

# Pélerin Symposium 2023

ABSTRACTBOEKJE

## (SOCIAL) MEDIA WIJSHEID

MET GASTSPREKER MICHIEL PEEREBOOM



# INHOUDS

# OPGAVE

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- 03** Voorwoord
- 04** Het symposium 2023 en de gastspreker
- 05** Organisatie 2023
- 06** Winnaars voorgaande edities
- 08** Genomineerden 2023
- 09** Abstracts genomineerden  
(Pélerin Wetenschapsprijs, Pitch prijs en Senior coassistent prijs)
- 32** Overige ingediende abstracts - Arts-onderzoekers
- 45** Overige ingediende abstracts - Senior coassistenten

# Voorwoord

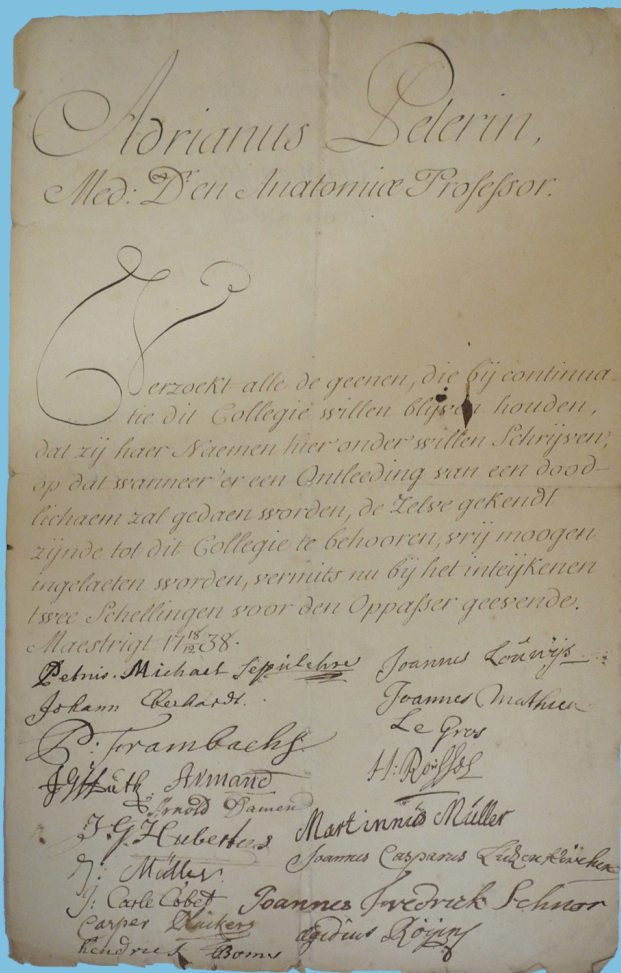
## De Stichting Pélerin

Sinds 1996 kent de Stichting Pélerin de Pélerin Wetenschapsprijs toe aan het beste onderzoek verricht door een arts-assistent of promovendus in het Maastricht Universitair Medisch Centrum. Het symposium heeft als doel jonge artsonderzoekers te stimuleren en scheidt de mogelijkheid voor het presenteren van wetenschappelijk onderzoek.

Dit jaar zal het symposium voor de 26e keer plaatsvinden. Echter het fundament voor dit symposium werd al ruim 250 jaar geleden gelegd.

In 1738 werd Adrianus Pélerin benoemd als eerste professor in de anatomie en chirurgie in Maastricht. Hij stond aan de wieg van het medisch onderwijs in Maastricht. Met zijn anatomische lessen verbeterde hij de medische zorg in het militair hospitaal van de garnizoenstad Maastricht. Tevens was Pélerin verbonden aan de illustere School van Maastricht, een instelling die studenten voorbereidde op een verdere universitaire studie. Ofwel een Maastrichtse bacheloropleiding avant la lettre. Tijdens zijn opleiding verrichte hij onderzoek naar het op dat moment endemische pokkenvirus. In 1719 promoveerde Pélerin in Leiden op het proefschrift "de Variolis". Zijn proefschrift heeft hoogstwaarschijnlijk bijgedragen aan de vroegtijdige invoering van de pokkenvaccinatie in Maastricht.

In de geest van Pélerin zijn zowel wetenschap als opleiding gebundeld in het jaarlijkse Pélerin Wetenschapssymposium.



**De Pélerin Stichting wil de kwaliteit en de continuïteit van academische patiëntenzorg bevorderen**

# Het Pélerin Symposium 2023

(SOCIAL) MEDIA WIJSHEID

Het jaarlijkse Pélerin arts-assistenten symposium is dé mogelijkheid voor arts-assistenten, arts-onderzoekers en senior-coassistenten om wetenschappelijk onderzoek, verricht vanuit het Maastricht UMC+, onder de aandacht te brengen. Arts-assistenten, arts-onderzoekers en senior-coassistenten hebben ook dit jaar weer interessante abstracts ingediend. Tijdens het symposium zal de top 5 een presentatie geven over zijn/haar onderzoek, waarbij de beste presentatie beloond zal worden met de Pélerin Wetenschapsprijs. Daarnaast hebben genomineerden voor de Pitch prijs ook dit jaar weer interessante pitches opgenomen over hun onderzoek waarmee zij zullen meedingen naar de Pélerin Pitchprijs. Ook de winnaar van de Pélerin senior-coassistent prijs zal bekend worden gemaakt tijdens het Pélerin symposium, naar aanleiding van de poster-presentaties van de genomineerde senior-coassistenten tijdens de lunchsessie.

Welkom bij de 28e editie van het Pélerin wetenschapssymposium! Het thema van dit jaar is "(social) media wijsheid". Wat voor invloed kan (social) media hebben op patiënten, artsen en de gezondheidszorg? De gastspreker van dit jaar, Michiel Peereboom, zal ons hier meer over komen vertellen. Zijn ervaring als cabaretier, filmmaker en tekstschrijver komt hierin samen met zijn inhoudelijke kennis van de medische wereld als arts.



Fotograaf  
Richard Westerhof

Kortom, wij zijn blij dat we dit jaar weer de mogelijkheid hebben om zoveel interessant onderzoek te kunnen presenteren aan u. Wij wensen u een leerzame en vooral ook plezierige avond toe!

# ORGANISATIE 2023

## pélerin

ARTS ASSISTENTEN SYMPOSIUM



Al vroeg in het jaar beginnen wij achter de schermen met de voorbereidingen voor het symposium. De organisatie bestaat uit 8 gedreven, actieve maar vooral ook gezellige leden uit verschillende vakgebieden (zie hiernaast). Om de continuïteit van het symposium te waarborgen blijft elk lid voor 2 jaar in de organisatie, waarbij per jaar de helft wisselt. Zo kunnen we alle leerzame ervaringen van dit jaar weer meenemen in de organisatie van het Pélerin symposium volgend jaar! Interesse? Kijk op onze website!

Van links naar rechts:  
 Arta Aliu - Maag-Darm-Leverziekten  
 Danique Heuvelings - Chirurgie  
 Michelle Bosman - Maag-Darm-Leverziekten  
 Quirien Robbe - Radiologie  
 Karlijn Demers - Chirurgie/Maag-Darm-Leverziekten  
 Lars Hillege - Chirurgie  
 Tim Brokken - Kindergeneeskunde  
 Sadé Assmann - Chirurgie/Maag-Darm-Leverziekte



## WINNAARS VOORGAANDE EDITIE

### Editie 2022

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Pélerin Wetenschapsprijs:  
Floor Pinckaers - Radiologie

Pitch prijs:  
Tom Wolswijk - Dermatologie

Semi-arts prijs:  
Gabriela Pilz Da Cunha - Heelkunde



(foto's op volgorde van boven naar beneden)

## Winnaars Pélerin Wetenschapsprijs voorgaande edities

- 1996 Drs. M.J. Bonten, afdeling interne geneeskunde
- 1997 Drs. H.W. van Straaten & drs. L. Koster-Kamphuis, afdeling kindergeneeskunde
- 1998 Drs. J.A. de Priester, afdeling radiologie
- 1999 Drs. R.J. van Oostenbrugge, afdeling neurologie
- 2000 Drs. L. Hofstra, afdeling cardiologie
- 2001 Drs. S.W.Olde Damink, afdeling algemene heelkunde
- 2002 Drs. E. Hoitsma, afdeling neurologie
- 2003 Drs. A.W. Nap, afdeling gynaecologie & obstetrie
- 2004 Drs. F.M. van Dielen, afdeling algemene heelkunde
- 2005 Drs. V.C. Cappendijk, afdeling radiologie
- 2006 Drs. M.A. Hoving, afdeling neurologie
- 2007 Drs. J. Trip, afdeling neurologie
- 2008 Drs. J.P. Derikx, afdeling algemene heelkunde
- 2009 Drs. M.G. Snoeijs, afdeling algemene heelkunde & Drs. J.V. Been, afdeling kindergeneeskunde
- 2010 Drs. J.G. Bloemen, afdeling algemene heelkunde
- 2011 Drs. E.J. Rondagh, afdeling maag-, darm- & leverziekten
- 2012 Drs. A.H. Arits, afdeling dermatologie
- 2013 Drs. R.M. Schols, afdeling algemene heelkunde
- 2014 Drs. T. Brinkhuizen, afdeling dermatologie
- 2015 Drs. M. Dickman, afdeling oogheelkunde
- 2016 Drs. J. Beugels, afdeling plastische chirurgie
- 2017 Drs. M.W. Smulders, afdeling cardiologie
- 2018 Drs. M.H.E Jansen, afdeling dermatologie
- 2019 Drs. B. Corten, afdeling heelkunde
- 2020 Drs. V. Schiffer, afdeling gynaecologie en obstetrie
- 2021 Drs. F. Adan, afdeling dermatologie

# *Genomineerden 2023*

## **PÉLERÏN WETENSCHAPSPRIJS**

MARIE-ELINE DEBEUF - DERMATOLOGIE  
KARIN HEESTERBEEK - INTERNE GENEESKUNDE  
SUSAN OLTHUIS - NEUROLOGIE  
MARTJE SUVEREIN - INTENSIVE CARE  
HANNE VERBERGHT - HEELKUNDE

## **PÉLERÏN PITCH PRIJS**

MATTHIJS BOSVELD - HUISARTSGENEESKUNDE  
MAUD VAN DINTHER - NEUROLOGIE  
ROBRECHT KNAPEN - RADIOLOGIE EN NUCLEAIRE GENEESKUNDE  
SEBASTIAAN PRONK - INTENSIVE CARE  
TOM WOLSWIJK - DERMATOLOGIE

## **PÉLERÏN SENIOR-COASSISTENT PRIJS**

MARTIJN CELEN - NEUROLOGIE  
KARINA CHAIBEKAVA - GYNAECOLOGIE & OBSTETRIE  
CHRISTOS DIAMANTIDIS - DERMATOLGIE  
MARTE HOEBEN - KLINISCHE NEUROFYSIOLOGIE  
FABIËNNE KLIJN - KINDERGENEESKUNDE  
RIK VAN MIERLO - RADIOLOGIE  
LYNN MULDER - KINDERGENEESKUNDE  
LAURA SCHENAARTS - HUMANE BIOLOGIE  
HUI QIAN SHI - CARDIOLOGIE  
FAUVE VAN VEEN - DERMATOLOGIE  
FINN VAN DER VOORT - UROLOGIE  
LOIS VAN DER VOORT - RADIOLOGIE



## Resolution of M. Hailey-Hailey by Er:YAG ablative laser therapy: a prospective observational study

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### Introduction

Hailey-Hailey disease (HHD) is a rare genetic skin fragility disorder with great disease burden caused by variants in the gene *ATP2C1*. Current treatment does not provide long-term remission. Er:YAG ablative laser therapy is a therapeutic modality with promising results. In this prospective study, we aimed to analyse the effect of Er:YAG laser therapy on erosive plaques in patients with HHD and on patient's quality of life (QoL).

