a clear association of the level of diabetes control with the prognosis of DFUs was not demonstrated.

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[OP42] HEALING WOUNDS SAVES LIVES; HEALING WITHIN 12WEEKS HAVE A BETTER FIVE-YEAR MORTALITY COMPARED TO THOSE WITH NON-HEALING WOUNDS

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Aim: Foot care and wound healing is usually advocated to help prevent amputation, and often have a one-year mortality report via the National Diabetic Foot Audit (NDFA). The aim was to compare the baseline and clinical outcome at five years upon presentation with a foot ulcer, between the two groups based on ulcer healing or non-healing at 12weeks follow-up.

Method: A retrospective cohort study of patients presenting to a single centre with a new diabetes foot ulceration (DFU) over a period of one year. Patients' electronic medical records were reviewed for the subsequent five years. With analysis of baseline characteristics and clinical outcomes between the two groups of ulcer healing or non-healing at 12weeks. The primary end point of all-cause mortality at 5 years and secondary outcome of changes in glycaemic control and amputation rate.

Results / Discussion: There were 203 new presentations of which 27 were lost to follow-up at 12weeks, but 79 had healed at 12weeks and 97 were non-healed. Overall mean age of 64±14yrs, 70% with type 2 diabetes, 69% male. Baseline HbA1c was comparable between both groups 73±29mmol/L vs 74±25mmol/L respectively as was their baseline eGFR, albumin, anaemia. There were no events of major amputation at one-year follow-up. The 5-year mortality was significantly higher in the non-healing at 12weeks; 56% vs 15% respectively [p<0.001].

Conclusion: There was a significantly high five-year mortality rate in the cohort with non-healing ulcer at 12 weeks. There is the need to have more emphasis on the possibility of healing wound early to help improve on mortality, and not just as an amputation avoidance.

[OP44] IMPACT OF WIFI COMPOSITE SCORE AND DIABETES CONTROL ON THE HEALING OF HEEL DIABETIC FOOT ULCERS

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Aim: The diabetic foot ulcers (DFUs) in hindfoot represent a great issue in podiatric care. Healing is deteriorated due to high plantar pressure, worse perfusion and limited options for surgical procedures. The aim of our retrospective study was to determine whether WIfI composite score (the sum of–Wound, Ischemia, foot Infection) of DFUs and diabetes control could potentially affect the healing of heel DFUs.

Method: We analyzed 78 patients of both types of diabetes (mean age 67±12 years, diabetes duration 26+-14.5 years, mean BMI 29±9.2kg.m^{-2}) whose treated for hindfoot DFUs, predominantly superficial ones (of WIfI on average W1.4±0.6, I1.5±1.2, fI1±0.9) from January 2020 to July 2023 and followed for one year**.** We divided evaluated patients into two groups– group 1-patients with HbA1c ≤60 mmol/l (43%patients) and group 2– with >60 mmol/l (57%) and compared their characteristics and the end-points(DFUs healing classified as healed, non-healed, minor, major amputation and death).

Results: The WIfI composite score showed positive correlation with the healing of hindfoot DFUs (r=0.26;p=0.025). As the sum increased +1 point of WIfI composite score (with OR 1.5; CI1.09-1.95; p=0.007) the probability DFUs healing worsened. The diabetes control didn´t correlate significantly with the DFU healing stages. Two observed groups differed significantly only in BMI (27.1±5.5, in group 1 vs. 30.3±6.7kg.m^{-2} in group 2;p=0.03) and in the occurrence of more superficial DFUs (of WIfI W1±0.8 vs 1.44±0.88;p=0.026), other parameters didn´t differ significantly between both study groups. We observed higher occurrence of healed DFUs in group 1 compared to group with uncontrolled diabetes (38.7% vs 61.3%;p=0.054).

Conclusion: With the greater WIfI composite score increases 1.5 times the risk of poor healing of DFUs. Similarly, worse diabetes control negatively altered healing of heel DFUs.

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[OP45] ASSESSMENT OF WOUND HEALING IN PATIENTS WITH ISCHEMIC DIABETIC FOOT TREATED BY AUTOLOGOUS CELL THERAPY

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Aim: Autologous cell therapy (ACT) is often the only option to avoid major amputations in patients with chronic limb threating ischemia (CLTI). The aim of our study was to assess baseline risk factors that could influence wound healing in patients with CLTI treated by ACT.

Method: We included 149 limbs treated by ACT in 124 patients with CLTI and diabetic foot ulcers (DFU). Risk factors influencing woud healing were divided into three groups: ischemia-related risk factors (transcutaneous oxygen pressure [TcPO2], Rutherford and Graziani classifications), infection-related risk factors (C- reactive protein [CRP], clinical signs of infection, probe to bone test, presence of osteomyelitis and presence of resistant bacteria) and baseline parametres in classifications for DFU (Wagner, WIfI, IDSA/IWGDF, Texas and Sinbad). Risk factors were analyzed using Kaplan-Meier estimate and Cox proportional-hazard model.

Results / Discussion: DFUs were completely healed in 92/149 (61.7 %) cases. The median time of complete wound healing was 1.24 years, 95% CI (0.85, 2.62). Higher CRP significantly reduced the probability of DFU healing (HR 0.98 95% CI (0.96, 0.995)) whereas higher baseline TcPO2 values increased this probability (HR 1.02 95% CI (1.00, 104)). The absence of infection (grade 1) according to the IDSA/IWGDF compared to other grades showed a positive prediction for DFU healing (grade 1 vs. 2 to 4, $p<0.001$). DFU characterized by grade 3 in WiFI infection showed worse healing than DFU in grade 1 (grade 1 vs. 3: $p= 0.046$) and grade 2 (grade 2 vs. 3: $p= 0.036$).

Conclusion: Our study showed that lower CRP, higher levels of TcPO2, the absense of clinical signs of infection and lower IDSA/IWGDF and WifI infection grades were independent predictors for wound healing in patients after ACT.

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[OP46] CLINICAL OUTCOMES OF ONE VERSUS MULTIPLE METATARSAL HEAD RESECTION IN PATIENTS WITH DIABETES RELATED FOOT ULCERS. IS IT SAFE TO PERFORM SEVERAL METATARSAL HEAD RESECTIONS?

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Aim: To analyse clinical outcomes of one ***versus*** multiple metatarsal head resection (MHR) in patients with diabetic foot ulcers (DFU).

Method: An observational prospective study was performed in a total of 105 patients between March 2019 and January 2022. Patients were consecutively included after MHR within a prophylactic, curative, or emergent surgery basis, in DFU located beneath the metatarsal heads. For analyses patients were stratified into 4 groups depending on the number of MHR procedures (group 1; one MHR, group 2; two MHR, group 3; three MHR, and group 4; four MHR). Patients were follow-up to assess postsurgical complications (dehiscence, hematoma, infection, bone exposure, and/or need of reintervention), and the rate (%) and time (weeks) to healing. After confirmed healing, patients were follow-up 1-year in a monthly basis to assess reulceration, minor and major amputation and death events.

Results / Discussion: We did not find statistical differences in the general rate of postsurgical complications stratifying by the number of MHR performed (p= 0.997). Healing rate was similar between the groups 63 (96.9%), 21 (100%), 12 (85.7%), 5 (100%) (p= 0.429) for group 1 to 4, respectively. However, time to healing was significantly longer in the group of patients with 4 metatarsal head resected 9 [IQR, 4.50- 38.50] weeks, p= <0.001 compared with the other groups. Following this trend, minor amputation rate demonstrated to be greater in the group of patients with 4 MHR: 2 (3.1%), 4 (19%), 2 (14.3%), 2 (40%), for group 1 to 4, respectively p= 0.003.

Conclusion: Patients with more than three MHR in the same foot demonstrated worse healing times and higher minor amputation rates compared with patients with 3 or less procedures. Patients with three or more resections should be prescribed with other surgical technique to prevent long-term complications.

[OP47] ESTABLISHING AN ENHANCED TERTIARY REVIEW PATHWAY FOR DIABETIC FOOT ULCER USING A CENTRALISED ELECTRONIC DATABASE

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Aim: Recent international guidelines for DFU recommend multidisciplinary team-based management for minimising tissue loss, however the vast distances in Western Australia are an obstacle to delivering optimal and timely multidisciplinary care. The purpose of this project was to reduce delay and barriers to care in the management of DFU.

Method: Key members of the multidisciplinary foot ulcer clinic team set out to adopt a networked wound imaging and measurement system (Silhouette®, Aranz Medical, NZ) in a tertiary hospital multi-disciplinary setting, and subsequently linked the technology to other tertiary and secondary sites elsewhere in Western Australia thus facilitating timely transfer of clinical information.

Results / Discussion: Smart technology can address many of the issues faced by remote peoples by bringing tertiary level advice and support to primary care. It can expedite transfer of those who really need it for infection control, tissue salvage, debridement and grafting and reduce transfer of those who, with support, can be managed locally in a more familiar environment, near to family and carers and on country. Using this technology can facilitate online education, training, and teaching for remote sites, upskill local Health Service Providers and serve to reassure the patient who is often isolated and vulnerable, that their care is optimised.

Conclusion: The use of networked electronic health documentation can inform service delivery quantitatively and by producing trends in demand over time, across the health sector, enable focus to be directed to areas of unmet need, supporting funding initiatives to fill gaps in multidisciplinary care and ensuring gold standard can be offered to all patients.

[OP48] CHALLENGES IN THE MANAGEMENT OF DIABETIC FOOT INFECTIONS COMPLICATED BY THE PRESENCE OF CARBAPENEMASE PRODUCING ORGANISMS (CPO) IN A MULTIDISCIPLINARY DIABETIC FOOT CLINIC (MDTFC)

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Aim: Carbapenemase Producing Organisms (CPO) present a challenge in persistent infection, notably in the setting of diabetic foot ulceration. These are extremely drug resistant organisms, by definition resistant to 3 or more classes of antibiotics, and have acquired carbapenemases that hydrolyse carbapenems. We reviewed the current cases of CPO in our multidisciplinary foot clinic (MDTFC), and the implications of identification of this organism on patient outcomes.

Method: Retrospective review of diabetic foot infection trajectory in individuals identified to carry CPO, attending our MDTFC. Carbapenemase screening in our trust is undertaken using PCR looking for the presence of IMP1, VIM, NDM, KPC and OXA48 PCR. We assessed duration of ulceration, MDTFC attendance frequency, surgical intervention and amputation rates.

Results: At the time of review (March 2024), 8 patients attending our MDTFC were identified to have a positive CPO screen, with an annual capacity for this service (2023-2024), n=4500 attendances. Median age was 60.5 years (IQR 51.8-66.5) and 50% female, forefoot ulceration was present in n=7, 87.5% and co-existing Charcot foot in n=2, 25%. Carbapenemase PCR was positive for NDM in n=3, 37.5% and n=7, 87.5% OXA48. Surgery was required in n=6, 75% of cases, with amputation of at least one digit in n=5, 62.5%. In total, these eight patients have had 111 MDTFC visits so far, median 6 (IQR 3-24) per person. With hydrogen peroxide fogging required for room cleaning (240 minutes), this equates to 444 hours these clinical rooms were out of use for other potential clinic visits.

Conclusion: The presence of CPO in association with diabetic foot ulceration has significant implications for both the individual and the MDTFC service. Most individuals required surgical intervention. In a busy outpatient setting, frequent assessment over a prolonged duration of time, as identified in this cohort of CPO carriers, results in limitations in clinic space and efficiency.

[OP49] RISK FACTORS FOR RECURRENCE OR NEW ULCER IN CONTRALATERAL FOOT IN HEALED DIABETIC PATIENTS

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Aim: Risk factors for developing new ulcers in a previously healed foot are well described, but it is not known whether they differ from those for new lesions on the contralateral foot. The aim of our study is to compare the risk factors for recurrent ulcers versus new ones contralateral foot ulcers.

Method: We analyzed patients who had healed a previous ulcer and who presented a new lesion on our Diabetic Foot Center from April 2022 to April 2023. We analyzed clinical characteristics and

adherence in wearing therapeutic footwear. We evaluated ulcer recurrence and new ulcers in the contralateral foot: location, area, previous treatment (surgical or non-surgical), main mechanism (inadequate shoes, trauma, ischemia).

Results / Discussion: 107 previously healed patients presented a new lesion: 68% in the same foot,

32% in contralateral foot. Main mechanism of ulcer developing was ill- fitting shoes in 63 patients, trauma in 14 patients and ischemia in 30 patients. Ischemia rate was significantly higher in ulcer of contralateral foot (44% vs 22%), as cardiovascular disease (45% vs 22%) and CHF (31% vs 22%, p <0.05). Low adherence was more frequent in recurrences (58% vs 38%). We found no differences in site of ulcer between patients treated with surgery or non surgical treatment, as in contralateral foot. Early ulcers (within 1 year) were significantly more related to ill- fitting shoes and trauma that those over 1 y (81% vs 65%). Low adherence was significantly more frequent in patients affected by early ulcers (62% vs 40%).

Conclusion: We found that ischemia and low adherence to the use of therapeutic footwear are the main mechanisms for early development of new lesions in the contralateral foot. Further efforts are needed to treat PAD also in the contralateral limb and to improve compliance in wearing therapeutic shoes.

[OP50] PERSISTENT HIGH MORTALITY IN PATIENTS PRESENTING WITH NEW DIABETES RELATED FOOT ULCERATION: MORE SO IN THOSE UNDER PRIMARY CARE FOR THEIR DIABETES FOLLOW-UP

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Aim: Much emphasis is placed on preventing amputation, but perhaps not as much emphasis on prevention of "pre-mature" mortality upon presentation with a diabetes foot ulceration (DFU). Patients with type 2 diabetes are deemed to be less severe and have their diabetes care under primary care. The aim of this study was to assess the care processes provided for metabolic and diabetes care upon presentation to a multidisciplinary diabetic foot team (MDfT) with DFU.

Method: This was a retrospective analysis of patients presented to a single centre MDfT in 2018 with a new DFU. Data was extracted from the National Diabetic Foot Audit (NDFA) and electronic notes. Patients' baseline demographic and clinical outcomes were analysed within four main groups depending on their diabetes care provider namely, primary care, secondary/hospital based, community care or unknown diabetes follow-up. The clinical outcome was reviewed with primary end point of mortality at one year, five years and secondary endpoints of change in glycaemic control and metabolic control such as lipid profile and ulcer healing.

Results / Discussion: There were 203 out of a total of 329 new presentations of DFU, over the period of one year, who were local residents to the proximity of the clinic. Of which 84% of the subjects had type 2 diabetes. Mean HbA1c at presentation was 77.3 mmol/mol. The percentage of patients who had diabetes care under primary, hospital based, community and unknown follow-up were 66%, 18.2 %, 4.9% and 10.8% respectively. The one-year mortality was twofold higher in the patients under primary care for their diabetes compared to the other three groups. The five-year mortality was 47%:51%:50% respectively.

Conclusion: The five-year mortality remains relatively high in group under primary care for their diabetes care despite having fewer complex comorbidities, thus the need to re-address their follow-up needs.

[OP51] THE ASSOCIATION BETWEEN HEALTH-RELATED QUALITY OF LIFE AND PHYSICAL ACTIVITY IN PEOPLE WITH DIABETES AT HIGH RISK OF FOOT ULCERATION

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Aim: Health-related quality of life (HRQoL) is reduced in people with diabetes-related foot disease. Training programs to increase 'activity-rich days' have been suggested as a key target to increase both physical fitness and HRQoL. However, training programs aiming to increase physical activity may only increase HRQoL when these factors are associated. While such an association has been shown for the general population, it has not been investigated in diabetes-related foot disease. We aimed to investigate the association between HRQoL and physical activity in people with diabetes at high foot ulcer risk.

Method: We used baseline data from a prospective observational cohort study and an RCT, both including adults with diabetes at high foot ulcer risk (IWGDF risk 3). For HRQoL, participants completed the SF-36 (range:0-100; 100=maximum HRQoL). We measured physical activity for 7 consecutive days, using a tri-axial accelerometer measuring daily steps. Demographic characteristics were collected. We statistically tested the association between HRQoL and physical activity and demographics using univariate analyses and multivariate linear regression.

Results/Discussion: We included 107 participants, 84% male, mean age 66(SD:10) years. Mean daily steps were 5024(SD:3358). Mean HRQoL on all domains is shown in Table 1. Physical activity was significantly associated with the domains physical functioning (Pearson's r=.56; beta=.003; p<.001) and physical limitations (Pearson's r=.29; beta=.003; p<.001), but not with the other domains (Table 1). Use of a walking aid was associated with a lower HRQoL in 6 of the 8 domains (Table 1).

Conclusion: In people with diabetes at high risk of foot ulceration, higher level of physical activity was associated with better physical functioning and fewer experienced physical limitations, but not with any other HRQoL domain. This suggests that participation in physical activity programs might produce benefits in those specific HRQoL-domains. Greatest gain may be expected in those dependent on a walking aid.

Table 1: The association between HRQoL, physical activity and demographic variables

HRQoL domains	Physical functioning	Physical limitations	Emotional limitations	Energy and fatigue	Emotional wellbeing	Social functioning	Pain	General health
Mean (SD) score	61 (25)	52 (42)	76 (36)	59 (21)	77 (18)	76 (26)	74 (23)	49 (20)
Association with physical activity *	r = .56 (.42 ; .68)	r =.29 (.10 ; .46)	r =.15 (-.41 ; .33)	r =.18 (-.01 ; .36)	r =.06 (-.13 ; .25)	r =.17 (-.02 ; .35)	r =.14 (-.05 ; .32)	r =.15 (-.04 ; .34)
Multivariate analyses								
Physical activity (daily steps)	β=.003; p<.001	β=.003; p=.026	NA	NA	NA	NA	NA	NA
Demographics **	Walking aid: β=-24.6	Walking aid: β=-22.1 Diabetes type: β=35.1	Walking aid: β=-18.9	Walking aid: β=-11.5	Alcohol use: β=6.4	Walking aid: β=-14.1 Gender: β=-11.8	Gender: β=-12.5 Diabetes type: β=15.7	Walking aid: β=-10.4
Multivariate model summary	R^2=.457	R^2=.219	R^2=.056	R^2=.061	R^2=.082	R^2=.116	R^2=.202	R^2=.054

*: Pearson's correlation (95%CI). **: Only demographics statistically significantly associated with that domain in multivariate regression analyses are shown (all p-values <.05). Demographics included in analyses: Gender; Age; BMI; Education; Diabetes duration; Diabetes type; Employment status; Living situation; Walking aid; Alcohol use. NA = not applicable.

[OP52] CHANGES IN CORNEAL MORPHOLOGY IN PATIENTS AFTER COMBINED PANCREATIC KIDNEY TRANSPLANTATION: NEUROPATHIC DIABETIC FOOT AND CORNEAL EROSION

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Aim: Evaluate the cellular composition of the corneal nerves as well as the state of the peripheral nervous system in patients with kidney and pancreas transplantation against the background of euglycemia.

Methods: The study included 21 patients with kidney and pancreas transplantation with disease duration 24 [22;31] years, all patients had euglycemia. Ophthalmological and diabetic foot anamnesis was obtained. Comparison group included people without diabetes mellitus. Using a confocal microscope, the cornea scanned with a resolution of 384x384 px. The analysis include nerve fiber density/mm2 of the cornea (CNFD), morphological changes of the cornea. The severity of neuropathy was assessed according NDS score.

Results: 1 patient had a history of corneal erosion and corneal transplantation, 1 had a recurrent keratitis, 2 - dry eye syndrome. All patients underwent laser coagulation, 52% - cataract surgery, 24% underwent YAG-laser treatment, 24% - vitrectomy. CNFD in diabetic patients compared the comparison group was 27.1 ± 9.1 fibres/mm2 vs 35.5± 9.4 fibres/mm2. All patients had severe peripheral neuropathy, diabetic foot developed in 47%, Charcot foot had 14%, limb amputation - 5%.

Conclusions: Diabetic corneal changes, such as delayed epithelial wound healing, edema, recurrent erosions are common but underdiagnosed complications of diabetes mellitus compared to retinal pathology. There causal relationships between morphological changes of corneal nerve fibers and neurotrophic keratopathy presented in the patients with diabetes, refractive surgery and dry eye. Despite the maintenance of euglycemia, restoration of the nerves of the cornea, as well as in the skin of the feet, does not occur, which leads to the poor tissue repair.

[OP53] CAN ADVANCES IN MATERIAL SCIENCE EXPLAIN WHY OSTEOCLASTS GENERATED IN VITRO FROM PEOPLE WITH AN ACTIVE CHARCOT FOOT RESORB BONE EXCESSIVELY?

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Background and aims: Osteoclasts, generated from monocytes from patients with active Charcot foot, are overactive and resorb bone extensively in cultures with macrophage colony stimulating factor and receptor activator of nuclear factor-κβ ligand (M-CSF+RANKL). We hypothesise that this enhanced osteoclastic function could be due to increased activity of cathepsin K, the main proteinase responsible for collagenase degradation. The aim was to assess the chemical composition of resorbed surfaces in MCSF+RANKL cultures before and after the addition of the cathepsin K inhibitor, Odacanatib (ODN).

Methods: Osteoclasts, generated from a blood sample from a person with diabetes and active Charcot foot, were cultured ***in vitro***. After 21 days, the cells were lysed. Resorption pits were examined with Raman spectroscopy (LabRAM HR Evolution Raman Spectrometer, Horiba Scientific). The compositional variation of five randomly selected areas was compared between the two treatments. Data were processed with Python and Asymmetric Least Squares Smoothing algorithm.