### Methods

Eight patients with HHD were included in this observational prospective study of which seventy-one erosive plaques were treated using Er:YAG laser therapy. Skin biopsies were taken from a Hailey-Hailey plaque before laser therapy, six weeks after laser therapy and in clinically uninvolved skin to evaluate the number of desmosomes, intercellular distance and perinuclear retraction of intermediate filaments by electron microscopy. Control group consisted of three individuals without HHD. Skindex-29 and DLQI questionnaires were taken before laser, as well as six weeks and three years after laser therapy.

### Results

One single Er:YAG laser treatment resulted in complete resolution of all HHD plaques, even at 3-year follow-up. The number of desmosomes restored upon laser therapy, intercellular distance decreased to levels similar of clinically uninvolved skin, and clumping of keratin filaments was significantly less compared to the patient's clinically uninvolved skin. QoL significantly improved.

### Conclusion

One single Er:YAG laser treatment results in a long-term remission of this genetic acantholytic dermatosis and significantly improves the quality of life. The healed skin ultrastructurally resembles that of control individuals without disease rather than the patient's own clinically uninvolved skin. We strongly advocate a greater role for ablative laser surgery in the treatment of this recalcitrant disease.

## Malignancy suspicious chromosomal aberrations in the Noninvasive Prenatal Test in women diagnosed with pregnancy-associated cancer

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### Introduction

The non-invasive prenatal test (NIPT) is a screening test for foetal aneuploidy based on whole genome sequencing of cell-free DNA. Chromosomal aberrations, like copy number variations (CNVs), can be associated with a maternal malignancy and are incidentally discovered by NIPT. We determined if the NIPT revealed CNVs that are attributable to a malignancy in patients with pregnancy-associated cancer.

### Methods

The study population consisted of Dutch patients with a diagnosis of cancer during pregnancy or within two years postpartum between April 1, 2017 and April 1, 2021, who underwent NIPT during pregnancy. Patients were enrolled in both the International Network on Cancer, Infertility and Pregnancy registry, and the Dutch nationwide NIPT implementation study, TRIDENT-2. NIPT profiles were reviewed to look for CNVs and genes associated with the present malignancy. We obtained data on tumour type, stage at diagnosis, cancer treatment and obstetric outcome.

### Results

An NIPT was performed in 67/143 (46.9%) patients. Reviewed NIPT results were normal in 76.1% (51/67) of the patients. In 23.9% (16/67) of the patients the NIPT showed chromosomal aberrations suspicious for a maternal malignancy, 15 after genome-wide NIPT and in one targeted NIPT. Most of the cancers were newly diagnosed during pregnancy (n=59/67), and different tumour types and stages were diagnosed. All genome-wide NIPTs of women with a haematological malignancy (10/11) were suspicious for a malignancy, irrespective of the stage of the disease. For the solid tumours, 5/56 NIPTs were malignancy suspicious, one with stage II, two with stage III, and two with stage IV disease.

### Conclusion

This study provides insights into the NIPT results in patients with pregnancy-associated cancer. The suspicion for a malignancy was found almost exclusively after a genome-wide NIPT. All genome-wide NIPTs of women with a haematological malignancy were malignancy suspicious, irrespective of the tumour stage. For the solid tumours the NIPT was most often normal, and more often chromosomal aberrations were seen in the advanced stages. This knowledge will contribute to an improved interpretation of malignancy suspicious-NIPT results and could lead to an earlier diagnosis and treatment of cancer during pregnancy.

## Endovascular treatment versus no endovascular treatment after 6–24 h in patients with ischaemic stroke and collateral flow on CT angiography (MR CLEAN-LATE) in the Netherlands: a multicentre, open-label, blinded-endpoint, randomised, controlled, phase 3 trial

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## Introduction

Endovascular treatment (EVT) for anterior circulation ischaemic stroke is effective and safe within the 6-hour window. We aimed to assess efficacy and safety of EVT for patients treated in the late window (6-24 hours from symptom onset or last seen well) selected based on the presence of collateral flow on CT angiography (CTA).

## Methods

We conducted a randomised controlled trial with open label and blinded endpoint in eighteen Dutch stroke intervention centres. Patients with ischaemic stroke, presenting in the late window with an anterior circulation large-vessel occlusion and collateral flow on CTA, were included. Patients who were eligible for late window EVT were treated according to national guidelines (based on DAWN and DEFUSE-3-trial-derived clinical and perfusion imaging criteria) and excluded from MR CLEAN-LATE enrolment. Patients were randomised (1:1) between the intervention (EVT) and control (no EVT) group, both in addition to best medical treatment. Randomisation was web-based and stratified by centre. Primary outcome was the modified Rankin Scale score (mRS) at 90 days. Analyses were based on the intention to treat and adjusted for predefined confounders. Treatment effect was estimated with ordinal logistic regression and reported as an adjusted common odds ratio (acOR). MR CLEAN-LATE was registered with the International Standard Randomised Controlled Trial Number: ISRCTN19922220.

## Results

Between February 2, 2018, and January 27, 2022, we randomised 535 patients of whom 502 (94%) provided deferred consent or died before consent was obtained (intervention group N=255, control group N=247). The median mRS score was lower in the intervention than in the control group (3 [IQR 2-5]; 4 [IQR 2-6]), and we observed a shift towards better outcomes on the mRS for the intervention group (acOR 1.67 [95%CI 1.20-2.32]). Mortality did not differ significantly between both groups (aOR 0.72 [95%CI 0.44-1.18]).

## Conclusion

In this study, endovascular treatment was effective and safe for patients with ischaemic stroke caused by an anterior circulation large-vessel occlusion who presented 6-24 hours from onset or last seen well, and who were selected based on the presence of collateral flow on CTA.

## Early extracorporeal CPR for refractory out-of-hospital cardiac arrest

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### Introduction

Extracorporeal cardiopulmonary resuscitation (ECPR) is the rapid deployment of extracorporeal membrane oxygenation (ECMO) during cardiac arrest. This restores organ perfusion and oxygenation in patients without return of spontaneous circulation (ROSC). ECPR is a resource-intensive treatment that is increasingly implemented in refractory out-of-hospital cardiac arrest. However, the evidence of its clinical effectiveness is inconclusive.

### Methods

In this multicentre, randomized, controlled trial that was conducted in 10 Dutch ECMO centres, we randomized 160 patients with an out-of-hospital cardiac arrest to receive ECPR or conventional cardiopulmonary resuscitation (CCPR). Patients between 18 and 70 years of age with an OHCA due to a ventricular arrhythmia, who had received bystander CPR, and who did not have ROSC within 15 minutes of advanced life support were eligible. Randomization was stratified per study site. Patients could be randomized prehospitally to allow timely preparation of the ECPR procedure. Post-randomization exclusion was applied when exclusion criteria became apparent before ECPR. The study protocol was approved by the Medical Ethical Committee of Maastricht University. Informed consent was deferred until ICU admission or waived when a patient demised before (proxy) consent could be obtained. The primary outcome was survival with a favourable neurologic outcome, defined as a Cerebral Performance Category (CPC) score of 1 or 2 at 30 days. Results were analysed on an intention-to-treat basis using a logistic mixed model with correction for the stratification variable (study site).

### Results

Of the 160 patients who underwent randomization, 26 patients who did not meet the inclusion criteria at hospital admission were excluded, leaving 134 patients for the final analysis. Of these, 70 were assigned to ECPR and 64 to CCPR. At 30 days, 14 patients (20%) in the ECPR group were alive with a favourable neurologic outcome, as compared with 10 patients (16%) in the conventional CPR group (odds ratio, 1.4; 95% CI 0.5-3.5;  $P=0.52$ ). The number of serious adverse events per patient was similar in the two groups.

### Conclusion

In this multicentre randomized trial in patients with refractory out-of-hospital cardiac arrest, extracorporeal CPR and conventional CPR had similar effects on survival with a favourable neurologic outcome.

## Reducing Hepatectomy Times in Dutch Organ Procurement Teams

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### Introduction

Donor hepatectomy time > 60 minutes is associated with poorer transplantation outcomes. The Dutch organ procurement committee executed a nationwide audit to evaluate hepatectomy times of procedures performed from December 2017 until February 2018. Liver procurements exceeded the 60-minute threshold in more than 50% of cases. Subsequently, a nationwide improvement program ("intervention") was enrolled to reduce hepatectomy time, ideally below 45 minutes. Aim of this study was to determine whether this intervention successfully reduced hepatectomy time.

### Methods

A nationwide, retrospective database study of organ procurement procedures, both DBD and DCD was conducted. All procedures from January 2013 until December 2022 were included. Donor hepatectomy time was defined as time between start of abdominal flush and hepatectomy. The intervention period, from March 2018 till May 2018, was excluded from analysis. We compared hepatectomy times before and after intervention, of procurement teams who were affiliated to a liver transplant center (n=3) and those who are not affiliated (n=2).

### Results

In total 1788 liver procurements were analyzed, of which 873 before and 915 after intervention. Median hepatectomy time significantly decreased from 50 (39-64) to 35 (29-43) minutes,  $p < 0.01$  for affiliated procurement teams and from 67 (52-88) to 33 (28-41),  $p < 0.01$  for non-affiliated procurement teams. Before intervention 32.4% of the hepatectomies in the Netherlands were performed within 45 minutes. This increased to 80.3% after the intervention ( $p < 0.01$ ). Before intervention, simultaneous procurement of thoracic organs was significantly associated with increased hepatectomy time ( $p < 0.001$ ), while this was not the case after intervention ( $p = 0.32$ ). There was no significant difference in preventable surgical damage before or after the intervention ( $p = 0.86$ ).

### Conclusion

The nationwide audit and the subsequent intervention resulted in a significant decrease in hepatectomy times for all procurement teams. Therefore, we recommend implementing such procurement analysis in all ET countries. Monitoring and intervention, if needed, will assure the same procurement standards, and increase donor liver quality.

## Patients and informal caregivers in the lead: experiences with generic self-management support interventions at the Maastricht University Medical Centre

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### Introduction

A significant proportion of patients and informal caregivers would like to play an active role in (decisions concerning) their health. Simultaneously, governments aim to shift treatment from a professional care setting to an informal setting, considering demographic changes and the allocation of scarce resources. This transition of care solicits patients' and informal caregivers' ability to self-manage. Therefore, the Maastricht University Medical Centre+ has established the Academy for Patients and Informal caregivers. Its aim is to proactively and professionally instruct patients and their informal caregivers to enhance their health, self-efficacy, and self-management. Consequently, the Academy aims to positively influence quality of care, to decrease (re)hospitalisations and to smoothly but responsibly support patients' transitions to their home environments. Activities range from learning patients to self-administer subcutaneous injections, to eight-week self-management support programmes for chronically ill patients and their informal caregivers. However, little is known about the impact of this intervention on patients, informal caregivers, and healthcare professionals.

### Methods

This study qualitatively explored the experiences of participating patients, informal caregivers and healthcare professionals in the Maastricht University Medical Centre+ through individual semi-structured interviews (N=38). The interviews were analysed through conventional content analysis.

### Results

Patients and informal caregivers reported (1) increased knowledge influencing participants' health, self-efficacy and ability to self-manage. Additionally, they reported (2) to feel acknowledged as partners in care resulting in autonomy and (3) personal growth through active involvement. Lastly, patients and informal caregivers reflected upon the (4) personal impact of independently executing health tasks. Health care professionals experienced (5) increased meaningfulness of their work and (6) improved working conditions, specifically a reduced workload. Independently executing health tasks were perceived to lead to (7) reduced use of professional healthcare, possibly leading to (8) improved level of equity in health care as there is more capacity for everyone to attain his or her full health potential.

### Conclusion

Participation in the activities of the Academy for Patients and Informal caregivers is perceived to contribute to the development of self-management competencies, whilst simultaneously improving working conditions for health care professionals and potentially making health care more equitable.

## An integrated approach to neurovascular unit function and its relation with cognitive function in cerebral small vessel disease

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### Introduction

Cerebral small vessel disease (cSVD) is the leading cause of vascular cognitive impairment. Growing evidence indicates a significant role of neurovascular unit (NVU) dysfunction in the pathophysiology of cSVD. The NVU maintains the integrity of the blood-brain barrier (BBB), and regulates cerebral blood flow and perivascular clearance pathways. Individual functions of the NVU have been correlated with cognitive function previously, but an overall integrated analysis of the NVU, taking into account its multifunctional character, is currently lacking.

### Methods

Dynamic contrast-enhanced (DCE) and intravoxel incoherent motion (IVIM) MRI, and neuropsychological assessment, were performed in 73 clinically overt cSVD patients (mean age  $70 \pm 10$  years, 41% women). We used an integrated approach to investigate NVU function and its relation with cognition, by applying canonical correlation analysis (CCA). CCA aims to correlate two multivariable datasets and goes beyond one-to-one or many-to-one relations. In our study, the first dataset consisted of NVU variables (BBB leakage rate  $K_i$ , perfusion volume fraction  $f$ , pseudodiffusion coefficient  $D^*$  (reflecting the fast directional changes in the microcirculatory blood stream) and intermediate diffusion coefficient  $f_{int}$  (reflecting the amount of interstitial fluid in perivascular spaces). The second dataset consisted of 12 cognitive test scores representing three different cognitive domains (memory, executive function and psychomotor speed).

### Results

The integrated measure of NVU function correlated with cognitive functioning (canonical correlation 0.72,  $p$  0.02). Full CCA results are displayed in figure 1. For the NVU, the dominating variable was  $D^*$ , followed by  $f_{int}$  and  $K_i$ . Tests in all different cognitive domains contributed to the overall integrated measure of cognition. Similar results were obtained when individual neuropsychological test scores were substituted with compound cognitive domain scores (canonical correlation 0.58,  $p$  <0.01).

### Conclusion

This study has provided proof of concept for NVU dysfunction in the pathophysiology of cSVD. Instead of focussing on individual pathophysiological mechanisms, future studies in cSVD should target NVU dysfunction as a whole to acquire coherent understanding of the complex disease mechanisms in cSVD and eventually lead to the development of therapeutic interventions.



# Intravenous thrombolysis in the posterior circulation for acute ischemic stroke: A systematic review and meta-analysis.

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## Introduction

Intravenous thrombolysis (IVT) is recommended in patients with an acute ischemic stroke due to large vessel occlusion in the anterior circulation. Scarce information is known about treating posterior circulation occlusions with and without IVT. Posterior circulation occlusions have high mortality and morbidity rates. Our aim was to evaluate the safety and efficacy of IVT in the posterior circulation based on this systematic review and meta-analysis of published data.

## Methods

A systematic literature search was performed in PubMed and Embase on February 27th 2023. All titles and abstracts were screened independently by two authors. Data were extracted in one uniform data sheet and the risk of bias was assessed by two review authors using the Newcastle-Ottawa Scale. Outcome measures included favorable functional outcome on the modified Rankin Scale (mRS) at 90 days (defined as mRS 0-2), mortality at 90 days, and symptomatic intracranial hemorrhages (sICH) rates. Pooled weighted averages with DerSimonian-Laird approach is used to analyze the data. Subgroup analyses have been performed stratified by treatment window. Standard time window defined as treated within 4.5 hours after symptom onset and extended time window treated after 4.5 hours. Risk ratios (RR) were calculated using pooled raw data. All analyses were performed using RStudio.

## Results

Preliminary results included five prospective and seven retrospective cohort studies (n=977 patients). The overall pooled weighted average regarding favorable functional outcome was 0.63 (95%CI[0.44-0.78]; I<sup>2</sup>=94%), for mortality at 90 days 0.18 (95%CI[0.10-0.29]; I<sup>2</sup>=88%), and for sICH 0.05 (95%CI[0.04-0.13]; I<sup>2</sup>=49%). Subgroup analyses showed that patients treated with IVT in the standard compared to extended time window have higher probability of achieving favorable functional outcomes (RR=2.16, 95%CI:1.86-2.52), showing a higher weighted average of 0.78 (95%CI[0.64-0.87]; I<sup>2</sup>=82%) compared to 0.37 (95%CI[0.28-0.47]; I<sup>2</sup>=62%). Lower probabilities were seen in patients treated with IVT in standard compared to extended time window regarding mortality at 90 days (RR=0.33, 95%CI:0.25-0.44) and sICH rates (RR=0.44, 95%CI:0.25-0.79).

## Conclusion

Compared to literature our findings suggest that IVT in patients with posterior circulation occlusion is safe and effective in standard and extended time window. However, the effect of IVT is higher in the standard time window.

## Social media and medical disciplinary law: from case studies to practical rules of thumb.

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### Introduction

Professionalism is no longer limited to the physical world now a digital dimension has been added. It is known that people's behaviour online is more intense than in physical life, the so-called 'online disinhibition effect'. The central question in this research is whether and how social media play a role in disciplinary cases against BIG-registered care providers in the Netherlands.

### Methods

A study was conducted among the legal case law database of the Dutch Healthcare Disciplinary Board (<https://tuchtrecht.overheid.nl/>) of all rulings between January 2010 to January 2020, using the terms: 'social(e) media', 'Hyves', 'Instagram', 'LinkedIn', 'Pinterest', 'Snapchat', 'TikTok', 'Tumblr', 'Twitter', 'WhatsApp' and/or 'YouTube'. This resulted in 139 unique rulings, of which 48 related to the use of social media by the professionals themselves. These 48 rulings were included in the qualitative thematic analysis. Two authors were involved in the coding and consulted with each other in case of doubt about a code.

### Results

Men were more commonly accused in the rulings (83%) compared to women (17%). Five themes were found: 1. sexually inappropriate behaviour, 2. wrong medical title, 3. violation of professional secrecy, 4. not documenting relevant clinical information and 5. curiosities. The majority of the rulings (40 out of 48) were (partly) related to social media use in the context of sexually inappropriate behaviour between the healthcare provider and the (vulnerable) patient, such as underage or psychiatric patients.

### Conclusion

The boundaries of online professionalism in medical practice have been reassessed in disciplinary law over the last decade in response to digital developments in society. This case law study showed the following three rules of thumb:

1. The healthcare professionals themselves must maintain and monitor their (online) professional distance, especially with the most vulnerable (i.e. underage or psychiatric) patients.
2. The role of patients in (sexual) contact on social media with the healthcare provider is considered irrelevant in the rulings.
3. In the online domain, the healthcare providers must behave professionally as in the 'offline' domain concerning the (correct) use of their medical titles, professional secrecy and other professional obligations towards the patient.

# E-learning for Training Health Care Professionals to Differentiate Basal Cell Carcinoma from Non-Basal Cell Carcinoma on Optical Coherence Tomography

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## Introduction

Optical coherence tomography (OCT), a non-invasive diagnostic modality, may replace biopsy for diagnosing basal cell carcinoma (BCC). OCT may only replace biopsy if BCC lesions can be well discriminated from non-BCC lesions with high confidence. Clinical implementation of OCT is currently limited due to a lack of OCT assessors. E-learning may facilitate remote and simultaneous training of multiple new OCT assessors. This study evaluated whether e-learning is suitable for training health care professionals in achieving and maintaining an acceptable error rate for differentiating BCC from non-BCC lesions on OCT. Moreover, we explored the diagnostic accuracy for high-confidence BCC diagnoses by newly trained OCT assessors.

## Methods

The e-learning consisted of a theoretical module and practice cases containing OCT scans and clinical photographs. Trainee performance was monitored by cumulative sum analysis. The diagnostic error rate; sum of false-negative and false-positive OCT results divided by the total number of cases was used to evaluate performance using histopathology as reference standard. Acceptable and unacceptable error rates were set at 16% and 25% respectively. After successful completion, newly trained OCT assessors participated in a pilot study to assess the ability to discriminate BCC lesions from non-BCC lesions. Diagnostic certainty on BCC presence was expressed on a 5-point confidence scale. Only score 4 was considered a positive OCT test result (high confidence). Histopathology was used as reference standard.

## Results

Eleven trainees successfully completed the e-learning. On average, adequate performance was achieved and maintained after assessing 309 scans (range: 103 - 577). Six newly trained OCT assessors participated in the pilot study. The pooled specificity was 96.3% (95% CI: 92.0 - 98.4) and indicates high ability to recognize non-BCC lesions, which always have to be referred for biopsy to verify the histopathological diagnosis. The pooled sensitivity was 23.0% (95% CI: 14.2 - 35.0) indicating that in approximately one in five BCC patients, presence of a histopathological BCC can be established with high confidence, thereby obviating the need for a biopsy.

## Conclusion

With e-learning, health care professionals can achieve and maintain an acceptable error rate in differentiating BCC from non-BCC lesions on OCT.