Results: Raman peaks were normalised to the highest peak at 960 cm^{-1}, which primarily corresponds to phosphate. In comparison to samples in MCSF+RANKL treatment, the addition to ODN led to an average reduction of 20.4% on peak 853 cm^{-1} (collagen proline), 13.5% on 872 cm^{-1} (collagen hydroxyproline), 33.1% on peak 1003 cm^{-1} (phenylalanine), 23.8% on peak 1340 cm^{-1} (amide III region) and 52.0% on peak 1660 cm^{-1} (amide III region).

Conclusion: In MCSF+RANKL cultures, there was enhanced collagen degradation which was reduced after the addition of ODN. Raman spectroscopy indicated a difference in the dissolution of organic and inorganic components of bone.

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[OP54] UNCUT DIAMONDS OR FOOLS GOLD? THE USE OF NON-INVASIVE NEUROMODULATION IN THE MANAGEMENT OF PAINFUL DIABETIC NEUROPATHY - A SYSTEMATIC REVIEW AND META-ANALYSIS OF ELECTRICAL AND LIGHT BASED THERAPIES

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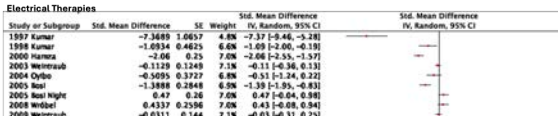
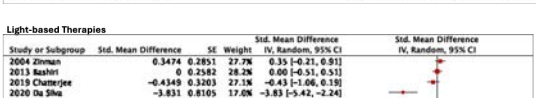
Aim: Numerous therapeutic agents have been tested for symptomatic relief in painful diabetic neuropathy (pDN), yielding inconsistent results. The use of pharmacological options predominates but have significant side effects. We aimed to evaluate the efficacy of non-invasive neuromodulation – electrical and light-based therapies – on pain control.

Methods: A search was carried out in Medline, Web of Science, OVID and Scopus, until 31 Jan 2024. Only randomised trials using best medical therapy/sham-based controls were included. Two reviewers independently screened and extracted data. Meta-analysis was performed from standardised mean differences (SMD) using a random-effects model.

Results: Overall, we identified 13 studies exploring electrical and 4 studies for light (laser) therapies meeting our inclusion criteria. The SMD (95% CI) for electrical therapies was -1.76 [-2.57, -0.95] in favour of the intervention but there was no such positive signal with light-based therapies with a SMD of -0.67 [-1.66, 0.31]. However, all (100%) of studies were deemed at high risk of bias. There was a huge variation in study design, sample size estimation, definition of pDN, its intensity, intervention period (range from 2 to 12 weeks) and the frequency of application. No significant adverse events were reported in any of the studies with either technology. No information on cost-effectiveness was found.

Conclusion: The application of electrical neuromodulation demonstrated benefit in improving pDN. The apparent benefit, however, requires cautious interpretation as the available evidence was deemed at significant risk of bias, therefore the strength of findings should be considered low. There was no such benefit with light-based therapies. The jury is therefore out whether they represent 'uncut diamonds', potentiating improvement in those with refractory pain, or 'fools gold', being offered without clear efficacy. Furthermore, we believe the main finding from our analysis is that the quality of research studies in pDN also requires significant improvement urgently.





Poster Abstracts

TOP 8 POSTER

[PP01] WOUND HEALING EFFICACY AND OUTCOME IN PATIENTS WITH INFECTED DIABETIC FOOT ULCER AND GAS GANGRENE

Zulfiqarali G. Abbas[1 2 3], Roozbeh Naemi[4]

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Aim: Diabetic foot ulcer (DFU) disease is common in Sub-Saharan Africa (SSA). Gas gangrene is a life threatening infection with high morbidity and mortality rate. Mortality from nontraumatic gas gangrene ranges from 67-100%. Early diagnosis and aggressive treatment of gas gangrene are the keys to decreasing mortality. We carried out this study to identify the factors that affect healing of patients with DFU and gas gangrene.

Method: During December 2021 to August 2023 (study period) consecutive patients with active gas gangrene were recruited after informed consent. Aggregated data included all basic epidemiological data, risk factors, details of DFU history, including delay in presentation and examination of ulcer at base line and later, wound classifications, treatment choice and outcome were collected.

Results / Discussion: Forty-nine (M/F:29/20) patients presented with gas gangrene were admitted for surgical intervention. During follow-up of 221.1±152.3 days, 5(M/F:0/5) patients were lost to follow-up. Forty-four (M/F:29/15) patients remaining in the study, 26 (M/F:17/9) had fully healed in 213.0±113.9 days and 18(M/F:12/6) remained unhealed in 232.8±198.4 days. Mortality due to foot infection occurred in 3 cases (7%). Eight out of 44 (18.2%) patients had amputation that was seven out of 26 (26.9%) in the healed group vs 1 out of 18 (5.6%) in the unhealed group. Kaplan-Meier survival Analyses showed that the time to heal in days (Median [95%CI]) for patients with amputation (172.0[118.9-225.0]) was significantly ($P<0.05$) shorter than those who did not have amputation (253.0 [174.7-331.3]). No other measure showed to have significant association with the healing outcome or the time to heal.

Conclusion: Early diagnosis, aggressive medical and surgical intervention are the keys to decreasing morbidity and mortality of diabetic foot patients with gas gangrene remains the mainstay treatment of this dangerous condition. Amputation during the treatment of gas gangrene showed to have decreased the healing duration.

TOP 8 POSTER

[PP02] IMPACT OF CONTINUOUS TOPICAL OXYGEN THERAPY ON BIOFILM GENE EXPRESSION IN A PORCINE TISSUE MODEL

Emma Woodmansey[1], Chris Ball[2], Hannah Thomas[2], Hannah Jones[2], Gregory Schultz[3], Lisa Thomas[1]

[1]Natrox Wound Care, Clinical, Cambridge, United Kingdom, [2]Perfectus Biomed, Microbiology & Molecular, Daresbury, United Kingdom, [3]University of Florida, Gainsville, United States

Aim: To determine the effect of continuous Topical Oxygen Therapy (cTOT*) on biofilm gene expression in ***Pseudomonas aeruginosa*** using a customised molecular assay.

Methods: Sterilised porcine skin explants were inoculated with ***P. aeruginosa*** in triplicate (0h negative control, 24h cTOT on, 24h cTOT off). The oxygen delivery system (ODS) of the cTOT device was applied to the inoculated tissue and covered with a semi-occlusive dressing. All samples were incubated at 37°C ± 2°C for 24h with the negative control 0h inoculated porcine skin samples recovered immediately.

Planktonic suspensions and biopsy samples were removed at 0 and 24h. Samples were processed and quantifiably assessed using gene specific RT-qPCR assays for a panel of eight *P. aeruginosa* genes (16S, ***pelA pslA***, ***rsaL***, ***pcrV***, ***psqC***, ***acpP***, ***cbrA***) associated with biofilm and quorum, protein secretion/translocation and metabolism.

Results/Discussion: Transcriptional up-regulation of ***pelA, pcrV*** and ***acpP,*** responsible for intracellular adhesion, needletip protein production for type-3 secretion systems and fatty acid synthesis during proliferation, respectively, was observed when the cTOT device was switched on compared to when the device was switched off. Data suggests increased metabolic activity within bacterial cells following cTOT treatment. Oxygen has previously been shown to increase susceptibility of biofilms to antibiotics[5] through enhancing metabolism.

Conclusion: cTOT is an adjunctive therapy that supports faster healing[1–3] and pain reduction[4] in non-healing hypoxic wounds. Observed gene expression changes here highlight the impact of cTOT on biofilms potentially influencing antimicrobial treatment success in wounds warranting further ***in-vitro*** and clinical investigation.

*cTOT, NATROX® O_2 Wound Therapy

TOP 8 POSTER

[PP03] DIAGNOSTIC PERFORMANCE OF ATHEROGENIC INDEX OF PLASMA FOR PREDICTING DIABETIC FOOT OSTEOMYELITIS WITH PERIPHERAL ARTERY DISEASE

Sebastián Flores Escobar[1], Mateo López Moral[1], Aroa Tardáguila García[1], Irene Sanz Corbalán[1], Francisco Javier Álvaro Afonso[1], José Luis Lázaro-Martínez[1]

[1]Diabetic Foot Unit. Universidad Complutense de Madrid, Facultad Enfermería, Fisioterapia y Podología, Madrid, Spain

Aim: Diabetic foot infections (DFI) can extend to soft tissues or the underlying bone, which results in diabetic foot osteomyelitis (DFO). Early and precise diagnosis of DFO is crucial in DFI management, as it helps minimize the amputation and mortality rates. This study aims to assess the atherogenic index of plasma (AIP) diagnostic value in detecting osteomyelitis among patients with diabetic foot ulcers (DFUs).

Method: A prospective cohort study was conducted on 80 patients with DFUs and suspected DFO between January 2022 and December 2023. The primary outcome measures included the diagnosis of DFO, determined by positive microbiological analysis results from bone samples and its correlation with the AIP. Receiver operating characteristic (ROC) curves were utilized to select the optimal diagnostic cut-off points for AIP and Post-Hoc analysis was performed to evaluate the difference in the AIP for diagnosing DFO in patients with and without peripheral arterial disease (PAD). The study followed the Standards for Reporting of Diagnostic Accuracy Studies (STARD) 2015 guidelines for diagnostic accuracy studies.

Results / Discussion: The diagnostic potential for DFO with PAD of AIP-1 (Log TC/HDL); showed an AUC of .914 (P<0.001 [0.832 – 0.996]), leading to a sensitivity of 83% and a specificity of 85%. By contrast, AIP-2 (Log TG/HDL) demonstrated a slightly lower AUC of .841 (p<0.001 [0.716–0.967]), leading to a sensitivity of 76% and a specificity of 74%.

Conclusion: The AIP tool, with its ideal blend of sensitivity and specificity, aids in diagnosing DFO effectively. Therefore, clinicians should consider using AIP for patients suffering from PAD and associated DFO.

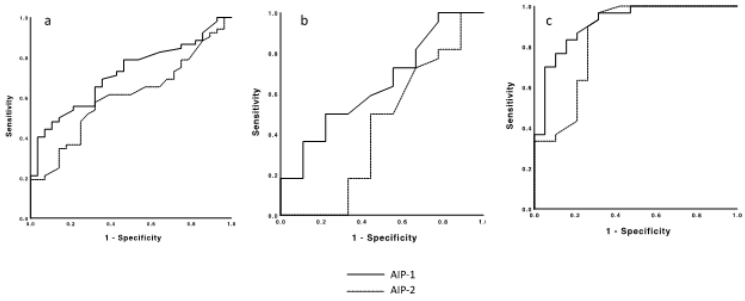

Figure 1. *ROC curves for atherogenic index of plasma (AIP) in the prediction of diabetic foot osteomyelitis. a. ROC curves for all the samples (N=80); b. ROC curves for non-peripheral artery disease patients (n=31); c. ROC curves for peripheral artery disease patients (n=49).*

TOP 8 POSTER

[PP04] SHOULD WE IMPLEMENT PEAK PLANTAR PRESSURE MEASUREMENT PRIOR TO AND FOLLOWING SURGERY?

Klaus Kirketerp-Møller[1], Louise Barth[1], Nina Johannessen[1], Frederik Persson[1], Anne Rasmussen[1]

[1]*Steno Diabetes Center Copenhagen, Foot Clinic, Herlev*

Aim: Assessing use of peak plantar pressure (PPP) measurement prior to surgery to illuminate the effect of surgical offloading.

Method: This study is a part of our implementation project. Population: persons with type 1 diabetes (T1D) or type 2 diabetes (T2D) in moderate and high risk (IWGDF risk 2 and 3) seen in the multidisciplinary foot clinic in our center from November 2022 to November 2023. At baseline we obtained barefoot PPP measurement at point of interest (POI) during walking (Emed-X) prior to and following surgery. All diabetes related data was collected from our electronic patient record. Four different surgical procedures were used depending on the problem.

Result/discussion: 20 persons were included, 16 (80%) had T2D, 14 (70%) were male, average age 61.8 year ± 13.3 years, duration of diabetes 17.6 year ± 7.3 years, BMI 29.1 kg/m² ± 4.8, HbA_{1c} was 63.7 mmol/mol ± 16.9, 8 with eGFR < 60 ml/min eGFR, all had peripheral neuropathy and foot deformities, 17 (85%) had palpable foot pulses, 19 (95%) had toe blood pressure measurement > 40 mmHg, smoking (current 9; 47.4%, former 6; 31.6%). Category of surgery: Plantar partial fasciectomy 4 (20%), tenotomy 5 (25%), Achilles tendon lengthening 2 (10%) or osteotomy 1 (5%). One was lost to follow up, 3 withdrew consent, 1 had a healed ulcer before surgery. Prior to surgery the max PPP at POI was between 210-780 kPa, and after surgery 6-655 kPa.

Conclusion: The study is a small observational study using several types of surgeries, limiting conclusions. It seems PPP prior to and following tenotomy did not give an accurate picture of the pressure on the toes. Implementation of the dorsal pressure pad may be the next step.

TOP 8 POSTER

[PP05] PERCUTANEOUS BONE BIOPSY (PBB) IN OUTPATIENTS WITH DIABETIC FOOT OSTEOMYELITIS (DFO) UNRESPONSIVE TO STANDARD TREATMENT PERFORMED BY A DIABETOLOGIST IN A TERTIARY CENTER

Johana Venerová[1], Jiri Lacman[2], Libuse Fialova[1], Mikulas Kosak[1]

[1]Charles University, Medical Department of the First Faculty of Medicine and University Military Hospital, Prague, Czech Republic, [2]University Military Hospital Prague , Department of Radiology, Prague, Czech Republic

Aim: implementation of percutaneous bone biopsy (PBB) in outpatients with diabetic foot osteomyelitis (DFO) unresponsive to standard treatment performed by a diabetologist in a tertiary center

Method: In patients with a diabetic foot ulcer (DFU), the diagnosis of DFO is confirmed by 1/ probe-to bone test, 2/inflammatory biomarkers 3/ plain X-ray of the foot. Antibiotic treatment is based on the culture of a tissue specimen or swab from the wound. PBB is indicated if the diagnosis of DFO is uncertain or if antibiotic therapy fails and the ulcer does not heal. To avoid a false-negative culture result, we stop antibiotic at least 14 days before PBB. The aim of PBB is to determine the causative pathogen/s of DFO, target the antibiotic therapy and to heal the ulcer. The patient is informed about details of the procedure and signs an informed consent. Adhering to the principles of antisepsis-asepsis and under local anesthesia, we make a short skin incision in the region of planned biopsy. Through the incision, we introduce the Jamshidi needle to the bone and by a spiral motion we collect a specimen of bone. Microbiological and histological examination of the sample follows.

Results / Discussion: We perform PBB (under fluoroscopic control in cooperation with an interventional radiologist) to confirm a causative microorganism and test its sensitivity. Up to now we didn´t observe any periprocedural complication. We present the results of biopsy and defect healing in the form of individual case reports.

Conclusion: Bone biopsy is a gold standard in diagnosis of osteomyelitis. PBB is a minimally invasive low-risk procedure that can be performed on an outpatient basis. Microbiological examination of material from infected bone helps define the causal pathogen/s and specific antibiotics (preferably narrow spectrum ATB) thus improving clinical outcome and reducing risk of antibiotic resistance.

TOP 8 POSTER

[PP06] IS TAZOCIN INDUCED AKI A GENUINE PROBLEM IN DIABETIC FOOT INFECTIONS?

Joanne Patterson[1], Michael Pierides[1]

[1]*Kettering General Hospital, Diabetes, Kettering, United Kingdom*

Aim: This retrospective review aims to explore if there is a correlation between the use of Tazocin and the risk of developing AKI during treatment for DFU with/without osteomyelitis. Locally we have noticed an increase in Tazocin empirically as well as to target resistant gram negative bacteria and ***Pseudomonas*** species where treatment options are limited and carry a risk of ***C.Difficile*** diarrhoea.

Method: Retrospective review of outpatient clinical notes of patients that received Tazocin for DFU in the last 24 months. Creatinine and eGFR from the preceding one month prior to starting tazocin was regarded as the baseline provided there was no acute intercurrent illnesses at the time. This was compared to creatinine and eGFR throughout treatment and any detrimental change including AKI was recorded. Patient's medications were also reviewed for any nephrotoxic properties as well as pre-existing CKD as confounders.

Results / Discussion: 44 patients records were reviewed that received Tazocin for DFU in an outpatient setting. 22 patients were excluded as they had been an inpatient in an acute hospital in the preceding month for a concurrent illness. Duration of treatment ranged from 13 to 168 days. 5 patients out of 22 developed a reduction in their renal function and elevation of creatinine. This included 2 patients that developed AKI 1. Renal function returned to baseline once Tazocin was stopped.

Conclusion: The small number of cases is a limiting factor. However, we are unable to exclude Tazocin as an independent cause of AKI from this case series. An important unanswered question therefore remains that we feel warrants more interrogation considering the increasing use and need of Tazocin as a first line empirical but also targeted choice due to the ongoing increasing resistance to other antimicrobials (eg amoxicillin and co-amoxyclav) and the risk of *C.Diff* with ciprofloxacin and cephalosporins.

TOP 8 POSTER

[PP07] ORTHOPEDIC SURGERY IN THE MANAGEMENT OF CHARCOT MIDFOOT DEFORMITY: A SINGLE-CENTER EXPERIENCE

Veronika Woskova[1], Petr Teyssler[2], Vladimíra Fejfarová[1], Radka Jarosikova[1], Dominika Sojakova[1], Šimon Kopp[1], Andrea Němcová[1], Karol Sutoris[2], Michal Dubský[1]

[1]Diabetes Centre, Institut for Clinical and Experiental Medicine, Prague, Czech Republic, [2]Transplant Surgery Department, Institut for Clinical and Experimental Medicine, Prague, Czech Republic

Aim: The midfoot is the most commonly affected region in Charcot neuro-osteoarthropathy (CN) of the foot and ankle. Treatment is mostly conservative, but a number of case series have shown favorable results using several surgical techniques. We present the results of surgical treatment for Charcot midfoot deformity in terms of ulcer healing, ability to walk, and limb salvage.

Methods: The retrospective study included 34 diabetic patients who underwent orthopedic surgery between January 2017 and October 2023; the median follow-up period was 35 (5–76) months. Indications for surgery were severe midfoot deformities and/or instability based on CN. Non-healing or recurrent wounds were present in most cases (79%). Revascularization was performed prior to surgery if needed (TcPO2 50±10mmHg). Surgical procedures included Achilles tendon lengthening or tenotomy, midtarsal bone removal, and external fixation with foot arch reconstruction.

Results: Of the 34 included patients, 32 were analyzed per protocol; 2 patients died from CV event. During the follow-up, 2 patients (6%) underwent major amputation due to progressive infection. Ulcer healing was achieved in 18 out of 27 (67%) cases, with ulcer recurrence after weight-bearing in 8 out of 32 (25%) patients. No serious surgery-related complications were observed. Further surgery was required in 12 out of 32 (35%) patients. At the end of the follow-up period, 25 out of 32 (78%) patients had functional limbs and were able to walk using accommodative devices.

Conclusion: Our study demonstrated favorable results of reconstructive surgery for Charcot midfoot deformity. External fixation is the method of choice, which does not depend on bone quality, minimizes soft tissue damage, and is useful in the presence of active infection. However, the risk of ulcer recurrence after weight-bearing remains high.

Supported by the project CarDia (Programme EXCELES, Project No. LX22NPO5104) - Funded by the European Union-Next Generation EU

TOP 8 POSTER

[PP08] TRENDS IN FIRST DIABETIC FOOT DISEASE OUTCOME IN A TYPE-1 AND TYPE-2 DIABETES POPULATION: A DANISH REGISTER-BASED COHORT STUDY

Abhilasha Akerkar[1 2], Pernille Falberg Rønn[1], Vanja Kosjerina[1 3], Christian Stevns Hansen[1], Adam Hulman[4 5], Anne Rasmussen[1], Peter Rossing[1 6], Tarunveer S. Ahluwalia[1 2]

[1]Steno Diabetes Center Copenhagen, Copenhagen, Denmark, [2]University of Copenhagen, The Bioinformatics Center, Department of Biology, Copenhagen, Denmark, [3]Bispebjerg Hospital, Department of Endocrinology, Copenhagen, Denmark, [4]Steno Diabetes Center Aarhus, Aarhus University Hospital, Aarhus, Denmark, [5]Aarhus University, Department of Public Health, Aarhus, Denmark, [6]University of Copenhagen, Department of Clinical Medicine, Copenhagen, Denmark

Aim: There is limited evidence on trends in diabetic foot complications, hence this study aims to estimate the transition rates between different risk states associated with the first diabetic foot complication in individuals with type-1 (T1D) and type-2 (T2D) diabetes from the capital region of Denmark.

Method: In this register-based cohort study, we identified all individuals with at least two foot screening visits between 1993 and 2020 at Steno Diabetes Center Copenhagen, a diabetes out-patient clinic. Individuals were classified as low- or high-risk based on vibration perception threshold (VPT) and foot pulse, where 'low-risk' was defined as VPT < 25 volts and foot pulse present; and 'high-risk' as VPT ≥ 25 volts or foot pulse absent. The population was followed from date of first visit to date of first occurrence of a diabetic foot ulcer (DFU) or lower extremity amputation (LEA), emigration, death, or end of data availability (May 1, 2020), whichever occurred first. A multistate model was set up enabling transition from low- to high-risk, and from the two risk states to outcome or death.

Results / Discussion: The study included a total of 18,904 individuals- 7,701 with T1D and 11,203 with T2D. During the follow-up period (174,288.8 person-years), 9.9% individuals experienced an outcome. The crude rate of transitioning from low- to high- risk state was 14 per 1000 person-years. The crude rate of high-risk individuals developing an outcome was 15 per 1000 person-years, while that for low-risk individuals developing an outcome was 1 per 1000 person-years.