## Comparison of clinical, technical and safety outcomes between inflated balloon guide catheters vs not inflated balloon guide catheters vs non-balloon guide catheters

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### Introduction

Patients with acute ischemic stroke due to a large vessel occlusion underwent often endovascular treatment (EVT). During EVT balloon guide catheters (BGCs) are often used. Despite evidence suggesting benefits of BGCs, their routinely use in clinical practice remains limited. Besides, the balloon is not in all cases inflated, rendering the balloon guide as a non-balloon type.

No previous study distinguished clinical outcomes between BGCs with and without inflated balloon. This study aims to compare the clinical, technical, and safety outcomes of BGCs with inflated balloon to BGCs without inflated balloon to non-balloon guide catheters (non-BGCs) in a local cohort.

### Methods

All patients who underwent EVT due to ischemic stroke between September 2020 and January 2023 in Maastricht University Medical Center+ were analyzed retrospectively. The primary outcome was the modified Ranking Scale (mRS) at 90 days follow-up. Secondary outcomes included favorable functional outcome (defined as mRS 0-2), the National Institutes of Health Stroke Scale (NIHSS) at 24-48 hours after EVT, expanded Treatment In Cerebral Infarction (eTICI) score, and safety outcome (eg. dissection).

### Results

Out of 492 patients, 438 were included. No statistical significant differences were observed for the follow-up mRS ( $P=0.620$ ). Favorable functional outcome was achieved in 34% of the patients using BGC with inflated balloon, 35% using BGC without inflated balloon, and 39% using non-BGC, however not significant different ( $P=0.742$ ). Also no statistical significant difference was observed for the follow-up NIHSS ( $P=0.795$ ). Ordinal eTICI differed significantly between the groups ( $P=0.009$ ). However, final eTICI $\geq 2C$  did not differ and was achieved in 69% of the patients treated with BGCs with inflated balloon, in 68% treated with BGCs without inflated balloon, and 72% treated with non-BGCs ( $P=0.698$ ). Dissection did not differ between the groups ( $P=0.690$ ).

### Conclusion

Clinical, technical, and safety outcomes were comparable for patients who were treated with BGCs with inflated balloon compared to BGCs without inflated balloon and compared to non-BGCs.

## Continuous care during labor by maternity care assistants in the Netherlands versus care-as-usual - a randomized controlled trial

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### Introduction

Background: Continuous support during labor has many benefits, including lower use of obstetrical interventions. However, implementation remains limited. Insights into birth outcomes as well as peripartum costs are essential to assess whether continuous care by a maternity care assistant is a potentially (cost) effective program to provide for all women.

Objective: Evaluate continuous care provided by maternity care assistants during labor.

## Methods

Study design: A randomized controlled trial, comparing continuous support during labor (intervention group) to care-as-usual (control group) with pre-specified intention-to-treat and per-protocol analyses. The population consisted of 1076 women with 54 exclusions and 30 discontinuations, leaving 992 women to be analyzed (515 continuous care and 477 care-as-usual). The primary outcome was epidural analgesia use. Secondary outcomes were use of other analgesia, referrals from midwife- to obstetrician-led care, modes of birth, hospital stay, sense of control, maternal and neonatal adverse outcomes and peripartum costs. Data were collected using questionnaires. Anticipating incomplete adherence to providing continuous care, both intention-to-treat and per-protocol analyses were planned. Peripartum costs were estimated using a healthcare perspective. Mean costs per woman and cost differences between the intervention and control group were calculated.

## Results

Intention-to-treat analyses showed statistically non-significant differences between the intervention and control group for epidural use (RR 0.88, 95%-CI 0.74 to 1.04,  $p=0.14$ ) and peripartum costs (mean difference € 185.83, 95%-CI -€ 204.22 to € 624.54).

Per-protocol analyses showed statistically significant decreases in epidural analgesia (RR 0.64, 95%-CI 0.48 to 0.84,  $p=0.001$ ), other analgesia (RR 0.59, 95%-CI 0.37 to 0.94,  $p=0.02$ ), cesarean sections (RR 0.53, 95%-CI 0.29 to 0.95,  $p=0.03$ ) and increase in spontaneous vaginal births (RR 1.09, 95%-CI 1.01 to 1.18,  $p=0.001$ ) in the intervention group, but difference in total peripartum costs remained statistically non-significant (mean difference € 246.55, 95%-CI -€ 539.14 to € 13.50).

## Conclusion

If the provision of continuous care given by maternity care assistants during labor can be secured, continuous care leads to more vaginal births and less epidural use, pain medication and cesarean sections, while not leading to a difference in peripartum costs compared to care-as-usual.

## Automated detection and segmentation of superficial basal cell carcinoma on optical coherence tomography.

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### Introduction

Superficial basal cell carcinoma (sBCC) represents approximately 30% of all basal cell carcinomas (BCCs), the latter being the most common type of cancer in humans. The gold standard for diagnosing BCC is the histological examination of a biopsy. Obtaining a biopsy is an invasive and painful procedure that carries minor risks such as infection and re-bleeding. Moreover, awaiting the histological results can be stressful for patients. Optical coherence tomography (OCT), an imaging method utilizing light-waves to produce high resolution three-dimensional images, has been successfully used to noninvasively diagnose BCC, expediting treatment and reducing healthcare costs. State-of-the-art deep learning algorithms applied to OCT scans could further improve OCT usefulness in BCC diagnostics by providing valuable insights to clinicians regarding tumor presence and location.

### Methods

We developed a 2D nnUNet-based deep learning model for the automated detection and segmentation of sBCC on OCT scans. The model was trained on 51 sBCC scans and tested on 20 sBCC and 80 non-BCC scans of histologically verified lesions clinically suspect of non-melanoma skin cancer. To generate ground truth masks, sBCC tumor nests were manually segmented by a trained OCT assessor. A positive test result for sBCC detection was defined as the model predicting sBCC presence in a scan and a negative result as the model predicting the absence of sBCC. The model's segmentation performance was assessed on 2D and 3D.

### Results

Our model achieved a sensitivity of 80.0% (95% CI: 56.3%-94.3%) and a specificity of 71.3% (95% CI: 60.5%-80.2%) for sBCC detection. A median 2D Dice score of 0.42 (IQR: 0.73) and a median volumetric (3D) Dice score of 0.31 (IQR: 0.36) were achieved on a test set of 20 sBCC scans.

### Conclusion

Our prototype deep learning model serves as a proof of concept for our approach, paving the way for its extension to other BCC subtypes. Future work should concentrate on enhancing detection and segmentation performance through training on a larger dataset. Refinement of postprocessing methods to increase detection specificity should also be considered. These combined efforts will be instrumental in transitioning our model from the research phase to the clinic.

## Establishing ultrasonographic reference values for the median nerve

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### Introduction

Nerve ultrasound (US) is playing an increasingly prominent role in the diagnosis of compression neuropathies and inflammatory polyneuropathies, characterised by an increase in cross-sectional area (CSA). Reference values variate between 6,6 and 10,0 mm<sup>2</sup> over the different sites and the examined nerve sections varied among studies. Few studies established correlations between the CSA and physical characteristics. However, there is no general consensus of significance and correlation.

The objective of this study is to establish ultrasonographic reference values for the CSA of the median nerve at five entrapment- and non-entrapment sites for the Maastricht University Medical Center. In addition, physical factors affecting the median nerve CSA are identified to specify the reference values.

### Methods

Median nerve CSA was measured by continuous tracing bilateral in 54 healthy adults at the distal wrist crease, 1/3 of the forearm, elbow, upper arm and axilla. Physical characteristics were obtained by questionnaire and measures. A multiple linear regression analysis was performed to determine the individual influence of the physical characteristics on the CSA.

### Results

The mean median nerve CSA at the wrist is 8,3 mm<sup>2</sup>, decreases at the forearm and increases along the proximal course. Reference values for the upper limit of normal are, from distal to proximal, 12,5 mm<sup>2</sup>, 9,8 mm<sup>2</sup>, 10,5 mm<sup>2</sup>, 11,4 mm<sup>2</sup> and 12,0 mm<sup>2</sup>.

Sex has the strongest correlation with CSA ( $\beta = 0,601$ ,  $p = 0,001$ ). Whereas wrist circumference had some effect. Age, height, weight and BMI seem to have no effect. Separate reference values for males and females were established.

### Conclusion

The established reference values fit well within the literature and are therefore valid to use in practice. It is too early to say that age does not affect the CSA since inclusion of elderly participants needs to be finalised. Advised is to finish inclusion and re-evaluate the reference values and influence of physical characteristics.



## The Association Between the Severity and the Duration of Having Overweight and Depressive Symptoms in Children and Adolescents

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### Introduction

The global prevalence of overweight and depression in children and adolescents is high, and furthermore, frequently coexisting in individuals. Children with obesity have a higher risk of developing depressive symptoms than children with a healthy weight. However, it is unclear if the severity of childhood overweight (defined by the International Obesity Task Force, IOTF), and the duration of having overweight (defined as the time between the first measurement of overweight and start of intervention) are associated with depressive symptoms. Therefore, this study examined the prevalence of depressive symptoms in children with overweight, obesity, and severe obesity, pre-treatment, and their relationship with the duration of having overweight.

### Methods

A retrospective study was performed at the Centre for Overweight Adolescent and Children's Healthcare (COACH), including children with overweight, obesity, or severe obesity aged 7 to 18. Depressive symptoms were measured with the Children's Depression Inventory (CDI) questionnaire. Anthropometry data, including retrospective measurements and the child's measurements at the start of the intervention, were gathered from medical records.

### Results

In total 387 children and adolescents with overweight (N=102), obesity (N=184), or severe obesity (N=101) were included. Depressive symptoms (defined as CDI score  $\geq 16$ ) were observed in 8.8% of all children, and present in children of all IOTF categories; overweight (5.9%), obesity (10.3%), and severe obesity (8.9%). No significant association was found between IOTF criteria and depressive symptoms. The CDI scores did not significantly differ between children with overweight (6.00, IQR 3.00-9.00), obesity (7.00, IQR 4.00-11.00), and severe obesity (7.00, IQR 4.00-12.00,  $p=0.055$ ). The median duration of having overweight was not significantly different between children with depressive symptoms (7.63, IQR 6.36-10.63) and those without (6.57, IQR 4.07-8.64). The duration of having overweight was not significantly associated with CDI scores or depressive symptoms.

### Conclusion

Each IOTF category had some children that showed depressive symptoms. There was no relation between the severity or the duration of having overweight and the CDI scores or depressive symptoms in children. Therefore, healthcare workers must be attentive to the potential presence of depressive symptoms in children and adolescents with overweight, regardless of the severity and duration of having overweight.

## Correlation between radiologic complete response of the breast and axillary pCR in patients treated with neoadjuvant systemic therapy - a single-centre retrospective analysis

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### Introduction

The implementation of neoadjuvant systemic therapy engendered an increase in pathologic complete response (pCR) of the breast and axillary lymph nodes (ALNs). Previous studies suggest a strong correlation between breast pCR and axillary pCR in patients treated with NST. Determining the extent of breast pCR after NST could shape axillary surgery into a redundant procedure in select groups of breast cancer patients. Therefore, this study aimed to assess the correlation between radiologic complete response (rCR) of the breast on breast imaging modalities and pCR of the breast and axillary lymph nodes after NST in patients with breast cancer.

### Methods

Breast cancer patients, treated with NST between 2012-2022, who underwent baseline breast imaging modalities followed by mid- or post-treatment imaging (with either breast MRI or contrast-enhanced mammography (CEM)), were included using the Netherlands Cancer Registry. Clinicopathologic characteristics and imaging findings were obtained and correlated with the histopathologic results of the surgical specimen. Sensitivity, specificity, predictive values and descriptive statistics were performed. Multivariate logistic regression was performed to establish clinicopathologic variables correlated with axillary pCR.

### Results

Preliminary results; 273 patients (2012-2019) were included, of whom 71 (26.0%) achieved breast pCR. Patients who underwent CEM during-/post-NST were not included in the preliminary analysis due to the limited amount of cases (n=16). The sensitivity, specificity, PPV and NPV of breast MRI in the prediction of breast pCR after NST were 38.0%, 86.6%, 50.0% and 80.0% respectively (AOC 0.69 (95% CI 0.62-0.76)). The false-negative rate of breast rCR in predicting ypN0 was 11.3%. The odds of ypN0 increased in case of rCR of the breast (OR 2.74 (95% CI 1.32-5.68)) and decreased in ER+HER2- subtypes (OR 0.36 (95% CI 0.18-0.72)).

### Conclusion

This study suggests a positive correlation between breast rCR achieved after NST and axillar pCR. Future studies should focus on breast cancer subtype-specific correlations to determine the potential for clinical implementation. Based on preliminary results, we conclude that MRI findings are currently insufficient to determine pCR of the breast and axilla.

## Validity and Reliability of the Baecke Questionnaire Compared with the ActiGraph Accelerometer to Measure Physical Activity in Women with Overweight or Obesity

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### Introduction

The rising prevalence of people with overweight or obesity is posing a threat to global public health and causing a rise in the development of noncommunicable diseases. Physical inactivity is a major risk factor for developing overweight or obesity, while adequate physical activity confers numerous health benefits. To assess the impact of a lifestyle intervention on physical activity, a reliable measurement method is essential. In this study, the Baecke questionnaire was compared to the ActiGraph accelerometer with the aim to investigate the validity and reliability of estimating physical activity in women with overweight or obesity with a pregnancy wish or who are pregnant. This is relevant for the implementation of an effective physical activity-based lifestyle intervention. It was hypothesized that a discrepancy would exist between the physical activity levels reported through the Baecke questionnaire and those captured by the ActiGraph.

### Methods

The sample consisted of 90 participants originating from the TOP-mums study. Women were eligible to be included when planning to conceive within one year, 18-40 years of age and having a BMI  $\geq 25.0$  kg/m<sup>2</sup>. Participants completed the Baecke questionnaire and the ActiGraph measurement. For both measurements, the participants were either classified as more or less active. Pearson correlations were used to examine the strength and association between the Baecke questionnaire and the ActiGraph. McNemar's test was used to evaluate whether there was a similarity in activity classification. Furthermore, the intraclass correlation coefficient was used to assess the reliability of the Baecke questionnaire to measure physical activity.

### Results

The study results revealed that there was no statistically significant correlation between physical activity levels measured by the Baecke questionnaire and the ActiGraph, and no significant similarity in activity classification. However, a significant negative correlation was observed between the Baecke questionnaire and sedentary behaviour as measured by the ActiGraph. Additionally, the reliability of the Baecke questionnaire was found to be poor in comparison with the ActiGraph.

### Conclusion

Our research revealed that the Baecke questionnaire cannot correctly estimate physical activity in women with overweight or obesity with a pregnancy wish or who are pregnant in comparison with the ActiGraph accelerometer.

## Infrared sauna does not acutely lower postprandial plasma glucose excursions in individuals with type 2 diabetes mellitus: a cross-over, randomized, controlled trial

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### Introduction

Passive heat therapy has been suggested to improve glycaemic control in individuals with type 2 diabetes mellitus (T2DM). Previous studies have predominantly focused on hot water immersion and traditional sauna bathing, as opposed to the more novel method of infrared-based sauna bathing. Here we assessed the impact of a single infrared sauna bathing session on post-prandial glycaemic control in older individuals with T2DM.

### Methods

In this randomized controlled crossover trial, 12 participants with T2DM (male/female: 10/2, age:  $69\pm 7$  y, BMI:  $27.5\pm 2.9$  kg/m<sup>2</sup>) rested in an infrared sauna twice: once in a hot condition (60°C; HOT) and once in a thermoneutral condition (21°C; CON) for 40 min, immediately followed by a 2-h oral glucose tolerance test. Venous blood samples were obtained to assess plasma glucose and insulin concentrations and to determine the whole-body composite insulin sensitivity index.

### Results

Body core and skin temperature were higher following infrared sauna bathing compared to the thermoneutral condition ( $38.0\pm 0.3$  vs  $36.6\pm 0.2$  °C and  $39.4\pm 0.8$  vs  $31.3\pm 0.8$  °C, respectively;  $P<0.001$  for both). The incremental area under the curve of plasma glucose concentrations during the oral glucose tolerance test was higher for HOT compared to CON ( $17.7\pm 3.1$  vs  $14.8\pm 2.8$  mmol/L/120 min;  $P<0.001$ ). No differences were observed in plasma insulin concentrations (HOT:  $380\pm 194$  vs CON:  $376\pm 210$  pmol/L;  $P=0.93$ ) or whole-body composite insulin sensitivity indexes ( $4.5\pm 2.8$  vs  $4.5\pm 2.1$ ;  $P=0.67$ ).

### Conclusion

A single infrared sauna bathing session does not lower postprandial blood glucose excursions in individuals with T2DM. Future studies should assess the effect of more prolonged application of infrared sauna bathing on glycaemic control.

## Evaluation of Left Ventricular Ejection Fraction Recovery to prevent untimely Defibrillator Implantation in Dilated Cardiomyopathy

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### Introduction

Left ventricular ejection fraction (LVEF) has been a major determinant in implantable cardioverter-defibrillator (ICD) therapy, but with the availability of new pharmacological therapies for nonischemic dilated cardiomyopathy (DCM), several aspects regarding LVEF recovery remain unclear, including the time-period following optimal medical therapy (OMT) in which LVEF recovery may still set in and its predictors.

### Methods

DCM patients with LVEF  $\leq 35\%$ , were prospectively enrolled in the Maastricht Cardiomyopathy Registry from 2004 to 2022. OMT was established and determined as T0. A subgroup analysis was performed to calculate significant LVEF improvement duration using a paired sample t-test on two separate time points on the trajectory analysis with the respective mean LVEF. The incidence of life threatening arrhythmias (LTA) or sudden cardiac death (SCD) between timepoints was calculated and visualized using Kaplan-Meier. Univariable and multivariable logistic regression analyses were conducted to compare predictive variables at baseline to LVEF improvement.

### Results

A total of 453 patients met the inclusion criteria. Mean LVEF was  $27.7\% \pm 7.8\%$  at OMT (0 months) and  $37.9\% \pm 11.0\%$  at 18 months, respectively. A mean LVEF improvement of  $10.2\%$  (95% CI 8.6%-11.9%,  $p < 0.01$ ) was seen within this time-period. LTA/SCD was seen in 1.8% ( $n=8$ ) within 18 months following OMT. Late LVEF recovery to  $>35\%$  occurred in a majority of 61.7% ( $n=127$ ) out of 206 patients. Multivariable logistic regression analyses showed that T-lymphocyte cell count in endomyocardial biopsy (OR=0.93, 95% CI 0.87-0.99,  $p=0.034$ ) and beta blocker usage of  $\geq 50\%$  of the OMT targeted dose (OR=2.08, 95% CI 1.06-4.15,  $p=0.036$ ) were independently associated with LVEF outcome.

### Conclusion

In DCM, a significant LVEF improvement is seen up to 18 months after OMT with a  $<2\%$  incidence of LTA/SCD within this period of time. A delayed primary prevention ICD implantation may be considered in DCM patients with beta blocker usage  $\geq 50\%$  of the OMT targeted dose and low T-lymphocyte cell count in endomyocardial biopsy.

## Exploring perceived quality of life in middle-aged to old-aged patients with inherited ichthyosis

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### Introduction

Inherited ichthyosis refers to a rare group of keratinization disorders caused by genetic variants characterized by scaling and erythema. Ichthyosis patients suffer from physical and mental complaints affecting their quality of life (QoL). There is limited knowledge regarding the influence of ichthyosis on the QoL of adult and older patients.

### Methods

**Objective:** To investigate the impact of ichthyosis on the biological-psychological-social QoL of adults and older patients.

**Methods:** We performed semi-structured interviews with participants  $\geq 30$  years and a molecular diagnosis of inherited ichthyosis. Participants were recruited in Maastricht UMC+ expertise-center and via the ichthyosis-patient association. Specific topics concerning the biological-psychological-social QoL, e.g. psychological burden and sexual health, were questioned using an interview protocol. All interviews were recorded, transcribed, and analyzed using grounded theory. Validated QoL questionnaires (DLQI and Skindex-29) were collected.

### Results

Sixteen participants (median age 54.0; IQR 43.5-66.5) were included with a diagnosis of autosomal recessive ichthyosis (n=10), bullous congenital ichthiosiform erythroderma (n=2), or X-linked ichthyosis (n=4). We learned that physical complaints such as scaling and pruritus, restrict daily activities and life choices, i.e. occupation. With age, participants experienced more fatigue and overheating. Ichthyosis may adversely affect sexual health and the desire to have children. Psychosocial aspects included a life-long poorer self-image, feeling alone, and concerns about future obstacles in their skincare. Unsurprisingly, patients reported time-consuming and costly skin-care routines. Total DLQI scores of the study population were median 10.0; IQR 6.0-18.0, indicating an impact of ichthyosis on QoL in 80% of the participants. Overall Skindex-29 scores were median 37.5; IQR 22.5-50.8, and for individual categories of symptoms (median 50.0; IQR 35.7-64.3), emotions (median 27.5; IQR 22.5-55.0), and functioning (median 35.4; IQR 21.0-54.2).

### Conclusion

We found a negative impact of ichthyosis on the biological, psychological and social QoL. Results of the DLQI and Skindex-29 scores synergistically confirm this impact on the QoL. Suggestions for healthcare improvements include societal awareness, medication reimbursement, research on age-related issues, and, most importantly psychological support.