Conclusion: This study shows that approximately 10% of individuals with T1D and T2D experienced the first occurrence of a DFU or LEA in a total follow up period of 174,289 person-years. Further analysis for estimating incidence rates of first DFU and LEA using the Poisson regression model is ongoing.

[PP09] HARNESSING THE POWER OF OUR IMMUNE SYSTEM: ANTIBIOFILM EFFECTS OF NITRIC OXIDE

Daniel Metcalf[1 1], Jonathan Roberts[1], Scarlet Milo[1]

[1]Convatec, Advanced Wound Care R&D, Deeside, United Kingdom

Background: Diabetic foot ulcers (DFUs) are the most common, severe, and clinically significant complication of diabetes mellitus. Polymicrobial communities within DFUs, and other hard-to-heal wounds, form complex biofilms that contribute to wound chronicity, delayed healing and increased infection risk. Due to the tolerance of biofilms to the host immune response and external wound management techniques, such as antibiotic treatment and antimicrobial dressings, there exists an unmet clinical need for treatment strategies able to effectively target chronicity and infections in hard-to-heal wounds such as DFUs. Nitric oxide (NO) represents one such strategy, due to its ability to target specific mechanisms integral to biofilm survival. The aim of this study was to evaluate the evidence of exogenous NO as an antibiofilm agent.

Methods: We conducted a narrative review of the evidence underlying the antibiofilm mechanisms of action of NO and discussed the ability of NO to serve as a single-agent antibiofilm therapeutic for the management of hard-to-heal wounds, such as DFUs.

Results/Discussion: We identified and reviewed three key antibiofilm mechanisms of actions of NO. (1) The breakdown of biofilm extracellular polymeric substances (EPS), through the nitrosation of polysaccharides, extracellular DNA and free enzymes and proteins, allowing further penetration of NO (or other exogenous antimicrobial or host defence molecules) to reach the microorganisms within. (2) The induction of biofilm dispersal, exposing the bacteria and making them more susceptible to antimicrobials. (3) The disruption of signal molecules preventing intra-biofilm bacterial communication (quorum sensing), resulting in reduced virulence of the biofilm bacteria and thus severity of infection.

Conclusion: The antibiofilm mechanisms of action of NO suggest that the exploitation of NO generation from exogenous sources may represent a promising strategy for the management of biofilm in hard-to-heal wounds, such as DFUs.

[PP10] DOES DALBAVANCIN HAVE A LOW RECURRENCE RATE AGAINST GRAM-POSITIVE BACTERIA IN DIABETIC FOOT ULCER INFECTIONS?

Joanna Tanner[1], Michael Pierides[1]

[1]*Kettering General Hospital, Kettering , United Kingdom*

Aim: To review outcome data in patients receiving Intravenous Dalbavancin for Diabetic foot infection.

Method: A retrospective analysis of clinical records of patients who received IV Dalbavancin for DFU osteomyelitis (OM) or soft tissue infection (STI) were screened for outcomes and recurrence of infecting organism. Typical dosing was 1.5g administered on day 1 and day 8 for OM or a single IV 1.5g dose for STI, based on proposed regime by Dunne ***et al*** (2015).

Results / Discussion: Between March 2020 and Sept 2023 84 patients received intravenous Dalbavancin for Diabetic foot ulcers complicated with OM and/or STI. The majority (63) were treated for OM and 22 had STI.

Diabetic foot infections are often polymicrobial and in this cohort many ulcers were complicated with multiple organisms including gram-negative bacteria. However, 64 (76%) cultured gram-positive bacteria only. Initial causative gram-positive organisms recurred in 14 (16%) cases, 5 within 3 months, 8 within 6 months and 1 >6 months of 1st dose, of which most were ***S. aureus.***

Records were reviewed for recurrence of ulceration to ascertain longer-term effectiveness of Dalbavancin. Of the 64 patients with pure gram-positive bacteria a total of 33 had achieved complete healing by 12 months and the majority had improved clinically. One patient had relapse of ulcer at 4 months and one at 9 months post Dalbavancin.

Reasons for giving Dalbavancin in this caseload were multi-factorial and included patients with multiple antibiotic intolerance, resistance or unsuitability for OPAT.

The delay to complete healing in this review was typical of the complex diabetic foot population, with many ulcers already at a chronic stage. Where possible, glycaemic control, offloading and vascular were optimised.

Conclusion: This data review suggests that Dalbavancin is safe and effective in treating infected DFU addressing many gram-positive infections, with a relatively low relapse rate.

[PP11] THE DECEPTIVE NATURE OF DIABETIC FOOT ULCERS: UNRAVELING HEMATOGENOUS COMPLICATIONS

Diogo Brandão Neves[1], Susana Garrido[1 2], Claúdia Amaral[1 2], Renata Duarte Barbosa[1], Lia Ferreira[1 2], Cláudia Freitas[1 2], André Carvalho[1 2], Helena Neto[1 2], Miguel Abreu[2 3], Francisco Leite[2 4], Luís Costa[2 4], Luís Loureiro[2 5], Joana Martins[2 5], Joel Pereiro[1 2], Rosa Guimarães[1 2], Rui Carvalho[1 2]

[1]Unidade Local de Saúde de Santo António, Endocrinology, Porto, Portugal, [2]Unidade Local de Saúde de Santo António, Diabetic Foot Unit, Porto, Portugal, [3]Unidade Local de Saúde de Santo António, Infectious Diseases, Porto, Portugal, [4]Unidade Local de Saúde de Santo António, Orthopedics and Traumatology, Porto, Portugal, [5]Unidade Local de Saúde de Santo António, Vascular Surgery, Porto, Portugal

Aim: Infection commonly complicates diabetic foot ulcers, needing timely intervention by a multidisciplinary team to mitigate associated complications. Among these, some of the less recognized are the ones stemming from bacteremia-induced hematogenous seeding. Our paper aims to highlight a case series from a Diabetic foot clinic at a tertiary hospital in Portugal to raise awareness for these often overlooked complications.

Method: We retrospectively reviewed our cohort of 7 patients diagnosed with the aforementioned complications from 2010 to present. Data was extracted from clinical records.

Results/Discussion: The majority of the yielded cases exhibited neuropathic ulcers (n=6), while one had neuro-ischemic features. Before the diagnosis, one of the patients had been recently discharged, one was receiving treatment in an outpatient setting with oral antibiotics, while the remaining five were hospitalized. Initial clinical presentations varied and the suspicion was evoked due to persistence/recurrence of fever, with subsequent diagnoses of spondylodiscitis (n=5), infected hip arthroplasty (n=2), iliac and psoas muscle abscesses (n=3) and anterior mediastinal abscess (n=1), with some patients experiencing multiple sites of septic embolization. Staphylococcus aureus emerged as the most commonly isolated bacterial species. Treatment required both antimicrobial therapy and surgical interventions for most patients (n=6); however, despite appropriate management, all had long hospital stays and experienced diminished quality of life and functional capacity. Notably, one patient suffered complete sensory-motor loss in the lower extremities, underscoring the imperative of early recognition of warning signs and prompt intervention.

Conclusion: The insidious onset and nonspecific symptoms of hematogenous seeding complications of diabetic foot ulcers often lead to delayed or missed diagnoses, compounded by insufficient nosological awareness. The emergence of ***de novo*** osteoarticular and muscular symptoms, alongside systemic inflammatory response persistence/recurrence, warrants expedited and thorough investigation for hematogenously seeded long-distance complications. Such vigilance is critical in averting major sequelae.

[PP12] FUSARIUM PROLIFERATUM OSTEOMYELITIS IN PATIENT WITH TYPE 2 DIABETES

Stavroula-Panagiota Lontou[1], konstantina bafa[1], Kiriaki Kakavia[2], christos siafarikas[3], paraskevas stamopoulos[4], Ioanna Eleftheriadou[3], Amalia Anastasopoulou[1], Ioannis Deliolanis[5], Georgia Vrioni[6], Nicholas Tentolouris[3]

[1]National and Kapodistrian University of Athens, Laiko General Hospital, 1st Department of Internal Medicine, Athens , Greece, [2]National and Kapodistrian University of Athens, Laiko General Hospital, 2nd Department of Vascular Surgery, Athens , Greece, [3]National and Kapodistrian University of Athens, Laiko General Hospital, 1st Department of Propaideutic and Internal Medicine, Athens , Greece, [4]National and Kapodistrian University of Athens, Laiko General Hospital, 2nd Department of Propaideutic Surgery, Athens , Greece, [5]Laiko General Hospital, Department of Microbiology, Athens , Greece, [6]National and Kapodistrian University of Athens, Medical School, Department of Microbiology, Medical School, Athens , Greece

Introduction: Osteomyelitis indicates the most severe expression of diabetic foot infection, being present inapproximately 10%-15% of patients with moderate and in 50% with severe foot infections. The most common isolated pathogens are gram positive aerobic germs, followed by gram negative aerobic bacteria. Fungi are extremely rarely isolated.

Case report: A 78-year-old man with a 22-year history of type 2 diabetes, prior toe amputation at left foot, coronary artery disease and chronic kidney disease, was admitted to our department due to diabetic foot infection after recent amputation of the right big toe due to gangrene.

At this time the patient was presenting with pain, pus, and necrotic tissuearound the wound; no fever or chills were noticed. Blood tests revealed leukocytosis, increased C-reactive protein and erythrocyte sedimentation rate, anaemia and impaired renal function. The plain x-ray showed osteomyelitis at the stump of the recent amputation.

He underwent extensive surgical debridement and bone culturewere taken. He was treated empirically with piperacillin/tazobactam and vancomycin intravenously. The culture of the bone revealed ***Fusarium proliferatum*** (identification with MALDI-TOF MS), ***Staphylococcus epidermidis*** and ***S.haemolyticus***. We administered orally voriconazole and intravenously dalbavancin according to the results of the culture. The patients improved clinically, and the laboratory parameters returned progressively to normal values. The patient was discharged after 21 days of hospitalization under oral antifungal treatment with weekly follow-up at the outpatient Diabetic Foot Clinic.

Conclusion: Fusaria have been increasingly recognized globally as pathogens in diabetic foot infections, particularly in severely immunocompromized patients, but no case of diabetic foot osteomyelitis with ***F.proliferatum*** was reported so far. Bone culture represents the cornerstone for the diagnosis and must be applied to all patients with severe diabetic foot infections.

[PP13] RARE CAUSES OF PROCALCITONIN LEVEL ELEVATION IN PATIENTS WITH DIABETIC FOOT INFECTION

Evgeniya Bublik[1], Mariya Shmyreva[2], Vladimir Vanushko[3], Ekaterina Ryzhkova[1], Grigoriy Koroba[2], Olga Durnetsova[2], Konstantin Yaskov[3], Olga Vinogradskaya[1], Sergey Terekhin[3], Aleksandr Farmanov[1], Aleksey Zilov[1]

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Objective: To demonstrate the importance of differential diagnosis of rare causes of procalcitonin (PCT) elevation

Materials and methods: Case of patient with diabetic foot infection, knee joint injury, and persistent elevation of PCT level on antibiotic therapy.

Results: PCT and C-reactive protein (CRP) are biomarkers of sepsis. Raised PCT and CRP after antibacterial therapy (ABT) can be associated with different factors.

Reviewed publications suggest the following causes of elevated PCT: ketoacidosis, liver diseases, acute kidney injury, trauma, burns, calcitonin-secreting neuroendocrine tumors, medullary thyroid cancer.

70-year-old woman with type 2 diabetes mellitus was admitted for closed fracture of the right patella.

Persistent wound of the right foot after a forefoot amputation in 2022, dry necrosis of the 4th toe of the left foot was found. Tests detected: PCT - 7.3 ng/mL (0-0.5), CRP - 156 mg/L (0.0-5.0). ABT and local wound care were initiated. A left lower limb revascularization and a 4th left toe disarticulation were performed.

In 5 days open reduction and osteosynthesis of the right patella were performed.

After 2 weeks of ABT there were no signs of wound infection, CRP level decreased but PCT was still high, 5.7 ng/mL (0-0.5).

One of the hypotheses was that the raised PCT was not related to infection. The patient had previously had a multinodular goiter so the calcitonin level was checked (above 950 pg/mL). Thyroid biopsy detected medullary carcinoma.

Later total thyroidectomy and central neck dissection were performed. Histology: medullary thyroid carcinoma (pT2N0(0/2), Lv0, Pn0, R0). No pathogenic or probably pathogenic mutations were found. In 1 month, calcitonin was 3.7 pg/mL.

Conclusions: Causes of elevated procalcitonin may be not related to infections, which is an important finding for physicians treating comorbid patients with diabetic foot infection. There is scarce literature on the topic, which makes the research even more significant.

[PP14] LINEZOLID USEAGE AND OUTCOMES IN THE MANAGEMENT OF DIABETIC FOOT INFECTIONS

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Aim: There are escalating concerns about diabetic foot infections and osteomyelitis (OM) linked to antibiotic resistance. Linezolid has emerged as a key treatment in OM by targeting Gram-positive MRSA and VRE bacteria. Our aim was to look at the use of Linezolid in the treatment of osteomyelitis (OM)for diabetic foot infection and analyse tolerability and efficacy

Method: A retrospective analysis of an electronic database of all patients prescribed Linezolid between 2012 to 2021 with respect to diabetic foot infection.

Results / Discussion: 35 patients over the study period had Linezolid prescribed over 11 years. The mean age of the patient was 64.9 years with 83% of were person with type 2 diabetes and the rest type 1 diabetes. 91% of the patients were males. Typical duration of treatment was 4-6 weeks. 71% of patient were able to complete the course of treatment. OM was successfully treated in 49% of patients. 17% had drug induced side effects (thrombocytopaenia, gastrointestinal symptoms and optic neuritis). 69% of patient were monitored with blood tests weekly as per guidelines. Further surgical management was necessary for 29% of the patients with 11% of patient death was eventually related to diabetic foot sepsis.

Conclusion: In our cohort Linezolid is well tolerated in 71% of patient with successful treatment of OM in 49% of patients. However, many patients still needed surgery with 11% death due to diabetic foot sepsis. Larger multicenter audits would be helpful in the useage of Linezolid for routine practice in diabetic foot clinics.

[PP15] INFECTED DIABETIC FOOT ULCERS: ARE THEY ALWAYS WHAT THEY LOOK LIKE?

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Aim: We describe a rare presentation of a squamous cell carcinoma (SCC) masquerading as an infected non-healing diabetic foot ulcer (DFU) in a person living with type 2 diabetes mellitus.

Case presentation: A 68-year-old Afro-Caribbean female patient presented to the Diabetic Foot Clinic with a three-year history of a non-healing ulcer on the dorsum of the right hallux. The patient reported toe pain while walking and on direct palpation. The lesion was overlying a scar tissue due to childhood trauma. It had cauliflower/ verruca type appearance with capillary heads, ulcerated overlying callus and spreading forefoot cellulitis. Initial management included amoxicillin/clavulanic acid and protective offloading. The patient was referred to dermatology for histopathology to exclude bacterial and fungal infection as well as malignancy. The microbiology result was positive for Citrobacter and anaerobes. Additionally, the biopsy showed evidence for squamous cell carcinoma. Although foot x-ray was unremarkable and showed no evidence of osteolysis, a magnetic resonance imaging scan revealed that the lesion infiltrated the cortex of the proximal phalanx. The patient was referred to plastic surgery for lesion excision and further management.

Conclusions: This case study indicates the need for a vigilant assessment of non-healing diabetic foot ulcers with atypical presentation for expedited diagnosis of hindered malignancy. Although initial histological assessment carried out in the referring hospital showed only granulation tissue with no signs of malignancy, repeated assessment a year later confirmed the presence of squamous cell carcinoma. Risk factors include old age, trauma with chronic infection and dark skin, all present in this case. Despite uncommon, squamous cell carcinoma should be suspected in atypical, relapsing or treatment refractory DFUs. Multidisciplinary approach is mandatory.

[PP16] HARNESSING THE POWER OF OUR IMMUNE SYSTEM: THE ANTIMICROBIAL MODE OF ACTION OF NITRIC OXIDE

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Background: Diabetic foot ulcers (DFUs) represent the most common and severe complication of diabetes mellitus. Systemic antimicrobial therapy plays a crucial role in managing DFUs; however, the increasing prevalence of antimicrobial resistance presents a challenge to effective treatment. Nitric oxide (NO) is an integral and highly conserved factor of the host immune response, to which the risk of development of bacterial resistance is significantly diminished. The aim of this study was to evaluate the evidence of exogenous NO as an antimicrobial agent and assess the potential use of NO generation in wound dressings for the management of DFUs.

Methods: We conducted a narrative review of the evidence underlying the antimicrobial mechanisms of action of NO and discussed the ability of NO to serve as an antimicrobial agent in the treatment of hard-to-heal wounds, such as DFUs.

Results/Discussion: We identified and reviewed three key antimicrobial targets of NO. (1) NO inactivates extracellular cell wall proteins, preventing bacterial transport systems and communication, NO freely penetrates and damages bacterial cell walls, and NO inactivates internal cell wall proteins, resulting in cell death. (2) NO destroys microbial DNA, resulting in cell dysfunction and microbial cell death, and NO inhibits DNA replication causing bacteria to become unstable, unable to reproduce, and ultimately die. (3) NO inactivates iron-sulphur clusters essential co-factors in enzymes involved in metabolic processes, resulting in bacterial cell death.

Conclusion: The exploitation of NO generation from exogenous sources represents a promising strategy as an antimicrobial agent, which has the potential to be used in wound dressings, for the treatment of hard-to-heal DFUs.

[PP17] COULD ANTIBIOTIC BONE GRAFT SUBSTITUTES REDUCE REULCERATION RATES IN PATIENTS WITH DIABETIC FOOT OSTEOMYELITIS AFTER METATARSAL HEAD RESECTION SURGERY? A PRELIMINARY STUDY

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Aim: To evaluate clinical outcomes and the functional effect of bone graft substitutes in the reduction of reulceration rates in patients with diabetic foot osteomyelitis who underwent to metatarsal head resection (MHR).

Method: A prospective cases series study between April 2023 and February 2024 was carried out involving patients who underwent MHR surgery (curative or emergent indication) for the treatment of diabetic foot osteomyelitis in a specialized diabetic Unit. Osteomyelitis was established through a combination of the probe-to-bone test and a plain X-ray examination. Critical limb ischemia patients were excluded. The bone graft substitutes are injectable biocompatible bone void filler consisting of calcium and hydroxyapatite loaded with gentamicin. After MHR, the bone substitute was placed according to the instructions. Patients were follow-up until healing, to record postsurgical complications (dehiscence, infection, reintervention and minor amputation) and plain RX control. Patients were followed-up during a mean time of 10.5 weeks after confirmed healing to assess reulceration and recurrence rates.

Results: Eight patients were included (7(87.5%) male) with a mean age of 71.75 ± 7.34 years old, with Diabetes Type 2. One DFUs (12.5%) were located in the first metatarsal head (MH), 1 (12.5%) under the second MH, 3 (37.5%) under the third MH, 3 (37.5%) under the fifth MH. Six patients (75%) developed postsurgical dehiscence, 4 patients (50%) presented postsurgical inflammation. Only one patient (12.5%) suffered a reulceration in an adjacent MH. All patients achieved healing in a median time of 5 [13-2.25] weeks.

Conclusion:

Bone graft substitutes could be a promising option to reduce the high rates of transfer lesions after MHR. Furthermore the combination of bone substitutes and gentamicin could be an alternative as an adjunct treatment to the management of in diabetic foot osteomyelitis in MH decreasing recurrence of infection and promoting bone formation.

[PP18] IMPLEMENTATION OF A PRESSURE MEASUREMENT SYSTEM, A DATA DRIVEN APPROACH

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Aim: To highlight the experience with implementation of a plantar pressure measurement system in our clinic.

Method: A pilot study of persons with type 1 (T1D) or type 2 (T2D) diabetes, in moderate and high risk of foot ulcer (IWGDF risk 2 and 3), seen in the multidisciplinary foot clinic from November 2022 to November 2023. The persons were divided into 4 groups based on type of foot complication, A: Foot deformities and no previous foot ulcer, B: Previous plantar foot ulcers, C: Current plantar foot ulcer, D: Prior to and following foot surgery. At baseline we have applied barefoot and in-shoe plantar pressure measurement during walking (Emed-X and Pedar-X). Semi-structured interviews were carried out immediately after pressure measurement. All diabetes related data was collected from electronic patient records.

Results / Discussion: 94 persons were included. 69 (73%) had T2D, 72 (77%) were male, age 64.7 year ± 10,4 years, diabetes duration was 22.7 year ± 13.5 years, HbA_{1c} was 61.5 ± 16.3 mmol/mol, BMI 28.5 ± 4.7 kg/m**²**, 44 (47%) with eGFR < 60 ml/min. All persons had neuropathy and foot deformities, 69 (73%) were non-smokers. Plantar pressure was compared barefoot vs. shoes/insoles, number of persons in following groups: A: 37(40%) B: 27(29%), C: 10(11%). In group D: 20(20%) persons had the plantar pressure compared barefoot prior to and following foot surgery. All had individual feedback. 12 persons had participated in a semi-structured interview. Local instructions were tested and implemented.

Conclusion: The process of implementation had time challenges like staff training and storing data (GDPR). The system is a promising tool in the patients understanding of pressure, and to communicate with e.g., the shoemakers. We plan to conduct a RCT study in patient education to prevent first foot ulcer by utilizing the system as a pedagogical tool.

[PP19] OFFLOADING STRATEGIES USED FOR PLANTAR DIABETIC FOOT ULCERS AND THEIR OUTCOMES IN REAL-LIFE CLINICAL PRACTICE

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Aim: International guidelines describe offloading to facilitate healing as a cornerstone in the treatment of Diabetic Foot Ulcers (DFU). In present-day clinic, various offloading devices are used. The aim is to investigate the effectiveness in healing of different offloading devices used in real-life clinical practice.

Method: Retrospective cohort study of 235 patients with a plantar DFU in one diabetic foot centre of expertise. Clinical outcomes were determined during a follow-up period of 12 months. Groups were defined according to the types of offloading, defined as total contact cast, ankle-high removable device, custom-made orthopaedic shoe with felted foam, Pulman bandage shoe with felted foam or felted foam alone. Univariate and multivariate analysis was performed to assess ulcer-related outcomes in different offloading devices.

Results / Discussion: Of the 235 patients, 3% were treated with a Total Contact Cast, 9% with an ankle-high removable device, 32% with an orthopaedic shoe with felted foam, 16% with Pulman bandage shoe, and 39% with felted foam alone. Patients who received a Pulman bandage shoe or felted foam had a higher UT classification (Stage D 21% and 18%, p=.001) and more ulcers per foot (13% and 5%, p=.002). Overall healing rate at 12 weeks was 33% and was not significantly different between patients stratified by offloading device (p=.255), at 20 weeks this was 51.5%, and at 12 months this was 77%. No significant differences were found regarding ulcer healing in multivariate analysis between the different offloading devices.

Conclusion: Most offloading strategies used in clinical practice are not in correspondence with current international treatment guidelines. DFU healing after 12 weeks follow-up did not differ between patients stratified according to offloading devices. Offloading devices were not associated with diabetes-related foot ulcer healing in multivariate analyses, suggesting there was no superiority of TCC / BTCCs compared to other offloading devices

[PP20] FOOTPRINTS OF PROGRESS: INSIGHTS FROM A DIABETES VASCULAR MULTI-DISCIPLINARY FOOT CLINIC

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Aim: To review the characteristics and outcomes of new patients referred to a joint Diabetes Vascular Multi-Disciplinary Foot Clinic (MDFC) in a large tertiary centre over 10 months.

Method: Retrospective electronic data of 97 new patients referred to our Diabetes-Vascular MDFC from May 2023 to Feb 2024 were reviewed. 32 patients without diabetes and non-attendees were excluded. Variables reviewed included the 8-point diabetes primary care processes (NICE), the imperative need for vascular interventions, amputations, and ulcer healing within 12 weeks after first clinic attendance.

Results: There were 65 new clinic attendees. 76% had type 2 diabetes, 11 type 1 diabetes and 4 pre-diabetes. The patients were predominantly White British (81%) and male (67%). 16% had diabetes for <5 years, while 12% had diabetes more than 25 years. 33% had an HbA1c <7% and 30% had an HbA1c between 9 and 12%. Two patients required emergency admissions at their first attendance due to limb-threatening ischaemia and sepsis. 70% and 66% of patients had blood pressure and cholesterol levels respectively within target range. The majority (63%) had a high BMI. Regarding smoking status, 27% were current smokers, 32% were ex-smokers and 40% were non-smokers. Following clinic visits, 38% of patients underwent vascular interventions, with 9% undergoing amputations (2 major, 4 minor). All patients who underwent vascular interventions had cardiovascular disease. Among current and ex-smokers (39), 48% had angioplasty and 12% had amputations. 38% patients had renal failure, 52% underwent vascular intervention with 16% undergoing amputations. 51% had completely healed ulcers 12 weeks after their first visit while 49% had ongoing non-healing ulcers.

Conclusion: These findings highlight the complexity of diabetes management in this high-risk group of patients who require intensive risk reduction and close follow up, focussing on glycaemic control, smoking cessation, and comprehensive care strategies to address vascular and foot complications.

[PP21] A REVIEW OF THE QUALITY OF DOCUMENTATION OF ANNUAL DIABETES FOOT CHECKS IN IDENTIFYING THE RISK OF ULCERATION IN A UK PRIMARY CARE SETTING

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Aim: To review the quality of documentation of the Hicks /Townson/Young diabetic foot skin scale (1) in primary care.

Method: Interrogation of SystmOne clinical reporting searches to check how many of the 2,946 registered people with diabetes on the practice register with a history of moderate/high/'increased' foot risk has ever had a diabetic foot skin scale documented. The codes searched were active codes from the SNOWMED hierarchy without ambiguous codes under quality of framework (QOF) within the primary care software used (SystmOne).

The foot reviews were undertaken by health care assistants/physician associates/practice nurses.

Results / Discussion: 1173 patients had a code for moderate/high/'increased' foot risk.

1013/1173 had a skin rating scale documented in their history, aged 27-87 years old, 12% male/88% female.

961/1013 patients had a skin scale documented at their last diabetes foot check. Importantly, of 52 patients with no scale documented: 9 patients had a moderate foot risk (2 of these were under podiatry, 1 was at high risk and referred to dermatology); 42 patients were deemed low risk (2 of whom were under community podiatry: 1 was prescribed 25% urea-heel-balm).

Even patients with skin conditions were coded as low risk: 1 had diagnosed congenital ichthyosis; 1 had palmoplantar pustular psoriasis; 1 patient had low risk documented but when subsequently reviewed required 25% urea heel balm.

Conclusion:

Our analysis showed that there was an underestimation of risk of ulceration. 1173 people were previously found to be at high, moderate or at an increased risk but 18% did not have up-to-date skin evaluation, with skin conditions sometimes not considered.

Further education/supervision/quality improvement is required to ensure a systematic approach to foot assessment in those who undertakes the assessment. The focus should be the quality of assessment as a toolkit ``is only as good as the training of its user''.

[PP22] DIABETIC FOOT CARE AWARENESS AND CHECKLIST USAGE IN A MULTIDISCIPLINARY DIABETIC FOOT CLINIC

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Aim: To investigate awareness and usage of a diabetic foot care checklist in patients referred to a Multidisciplinary Foot Clinic (MDFC) in a tertiary care hospital

Method: Over a period of 4 months, patients attending our MDFC were invited to complete an initial questionnaire to assess awareness of various aspects of diabetic foot care and its complications. A checklist was provided and at their follow up visits the patients were asked to complete a follow up questionnaire to assess the usefulness of the checklist.

Result: 20 patients completed both the initial and follow up questionnaires. Most of the participants were white British (80%) and male (75%). The age group was mostly 61-80 years (55%) with Type 2 diabetes (80%) and 55% have had diabetes for 10-20 years. 60% were referred for chronic non-healing diabetic foot ulcers. Interestingly, although 85% reported they were compliant with medications/insulin, 60% were not aware of the importance of optimising their HbA1C. 70% of the patients reported they had received education regarding diabetes and 65% about foot care.

80% were aware of the complications of poorly controlled diabetes and 90% were aware of red flag signs. 80% were aware of self-examination of the feet but only 60% were provided with the checklist. 100% of the patients reported they were aware that good footwear is an important part of foot care. 90% felt well supported in the clinic. On the post checklist questionnaire assessment 89% felt that the checklist was useful and 94% recommended the checklist to be provided to all patients attending the diabetes clinic.

Conclusion. These findings emphasise the fact that diabetic foot care awareness needs to be an ongoing process from primary to tertiary care and providing a checklist empowers patients to take better care of their feet.

[PP23] OPAT IN THE DIABETIC FOOT: REVIEW OF THE DELIVERY MODEL AND OUTCOMES OF A DIABETES SPECIALIST PODIATRIST AND AN ANTIMICROBIAL PHARMACIST LED CLINIC BASED AT KETTERING GENERAL HOSPITAL

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Aim: To review the outpatient antimicrobial treatment (OPAT) for the diabetic foot.

This innovation was borne from a successful bid for transformation funding in 2017. It was set up with regard to Good Practice Recommendations for OPAT. Referrals into OPAT for infections requiring intravenous antibiotics, governance and clinical supervision are provided by the Consultant diabetologist. It supports the use of combined skill sets and liberates consultant time. A one stop shop for diabetic foot assessment, treatment and IV antibiotic initiation in a community setting.

Method: Retrospective data was collected from clinical records and an OPAT data base for 60 patients referred into the OPAT clinic for a 12-month episode (2023) and compared to a previous clinical audit undertaken between December 2017 and 0ctober 2019 involving 131 patients.

Results / Discussion: The review demonstrated safe practice whilst maintaining outcomes in a joint professional led OPAT clinic. Optimised by frequent reviews, weekly blood monitoring and timely changes to antibiotic regimes when clinically indicated. Based on the Sinbad scoring system, most patients (39%) had a score of 4, followed by 5 (33%), 3&6 (12%), and 2 (4%) demonstrating the complexity of the referrals. The provision of a diabetic foot OPAT with access to piperacillin/tazobactam surefuser device supported early discharge in 33% of the cases and avoided admittance to acute setting in 83 % of the cases. Use of the piperacillin/tazobactam surefuser alone, “released” 612 hospital bed days or the equivalent of 1224 community visits saving £154,222. Furthermore, feedback by service users upheld the confidence in the team and recommendation of both the surefuser device and the service.

Conclusion: The diabetic foot OPAT service continues to deliver high quality care and safe practice in a community setting, supporting patient flow and capacity in an acute and community setting.

[PP24] IMPROVING REGIONAL DIABETIC FOOT MANAGEMENT PATHWAYS: LESSONS FROM THE UK

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Aim: Review challenges and progress in improving regional diabetic foot pathways

Methods: Mini review of the 2023/2024 strategy of the Northamptonshire Diabetic Multi-Disciplinary Team

Results: The pyramid of care for patients with Diabetic Foot disease includes Diabetic foot and Vascular Multi Disciplinary Teams, Diabetes Specialist Podiatrists and Foot protection Programme delivered by Community podiatry. The categories of patients treated include acute diabetic foot, healed complex patients and high-risk patients.

Integrated diabetic foot pathway involves identification of referral source from the community and secondary care, triage into urgent and non urgent referrals with adequate assessments and classification of risk and management in hospital or in the community.

Clear identification of roles and integration of various clinics and teams involved e.g. MDT for clinic, vascular hot (urgent) clinic, podiatry surgery, orthopedics, microbiology and pharmacy support as well as emergency department for urgent treatment of acute ischemia, wet gangrene as well as other limb and kidney threatening infections. At inpatient level improving the MDT diabetes foot ward round and microvascular MDT is essential. Weekend demands have to be factored into the equation.

The role of and revamp of information technology services to facilitate virtual clinics and engagement and investment in diabetic specialist podiatry, diabetic specialist nursing teams, vascular access teams and medical teams is crucial.

Elective pathway	Type of patient	Required	Prior to clinic
V-SDEC	Stable Diabetic foot ulceration Ulceration Osteomyelitis Dry necrosis Confirmed PAD	Vascular surgeon	X-rays HbA1c eGFr Medication list
V-RAV clinic	Stable Diabetic foot Ulceration Ulceration Osteomyelitis Dry necrosis Reduced vascularity Monophasic signals	Diabetes consultant Podiatrist Vascular surgeon	X-rays Arterial duplex scan HbA1c eGFr Medication list Microbiology swabs
MDT ward round	Inpatients with active diabetic foot ulcer	Diabetes consultant Podiatrist Microbiologist Vascular surgeon VSN	X-ray Microbiology swabs Bloods eGFr HbA1c
Complex clinic	Charcot foot Foot deformity	Diabetes consultant Podiatrist Orthopaedic surgeon *Podiatric surgeon*	Xray MRI Arterial duplex scan
Multidisciplinary Foot Service (MDFS)	Active diabetic foot disease Ulceration Early infection Hot red, swollen tender foot Charcot arthropathy	Diabetes consultant Podiatrist *Antimicrobial pharmacist* Band 3	X-rays Bloods HbA1c Blood glucose diary Medication list Microbiology swabs
OPAT	Stable diabetic foot ulcer requiring antibiotics	Antimicrobial pharmacist DSP Band 3	Bloods Antibiotic levels Micro results
TCC – Plaster service	Chronic, non-healing, Non severe, DFU Charcot	Plaster Technician Orthopaedic consultant DSP Footwear specialist	Xray MRI Arterial assessment

Conclusion: Services are delivering quality care above and beyond expectations but at the cost of staff burn out and the pathway is being revamped to include podiatry, diabetes, vascular and emergency department teams to ensure effective and equitable care.

[PP25] SHOULD TOTAL CONTACT CASTING BE A KEY SKILL FOR EVERY PODIATRIST?

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Aim: The aim was to evaluate the provision of below knee offloading including total contact casting in community and hospital-based diabetic foot clinics.

Method: Podiatrists looking after people with diabetic feet were invited to take part in a survey.

Results / Discussion: There were 35 responders, of whom 16 had less than 5 years of experience, 11 had 5 to 10 years of experience and 6 had more than 15 years of experience. Twenty four podiatrists worked in the community and 11 worked in hospital-based diabetic foot clinics, 29 worked in greater London and 6 worked outside London.

Twenty one out of 35 reported that total contact casting was not offered at their practice. Only 15 out of 35 reported that they have had training in casting application. Among the remainder, 17 out of 19 expressed their willingness to be trained how to make a total contact cast. With regards to removable below knee casts, 21 out of 35 indicated that they can issue a device on the same day, 10 out of 35 had a referral pathway to a provider and 14 out of 35 indicated that they cannot issue a removal cast walker.

Conclusion: This survey indicates the need for training resources and local establishment of casting clinics. As well as significant patient benefit, this will alleviate the burden of centralised casting providers in hospital-based diabetic foot clinics.

[PP26] DIABETIC FOOT UNITS IN SPAIN: UNDERSTANDING THE REALITY THROUGH QUESTIONNAIRE-BASED ANALYSIS

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Aim: To analyse the current situation about the organization, composition and resources of diabetic foot units (DFUs) in Spain.

Method: A self-administered questionary was designed by Spanish Diabetic Foot Forum based on the previous study done by the Spanish Group of Diabetic Foot. The questionary was sent by e-mail from February to August 2023 through representatives of scientific societies and hospital managers national associations. Number of professionals involved on the attention of patients with DF, available resources, treatment procedures and the existence of guidelines were collected.

Results/Discussion: Among 152 responses, 48 DFUs were identified at hospitals and 16 DFUs in primary care and private clinics. 6 Spanish regions did not have DFUs that means 61.86% of the Spanish population do not have access to these services. DFUs are composed by an average of 7.2±3.1 members. Nurses were in 91,67% of these units and the most involved medical specialty was vascular surgery (56.25%). Podiatry was present in 58% and the most care delivery model was Toe&Flow in 52.08%. Surprisingly endocrinology appeared involved only in 27.08% of the centers. Limb revascularization was accessible only in 80.95% of the diabetic foot unit. The most clinical guideline followed was IWGDF guidelines (89.58%). Comparing with the previous survey done in 2012, it showed an increase in the number of DFUs, however the structure remains inadequate. The presence of podiatry in multidisciplinary units was shown to be stagnant (58.3%) in public centers, while in private centers, it was observed that all of them had this specialty.

Conclusions: More than 60% of the Spanish population do not have access to DFUs. Endocrinology is decreasing his implication and leadership among multidisciplinary teams. Podiatrist are lacking in almost 50% of the public centers and the access to a distal revascularization seemed still difficult even in patients treated in DFUs.

[PP27] IMPACT OF A NITRIC OXIDE GENERATING TREATMENT IN DIABETIC FOOT ULCERS SEGMENTED BY WOUND AGE AND INFECTION STATUS: A POST-HOC ANALYSIS

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Aim: To evaluate the effectiveness of a novel nitric oxide generating wound dressing, (EDX110), on the healing rates of infected diabetic foot ulcers.

Method: A post-hoc analysis of the ProNox1 randomised controlled trial. Treatment with either EDX110 or Standard of Care (SOC), for 12 weeks or until the wound had healed, and a further 12-week follow-up period. The number of wounds healed in the intention to treat (ITT) cohort, and the impact of infection and wound age were assessed.

Results / Discussion: Of the 149 wounds in the ITT, 70/74 wounds in the EDX110 and 73/75 in the SOC arm were complicated by infection which was detected at baseline. At week 12, healing rates in the infected wounds were 35.9% vs 21.1% [p=0.05] (EDX110 vs SOC) and 35.3% vs 29.8% in those without infection. The healing trajectory continued in the EDX110 group, with 43.6% of wounds healed by week 14, no further improvement was seen in the SOC arm beyond week 12 [p=0.004]. In wounds ≤12 weeks in age the healing rate in the treatment period was 51.5% (EDX110) and 22.3% (SOC) [p<0.001] The healing rates increased in the follow-up period in both groups with 57.2% (EDX110) and 30% (SOC) of wounds healed. In wounds >12 weeks of age the healing rates were the same for both arms, 25% in the study period and 30% at final follow-up. When segmented by the presence of infection, the healing rate for EDX110 was 35% at final follow-up compared with 17.5% for SOC [p=0.017].

Conclusion: This sub-analysis of the ProNox1 study data demonstrated the ability of EDX110 to improve the wound healing rate in wounds of <12 weeks of age and of infected wounds, compared with SOC.

[PP28] CLINICAL EVALUATION OF A TOPICAL AEROSOL OF HIGHLY PURIFIED PORCINE HEMOGLOBIN IN DIABETIC FOOT ULCERS: A PROSPECTIVE CASE SERIES

Yolanda García Álvarez[1], Esther Alicia Garcia Morales[1], Marta García-Madrid Martín de Almagro[1], Raul Molines Barroso[1], Francisco Javier Álvaro Afonso[1], José Luis Lázaro-Martínez[1]

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Aim: To evaluate clinical outcomes of highly purified porcine hemoglobin as a treatment for hard to heal diabetic foot ulcers (DFU).

Method: A prospective case series involving a total of 22 patients with hard to heal DFU´s treated during 7.95±3.27 weeks with topical aerosol of highly purified porcine hemoglobin was conducted during June 2022 to March 2024 in a specialized diabetic foot unit. DFUs had more than 1 month of evolution, not responding to conventional treatment and did not present local clinical infection based, untreated osteomyelitis and critical limb ischaemia (Median area surface at day 0: 2 cm^2 [3.20-1.30]). Median evolution time was 8 [20 – 3.75] weeks. This suggests that the DFUs included in the present study are wounds that have not previously responded to the standard of care. Wound bed preparation was performed by sharp debridement to obtain the optimal tissue as possible at wound bed. The aerosol was then sprayed into the wound about 5-10 cm from the wound. A non-adherent, non-occlusive dressing was used to cover the ulcer. On the other hand, transcutaneous oxygen pressure was measured at the beginning and end of the treatment. Ulcers were revised twice a week. Removable knee-high walkers were used to offload.

Results/Discussion: The average area reduction at 4 weeks was -55.90±28.98% and at 8 weeks of -80.41±27.19%, the Wollina scale score improved [7 (week 8) vs. 4.72±1.79 (day 0); p=0.002] and $TcpO_2$ values increased at the end (32.75±12.40mmHg) vs. $TcpO_2$ values day 0 (28.81±15.05mmHg; p=0.005). During the 8 weeks follow up 22.7% (n=5) of DFU healed.

Conclusion: Topical spray of highly purified porcine hemoglobin is an easy procedure that promotes healing and improves microcirculation achieving wound closure in chronic DFUs. It represents an alternative treatment for DFUs that are difficult to cure in which conservative treatment has not been successful.

[PP29] THE USE OF CONTINUOUS TOPICAL OXYGEN THERAPY IN COMBINATION WITH CELLULAR, ACELLULAR AND MATRIX-LIKE PRODUCTS TO TREAT COMPLEX, CHRONIC WOUNDS: A RETROSPECTIVE CASE SERIES

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Aim: Historically, chronic wounds are treated with various topical therapies. The goals of topical wound management are multiple and include supporting tissue repair, preventing infection, reducing pain, eliminating devitalized tissue, creating a moist environment, and decreasing edema. Clinical studies, however, typically focus on the effectiveness of a singular treatment. The objective of this retrospective case series is to investigate chronic wound progress when continuous topical oxygen therapy (cTOT) device was used in combination with cellular, acellular and matrix-like products (CAMPs).

Methods: A single center retrospective analysis was conducted to examine the outcomes of chronic wound combination therapy consisting of cTOT and CAMPs. Five patients were included in this case study. Demographic and wound-specific details were recorded without any patient identifying data.

Results: Six wounds from five male patients (mean age 68.3 years) were identified in this case review. The mean wound area reduction seen in this patient cohort undergoing therapy with cTOT and subsequent CAMPs was 78.9% and 80.1% at 4 and 6 weeks respectively. 4/6 healed by week 6, with a mean time to healing of 5.2 weeks.

Conclusion: The authors believe that this combination of topical methods might have synergistic effects and improve wound healing, and the results of this study support this assumption. With looming limitations in the number of CAMP applications permitted for reimbursement in the US, as well as the constraints in accessing certain CAMPs, finding innovative methods to improve wound healing pathways will have a great value across all clinical settings.

[PP30] AUTOLOGOUS STAMP-SHAPED SKIN MICROGRAFTS IN SEVERELY INFECTED DIABETIC FOOT. A PROSPECTIVE CASE SERIES

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Aim: To evaluate the clinical outcome using autologous stamp-shaped skin micrografts after limb salvage surgery in diabetic foot ulcers (DFU) with moderate/severe infection.

Method: Six diabetic patients with neuropathic or neuroischemic ulcer and moderate/severe infection, who required a large debridement and drainage, were included from May to November 2023.

Patients were included after surgical drainage for moderate/severe infection of neuropathic or neuroischemic DFU. If necessary, revascularization was performed. Ambulatory autologous stamp-shaped skin micrografts to healing was used. In all cases the anterolateral aspect of the thigh was used as donor site. Wound size, degree of infection, revascularization, mean time for complete wound healing, and possible graft complications were collected.