## Freehand Transperineal Prostate Biopsies without Antibiotic Prophylaxis - the New Gold Standard?

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### Introduction

Prostate biopsies are essential to diagnose prostate cancer (PCa). Transrectal prostate biopsies (TR-PB) are commonly performed, however disadvantages include the requirement of antibiotic prophylaxis (AP) and higher complication rates than transperineal prostate biopsies (TP-PB). Guidelines still recommend the use of AP for TP-PB due to the limited evidence regarding complication rates after their omission. However, the rising rates of antibiotic resistance is of concern. The aim of this study was to compare the complication and detection rates of freehand TP-PB without AP versus TR-PB with AP.

### Methods

This retrospective study was performed in an academic hospital. TP-PB were introduced in 2019 and implemented as the main technique by late 2020. To compare the two techniques, data was collected for freehand TR-PB with AP between 2017-2018 and freehand TP-PB without AP between 2021-2022. The data from 2019 and 2020 were excluded to rule out the effects of the initial learning curve during the transition period. Primary outcome measure was post-biopsy complications occurring within 2 weeks, focusing on infectious complications. Secondary outcome measures were detection rates and upgrading/reclassification in the repeat biopsy in active surveillance (AS). Statistical analysis was performed using a Fisher exact or Chi-Squared test.

### Results

In total, 923 individual biopsies were included (520 TP-PB and 403 TR-PB). TP-PB recorded significantly fewer infectious complications compared to TR-PB (0.2% vs 1.5%,  $p=0.048$ ). No cases of urosepsis occurred after TP-PB. The rates of acute urinary retention (0.8% vs 1.2%,  $p=0.515$ ) and hospitalisation for severe bleeding (0.0% vs 0.2%,  $p=0.437$ ) were similar. Upgrading/reclassification in AS was detected in 37% of TP-PB versus 28% of TR-PB ( $p=0.384$ ).

### Conclusion

This study indicates that freehand TP-PB without AP is associated with fewer infectious complications compared to TR-PB with AP, and that AP can safely be omitted. Our data suggests improved detection of upgrading in AS repeat biopsies for TP-PB, however larger studies are required to confirm this.

# 18F-FDG PET/CT in the staging of breast cancer patients with an estrogen-receptor positive subtype: The effect of different standardised uptake value (SUV) cut-off values on the proportion of patients with suboptimal 18F-FDG PET/CT scans

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## Introduction

18F-FDG PET imaging is used to diagnose and stage locally advanced breast cancer (LABC), as metastasis may alter prognosis and treatment. 18F-FDG uptake, indicating tumour metabolic activity, is measured using standardised uptake value (SUV). Previous studies demonstrated significant decrease in metabolic uptake in estrogen receptor (ER)-positive subtypes when compared to ER-negative subtypes, potentially resulting in suboptimal PET scans. The objective of this study was to assess the proportion of ER-positive tumours wherein the relatively reduced metabolic uptake resulted in suboptimal PET imaging, leading to an underestimated staging.

## Methods

Females diagnosed with LABC in Maastricht University Medical Centre+ between 2011-2022, with an ER-positive subtype who underwent a 18F-FDG PET/CT scan at diagnosis were retrospectively included. The 18F-FDG PET/CT scans were re-evaluated to assess the SUVmax values of the primary tumour, axillary lymph nodes, and background tissues. The proportion of suboptimal PET scans was assessed by applying different SUVmax cut-off values (2.0-5.0). Tumour-to-background ratio (TBR) and nodal-to-tumour ratio (NT-ratio) were calculated. Survival analysis was performed using Kaplan-Meier curves.

## Results

Fifty patients were included. Upon applying SUVmax cut-off values of 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, and 5.0, the proportion of women with an SUVmax of the primary tumour under the cut-off value and, therefore, having a suboptimal PET scan, was 8%, 18%, 26%, 32%, 42%, 42%, and 48% respectively. Maximum TBR of the contralateral breast, mediastinal bloodpool, and liver, had a median and range of 3.39 (1.03-19.03), 2.04 (0.53-9.25), and 1.52 (0.35-5.76) respectively. The NT-ratio ranged between 28.6-2.0%, depending on SUVmax cut-off value respectively. Kaplan-Meier showed no statistically significant difference in the disease-free (recurrence: 50-21% vs. 17-19% for suboptimal versus optimal PET-scans) and overall (death: 25-17% vs. 22-27% for suboptimal versus optimal PET-scans) survival at 125 months depending on the SUVmax cut-off value.

## Conclusion

This study demonstrated that a considerable proportion of ER-positive LABC patients have a decreased metabolic activity, resulting in a suboptimal PET scan and possibly an underestimated staging. Further research is necessary to investigate the optimal SUVmax cut-off value for, and the possibility of a more accurate PET tracer than 18F-FDG for visualising metastasis of, ER-positive tumours.



## Assessing balance in patients with bilateral vestibulopathy with the Mini-Balance Evaluation Systems Test (Mini-BESTest)

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### Introduction

Bilateral Vestibulopathy (BVP) leads to unsteadiness when walking which worsen in darkness and/or on uneven ground and oscillopsia when movement. A previous review concluded that clinical balance tests that challenge multiple aspects of balance should be investigated, since simple tests struggle to distinguish between BVP and healthy participants<sup>1</sup>. Our aim was (1) to test if the more comprehensive Mini-BESTest is feasible in BVP, (2) to examine how patients perform in terms of their overall and subcomponent scores and (3) to compare these scores with healthy reference data from the literature.

### Methods

50 participants with BVP completed the Mini-BESTest as part of a larger study. The Mini-BESTest has 4 components: anticipatory, reactive postural control, sensory orientation and dynamic gait. It comprises 14 items and each is scored from 0 (unable to perform) to 2 (normal performance) with a maximum score of 28. To compare the overall and sub-scores between our patients with BVP and those of healthy participants from the literature (n=327)<sup>2-9</sup>, Mann-Whitney U tests were used. Spearman correlations were used to investigate the relationships between Mini-BESTest score and age.

### Results

Patients with BVP had significantly lower Mini-BESTest total scores than the healthy group (BVP mean=20.8, Healthy mean=24.2, U(NBVP=49, NHealthy=327)=4564.00,  $p < 0.001$ ). 3 subscores of the Mini-BESTest (anticipatory, reactive postural control, sensory orientation) were significantly lower in BVP (U(NBVP=50, NHealthy=190)=2364.50,  $p < 0.001$ , U(NBVP=50, NHealthy=190)=3737.00,  $p = 0.028$  and U(NBVP=50, NHealthy=190)=1223.50,  $p < 0.001$ , respectively), while the dynamic gait subscores were not significantly different (U(NBVP=50, NHealthy=190)=4374.50,  $p = 0.367$ ). A stronger negative correlation between age and Mini-BESTest total score was found in the BVP group ( $\rho = -0.67$ ; 95% CI: -0.74 to -0.35;  $p < 0.001$ ) than in the healthy group ( $\rho = -0.32$ ; 95% CI: -0.32 to -0.11;  $p < 0.001$ ).

### Conclusion

Our findings illustrate that the Mini-BESTest can be used with patients with BVP and confirm the commonly reported balance deficits in BVP, specifically deficits related to anticipatory, reactive postural control and sensory orientation Mini-BESTest subscores. The negative association between age and balance was stronger in BVP, perhaps related to the age-related decline in the remaining functional sensory systems with which people with BVP compensate.

## Evaluation of innovative laboratory tests to predict a thrombotic phenotype in a family with dysfibrinogenemia and a novel FGG mutation.

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### Introduction

Hypodysfibrinogenemia is a rare hereditary fibrinogen disorder characterized by quantitative and qualitative fibrinogen defects. These fibrinogen defects can cause thrombotic and hemorrhagic phenotypes. Unfortunately, predicting the phenotype in a specific patient is often not possible with routine coagulation tests. The aim of this article is to characterize the phenotype and the genetic profile of a family with hypodysfibrinogenemia and to investigate the ability of innovative tests to predict bleeding and/or thrombotic phenotypes in asymptomatic family members.

### Methods

The proband, a 60-year-old woman with both bleeding and thrombotic complications who is currently on DOAC treatment, and two daughters were referred to our Hemophilia Treatment Center (HTC) for phenotypical and genotypical analysis of a congenital fibrinogen disorder (CFD). Extensive laboratory testing was done, as well as DNA-sequence analysis and molecular modelling. Thrombin generation and microfluidic testing were also performed to investigate their ability in phenotype prediction.

### Results

Fibrinogen activity and antigen levels led to the diagnosis of dysfibrinogenemia in the proband and hypodysfibrinogenemia in both daughters. In all three cases, the same heterozygous missense mutation in the FGG gene was uncovered. This likely pathogenic mutation leads to the p.(Tyr375Cys) amino acid change. Molecular modeling predicted possible conformational changes or covalent dimerization of the fibrinogen molecule. Thrombin generation was elevated in one daughter. Microfluidic testing showed enhanced fibrin formation in both daughters, regardless of the coagulation trigger.

### Conclusion

We described a family with hypodysfibrinogenemia in whom a novel heterozygous missense mutation in the FGG gene was found, possibly leading to conformational changes or covalent dimerization of the fibrinogen molecule. Furthermore we showed that microfluidic testing and thrombin generation can indicate a thrombotic phenotype in these patients, not detected with routine coagulation tests.

Informed consent and approval from the medical-ethical committee from Maastricht (METC azM/UM) were obtained.

# The prognostic value of regional lymph node microarchitecture in patients with oesophageal or gastric cancer: a systematic review and meta-analysis

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## Introduction

One of the most important prognostic factor in patients with gastric cancers (GaC) is the status of regional tumour-draining lymph nodes (LN). It has been suggested that the host anti-tumour immune response can trigger LN microarchitecture changes like follicular hyperplasia (FH), sinus histiocytosis (SH), or paracortical hyperplasia (PH). However, the prognostic value of LN microarchitecture changes in patients with GaC is currently unclear.

## Methods

Systematic search in Embase, MEDLINE, CINAHL and Cochrane up to January 2023 including cohort studies, randomized controlled trials, and case control studies. Outcome measure: prognostic value (overall survival (OS)) of the microarchitecture changes in tumour-negative and tumour-positive LN as measured on histopathological slides. The review was registered in the PROSPERO database. As the number of GaC publications was very small, the search was subsequently expanded to include oesophageal cancer (OeC).

## Results

7597 publications were identified. After reviewing title and abstract for predefined inclusion criteria, full-text review was performed for 227 studies identifying 29 articles which matched all inclusion criteria analysing a total of 5242 LN from 1898 OeC and 3982 GaC patients. Ten different LN microarchitecture changes were described and grouped into three categories: (1) LN compartment hyperplasia (SH, FH, PH), (2) cell-specific infiltration (dendritic cells, T-cells, neutrophils, macrophages), and (3) LN morphology changes (diameter, stromal reaction). The first category was studied in a sufficiently large number of patients in 5 studies to allow meta-analysis. The results from the meta-analysis suggested presence of SH, PH or FH as indicators for good survival (pooled risk ratios (95% confidence interval) 2.73 (1.23-6.05) and 1.36 (1.01-1.82) for 1- and 5-year OS for SH, 1.43 (1.09-1.88) for 5-year OS for PH and 1.85 (1.32-2.59) for 1-year OS for FH).