Results / Discussion: All patients were men (100%), 5 (83.3%) had type 2 *Diabetes Mellitus*, and 1 of them (16.7%) had previous ulcers and revascularization. 3 patients (50%) had abscense of pedal pulses, Ankle Brachial Index (ABI) was not compressible in 3 patients and another 3 patients had ABI >1.

On admission 4 patients (66.7%) had severe infection according to IDSA (Infectious Diseases Society of America). 3 patients (50%) required revascularization (Open or endovascular).

The average wound size was 26 ± 16cm2. Grafting was performed after atypical TMA (Trans-Metatarsal Amputation) in 4 patients (66.6%), 1 (16.7%) in Achilles Tendon and 1 patient (16.7%) after Chopart Amputation. Healing wound after grafting was 2.1 ± 1.14 months; Only 1 of the patients (16.7%) required a new grafting. Healing was achieved in 100% of patients. No complications were recorded.

Conclusion: Autologous stamp-shaped skin micrografts have demonstrated to be an ambulatory, effective and safe technique for quickly healing on large ulcers in diabetic foot with a previous moderate/severe infections.

[PP31] THE CONJURING OF ANEMIA AND MULTIDRUG RESISTANT BACTERIA ON HEALING CHANCES IN DIABETIC FOOT (DF) PATIENTS

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Aim: Our study aimed to evaluate if the presence of anemia may complicate and increase the pathogenetic effect of MDR on clinical outcomes in DF patients.

Method: We retrospectively analysed all patients admitted in our Department in 2022 for DF, dividing them in two groups according to presence (Group A) or absence (Group B) of anemia, defined as both total Hemoglobin (HB) and red blood cells (RBC). We compared groups for clinical, demographic characteristics, blood chemistry, procedures and clinical outcomes: healing rate (HR) and time (HT) and recurrence rate (RR). We compared clinical outcomes between Groups according to the detection of MDR.

Results / Discussion: We derived data of 280 patients: 164 patients in Group A [58.6%; age 70.7±11.2 yrs; male/female 77.4/22.6%; DM1/DM2 6.9/93.1%; Hba1c 57.8±19.1 mmol/mol; diabetes duration (DD) 21.2±12.4 yrs] and 116 in Group B (41.1%; age 71.1±10.7 yrs; male/female 73.2/26.8%; DM1/DM2 8.1/91.9%; Hba1c 59.1±17.2mmol/mol; DD 19.9±13.8 yrs). In the overall cohort Group A showed a lower healing rate (45.7% vs 78.4%, p<0.002), a longer healing time (98±62 days vs 82±54 days, p<0.05) and a higher recurrence rate (29.4% vs 21.2%, p<0.05). When considering separately Staphilococcus Aureus (SA), Pseudomonas Aeruginosa (PA) and Enterobacteriaceae (EN), their relative effect is greater on Group A than on Group B: SA determines a higher reduction in HR (17.5% vs 14.2%, p<0.05) and a greater increase in HT (21±16 vs 9±6 days, p<0.002) and in RR (7.3% vs 3.0%, p<0.002). PA is associated with a higher reduction in HR (8.9% vs 4.7%, p<0.002) and greater increase in RR (6.4% vs 3.3%, p<0.05) and EN with a greater reduction in HR (9.5% vs 4.8%, p<0.02)

Conclusion: Anemia and MDR are able to play a synergistic role on clinical outcomes of DF patients worsening healing chances.

[PP32] RECURRENCE RATES AFTER HEALING IN PATIENTS WITH NEUROISCHEMIC DIABETIC FOOT ULCERS HEALED WITH AND WITHOUT SUCROSE OCTASULFATE IMPREGNATED DRESSINGS. A ONE-YEAR COMPARATIVE PROSPECTIVE STUDY

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Aim: to compare recurrence rates after a 1-year follow-up of healed neuroischemic diabetic foot ulcers after they healed with sucrose octasulfate impregnated dressing comparing with patients treated and healed with other local dressings

Method: A one-year prospective study with 2 arms was conducted between April 2021 and April 2023 on 92 patients with neuroischemic DFU healed in a specialized diabetic foot unit. Patients were divided into two groups; treatment group that includes patients healed with a sucrose octasulfate impregnated dressing and control group that includes patients treated with other local treatment different to sucrose octasulfate impregnated dressings. The main outcome of the study was ulcer recurrence after wound healing within one year follow-up. Secondary outcomes were minor or major amputation and all causes of mortality.

Results / Discussion: A total of 92 patients were included in the study, 50 were treated with sucrose octasulfate dressings and 42 were treated with hydrocellular neutral dressings. Recurrence rate was more than twice in the control group 66.7% compared to 30.4 % in the treatment group, $p < 0.001$. All the four major amputations ($p=0.05$) happened in the treatment group due a complication derived from a recurrence event that was complicated by infection during SARS-CoV-2 period in the same limb. 7 patients died in the group of treatment due complications not related with local therapy ($p=.008$). RR of recurrence was 20.18 times higher in the control group that in patients who had been treated with octasulfate dressing ($p < 0.001$).

Conclusion: Treating with sucrose octasulfate impregnated dressing reduce recurrence rates of neuroischaemic DFU after healing compared to neutral dressings.

[PP33] OUTCOME AND RECURRENCE RATES OF DIABETIC FOOT ULCERS FOLLOWING TREATMENT OF A TOTAL CONTACT CAST AND BOHLER IRON

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Foot ulcers in patients with diabetes continue to be a burden to healthcare services. Total contact casting (TCC) is regarded as optimum treatment to aid healing but there is little research known about the long-term outcomes once ulcers have healed.

This study reviewed healing and final outcomes after total contact casting and Bohler iron treatment, for patient with diabetes. Twenty-five consecutive patients selected for casting were followed until healing between 2020 to 2022.

Ulcer recurrence rates prior to casting showed a mean of 36 months total duration with a median of 3 relapsing episodes. All ulcers healed with nine requiring elective surgery. The median number to full healing was 7 weeks. Ulcer locations were predominately at the forefoot (n-15) followed by heels then midfoot. The multidisciplinary team includes a footwear specialist podiatrist who measures, fits and on ulcer resolution, issues bespoke footwear and total contact insoles. At 6 months, 28% of ulcers relapsed, requiring recasting to heal, footwear adjustments and revisiting for a surgical option. At 12 months, 20% relapsed and after 24 months, 12% had relapsed. The SINBAD classification scoring system showed the mean cohort of 3 with the surgical cohort higher. Patient questionnaire indicated an improved quality of life (QOL).

This data shows, TCC with the Bohler iron is very efficient at healing ulcers but with an initial higher recurrence rate by the first 6 month. Once healing had been sustained past 12 months, the risk of relapse is reduced and this is possibly influenced by adjuvant corrective surgical intervention. The SINBAD score had good correlation, higher the score the poorer the outcome. The patient questionnaire was suggestive of improved QOL but also highlighted how difficult it is to achieve preventative care posing the question for earlier consideration of employing the TCC with Bohler iron alongside surgical interventions.

[PP34] RETROSPECTIVE REVIEW OF THE USE OF ARGON COLD PLASMA THERAPY IN NON-HEALING DIABETIC FOOT ULCERS OVER A 3-YEAR PERIOD WITHIN A DGH DIABETIC FOOT MDT SERVICE

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Aim: To review clinical outcomes of individuals with non-healing diabetic foot ulcers treated with Argon Cold Plasma Therapy (ACPT) in a DGH setting where healing had not been achieved despite optimization of other risk factors eg vascular supply, offloading and best medical therapy.

Method: To review outcomes of patients treated with ACPT once weekly with a treatment of 3mins/area. ACPT was delivered through the Adtec Steriplas medical device. Information/data was gathered over a 3-year period of 40 patients via medical notes and result reporting system following ACPT. Other metrics monitored were, antimicrobial use, microbiologist results and hospital admissions. All patients had their vascular supply and offloading optimized prior to attending for ACPT and ongoing support to improve metabolic risk factors eg glycemic control, BP and lipid profile.

Results / Discussion:
25/40 patients healed – 62.5%
4/40 required amputation- 10%
3/40 taken off ACPT service for alternate treatment (soft cast, stimulan) – 7.5%
3/40 still under treatment and improving - 7.5%
1/40 self discharge – outcome unknown – 2.5%
4/40 RIP during ACPT from other co comorbidities- 10%

Conclusion: The collection of data of patients treated has shown promising results of healing chronic DFU's where standard care alone has been insufficient. 62% of patients were discharged from secondary care setting where outcomes were previously not positive. ACPT treatment has also shown a clinical benefit in patient recovery with a reduction in hospital admissions as well as a reduction in antimicrobial use for 36 of the 40 patients (90%) that were treated for chronic DFU's. It would be exciting to see these benefits witnessed in the aforementioned cohort of patients being replicated on a larger scale. This in turn would have a significant healtheconomic benefit to the NHS aswell as improving patient outcomes and overall mental and physical well being.

[PP35] NAVIGATING BEHAVIOURAL CHALLENGES IN CHRONIC WOUND MANAGEMENT: ADDRESSING ADHERENCE IN NON-COMPLIANT PATIENTS

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[1]*Kettering General Hospital, Diabetes Centre, Kettering, United Kingdom*

This study aims to explore if there are lessons to be learned from a review of a clinical case, identifying key insights and implications for improving future service delivery and improving patient care.

This case presented with a chronic diabetic foot ulcer, for over two years and was investigated from a retrospective perspective, via electronic clinical records.

The patient had a complex medical history with sporadic attendance to appointments and non-adherence to treatment plans. During an extended length of time as an inpatient, an opportunity arose to work within an orthopaedic team to provide offloading with a total contact cast (TCC) and a Bohler iron. The patient consented to treatment and commitment to attend. Remarkably the cast facilitated significant healing of the ulcer demonstrating short-term outcomes.

Despite various interventions, including education, medication, appointment reminders and involvement of family members he still struggled with adherence. The provision of the Bohler cast was a turning point in the management of the heel ulcer, results were seen instantly in this new multifaceted approach for the podiatry service. The patient was encouraged and motivated through his witness to the results. This was a great success for the patient but also with cost savings estimated to about £94000. This is in comparison of the cost of treatment prior to the ulcer resolution. However, the patient's tendency towards non-adherence persisted after he healed which produced a sub-optimal long-term outcome. A comparison was made to local data involving non-compliant patients treated with TCC showed 33% had behavioural traits of which half had known mental health concerns.

There is limited evidence in the literature to link and overcome the barriers of mental health challenges and compliance to TCC. Therefore, this case study concludes further research is required to support underlying mental health needs to influence treatment adherence.

[PP36] INCIDENCE AND RISK FACTORS FOR DEHISCED SURGICAL WOUNDS AFTER SURGERY FOR DIABETIC FOOT INFECTIONS

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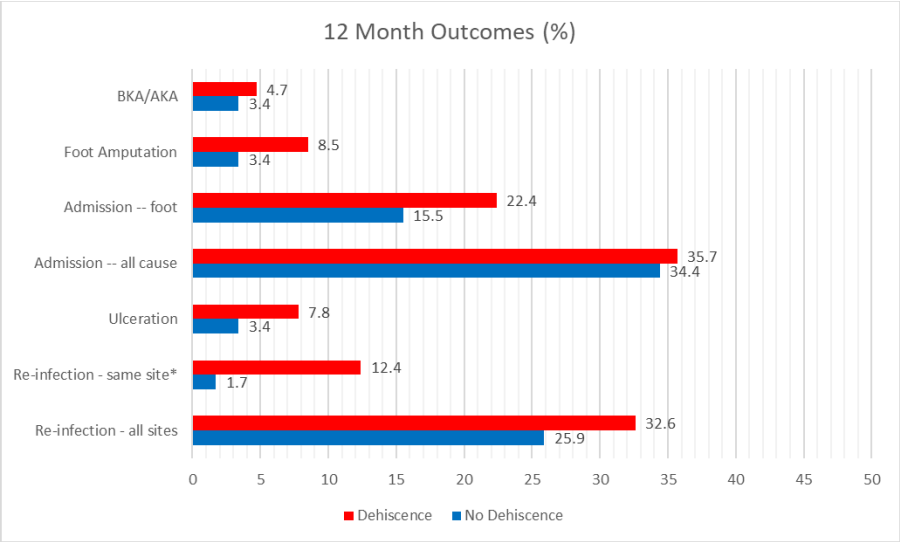
Aim: To identify the incidence and risk factors for surgical site dehiscence (SSD) and the impact on clinical outcomes in patients admitted to the hospital with moderate and severe diabetic foot infections.

Method: This was an analysis with pooled patient level data from 2 RTCs with a 1-year follow up. Moderate and severe infection was based on criteria of the International Working Group on the Diabetic Foot classification. Surgical site dehiscence was defined as any part of the wound not healed at 21 days. 12-month clinical outcomes evaluated included re-infection, hospitalizations, amputations, length of antibiotic use and length of stay. We used $\chi 2$ and ***t***-test for comparison of clinical events, with alpha of <0.05.

Results: We evaluated 187 patients with surgical wound closure after surgical treatment for DFI; 69.0% (n=129) had SSD. Mean age was 50.6 ± 9.6 years. Risk factors for SSD included hypertension, toe brachial index <0.6, and skin perfusion pressures <40 mmHg. Reinfection at the initial surgical site was 8.6 times more common in SSD (38.1% vs 6.7% p=0.02). During the 12-month follow-up, there was no difference in ulceration on the same site (ND 3.4%, SSD 7.8% p=0.27), all cause hospitalizations (ND 34.5%, SSD 35.7% p=0.88), total re-infections (ND 25.9%, SSD 32.6% p=0.36), amputation (ND 6.9%, SSD 13.2% p=0.21), total duration of antibiotic therapy (ND 48.5 ± 35.2 vs. SSD 51.4± 37.7 days, p=0.67) or total length of stay (ND 18.7 ± 17.0 vs. SSD 19.8 ± 13.8 days, p=0.62).

Conclusion: The incidence of SSD in people with DFI is very high (69.0%). During the 12 month follow up, the reinfection rate at the initial surgical site was 8.6 times more common in SSD.


12 Month Outcomes (%)
BKA/AKA
4.7
3.4
Foot Amputation
8.5
3.4
Admission -- foot
22.4
15.5
Admission -- all cause
35.7
34.4
Ulceration
7.8
3.4
Re-infection - same site*
12.4
1.7
Re-infection - all sites
32.6
25.9
0
5
10
15
20
25
30
35
40
45
50
Dehiscence
No Dehiscence

[PP37] DYNAMIC MEASURES OF OXYGENATION IN DIABETIC FOOT WOUNDS – A PILOT STUDY USING FUNCTIONAL NEAR INFRARED SPECTROSCOPY

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Aim: To investigate the use of functional NIRS (fNIRS) as a dynamic, quantitative clinical tool to assess tissue oxygenation in diabetic foot ulcers (DFU) and characterize high-risk wounds.

Method: This is a pilot, single-centre prospective study, on patients with DFUs. Wound measures are obtained using Silhouette Wound Imaging Camera (ARANZ Medical Ltd., Christchurch, New Zealand and fNIRS was performed using the MoorVMS-NIRS (Moor Instruments, UK) across three phases:

- Resting measurement (2 minutes)
- Plantar flexion at 40 beats per minute (2 minutes)
- Resting after plantar flexion (2 minutes)

Results are analysed using the MoorVMS-PC software.

Results / Discussion: 11 patients were recruited, with average wound area 1.35±1.53cm^2, and majority of wound, ischemia, foot infection classification (WIFI) score of 1.

A graphical chart of fNIRS is demonstrated in Figure 1. Comparative ratios of oxygenated hemoglobin, deoxygenated hemoglobin and oxygen saturations, between plantar flexion versus baseline and post-plantar flexion versus baseline is shown in Table 1. There was greater reduction in oxygenated (oxyHb) and deoxygenated (deoxyHb) hemoglobin during plantar flexion in acute ulcers <6 weeks, compared to chronic ulcers >6 weeks and >6 months. Both oxyHb and deoxyHb was higher in acute ulcers <6 weeks compared to chronic ulcers >6 weeks or 6 months.

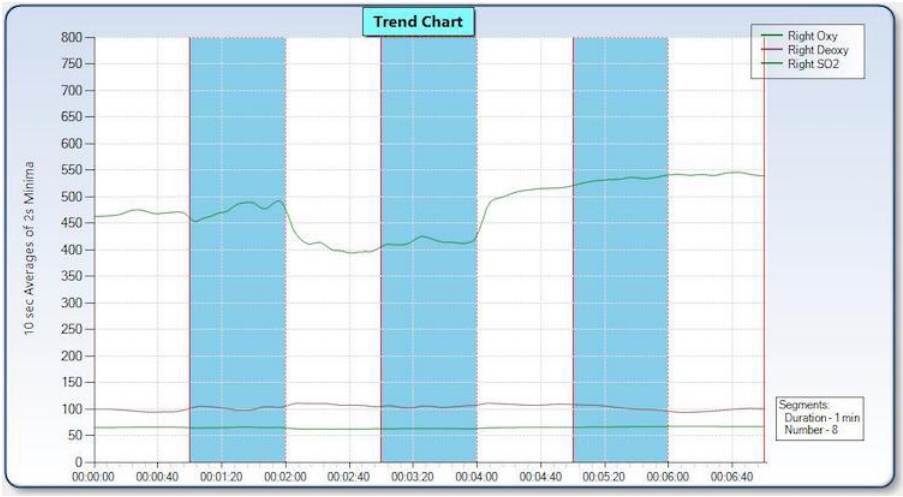

Figure 1. Functional near-infrared spectroscopy graph.

Table 1. Mean comparative ratios from functional near-infrared spectroscopy

	Movement compared to baseline			After movement compared to baseline		
	oxyHb	deoxyHb	SaO2	oxyHb	deoxyHb	SaO2
Ulcer <6 weeks	0.77	0.70	0.88	1.13	1.34	0.88
Ulcer >6 weeks	0.86	1.06	0.97	0.91	1.23	0.97
Ulcer >6 months	0.85	0.92	0.96	1.00	1.16	0.96

Conclusion: Dynamic measures in fNIRS could potentially identify non-healing DFUs. Chronic ulcers demonstrate less dynamic changes in oxygenated, deoxygenated hemoglobin and oxygen saturation. This could be a reflection of arterial stiffness, and slowed microvascular blood flow kinetics in diabetes.

[PP38] EVALUATING A FLUORESCENCE IMAGING DEVICE TO AID IN DIAGNOSING DIABETIC FOOT INFECTION: AN AUDIT ON FLUORESCENCE FINDING, SIGNS OF INFECTION, AND MICROBIOLOGY IN A MULTIDISCIPLINARY DIABETIC FOOT CLINIC

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Aim: To assess the feasibility of using fluorescence imaging of bacteria in ulcers treated in a multidisciplinary diabetic foot clinic and to prospectively evaluate the association between fluorescence images, clinical signs of infection, and bacterial growth.

Method: 70 consecutive diabetic foot patients with ulceration were assessed at their routine visit by a dedicated operator. Images of the ulcer were captured for the detection of bacterial fluorescence and graded negative (0) or positive for red (1), cyan & red (2), or cyan (3). Grading of fluorescence was compared between clinician scoring and an automated analyser in the device both pre/post debridement of the ulcer, Agreement was measured with Cohen's Kappa coefficients with standard error (SE). Each ulcer was graded clinically according to IWGDF infection criteria. Bacterial cultures were taken from ulcers suspected of infection (n=29). Bacterial cultures were categorised as negative or positive with bacterial growth. Correlation was assessed between clinical IWGDF grading and bacterial growth.

Results / Discussion: Agreement between clinician scoring of bacteria fluorescence versus automated analyser was substantial (Kappa=0.745 SE=0.65) for pre debridement images and almost perfect (Kappa=0.957 SE=0.60) for post debridement images. Of 29 bacterial cultures, 14 had positive and 15 had negative microbiology. Of the 14 ulcers with positive microbiology, 10 showed fluorescence and 4 no fluorescence, compared with the 15 ulcers with negative microbiology, of which 7 showed fluorescence and 8 no fluorescence. There was significant correlation between clinical grading of infections and bacterial growth ($r=0.425$, $p<0.05$).

Conclusion: Fluorescence imaging was easily incorporated into the clinic with excellent agreement between clinician scoring and automated analysis by the device. Although IWGDF grading of infection correlated significantly with bacterial growth, fluorescence imaging detected the presence of bacteria even when bacterial cultures were negative. Fluorescence imaging may be useful in the diagnosis of infection coupled with clinical judgement.

[PP39] THERMOGRAPHIC IMAGING AS AN AID IN DIAGNOSING PATIENTS AT RISK OF DIABETIC FOOT

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Aim: To evaluate the efficacy of thermographic imaging, integrated in an artificial intelligent software, as a diagnostic tool in identifying neuropathy and peripheral arterial disease (PAD) among patients at risk of diabetic foot complications.

Method: The recommended tests according to international guidelines for diagnosing neuropathy and PAD in patients at risk of diabetic foot complications were employed. The diagnostic tests to assess neuropathy, such as the Semmes-Weinstein monofilament and the 128 Hz tuning fork vibration test. For PAD detection, ankle-brachial index, toe-brachial index, TcPO2 tests and blood pressure measurements in the lower extremities were conducted. Additionally, thermographic imaging was performed with the camera TE-Q1 Plus – Android to detect potential alterations in temperature distribution in the patients' feet. Imaging findings were considered in conjunction with the results of standard diagnostic tests to assess the efficacy of thermography as a complementary diagnostic tool.

Results / Discussion: A total of 75 patients with diabetes mellitus were included in the study and some degree of PAD was identified in 42 (56%) patients. Findings from thermographic evaluation showed anomalous thermal patterns consistent with the presence of neuropathy and PAD in several patients. Among patients diagnosed with PAD, localized areas of hypothermia and thermal asymmetry were observed compared to healthy regions of the feet.