## Conclusion

This systematic review with meta-analysis suggests that the presence of SH or FH in regional tumour-draining LN could be a clinically useful biomarker of a favourable host anti-tumour response in OeC and GaC patients. However, the currently available evidence is limited and results for other LN reaction patterns are inconclusive warranting further studies.

## The prognostic and predictive effect of BMI in postmenopausal HR+ breast cancer patients receiving (extended) endocrine therapy - DATA trial analysis

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### Introduction

This study determines the prognostic and predictive effect of body mass index (BMI) on the disease-free survival (DFS) of postmenopausal hormone receptor-positive (HR+) breast cancer patients who received (extended) endocrine therapy.

### Methods

Patients with a BMI of  $\geq 18.5$  kg/m<sup>2</sup> were identified from the randomised, phase 3 DATA trial (NCT00301457), which evaluated the use of six versus three years of anastrozole in postmenopausal women with HR+ breast cancer who were disease-free after two to three years of adjuvant treatment with tamoxifen. Patients were categorised as normal weight (BMI: 18.5-24.9 kg/m<sup>2</sup>), overweight (BMI: 25-29.9 kg/m<sup>2</sup>), or obese (BMI:  $\geq 30$  kg/m<sup>2</sup>). The primary endpoint was DFS. Multivariable Cox regression analyses were performed. The prognostic impact of BMI was evaluated from date of randomisation, whereas the predictive impact of BMI on the efficacy of extended anastrozole was evaluated from three years after randomisation, i.e. treatment divergence (adapted DFS).

### Results

Overall, 1,781 patients were included: 678 (38%) normal weight, 712 (40%) overweight, and 391 (22%) obese patients. After a median follow-up of 13.1 years, overweight and obese patients had a worse DFS when compared with normal weight patients (hazard ratio (HR)=1.16; 95% confidence interval (CI) 0.97-1.38,  $p=0.10$ ; and HR=1.26; 95% CI 1.03-1.54,  $p=0.03$ , respectively). In women aged  $<60$  years, overweight was associated with a worse DFS (HR=1.29; 95% CI 1.00-1.67,  $p=0.05$ ) as was obesity (HR=1.83; 95% CI 1.36-2.46,  $p<0.001$ ), but this was not observed in women aged  $\geq 60$  years (HR=1.04; 95% CI 0.82-1.33,  $p=0.72$ ; and HR=0.94; 95% CI 0.72-1.23,  $p=0.63$ , respectively) ( $p$ -interaction = 0.009). The effect of extended anastrozole on adapted DFS did not differ between normal weight (HR=1.00; 95% CI 0.74-1.35,  $p=1.00$ ), overweight (HR=0.74; 95% CI 0.56-0.98,  $p=0.04$ ), and obese patients (HR=0.97; 95% CI 0.69-1.36,  $p=0.85$ ) ( $p$ -interaction=0.24).

### Conclusion

In HR+ breast cancer patients aged  $<60$  years at randomisation, overweight and obesity were adverse prognostic factors for DFS. In patients aged  $\geq 60$  years, this adverse prognostic effect was not observed. The effect of extended anastrozole on adapted DFS did not differ between BMI classes.

## Surgical outcomes and prognosis of HER2-positive invasive breast cancer patients with a DCIS component treated with breast-conserving surgery after neoadjuvant systemic therapy

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### Introduction

Ductal carcinoma in situ is considered a non-obligate precursor of invasive breast cancer (IBC). In up to 72% of HER2-positive IBC, a DCIS component is present next to the invasive tumour. In IBC patients primarily treated with breast-conserving surgery (BCS), the presence of a DCIS component is associated with a higher rate of positive resection margins. However, the influence of a DCIS component in the neoadjuvant setting is less well understood. The aim of this nationwide retrospective study was to assess the rate of positive resection margins of HER2-positive IBC with versus without a DCIS component, treated with neoadjuvant systemic therapy (NST) and BCS. In addition, prognostic outcomes were compared between the two groups.

### Methods

All women diagnosed with HER2-positive IBC treated with NST and BCS, between 2010-2020, were selected from the Netherlands Cancer Registry. Pathology reports were obtained from the Dutch Nationwide Pathology Databank to assess for the presence of DCIS and resection margins. Locoregional recurrence (LRR) was defined as a biopsy proven recurrence (in situ/invasive) in the ipsilateral breast and/or regional lymph nodes. Kaplan-Meier analyses were performed to determine locoregional recurrence free survival (LRFS) and overall survival (OS) for patients with IBC+DCIS versus IBC within 5 years after diagnosis.

### Results

In total, 3056 HER2-positive IBC patients were included, of which 1868 with IBC and 1269 with IBC+DCIS. Patients with IBC+DCIS had significantly more often positive resection margins compared to IBC (12.8% versus 4.9%,  $p < 0.001$ ). Overall, 100 patients had a LRR within 5 years after primary diagnosis, 56 (4.6%) in the IBC+DCIS group and 44 (2.4%) in the IBC group. Five-year LRFS was significantly lower in IBC+DCIS compared to IBC (91.7% versus 94.4%,  $p = 0.004$ ). Five-year OS did not significantly differ between IBC+DCIS and IBC (95.5% versus 96.2%,  $p = 0.334$ ).

### Conclusion

Patients with HER2-positive IBC+DCIS had a significantly higher rate of positive resection margins, after treatment with NST and BCS, compared to IBC only. Five-year LRFS is lower in IBC+DCIS patients compared to IBC, but five-year OS does not significantly differ.

## Novel variants in Desmoglein 1 causing Severe skin dermatitis, multiple Allergies and Metabolic wasting (SAM) syndrome and palmoplantar keratoderma (PPK)

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### Introduction

Biallelic loss-of-function variants in *DSG1* encoding desmoglein 1 cause severe atopic dermatitis, multiple allergies, and metabolic wasting (SAM) syndrome, whereas heterozygous variants cause palmoplantar keratoderma (PPK). We aimed to investigate the genetic variations, pathophysiology and clinical findings of two patients with SAM syndrome and eleven patients with PPK.

### Methods

Patients were recruited from European medical centres. Genetic analysis was used to identify variants in *DSG1*. Immunofluorescence staining was performed to determine *DSG1* protein expression and localization in SAM patients. Clinical data were extracted from patient records.

### Results

Here, we report two SAM patients and eleven PPK patients from unrelated families and identified eleven novel variants in *DSG1*. In a severe and in a mild SAM patient, we identified compound heterozygous and homozygous variants, respectively. Consequently the variants result in total or partial absence of *DSG1* in the epidermis. Variants in SAM and PPK included barely reported missense (n=4), nonsense (n=2), splice-site (n=2), small deletion/duplication (n=3) and never reported gross deletion (n=1) variants. Clinical heterogeneity in PPK patients was seen, with striate focal or a diffuse PPK

### Conclusion

This study demonstrates the genetic and clinical heterogeneity in SAM and PPK due to *DSG1* variants and adds eleven novel pathogenic *DSG1* variants, including rare missense variants. Immunofluorescence staining in SAM patients showed that the severity could correlate with total or partial absence of *DSG1*, suggesting a difference in protein stability encoded by the variants. However, the exact pathological mechanisms and genotype-phenotype correlation for *DSG1* variants remain to be elucidated.

## Association between time to treatment and disease-free survival of patients with high-risk cutaneous squamous cell carcinoma in the head and neck region.

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### Introduction

High-risk cutaneous squamous cell carcinomas (SCC) in the head and neck region (HNcSCC) require multidisciplinary care due to its complex location, risk of recurrence and/ or metastasis, and often vulnerable elderly patients. This may result in prolonged time to treatment and potentially reduces survival.

Objective: Investigating the association between time to treatment (TTT), defined as date of pathological diagnosis to date of first treatment, and disease free survival (DFS) in patients with high-risk HNcSCC.

### Methods

Included were patients with high-risk HNcSCC treated at one of the two participating centers between 2010 and 2018. Data were retrospectively derived from the Dutch Pathological Anatomical National Automated Archive and patient records.

### Results

Included were 151 and 107 patients with a short (i.e. <30 days) and long (i.e. 30 days or more) TTT, respectively. Patients with short TTT were more likely to have a statistically significant smaller median histological tumor diameter in mm (20 (IQR 15-22) vs. 24 (IQR 20-30);  $p=0.003$ ), less likely visited/were discussed in the HN-team (50.5% vs. 72.0%;  $p<0.001$ ), and less often received general anesthesia in the treatment of their HNcSCC (12.6% vs. 25.2%,  $p=0.013$ ) compared to patients with a long TTT.

The 5-year cumulative DFS in patients with a short TTT was 83.1% (95% CI, 73.2-89.6), compared to 74.1% (95% CI, 58.4-84.6) in patients with a long TTT (log rank,  $p=0.290$ ). On multivariate analysis, the relative risk of recurrence and metastasis in a long TTT was 1.200 (95% CI, 0.48-2.97;  $p=0.694$ ). Both a poor differentiation type (adjusted HR, 3.121; 95% CI, 1.24-7.84;  $p=0.015$ ) and incomplete treatment (adjusted HR, 6.157; 95% CI, 2.03-18.69;  $p=0.001$ ) are independent risk factors for recurrence and metastasis.

### Conclusion

Patients with a long TTT were significantly more likely to have poor prognostic baseline factors such as a higher median histological tumor diameter, and more frequently received general anesthesia. Results suggest that a TTT of more than 30 days may negatively affect DFS compared to a TTT of  $\leq 30$  days, however, no statistically significant difference was found and therefore definitive conclusions on TTT and DFS could not be made.

## Exploring trainees' learning processes of becoming a skilled communicator: a longitudinal qualitative research study

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### Introduction

Doctor-patient communication is a core competency in medical training. Learning communication asks for a contextual approach to tailor communication flexibly to the authentic clinical encounter, called 'skilled communication'. Conceptual models have provided insights into developing skilled communication in clinical settings, however insight in the longitudinal aspect remains unravelled. This study therefore aims to explore the longitudinal learning processes of becoming a skilled communicator. Thereby, enriching the understanding of existing conceptual models into communication learning and formulate recommendations on how learners can be optimally supported in becoming a skilled communicator.

### Methods

A longitudinal qualitative study engaging thirteen General Practitioner (GP) trainees (n=8 year 1, n=5 year 3) from two GP specialty training institutes in the Netherlands (Maastricht and Nijmegen) was conducted throughout a period of six months. To provide an in-depth understanding of communication learning processes during workplace learning three sources of data were collected: clinical observations, stimulated recall-interviews, and audio-diaries. In line with constructivist grounded theory, all data-sources were thematically analysed during an iterative process of data collection and -analysis.