Discrepancies were observed between the clinical diagnosis and imaging findings in a subgroup of 18 (24%) patients. These discrepancies suggest possible influences of neuropathy disorders, arterial calcification and microcirculation values (measured by TcPO2), on the detected thermographic changes.

Conclusion: These results suggest that thermographic imaging may be useful in detecting early changes in blood perfusion and nerve function in patients with diabetes mellitus and associated diabetic foot complications. The combination of thermographic imaging with standard diagnostic tests proved promising in the identification and assessment of neuropathy and PAD in this patient population.

[PP40] MONITORING WOUND STATUS USING MULTI-PARAMETER OPTICAL FIBRE SENSORS

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Background: Wounds that are healing well are associated with pH <7.6, absence of ammonia (NH_3), increasing carbon dioxide (CO_2) levels, a moist environment and stable temperature. Of these potential biomarkers of healing, humidity, NH_3, CO_2, and temperature are attractive as they can be monitored without a sensor being in contact with the wound bed.

Primary aim: The aim was to explore monitoring of wound healing status using optical fibre sensing incorporated into a wound dressing, utilising a novel Optical Fibre Sensing Wound Monitoring (OFSSWM) system to assess humidity, NH_3, CO_2, and temperature.

Method: A prospective observational feasibility study was conducted at a specialist diabetic foot clinic in the UK. Participants received all usual care including local debridement, offloading, dressing and treatment of infection as necessary and attended 2 weekly for a total of 8 weeks. The OFSSWM was placed on the largest eligible wound. and readings were compared with measurements from commercially available conventional sensors. Readings were taken supine, and a control measurement was taken on the intact skin of the contralateral foot.

Results: Ten participants (mean age 56 (range 37-72) years, 7 male, 9 Type 2 diabetes) were consented between June 2023 and March 2024. Eight participants attended all four visits, two attended three visits. Figure 1 shows preliminary results from one participant visit of the changes seen when a sensor is placed on a wound. This preliminary result has shown we have been able to collect data on Carbon dioxide concentration, Relative humidity, Ammonia concentration, and Temperature in this feasibility study. Results are still being analysed for patterns and relationships in the feasibility data to support future development of a larger randomised study.

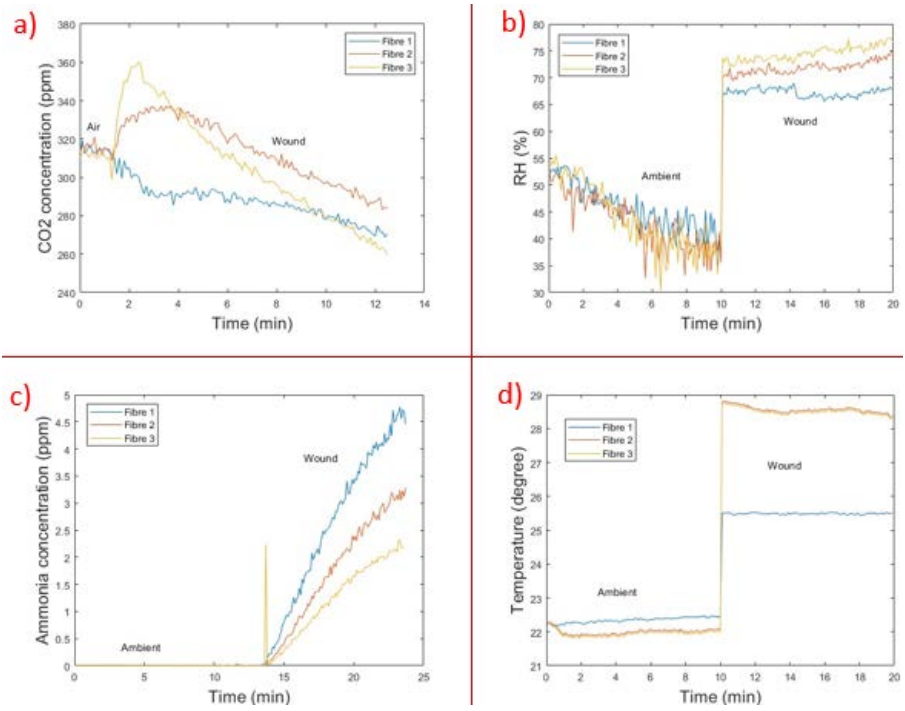

Figure 1. OFSSWM measurements from wound external micro-environment: a) Carbon dioxide concentration; b) Relative humidity; c) Ammonia concentration; d) Temperature.

[PP41] NEUROPATHY SCREENING IN DIABETOLOGISTS' CLINICAL PRACTICE - RECOMMENDATIONS AND REALITY

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Aim: Diabetic neuropathy (DN) screening aims at early detection of people at risk of diabetic foot. The goal was to verify the real state of DN examination in diabetologists´ outpatient across our republic.

Method: In 04-06/2023, members of the National Diabetes Society were asked to participate in an anonymous survey, focused on the screening of risky DN.

Results: A total of 186 respondents filled out the questionnaire. 60% of respondents perform DN screening once a year. 22% of those responding do not independently investigate DN (of which 19% refer to neurology and 3% do not refer at all). In terms of examination instruments, 88% of responders use 10g monofilament, 72% tuning fork, 40% warm/cold sensation, 25% sharp/dull touch, 14% biothesiometer. According to guidelines, when examining with a 10g monofilament, the examiner familiarizes the patient in advance with the expected sensation in 92%, with eyes closed in 74%; blind application is performed by 34% of people. Only 17% of respondents perform the recommended methodics (2x touch, 1x blind application in each examined area), the other 83% proceed in a very diverse manner (most often, in 23%, they perform 1 touch in each area without blind application). 63% of the examiners ask the patient also where they feel touch (the others only ask if they feel touch).

Conclusion: Our survey showed numerous methodological deviations from the recommendations. The results are an incentive for the Diabetic Foot Working Group of our National Diabetes Society to improve the awareness about the correct examination procedure, and prospectively also in the innovation of national guidelines.

[PP42] THERMOGRAPHY: A RELIABLE TOOL FOR THE DETECTION OF DIABETES FOOT COMPLICATIONS?

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[1]*L-Università ta' Malta, Msida, Malta*

Aim: To determine whether thermography can be used as a screening modality to detect type 2 diabetes mellitus (T2DM) complications by measuring the cutaneous temperature of specific areas of the foot

Method: a thermogram of the plantar aspect of the foot was taken for each participant using a thermal camera. The probability of complications for each foot was calculated using equations previously published in literature based on the cutaneous temperature. All subjects underwent a clinical assessment by a clinician blinded to the results of the thermography analysis to diagnose peripheral arterial disease, neuropathy, or neuroischaemia. The probability of diabetic foot complications was then compared with the actual presence or absence of diabetic foot complications arising from the clinical examination. The sensitivity, specificity, positive-predictive and negative predictive values were calculated for four different probability cut-off points (at 0.4, 0.5, 0.6,0.7) on ten different regions of interest.

Results / Discussion: In 66 feet, using a 0.5 probability cut-off point was found to have the greatest sensitivity of detecting complications, ranging from 93% to 97% in the toes and 93% to 100% in the forefoot. Importantly, all participants with peripheral arterial disease, neuropathy and neuroischemia were identified using the 1st metatarsophalangeal joint region of interest.

Conclusion: Results indicate that thermography can effectively detect diabetic foot complications with high sensitivity and specificity. In a clinical setting, this technology can be a helpful tool for reducing waiting times and resources for diabetic foot screening and detecting T2DM foot complications faster and at no cost.

[PP43] A CLUSTER ANALYSIS FOR STRATIFYING DIABETIC FOOT ULCERS AND THE ASSOCIATIONS WITH ULCER HEALING AND PATIENT OUTCOME

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Aim: This study aimed to investigate if diabetic foot ulcers can be grouped into clusters with similar characteristics at baseline and if these clusters are associated with ulcer healing outcomes during follow-up.

Method: During the study period December-2021 – August-2022, 1,099 diabetic patients with 1,250 active foot ulcers were recruited from a specialist diabetic service in Dar es Salaam, Tanzania. At baseline demographics, details of ulcer, amputation history, peripheral neuropathy, peripheral arterial diseases (PAD), ulcer classification were taken. A Hierarchical Cluster Analysis was utilised to identify homogeneous groups of DFUs based on all baseline measures.

Results / Discussion: Hierarchical Cluster Analysis identified that the 1,250 ulcers were distributed across three distinct clusters 1, 2 and 3 containing 449(35.9%), 269(21.5%), and 532(42.6%) ulcers respectively. The mean SINBAD score were 4.2, 5.3 and 4.5 while the median ulcer area was 4 cm^2, 9 cm^2 and 12 cm^2 in Clusters 1, 2 and 3 respectively. Most ulcers in Cluster-3 were first ulcers (99.4%), compared to 53.9% in Cluster 2, and no first ulcer in Cluster-1 (0.0%). PAD prevalence was 0.4%, 98.9%, and 0.6% in Cluster 1, 2 and 3 respectively. During the 122.5±235.4 days follow-up and treatment, 818 ulcers (65.8%) healed, and 425 ulcers (34.2%) remained unhealed. In Clusters 1, 2 and 3: the proportion of healed ulcers were 82.7%, 57.3% and 55.8%; amputation rates were 1.6%, 5.2% and 0.0% and the mortality rates due to foot ulcer were 2.0%, 3.0% and 1.1% respectively.

Conclusion: Three distinct DFU clusters with similar baseline characteristics in each cluster were identified. The orders in which the three clusters ranked based on wound classification at baseline did not follow either the proportion of ulcers healed, amputation or mortality rate during follow-up. Stratification systems using only baseline clinical measures may not fully predict the wound healing or patient outcome.

[PP44] CLINICAL SIGNIFICANCE OF THE AID CLASSIFICATION IN DIABETIC FOOT ULCERS: AWARENESS OF ARTERIOPATHY, BACTERIAL INFECTION AND FOOT DEFORMITY

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Aim: This single-center retrospective study aimed to investigate the impact of our novel AID classification, based on arteriopathy, bacterial infection, and foot deformity, on wound healing in patients with diabetic foot ulcers (DFUs).

Method: This study included 115 consecutive patients with 129 limbs who were hospitalized for DFU management. The presence of arteriopathy, bacterial infection, and foot deformity was scored as one point each, and wound severity was graded as 1–3. The wound healing rates at 12 months were evaluated. Comprehensive treatment including revascularization, debridement, or offloading was implemented based on the AID concept.

Results / Discussion: Arteriopathy was observed in 49.6% of patients with DFUs. A total of 82.8% of patients with arteriopathy had DFUs complicated by both bacterial infection and foot deformity; however, 10.9% were complicated by either one. Approximately 14% of patients underwent major amputations. The Kaplan-Meier wound healing curves were significantly (p=0.002) different among patients with AID scores of 1, 2, and 3; however, the wound healing rates at 12 months were 89%, 90%, and 88%, respectively.

Conclusion: Diabetic arteriopathy is commonly complicated by bacterial infections of of DFUs and foot deformities. The AID classification effectively stratified the wound healing speed. Furthermore, AID concept-based comprehensive treatment achieved a wound healing rate of approximately 90%.

[PP45] COMPARING OFFLOADING EFFECTS OF TOTAL CONTACT SOFTCASTS AND CONVENTIONAL TOTAL CONTACT CASTS FOR PLANTAR DIABETIC FOOT ULCERS

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Aim: Offloading is essential for the treatment of plantar diabetic foot ulcers. Total contact casts are recommended for this purpose. However, these are rarely used due to low patients' tolerance. As a new type of offloading cast which is tolerated better by patients, the total contact softcast has been develop, which is lightweight and partially flexible to allow some movement of the ankle. It is used in various Dutch hospitals, but the offloading effects have not been investigated. We conducted an experimental study with a repeated measures within-patient design to investigate the offloading effects of total contact softcasts in comparison to conventional total contact casts.

Method: In 20 patients with plantar diabetic foot ulcers, we investigated the peak plantar pressure at the ulcer site during offloading by conventional total contact casts, total contact softcasts, and non-therapeutic footwear using an insole with pressure sensors. The order of investigated modalities was randomized. Primary outcome was the peak plantar pressure at the foot ulcer site. Secondary outcomes included the patient-reported comfort expressed using the numeric rating scale.

Results / Discussion: Patient characteristics were typical for this patient category. The mean peak plantar pressure at the foot ulcer site during offloading by total contact softcasts (505 kPa [Interquartile range (IQR): 319;628]) was not significantly lower than whilst wearing non-therapeutic footwear (532 kPa [IQR: 293;630]), whilst it was significantly lower during offloading by conventional total contact casts (320 kPa [IQR: 182;606], p=0.011). Median patient-comfort numeric rating scale scores were significantly higher whilst wearing total contact softcasts during sitting, standing and walking (8.3 [IQR: 6.9;9.0], 7.8 [IQR:7.5;9.5] and 8.8 [IQR: 6.8;9.4], respectively) in comparison to conventional total contact casts (5.0 [IQR: 1.9;6.4], 3.9 [IQR: 2.1;4.9] and 3.8 [IQR: 1.7;4.9], respectively) (p <0.001).

Conclusion: A significant offloading effect of the total contact softcast could not be objectified.

[PP46] A WEARABLE IN-SHOE TEMPERATURE AND PRESSURE SYSTEM TO MONITOR THE DIABETIC FOOT AT RISK OF RE-ULCERATION

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Aim: To compare the outcome of incorporating a wearable in-shoe temperature and pressure system to monitor the diabetic high-risk foot at risk of re-ulceration as an adjunct tool to standard clinical care versus standard care only given at a specialised diabetes clinic.

Method: A matched parallel, prospective experimental study including 88 participants living with Type II diabetes mellitus, having a past history of plantar foot ulceration and wearing prescribed orthoses was conducted. Participants were randomly divided into 2 groups, the control group (n=44) which received standard care only. The experimental group (n=44) were assessed with an innovative single sensor and temperature monitoring device aimed to measure peak pressure areas and peak temperature in an area at risk of re-ulceration whilst still receiving standard care. Both groups were monitored for re-ulceration every 4 months for period of 1 year.

Results / Discussion: A higher number of ulcer healing cases was noted in experimental group The Cochran's Q-Test confirmed a significant difference ($p \leq 0.014$) in the proportion of healed re-ulcerated lesions within the experimental group across 3 time-points: (i) at 4 months, (ii) at 8 months and (iii) at 12 months implying that the use of the innovative device as an adjunct to the standard diabetic footcare resulted in better outcomes compared to standard diabetic foot care alone. Furthermore, a correlation between in-shoe skin temperature and in-shoe peak plantar pressure was confirmed.

Conclusion: This study highlights the need for more objective clinical decision making in the treatment and management of the diabetic high-risk foot utilizing innovative technologies which are inexpensive and easy to use during clinical practice. Moreover, a correlation between in-shoe foot temperature and pressure parameters, in view of tissue breakdown was confirmed. The ultimate goal of such innovative devices is to preserve functional lower limbs.

[PP47] THE EFFECT OF AN OFF-THE-SHELF AFO ON IN-SHOE PLANTAR PRESSURE

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Aims: Ankle-Foot-Orthoses (AFOs) are orthopaedic devices widely prescribed to individuals with a deficit of the ankle plantar- and dorsi-flexor muscles. This study aimed to assess the effect of an off-the-shelf AFO on in-shoe plantar pressure[1].

Methods: Five healthy participants (4 M; 1 F; age 33.4±11.2 years) were asked to walk at a self-selected pace on a 10 m platform. Each participant walked in two configurations: 1)wearing a pair of minimalist shoes. and 2)with a standard polyethylene AFO fitted only on the left shoe. Two sensor insoles were used to collect in-shoe plantar pressure in the left and right footwear. Three walking trials were collected for each participant in each configuration. The main plantar pressure parameters were calculated across a minimum of 27 steps for each subject. Wilcoxon signed-rank 'left-tail' test was used to assess the effect of the AFO on plantar pressure.

Results/Discussion: No statistical difference was observed between the left and right foot when wearing only the shoes (without AFO). In general, a trend for reduction in the mean-peak-pressure in the left footwear (with AFO) was observed across all subjects (figure).

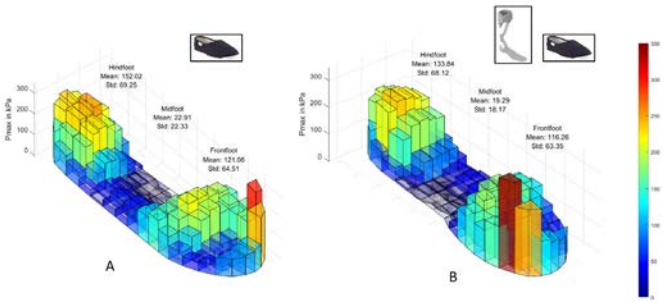

Figure: Inter-participant mean-peak-pressure (kPa)with (A)no AFO and (B)AFO condition.

This study is part of a larger investigation aimed at assessing novel offloading modalities and devices for people with diabetes at risk of ulceration. The AFO used here helped reduce plantar pressure in walking. This is likely due to the transfer of vertical ground reaction forces from the foot to the shank.

Conclusion: According to this pilot study, wearing footwear fitted with a standard polyethylene AFO appears to reduce plantar pressure. Further research is necessary to confirm this outcome with more participants to investigate the efficacy of using different AFOs to limit the risk of diabetic foot ulcers.

References: [1]Rogati G. et.al, *J Foot Ankle Res* **15**, 38(2022).

[PP48] BOHLER IRON OFFLOADER CASTS (BIOC) VS TOTAL CONTACT CASTS (TCC) FOR THE TREATMENT OF DIABETIC FOOT ULCERS - A PILOT STUDY

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[1]*Kettering General Hospital, Trauma and Orthopaedics, Kettering , United Kingdom*

Aim: The prevalence of diabetic foot ulcers is reported to be approximately 6.3% globally. Traditionally, these are treated with offloading devices, such as Bohler iron offloader casts (BIOCs) or total contact casts (TCCs), both of which are effective modalities for protecting vulnerable pressure areas and preventing further skin breakdown however till date there are no published research quantifying their offloading potential.

The aim of this study was to quantify and compare the offloading potential of the BIOCs and TCCs to determine the most effective method for offloading diabetic foot ulcer pressure areas.

Method: Twenty readings were taken at 6 pressure areas (1st and 5th metatarsal heads, heel, both malleoli and tibial crest) using commercially calibrated sensors applied on the skin in a single healthy individual using both TCC and BIOC. Results were compared using ANOVA statistical tests and paired T tests.

Results: Across the plantar surface, BIOC offloaded the foot by 74%, a pressure reduction of 567 N (CI:565-569, $p<0.001$) whilst the TCC offloaded the foot by 37%, a pressure reduction of 276 N (CI: 273-279, $p<0.001$). Across the malleoli, the BIOC offloaded the foot by 72%, a pressure reduction of 408N (CI:406-409, $p<0.001$) whilst the TCC offloaded the foot by 35%, a pressure reduction of 196 N (CI: 194-197, $p<0.001$). At the tibial crest there was minimal increase in pressure between the TCC and BIOC of 8N (CI: 6-10N, $p>0.001$).

Conclusion: This study is the first of its kind, providing quantitative data demonstrating that both the BIOC and TCC are effective offloading devices that can be used to protect pressure areas in patients with diabetic foot ulcers. However, the results suggest that BIOCs have a greater offloading potential when compared with the TCC and therefore could theoretically result in better clinical outcomes, for which further research is planned.

[PP49] CHALLENGES AND BENEFITS OF IMPLEMENTING A PEAK PLANTAR PRESSURE MAPPING SYSTEM

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Aim: Assessing use of peak plantar pressure (PPP) measurement as an educational tool to prevent recurrent foot ulcers.

Method: This study is a part of our PPP implementation project. Participants were persons with type 1 diabetes (T1D) or type 2 diabetes (T2D) with previous plantar foot ulcer (IWGDF risk 3), seen in the multidisciplinary foot clinic in our center from November 2022 to November 2023. At baseline we performed barefoot and in-shoe plantar pressure measurement during walking (Emed-X and Pedar-X) corresponding to Point of Interest (POI). All diabetes related data were collected from electronic patient records.

Results / Discussion: 27 persons were included, 21 (78%) had T2D, 23 (85%) were male, average age was 62,5 year ± 8 years, duration of diabetes was 25 year ± 14 years, BMI was 28,3 kg/m² ± 5,3 kg/m², HbA_{1c} was 59,2 mmol/mol ± 11,8 mmol/mol, 10 (37%) had a eGFR < 60 ml/min, all had peripheral neuropathy, foot deformities, and 19 (70%) had palpable foot pulses and only 2 (7%) had a toe blood pressure < 40 mmHg. Smoking (current 8; 29,6%). PPP at POI median 567.5 kPa barefoot, and 224.75 kPa in shoes with insoles. POI: 11 (41%) at first toe, 12 (44%) metatarsal head, 1 (4%) heel, 2 (7%) had Charcot deformity, 1 (4%) at fifth toe, 6 (22%) had a recurrent foot ulcer in the period. 19 (70%) had prescribed footwear.

Conclusion: The use of PPP measurement in both barefoot walking and in-shoe is a good visual and informative method to create awareness in preventing recurrence of foot ulcers. It provides the patient the reasons to use protective, well fitted footwear. Further development of education and measurement of cognitive capabilities will be included in future studies.

[PP50] THE CONSEQUENCES OF SEVERE NEUROPATHY AND OSTEOPOROSIS IN A YOUNG ADULT WITH TYPE 1 DIABETES– HOW BAD CAN IT GO AT THE AGE OF 25?

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Background and aims: There has been increased recognition of the early onset of Charcot osteoarthropathy in young adults living with type 1 diabetes. We present an unusual presentation of severe bilateral Charcot foot deformities in a 25-aged woman with neuropathy and osteoporosis.

Case presentation: A 25-year old female living with type 1 diabetes for 15 years was referred to the Diabetic Foot Clinic with suspected Charcot feet. She had a history of spontaneous transcervical fracture through the neck of the left femur, treated with orthopaedic pinning and a non-displaced fracture of the left humerus tuberosity, managed conservatively. At presentation, she had hot swollen feet with radiological evidence of extensive bone and joint destruction, consistent with bilateral active Charcot osteoarthropathy. She underwent treatment with bilateral total contact casting and was planned for reconstructive surgery. Initially, she underwent complex left mid-foot and hind-foot reconstruction, managed postoperatively with non-weight bearing casting and assisted mobility with a wheelchair. Three weeks before the date of the planned subsequent right foot reconstruction, she developed right hip pain. X-ray showed a femoral neck fracture which required orthopaedic pinning. The right foot reconstruction was deferred for almost a year until adequate fracture healing was achieved. Dual energy X-ray absorptiometry showed evidence of osteoporosis in a young adult at the lumbar spine (Z-score=-3.2), right neck of femur (Z-score=-2.8) and right total hip (Z-score=-2.5). She had vitamin D deficiency, which was managed with replacement therapy. In addition to profound peripheral neuropathy, she had severe autonomic dysfunction with gastroparesis. During the course of the disease, she developed recurrent foot ulcers, treated successfully with total contact casting and advanced care.

Conclusion: This case shows the complex multi-morbidity of young adults with type 1 diabetes, requiring significant multi-disciplinary input and intensive management. Despite the complexity, amputation was prevented.

[PP51] THE EFFICACY OF ANGIOPLASTY FOR WOUND HEALING IN DIABETIC PATIENTS WITH BELOW THE KNEE PERIPHERAL ARTERIAL DISEASE

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Background: In advanced stages of peripheral occlusive arterial diseases, severe rest pain, arterial ulcers and gangrene occur. These most severe clinical presentations of peripheral arterial disease is named critical limb ischemia. The coexistence diabetes mellitus and peripheral arterial diseases is very common. Wound healing is much more difficult in arterial ulcers in diabetic patients. Infrapopliteal endovascular procedures have become very common in the treatment of these patients in last years.

Methods: The aim of this observational single-center study is to examine the results of infrapopliteal angioplasty as a minimal invasive procedure in the treatment of patients with arterial ulcers, 88% of whom have diabetes mellitus. Patients who underwent above-knee procedures and below-knee stents were not ıncluded in the study.

Results: A total of 81 balloon angioplasty, -80 anterograde and 1 retrograde- procedures were performed on the infrapopliteal distal arteries of 42 patients who presented with foot ulcers. The mean age was 67.3 years (range 52-84) and there were 59.5% (n=25) males. In the arteries that underwent angioplasty,%85.2 complete and %14.8 partial recanalization was achieved. The most frequently intervened vessel was the anterior tibial artery (38.3%). While the limb salvage rate was 85.7%, mortality rate was only 2.4%. Complete healing of the wound was achieved in 15 patients (35.7%) between 5 days and 3 months (mean 59 days) and in 9 patients (21.4%) in 3-10 months. The toe/Ray amputation rate is 28.6% , at higher levels amputation rate is only 11.9%.

Conclusions: Endovascular interventions initially began as an alternative treatment to surgery. Technology has improved and experience has increased over the years. Angioplasty has achieved high success rates in the treatment of wounds caused by occlusion of the below knee arteries in patients especially with diabetes mellitus. We think that it is a reliable treatment that should be preferred first.

	PATIENTS	%	COMPLETE HEALING OF THE WOUND
[illegible]	15	35.7	Between 5 days and 3 months(mean 59 days)
[illegible]	9	21.4	Between 3 months and 18 months(mean 7 months)
[illegible]	12	28.6	Between 18 days and 2 months
[illegible]	5	11.9	Slubby healing in a month
[illegible]	1	2.3	

Table-1 The Results of the Treatments

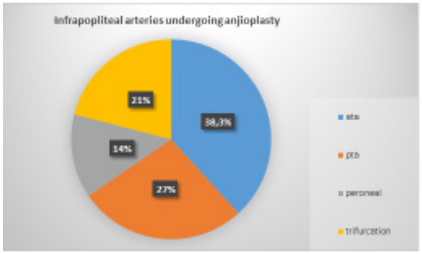

Table-2 Infrapopliteal Arteries Undergoing Anjioplasty

Two of Our Cases

[PP53] RENAL MORBIDITY AND EFFECTIVENESS OF TIBIAL ANGIOPLASTY IN REVASCULARISATION FOR PATIENTS WITH DIABETIC FOOT INFECTION

Seshu Bylapudi[1], Isaac Kobe[1], Kimberly Chong[2], Arya Krishnan[1], Michael Pieredes[3], Robert Hicks[4]

[1]Northampton General Hospital , Vascular Surgery , Northampton , United Kingdom, [2]Northampton General Hospital , Northampton , United Kingdom, [3]Kettering General Hospital, Diabetes , Kettering, [4]Northampton General Hospital , Vascular Surgery , Northampton, United Kingdom

Aim: To determine renal morbidity vs effectiveness of tibial angioplasty in revascularization for patients with diabetic foot infection in a district general hospital

Method: Retrospective cross sectional study. Eligibility criteria included patients who had undergone crural vessel angioplasty 2 years prior (July 2021-July 2023) in a district general hospital. Data collected included bio data, renal profile, diabetic control, tissue loss and bone involvement as well periprocedural and outcome data. Analysis was performed using SPSS data analysis software.

Results: 158 patients were included with a median age of 74.5yrs (IQR 15). Male to female ratio was 1.3. This represented >200 procedures as some patients underwent multiple procedures (39 patients). Median pre-procedure electronic glomerular filtration rate was 53.5ml/min/1.73m2 while post procedure was 49 ml/min/1.73m2. None of the patients required dialysis as a result of worsening renal function post angioplasty. The location of tissue loss on the foot was on the digits in 45%, gaiter region 20% and heel 15% unrecorded 20%. Osteomyelitis was present in 17.1% of the patients pre intervention. Antegrade approach was utilized in 98.1% of the patients and angiosome directed angioplasty strategy was not primarily considered in all patients. Primary technical success rate was 77.2% with reintervention rate of 44.3%. Overall mortality rate was 6.3%. The results add to the few studies looking at crural angioplasty in diabetic patients which is postulated to have poorer outcomes than in non diabetic patients and is one of the few studies investigating renal impairment post angioplasty in these patients.

Conclusion: Tibial angioplasty for diabetic foot ulceration is a reasonably effective treatment and with renoprotective strategy its effect on renal impairment can be attenuated.

[PP54] THE CASE: THE INTERNAL AND EXTERNAL FIXATION ARE EFFECTIVE METHOD FOR DNOAP WITH ULCER

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Aim: Diabetic neuropathic osteoarthropathy (DNOAP) causes severe foot deformity. There are several treatment methods of DNOAP: off-loading device, casting, internal fixation, and external fixation.

Method: A 50' male with bilateral DNOAP in the left foot ulcer. His talus was broken and had an ulcer on his lateral malleolar. So the surgical debridement and Ilizarov external fixation. The external fixation was performed for two weeks, and his ulcer was cured. After that, a total contact cast (TCC) was applied to him. His talus was re-broken after 3 weeks in TCC. So monoliteral external fixation was performed for two weeks and fracture talus was removed. After that internal ankle fixation and TCC were performed. TCC was applied for 4 weeks. The tibia and calcaneus fusion was confirmed by X-ray.

Results / Discussion: Finally, he was cured and didn't have recurrent bone fracture for half a year. The CROW boot was applied, however the boot was used before this event. His talus fracture is significant point. Ankle alignment was gradually out of place by DNOAP. So his talus was re-broken even if he applied TCC. Correcting the alignment by either one of internal and external fixation is an important thing for treatment for DNOAP in this case.

Conclusion: DNOAP is a complicated disease. Especially, DNOAP with an ulcer is a more difficult complication. The external fixation is a useful method for DNOAP with the ulcer. After the external fixation, correcting the alignment by internal fixation is a clue of treatment.

[PP58] PATIENTS WITH DIABETIC FOOT SYNDROME AND COMPRESSION THERAPY: A LOT IS POSSIBLE!

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Aim: The reduction of edema is part of guideline-based therapy for patients with diabetes. Questions of this abstract: What are the indications for adjunctive compression therapy, when/why should it be performed? What challenges and opportunities are associated with adjunctive compression therapy to reduce edema in patients with diabetic foot syndrome/ulcer (DFS/DFU) and what needs to be considered?

Method: Review of literature data and guideline recommendations with presentation of the current state of medical technology on the following questions: How can excess venous pressure and edema formation be reduced? How can inflammatory reactions in the tissue be prevented, progressive tissue loss prevented and arterial inflow not impeded?

Results / Discussion: In patients with diabetes mellitus, peripheral oedema, the circulatory situation, chronic venous insufficiency (CVI), cardiac insufficiency, etc. should be diagnosed. Usually 2-stage compression therapy with a decongestion phase and subsequent long-term therapy with multi-layer compression bandages/systems. Presentation of the physiological effects of compression therapy and the risk factors for CVI or varicosis. Presentation of specific recommendations of current guidelines (e.g. IWGDF), neuropathic or ischemic decision parameters (ankle-brachial pressure index (ABI), partial pressure of oxygen (TcPO2), in addition to warning signs and contraindications. Compression therapy improves arterial blood flow by reducing venous congestion in the leading veins. Exercise improves the effectiveness of compression therapy.

Conclusion: In patients with DFU, adjunctive compression therapy is appropriate for CVI if the ABI > 0.6 and TcPO2 > 40 mm Hg and there is no clinically relevant infection or acute Charcot foot. Good communication and a high level of comfort are crucial for patient adherence. After initial decongestion, a multi-component compression or stocking system can be used. If leg circumferences change, a medically adaptive compression system can be used.

[PP59] EVALUATION OF THE PRESENT PERSPECTIVE ON DIABETIC FOOT SYNDROME AND HEALTH EDUCATION AND ANALYSIS OF THE IMPACT OF EDUCATIONAL INTERVENTIONS: A SYSTEMATIC REVIEW AND META-ANALYSIS

Aroa Tardáguila García[1], María del Sol Tejeda Ramírez[1], Francisco Javier Álvaro Afonso[1], Raul Molines Barroso[1], Mateo López Moral[1], José Luis Lázaro-Martínez[1]

[1]*Complutense University of Madrid, Diabetic Foot Unit, 28040, Spain*

Aim: To evaluate the effect of educational interventions on patients with diabetic foot syndrome and examine the current understanding of diabetic foot syndrome and health education.

Method: A systematic review and meta-analysis adhering to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were conducted. The Review Manager v5.4.1 software was utilised for the meta-analysis.

Results / Discussion: The meta-analysis of educational interventions focused on enhancing patient knowledge for better self-care yielded statistically significant differences compared to the control group.

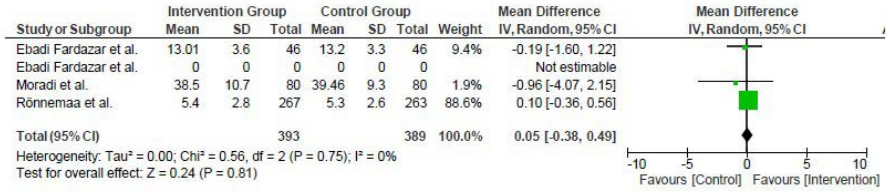


Figure 1. Comparison the intervention group and control group before the educative intervention.

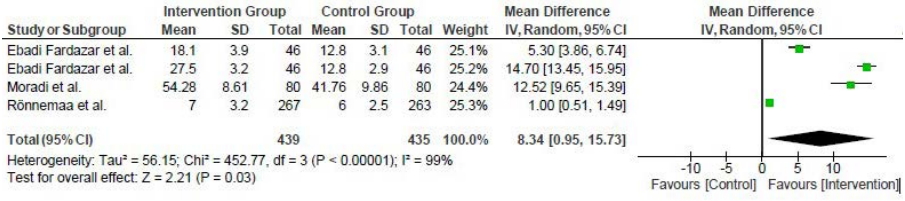


Figure 2. Comparison the intervention group and control group after the educative intervention.

Conclusion: Enhancing patient education about diabetic foot syndrome can lead to improved self-care.

[PP60] RELIABILITY OF STRAIN ELASTOGRAPHY IN THE ASSESSMENTS OF PLANTAR SOFT TISSUES AND ACHILLES TENDON IN PEOPLE WITH DIABETES AND A RECENTLY HEALED FOOT ULCER

Benedictine Khor[1 1], Lisa Wright[1], Jim Woodburn[2], Ruth Barn[1]

[1]Glasgow Caledonian University, School of Health and Life Sciences, Glasgow, United Kingdom, [2]Griffith University, School of Health Sciences and Social Work, Queensland, Australia

Aim: Strain elastography has potential utility in diabetes related foot ulcerations where alterations to tissue properties are known to occur. The aims were to evaluate (i) intra-rater reliability of 2 raters (novice and experienced) and (ii) inter-rater reliability between a novice and experienced operator using strain elastography to assess plantar soft tissue and Achilles tendon stiffness in people with diabetes and a recently healed foot ulcer.

Method: Data were collected on 12 participants with diabetes and a recently healed foot ulcer by a novice operator at two timepoints spaced 30-minutes apart using a Logiq GE S8 ultrasound machine. Seven plantar sites were assessed per foot and three segments were assessed per Achilles tendon. Resulting cineloops were assessed by a novice and experienced rater to determine the colour scoring, strain index and strain ratio. The percentage agreement, quadratic weighted Kappa and intraclass correlation coefficients were used to assess intra- and inter-rater reliability.

Results/Discussion: Intra-rater reliabilities were varied across the selected variables (colour score kappa values 0-0.58; strain index ICCs 0.003-0.64; strain ratio ICCs 0.03-0.52). No difference trends were observed based on experience level of the rater. Inter-rater reliability was superior to intra-rater across the majority of assessed sites (colour score Kappa 0.16-0.64; strain index ICC 0.63-0.92; strain ratio ICCs 0.05-0.93). Colour scoring was the most reliable method of strain elastography analysis and the Achilles tendon was evaluated more reliably than the plantar soft tissues. Percentage agreements showed good reliability (60-100% agreement) in the context of low kappa scores due to the spread of scores across categories.

Conclusion: Ultrasound-based assessments are operator-dependent and results indicate subjectivity is also present in elastography analysis. Results suggest there may be fundamental differences in the cineloops in people with diabetes and recently healed foot ulcers which renders data acquired at different timepoints non-comparable.

[PP61] INFLUENCE OF THE ETHNIC ORIGIN ON THE DISEASE SEVERITY AND TREATMENT RESULTS OF THE DIABETIC FOOT PATIENTS IN NORTHERN ISRAEL

Nour Kabha[1], Oleg Udovichenko[1], Maxim Gurevich[1], Loai Takrori[1], Merav Ben Nathan[1], Yaron Berkovich[1]

[1]*Hillel Yaffe Medical Center, Hadera, Israel*

Aim: Arabic population represents 20% of all Israeli citizens and 40% in the area of our territorial hospital. There are some differences in the lifestyle between various parts of the country's population. Diabetes and its complications are a serious problem as well in the Arabic people. Aim of the study was to reveal possible effect of the ethnic origin on the disease characteristics and the treatment results.

Method: we analyzed retrospectively case histories of 90 patients treated for a diabetic foot ulcer / wound in our tertiary care center from May to December 2023.

Median age of the patients was 65 (37-90) years, 96% had type 1 DM. Median follow-up time from the start of treatment was 6.3 months.

37 (41%) of them were of Arabic origin (Group 1), and 53 were of Jewish or other / mixed origin (Group 2).

Results / Discussion: Group 1 was younger (61 (41-82) vs 69 (37-90) years old, $p<0.05$), and despite of more prevalent active smoking (41% vs 13%, $p<0.05$, but past smoking 11% vs. 21%) had less neuro-ischemic ulcers (35% vs 57%).

The groups had:

similar ratio of genders, inpatients/outpatients, prevalence of seriously diminished functional status, grade 3 ulcers, previous amputations and foot areas involved.
similar HbA1c levels and ulcer duration..

Despite of similar treatment, its results were worse in group 1:
Healing was achieved in 32% vs 58% ($p<0.05$).
At 6 month stayed unhealed 41% vs 21% ($p<0.05$).
No difference in amputation rate (11% vs 9%) and mortality (5% vs 6%) was found.

Conclusion: Prevalence of diabetic foot in Israel seems to be similar between Arabic and non-Arabic populations. Arabic patients have poorer treatment results, which could not be explained by the difference in their demographic and disease characteristics. The causes of this phenomenon need additional investigation.

[PP62] MORTALITY IN PATIENTS WITH DIABETIC FOOT ULCER: A SINGLE-CENTRE, RETROSPECTIVE REVIEW OF 176 CASES OVER 1 YEAR

Luqman Safwan Bin Che Mohd Fauzi[1], Harriet Morgan[1], Sheena Thayyil[1], Rachel Berrington[1], Rajesh Jogia[1], Ian Lawrence[1], Marie France Kong[1]

[1]Leicester General Hospital, Diabetes, Leicester, United Kingdom

Aim: Patients with diabetic foot ulcers (DFU) have more than a two-fold increase in mortality compared to those with diabetes without DFU, regardless of other risk factors. We reviewed mortality data in our multi-disciplinary foot (MDFT) clinic over 1 year.

Methods: Retrospective case note review of recorded deaths from January 2023 to January 2024 in patients who were attending our MDFT clinic. Data obtained from both hospital and primary care records.

Results: n = 176 patients, 128 (72.3%) M: 48 F, mean age of death 76.9 ± 11.4 years. The majority were white British (n=147, 83%), 25 (14.1%) were Asian or Asian British. 136 (77.3%) had diabetes, mostly (87%) type 2 diabetes. All patients with type 1 diabetes were white British with mean age of death of 69.28 ± 12.3 years, younger than those with type 2 diabetes (77.23 ± 10.9 years, p=0.0125).

The main cause of death in this cohort was cardiovascular events (25.6%, n=45) with 7 patients presenting with cardiac arrest. Other causes were recorded as follows - respiratory disease (20%), malignancy (13%), sepsis (11%), frailty (6%) and foot ulcer (6%). 27.3% (n=48) were < 70 years old and mostly male (6M:1F ratio). Those confirmed to be single or living alone had a lower median age of death at 63 years old (IQR 17), (mean=67.7, p=0.0017).

54% of the cohort had peripheral vascular disease (PVD) with 65.3% revascularisation rate. 56 patients (31.8%) had history of amputation (12 major, 41 minor and 2 combined) and the majority (62.5%) had both diabetes and PVD. 8 patients were on renal replacement therapy.

Conclusion: The majority of deaths were in white British males. Those with type 1 diabetes and those who lived alone died at a younger age. Lack of social support and self-neglect may be a factor in the latter group.

[PP63] RECURRENCE RISK IN CHARCOT NEURO-OSTEOARTHROPATHY AND HIGH RISK PATIENTS IN A ONE-YEAR FOLLOW UP

Andrea Mancini[1], Secondina Viti[1], Marco Perini[1], Roberto Anichini[1]

[1]*Diabetes and Foot Unit Area Pistoiese USL Centro, Pistoia, Italy*

Introduction: Charcot Neuro-Osteoarthropathy (CNO) is an inflammatory disease that affects patients, largely diabetics, with peripheral polyneuropathy. The consequences that may develop could be fractures, dislocations, development of deformities, infections, and amputations of the affected foot and leg. Epidemiological numbers are few and often conflicting; there is no shared national and international epidemiological register.

Aim: The aim of this study, conducted at an Italian Diabetic Foot Center, is to compare the risk of ulcer recurrences in patients with CNO and patients with a high risk of DFUs (with a history of ulcers/amputations).

Methods: We evaluated a total of 199 patients who accessed the Diabetic Clinic during a one-year follow-up. 184 were high-risk (HR) patients without CNO, following the risk stratification of the 2023 IWGDF guidelines; 15 were patients with a previously diagnosed Charcot Neuro-Osteoarthropathy. The study does not include new cases for an acute episode of diabetic foot ulceration. Between CNO and high-risk group patients, we compared epidemiological data, peripheral vascular disease, revascularizations, re-ulcerations, and re-amputation rates.

Results: Peripheral vascular disease was found in over 70% of HR patients vs. 53% of those with CNO. The PVD in CNO patients seems to be more aggressive: over 62% of the Charcot Feet with a diagnosis of vasculopathy had a previous revascularization, compared with HR patients, where the rate is around 28%. During this one-year follow-up, the rate of revascularization was the same (6%). The risk of re-ulceration was over double in patients with CNO (80%) compared to HR patients (33%). The rate of new amputations is higher in CNO patients (20%) vs. HR patients (7.6%) in this one-year follow-up.

Conclusions: Charcot diabetic foot was significantly associated with the risk of recurrences (ulcerations, amputations, etc.). This study aims to be an epidemiological basis for this often misdiagnosed, underestimated, and sometimes underrated disease.

[PP64] FROM KIDNEYS TO TOES: EXPLORING DIABETES, RENAL THERAPY, AND AMPUTATIONS

Sheena Thayyil[1 1], Apexa Kuverji[1], Harriet Morgan[1], Luqman Safwan Bin Che Mohd Fauzi[1], Rachel Berrington[1], Marie France Kong[1]

[1]*University Hospitals of Leicester, Leicester, United Kingdom*

Aim: Renal replacement therapy (RRT) is associated with a high mortality, especially in people with diabetes. The incidence of major amputation is reported to be about 6% in the first year of dialysis and there is evidence that critical limb ischaemia is accelerated soon after the start of RRT. We analysed our databases to look at amputations and mortality in patients on RRT, transplant patients and pre-dialysis patients in our tertiary centre from 2018 to 2023.

Method: Retrospective review of electronic records of patients who had amputations from 2018 to 2023 and were on RRT, had a renal transplant or had CKD. We looked at demographics including type of diabetes, gender, ethnicity and mortality.

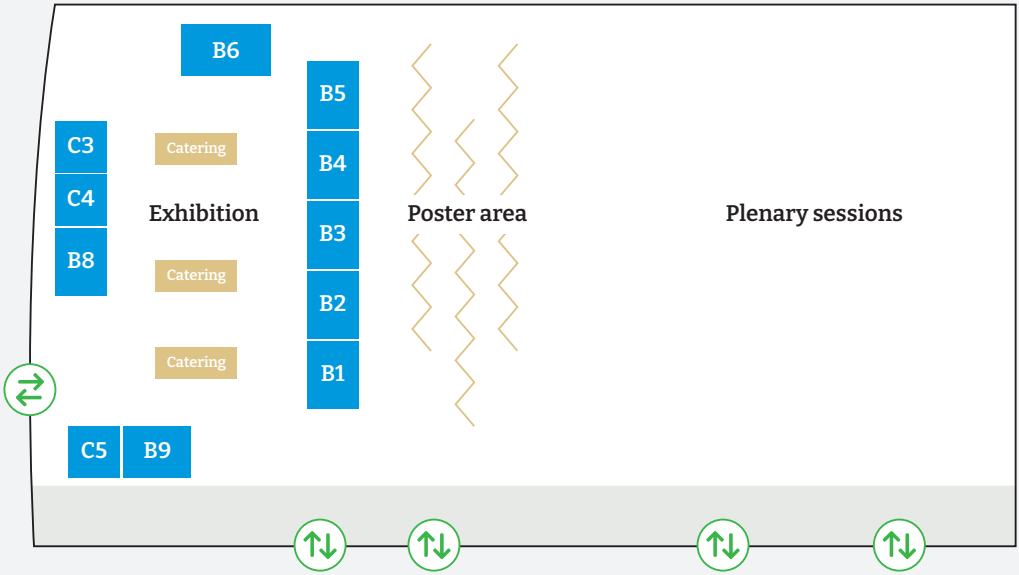
Results:

Patient population	2018 – 2019	Alive in 2024	2019 - 2020	Alive in 2024	2020 - 2021	Alive in 2024	2021 - 2022	Alive in 2024	2022 - 2023	Alive on 2024
Haemodialysis/ Peritoneal dialysis	2	0	8	1	9	2	6	2	19	11
Transplant	1	0	3	3	7	4	2	2	3	2
CKD	5	2	7	1	5	3	2	1	7	4
Total amputations	137 (41 major)		151 (55 major)		148 (64 major)		173 (76 major)			
Non diabetics	44		46		52		41			

Conclusions: High mortality after amputation in patients on haemodialysis and in patients with CKD. Majority were white British male with type 2 diabetes. Patients who had renal transplant seem to have lower mortality, but the number of patients is small and this needs to be further explored.

Sponsor and exhibitor information

Floorplan


B6
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Catering
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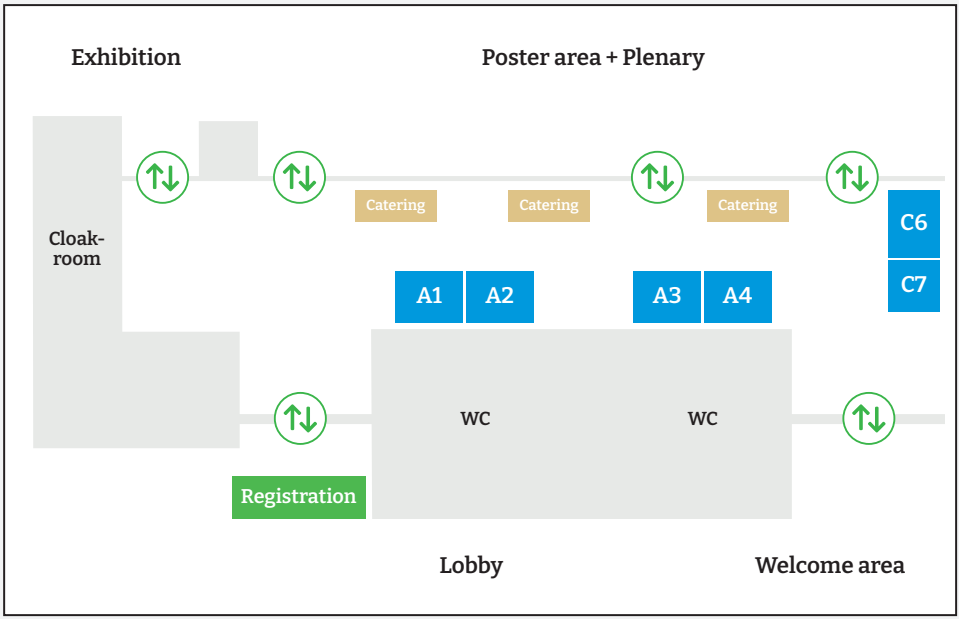
Exhibition
Poster area
Plenary sessions


Exhibition
Poster area + Plenary
Cloak-
room
Catering
Catering
Catering
C6
C7
A1
A2
A3
A4
WC
WC
Registration
Lobby
Welcome area

Exhibitors

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AOTI	A4
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Bonalive	A2
Convatec	B2
Diawin	C4
Essity	B8
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Mölnlycke	B6
Natrox	B4
Perimed	C6
Podartis	A1
Silica DermaCare	C7
Smith + Nephew	B1
Söring	C5
Thermidas	C3

Industry Symposia

Mölnlycke®

Friday 6 September 15:30 - 16:30

Optimising topical hemoglobin therapy for managing diabetes-related foot ulcers: Utilising a clinical decision support tool for timely, patient-specific treatment

In this symposium hosted by Mölnlycke Health Care, experts will introduce a clinical decision support tool. This tool is designed to optimise the use of Granulox® topical hemoglobin spray for managing diabetes-related foot ulcers. Additionally, the experts will explore the mechanism of action of Granulox®, with a focus on its ability to deliver oxygen to hypoxic wounds.

Moderators

- **Matthew Malone, PhD, FFPM, RCPS (Glasg)**
  Principal Scientist, Mölnlycke Health Care,
  Conjoint Associate Professor, Infectious Diseases and Microbiology, School of Medicine, Western Sydney University, Australia

- **Prof Dr. José Luis Lázaro-Martínez**
  Professor at the University of the Complutense University of Madrid (UCM), expert in Podiatric Surgery certified by a Fellowship Board of the New York College of Podiatric Medicine. Head of the Diabetic Foot Unit at UCM. Member of the Executive Committee of the Diabetic Foot Study Group (DFSG), Part of the European Association of the Study of Diabetes. Honorary President of D-Foot International. Chairman of EWMA DFU Committee

- **Susanna Roe, Ph.D**
  Senior Scientist, Tissue and Wound Science, R&D Wound Care, Mölnlycke Health Care
  Scientific Director Biotherapeutics, School of Life Sciences and Biopharmaceutical Sciences, Shenyang Pharmaceutical University, PR China
  Senior Principal Scientist Global Biologics, Pfizer Global Research and Development, USA

PODARTIS
clinically tested footwear

Saturday 7 September 13:30 - 14:00

What's New in Diabetic Foot Offloading?
Which parameter matters when selecting a Diabetic Foot Offloading?

Sicco Bus:
"Foot disease is a major problem in patients with diabetes mellitus. Every 20 seconds someone in the world loses a leg because of diabetes. A foot ulcer precedes most amputations.Changes in foot biomechanics during ambulation are an important risk factor for foot ulceration. In particular, increases in plantar pressures have been indicated as contributing factor. Therefore, reduction of these pressures, called offloading, is important in the treatment of these chronic wounds.Offloading a foot ulcer can be achieved by many different modalities and devices, that all aim to redistribute the pressure under the foot in order to offloading the ulcer region. The mechanisms by which this can be achieved will be discussed, to help better understand foot biomechanics, together with the association between offloading efficacy and healing efficacy.The recommendations from the most recent IWGDF guidelines on offloading will be presented"

Professor. JOSÉ LUIS LÁZARO MARTÍNEZ:
"Diabetic foot offloading is one of the cornerstones in the management of these patients. The IWGDF recommends selecting an offloading device based on the location of the ulcer, vascular status, and the presence of infection. However, there are other parameters that influence the selection of the offloading device, such as patient activity, body mass index, treatment acceptance, and impact on quality of life, among others. Selecting an effective, attractive, and easy-to-use device is key to improving patient outcomes. In this symposium, we will analyze the keys to selecting an offloading device and why they are important for achieving the best clinical and quality of life outcomes."

Presenters:
- Prof. Sicco Bus
- Prof. José Luis Lázaro-Martínez

Moderators:
- Prof. Luigi Uccioli and Prof. Venu Kavarthapu

bonalive

Saturday 7 September 14:05 - 14:20

Clinical Experiences with S53P4 Bioactive Glass in the Management of Diabetic Foot Syndrome

S53P4 bioactive glass produced by Bonalive®, is a specific type of bone graft substitute used in various medical applications, including the treatment of diabetic foot syndrome. Its unique composition, which combines bioactive, osteoconductive, osteostimulatory, bactericidal, and bacteriostatic properties, makes it suitable for treating the most complicated diabetic foot cases, even those with osteomyelitis. These properties make this product promising for long-term clinical use, particularly in patients with chronic hard-to-heal bone infections.

The actual podiatric management and Bonalive S53P4 usage is typically performed as follows: the first step is the careful selection of suitable patients for this bone substitute method. The surgical approach, technique, and application of the bioactive glass have specific requirements that influence the healing outcome. The success of the entire treatment also heavily relies on postoperative podiatric care, especially offloading therapy and diligent patient monitoring.

During this satellite symposium, we will present our pioneering clinical results and experiences with S53P4 treatment in our patient cohort. Through detailed case reports, we will showcase the journeys of patients from their initial referral to the podiatric clinic to the completion of the treatment process. This overview, including extensive wound photo documentation, radiological documentation, and microbiological findings, aims to serve as inspiration, guidance, or a "recipe book" for utilizing the benefits of bioactive glass in daily podiatric and surgical practice.

The main lecture on this topic is under abstract ID: OP32 (Sutoris et al.: Experimental Bone Tissue Substitution in Diabetic Osteomyelitis).

Presenters
- Karol Sutoris, Vladimira Fejfarova
  Institute for Clinical and Experimental Medicine, Prague, Czech Republic

URGO MEDICAL
Healing people®

Saturday 7 September 15:55 - 16:10

A global analysis of the cost-effectiveness of TLC-NOSF

The financial and global burden of foot ulceration remains high, hence the pressing need to reduce healing time, and close the wound as soon as possible to avoid complications, such as infection and amputation.

The evidence from clinical trials and cost analysis studies suggests that using TLC-NOSF as a first line treatment and having it as an integral part of the standard of care for patients with different types of chronic wounds consistently results in significantly higher healing rates, shorter healing times, and positive cost savings than standard dressings used under similar conditions.

Real-life evidence has also confirmed the results documented in clinical trials and economic models across the world, including UK, France, Germany, China, Canada, Czech Republic, Australia and Spain, have all demonstrated it to be cost effectiveness and a dominant strategy to adopt, regardless of the healthcare settings involved or the characteristics of the patients and wounds treated.

Furthermore, the use of TLC-NOSF have been shown to improve the patients' quality of life and also very well tolerated. Thus, all the available evidence supports the need for adopting this treatment approach, to reduce healing time, close the wound as soon as possible, and remains in alignment with national and international recommendations if we are to be successful in reducing the global burden of this disease.

Presenters

- Dr Chris Manu (MD, FRCP) Consultant Diabetologist, King's College Hospital, London, UK

Industry Symposia

Biocomposites®

Saturday 7 September 16:15 - 16.30

Local application of STIMULAN® in diabetic foot ulcers and complex wounds.

Dr Prash Vas and Maureen Bates be presenting on their experience using calcium sulfate (STIMULAN®). Their presentation will be how STIMULAN® is used as an antibiotic carrier – specifically designed to support the proactive management of dead space and surgical site infection, and illustrate the results from patient cases, highlighting the outcomes and benefits of using STIMULAN® in clinical practice on complex wounds.

Presenters:

- Dr Prash Vas – Consultant in Diabetes and Diabetes Foot Medicine (King's Health Partners)
- Maureen Bates – Diabetic Foot Clinic Manager (Mike Edmonds Diabetic Foot Clinic King's College Hospital)

Sunday 8 September 12:10 - 12:25

The Use of a Novel Dermal Repair Medical Device in Diabetic Foot Ulcers: pivotal experiences

Prof Alberto PIAGGESI will introduce a novel, naturally-occurring extracellular matrix solution (MicroMatrix®) in the treatment of chronic diabetic wounds and present clinical case studies, discussing with the audience its indications in the management of this complex pathology.

Presenter:

- Prof. Alberto Piaggesi

Sponsors

Gold Sponsors

Smith + Nephew Booth: B1

Smith+Nephew's Advanced Wound Management portfolio provides comprehensive solutions to meet broad and complex clinical needs and to help healthcare professionals reduce the human and economic consequences of wounds. These include products for the treatment of acute and chronic wounds such as leg, diabetic and pressure ulcers, burns, and post-operative wounds.

www.smith-nephew.com

Mölnlycke Booth: B6

Mölnlycke Health Care is a world-leading MedTech company that specialises in innovative solutions for wound care and surgical procedures. Mölnlycke products and solutions are used daily by hospitals, health care providers and patients in over 100 countries around the world. Founded in 1849, Mölnlycke is owned by Investor AB and headquartered in Sweden.

www.molnlycke.com

Silver Sponsors

Biocomposites Booth: B3

Biocomposites is an international medical device company that engineers, manufactures and markets world leading products for use in infection management in bone and soft tissue. Based in Keele, UK, it has global operations across Europe, USA, Canada, China and India. Biocomposites is a world leader in the development of innovative calcium compounds for surgical use. Its products target a broad spectrum of infection risks across a variety of specialities, including musculoskeletal infection, orthopaedics, trauma, spine, foot and ankle and podiatry. Biocomposites products are now used in over 100,000 procedures per annum and sold in more than 40 countries around the world.

www.biocomposites.com

Bonalive Booth: A2

Diabetes and, in particular, diabetic foot osteomyelitis (DFO) is a rapidly increasing disease. Together with antimicrobial resistance (AMR) it is one of the greatest challenges facing healthcare today. We provide Smart Healing™, which means we focus on solutions that facilitate conservative surgery in the treatment of DFO. Smart Healing™ restores body function through the patient's own biological processes without the need for local antibiotics. The long-term clinical use of our Bonalive® products has proven to be safe and effective in osteomyelitis surgery. The world needs solutions that are smarter and more sustainable for all patients worldwide.

www.bonalive.com

Silver Sponsors

Integra **Booth: B5**

Integra LifeSciences was founded in 1989 with a vision to provide access to a then emerging, promising technology that enables the body to regenerate damaged or diseased tissue. This vision led to the invention of Integra® Dermal Regeneration Template, a breakthrough in regenerative medicine which revolutionized treatment pathways and patient outcomes. With now 25+ years of expertise, Integra remains a pioneer and leader in the fields of tissue regeneration and wound reconstruction. With the recent introduction of MicroMatrix® - and soon Cytal® Wound Matrix®!, we remain true to our mission of offering varied solutions to support experts in the management of hard to heal wounds, helping improve the lives of patients around the world.

www.integralife.com

Podartis **Booth: A1**

For over 30 years, Podartis has specialized in innovative footwear and orthotic solutions for diabetic patients. Our mission is to prevent and manage diabetic foot complications, such as ulcers and neuropathy, through products that ensure optimal pressure distribution, shock absorption, and stability. Podartis leverages rigorous scientific research, advanced technologies like the biomechanical Timing Rocker Sole®, and clinical validations from top universities to set new standards in diabetic foot care. We collaborate closely with healthcare professionals, including endocrinologists, diabetologists, and podiatrists, to integrate the latest medical insights into our products and foster innovation. Visit us at DFSG 2024 to explore our latest innovations and see how Podartis is shaping the future of diabetic foot care.

www.podartis.com

Bronze Sponsors

Essity/BSN Medical GmbH **Booth: B8**

Essity is a leading global hygiene and health company that is breaking barriers to well-being. With world-renowned brands such as the registered trademarks Leukoplast, Cutimed and JOBST, Essity is among the global market leaders in a number of therapeutic areas.

www.essity.com

Urgo

At Urgo Medical, our mission is to support Healthcare Professionals to deliver evidence-based advanced wound care treatments from the beginning so that life can start again for patients. Our 1 600 employees are committed every day to making a difference for patients.

www.urgomedical.com

Exhibitors

Perimed **Booth: C6**

With over 40 years of experience and unique competence in measuring blood perfusion with laser-based technologies, Perimed is a leader in medical solutions that generate insights to aid peripheral vascular diagnosis and research. We have over 4,000 installed instruments worldwide, operating in wound care departments, diabetic foot clinics, vascular centers, labs, and radiology — saving limbs, saving lives, and reducing human suffering.

www.perimed-instruments.com

Adtec **Booth: B9**

Adtec SteriPlas cold plasma boasts a strong clinical evidence collection of 80+ clinical trials and studies across a multitude of infection conditions. Health economics data shows clear anti-bacterial health and cost benefits of plasma treatment compared to standard of care (including antibiotics) in treatment of diabetic foot ulcers and surgical site infections. Cold Plasma with a physical mode of action has broad spectrum antibacterial efficacy including AMR. Please visit our booth for a live demonstration of the Adtec SteriPlas medical device.

www.adtechealthcare.com

Convatec **Booth: B2**

Pioneering trusted medical solutions to improve the lives we touch: Convatec is a global medical products and technologies company, focused on solutions for the management of chronic conditions, with leading positions in advanced wound care, ostomy care, continence care and infusion care. With around 10,000 colleagues, we provide our products and services in almost 100 countries, united by a promise to be forever caring. Our solutions provide a range of benefits, from infection prevention and protection of at-risk skin, to improved patient outcomes and reduced care costs. Convatec's revenues in 2023 were over $2 billion. The company is a constituent of the FTSE 100 Index (LSE:CTEC).

www.convatecgroup.com

Natrox **Booth: B4**

NATROX® Wound Care leads the way in advanced therapies, sparked by one person's mission to improve the quality of life for a loved one suffering from a non-healing wound. Its flagship product, NATROX® O2, offers a discreet, wearable device that delivers the natural properties of topical oxygen, empowering patients in their wound-healing journey. Evolving from this vision, we offer innovative med-tech solutions to support clinicians worldwide in effectively managing a variety of chronic wounds.

www.natroxwoundcare.com

Thermidas **Booth: C3**

Thermidas has built the world's first FDA-cleared and CE-certified medical thermal imaging system. Our mission is to become the new Global Standard of Care for Pressure Injury and Diabetic Foot Ulcer Detection.
The company was founded in 2008 by two doctors in Finland. Currently, six medical doctors are shareholders in the company. Thermidas has a long history in the development of thermal imaging systems. Starting from a new and innovative method and evolving to an everyday tool for health care professionals. Over the past years, several generations of products have been developed from hospital systems to home care and self-care solutions.

www.thermidas.fi

Diawin Booth: C4

Diawin is a renowned manufacturer of preventive orthopedic footwear and insoles, enhancing the lives of diabetics and people with unique foot needs. Our products merge scientific insights and design with a deep understanding of diabetic requirements, aiming to set standards of responsibility and empathy in the footwear industry. Since 2017, Diawin has been recognized as a reimbursed medical device in Slovakia. At the beginning of 2023, our footwear was included as a reimbursed medical device for diabetics with neuropathy in the Czech Republic. Our reach extends across Europe, including Germany, France, Italy, and Spain via ecommerce platforms and local distribution. Clinical studies show a significant reduction in reulceration risk by up to 78.28%, endorsed by the Slovakian Diabetes Society. Our products are clinically tested, CE certified, TÜV tested and verified by tens of thousands of diabetics, which guarantees their high quality and safety.

www.diawin.eu

AOTI Booth: A4

AOTI's multi-modality topical wound oxygen (TWO®) is clinically proven to heal chronic wounds, dramatically reducing hospitalizations and amputations and leading to significant clinical, quality-of-life and cost saving benefits while increasing access and compliance via in-home therapy.

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Silica DermaCare Booth: C7

The SiLICA DermaCare brand represents a novelty on the market in home foot care. Mineral care suitable as prevention and care for diabetic foot at home. An innovative pedicure file with a patented quartz grinding surface. The mineral grinding surface is gentle and has a beneficial effect on the hydration and microbiome of the skin. The mineral file is used in the standard way to abrade the skin and is intended for daily foot care. The SiLICA Foot_02 file is suitable for dry and cracked heels, hyperkeratosis, calluses and mycoses. The file can be used for both wet and dry pedicures. The hygienic grinding surface has an antibacterial/ antifungal effect. With regular care, the overall condition of the feet improves over the long term. The ergonomic design of the file is designed for easy and quick application. For toenail care, we offer SiLICA Nails_02 file.

www.silicadermacare.com

Söring Booth: C5

Headquartered in Quickborn, Germany, Söring GmbH was founded in 1985 and has been manufacturing high-end products for ultrasonic surgery ever since. The company stands for leading ultrasonic technology with its numerous established applications, for example wound debridement.

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