### Results

Based on preliminary findings a 5-step learning cycle was constructed including learning strategies. Learning starts with an impactful experience or concrete stimulus like an uneasy feeling raised during a clinical encounter. Subsequently, learners become aware of own communication and underlying emotions and attitudes, which stimulates to obtain alternative communication. Followed by experimenting with alternative communication strategies and evaluating the effectiveness, for example if it matches their personal style. Through repeated practice, alternative strategies becomes internalized.

### Conclusion

A learning cycle for becoming a skilled communicator was developed and may provide a base to develop a continuous and learner-centered program. This approach enables internalizing communication and the capacity to flexibly adapt strategies to the constantly changing context of the clinical encounter. For clinical workplace learning, it is important to facilitate ongoing self-monitoring and repeated practice. Further research should focus on the generalizability of the learning cycle in other clinical competencies. If so, this may have huge implications for the design of longitudinal and continuous postgraduate training.



## The Influence of Personality on Health Complaints and Quality of Life in Women With Breast Implants

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### Introduction

A causal relation between systemic symptoms and breast implants has not been established. Psychological factors, such as personality and psychological distress, are strongly associated with the development of medically unexplained symptoms. It can be hypothesized that psychological factors may be related to the development of breast implant illness (BII). This study was conducted to evaluate the correlation between self-reported health complaints, health- and breast-related quality of life (QoL), and personality, in women with cosmetic breast implants.

### Methods

Women who attended the plastic surgery outpatient clinic of Maastricht University Medical Center between October 2020 and October 2021 for reasons related to their implants and women recruited for a BII study at the Center during this period were invited to participate in this study. Only women who underwent cosmetic breast augmentation were eligible. Participants completed a physical complaints score form and the BREAST-Q, SF-36, and EPQ-RSS questionnaires via an online survey.

### Results

In total, 201 women completed the questionnaires. Extroversion and social desirability were predominant personality traits in women with breast implants, followed by neuroticism. Relatively high levels of neuroticism were found compared with normative data. Neuroticism correlated significantly with health status and breast-related QoL. Physical and mental health-related QoL had the strongest correlations with neuroticism ( $\beta = -3.94$ ,  $\beta = -4.86$ ,  $P < 0.001$ ).

### Conclusion

Personality can play a role in the development of complaints. High levels of neuroticism are seen in cosmetic surgery patients and are negatively correlated with subjective health and patient-reported outcomes in women with breast implants. Therefore, neuroticism may be a factor in the development of BII.

## Protein supplementation and functional recovery in the critically ill patient - the PRECISE trial

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### Introduction

Critical illness is often characterized by profound muscle loss, reduced physical functioning, and diminished quality of life (QoL). High protein enteral nutrition may reduce muscle loss and improve long-term QoL in critically ill patients, but evidence is limited.

### Methods

We performed a multicentre blinded randomized controlled trial in 10 Dutch and Belgian Hospitals. A total of 935 patients who were intubated within 24 hours after an unplanned ICU admission with an expected ICU stay of >72 hours were randomized to receive enteral nutrition with either 1.3 or 2.0 g of protein per kg bodyweight per day during ICU admission. Patients were followed-up at 30, 90 and 180 days and a published core outcome set (COS) of functional outcomes was obtained, containing amongst others the 6-minute walking test, handgrip strength, MRC-sum score, and quality of life questionnaires. Primary endpoint was the EQ-5D-5L health utility score (HUS) over 180 days. Analyses will be performed on an intention-to-treat basis using linear mixed models with fixed effect for treatment and random effects for patient and center. For further deepening, 239 patients enrolled in MaastrichtUMC+ provided additional consent to perform sequential ultrasonography of the leg, indirect calorimetry, and arteriovenous blood samples across the leg.

### Results

Intermuscular adipose tissue assessed on CT was independently associated with walking distance 30 days after ICU discharge in COVID-19 survivors, suggesting a key role for muscle quality in post-ICU functional disability. (1) Mean 6MWT was 82% of predicted 3 months after ICU discharge and improved to 95% at 1 year ( $p < 0.001$ ). (2) These changes were accompanied by a significant improvement in health-related QoL (EQ-5D-5L HUS 0.67 vs. 0.84;  $p < 0.001$ ). Enrolment for the PRECISE trial finished last April according to schedule and the final patients are in follow-up. (3) Protocol and follow-up adherence are high with 94% of nutritional targets met and 83% compliance for completion of the primary endpoint.

### Conclusion

ICU admission leads to impaired functional capacity and quality of life illustrated by profound muscle loss, reduced 6MWT, and lower EQ-5D-5L HUS. The PRECISE trial was conducted successfully and will show whether high protein enteral nutrition can improve functional outcomes following critical illness.

## The relation of lifestyle with inflammation at the time of diagnosis in patients with colorectal cancer

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### Introduction

Colorectal cancer is one of the most common lifestyle-related types of cancer. The exact path-ophysiologic mechanism in the relation between (visceral) adipose tissue, systemic inflammation and colorectal cancer remains unknown. This study aimed to assess the association of lifestyle with markers of systemic inflammation at the time of diagnosis in stage I-III colorectal cancer patients.

### Methods

Patients (n=298) with stage I-III colorectal cancer from three Dutch hospitals were included at diagnosis. Several lifestyle variables (MUST nutritional status score, WCRF/AICR healthy lifestyle score, active smoking, alcohol consumption and BMI) and inflammatory markers (plasma levels of IL-6, IL-8, IL-10, TNF $\alpha$  and 'high sensitive' hsCRP) were measured at the time of diagnosis. Confounder-adjusted multivariable linear regression models were used to analyse how the lifestyle variables were associated with the inflammatory markers.

### Results

Statistically significant associations were found between a better WCRF/AICR lifestyle score and lower levels of IL-6 and hsCRP. A medium and high risk of malnutrition according to the MUST score was associated with elevated levels of both IL-8 and hsCRP.

### Conclusion

An overall unhealthier lifestyle indicated by a lower WCRF/AICR lifestyle score and a higher risk of malnutrition according to the MUST score at the time of diagnosis was associated with elevated levels of inflammatory markers. These findings should contribute to formulating life-style advice in future.

## Vagus nerve ultrasonography in Parkinson's Disease: a meta-analysis

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### Introduction

Recent studies have suggested that the vagus nerve (VN) may play an important role in the gut brain axis and Parkinson disease (PD). Therefore, severally studies have investigated the cross-sectional area (CSA) of the VN in PD using ultrasonography. This meta-analysis aims to evaluate the CSA of the VN via ultrasound in PD compared to controls.

### Methods

Totally, eight studies were included with a total of 616 participants (302 PD patients and 314 controls).

### Results

The results of the meta-analysis showed that the CSA of the vagus nerve was not significantly different between PD patients and controls (right -0.52[-1.35; 0.31] and left -0.52[-1.36; 0.32]).

### Conclusion

The meta-analysis reveals that the CSA of the VN is not reduced in PD patients. Therefore, ultrasound examination of the VN should at this moment not be used as a biomarker in the diagnosis of PD.

## Exploration of the Alanine-Aminotransferase Levels in Children who have Overweight or Obesity, Participating in the COACH long-term Lifestyle Intervention

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### Introduction

Pediatric obesity is a worldwide growing problem, putting more children at risk developing non-alcoholic fatty liver disease (NAFLD). The most used surrogate marker to detect liver damage, which is present in all stages of NAFLD, is the biomarker alanine-aminotransferase (ALT). Currently, trends in ALT levels in children who have overweight or obesity are not well known. This study explores the development of ALT levels in these children, before, during and after three years of lifestyle intervention, investigating the influence of sex, pubertal stage and presence of hepatic steatosis.

### Methods

A longitudinal, retrospective study was carried out at the Centre of Overweight Adolescent and Children's Healthcare (COACH), including children who have overweight or (severe) obesity (2-18 years old, n = 823) receiving long-term lifestyle intervention. Anthropometric measurements, fasted blood sampling and abdominal ultrasound evaluating the presence of hepatic steatosis, were performed annually. ALT levels were considered elevated when >26 U/L in males and >22 U/L in females.

### Results

Elevated ALT levels were present in 40% of children. ALT levels were significantly elevated in males compared to females at every timepoint. ALT levels were significantly higher in intra- and post-pubertal males, compared to females who have overweight or obesity. No significant difference was found between pre-pubertal males and females. Significantly higher ALT levels were found in children with hepatic steatosis, compared to children without hepatic steatosis.

### Conclusion

In this study, elevated ALT levels were present in a substantial number of children. ALT levels were significantly higher in males, with progressing pubertal stage and when hepatic steatosis was present. During puberty, there were noticeably contrasting trends in ALT levels between the sexes, with significantly lower ALT levels in intra- and post-pubertal females. Further research on the role of sex-hormones on ALT levels in children who have overweight or obesity is necessary.

## Environmental impact of a laparoscopic cholecystectomy in the USA

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### Introduction

Hospitals contribute significantly to greenhouse gas (GHG) emissions. To achieve targets as formulated in the Green Deal on Sustainable Healthcare, sustainability needs to be incorporated into clinical practice. As the operating room (OR) and particularly laparoscopic surgery contributes substantially to the total hospital waste, climate-friendly measures in the OR might be keystones in decreasing the overall emissions of hospitals. However, there is a lack of information concerning the actual usage and climate impact of the top three polluters; anaesthetics, medical devices and supplies. Therefore, this study focusses on surgical instruments, drapes, medication and instruments for medication administration in a laparoscopic cholecystectomy (LC). In this study, the LC was identified as a test case as it can be considered as a representative for majority of endoscopic procedures. This study aims to quantify the actual use of instruments, drapes and anaesthetics for LC. The quantification of these three items will be used to estimate the environmental impact of a LC, other laparoscopic procedures and to compare the impact between the Netherlands and the United States of America (USA) in follow-up studies.

### Methods

The numbers of prepared and unpacked instruments, drapes and anaesthetics for elective LCs (n=15) were collected prospectively in one hospital in the USA. Additionally, the actual usage of the three items were recorded. Means and standard deviation were calculated.

### Results

On average 93.93 ( $\pm 2.84$ ) surgical instruments, 2.42 ( $\pm 1.57$ ) drapes, 12.47 ( $\pm 2.39$ ) syringes and 10.8 needles ( $\pm 2.68$ ) were prepared for one LC. Only 42.6% (95% CI 33%-53%) of these instruments were used (40.00;  $\pm 4.72$ ). By optimising the instrument tray based on the observed opening and usage, a possible reduction of 58% (95%CI 0.47-0.68%) is estimated. For the drapes, syringes and needles the number of opened and used were comparable. In majority of the procedures (>70%) the following drugs were administrated: propofol, fentanyl, lidocaine, midazolam, glycopyrrolate, succinylcholine, rocuronium, neostigmine, dexamethasone, ondansetron and cefazolin.

### Conclusions

We identified the use of instruments, drapes and drugs for LC. Waste production and the environmental impact of a LC might be reduced by limiting the number of unnecessary prepared instruments.

## Single phase CT-angiography collaterals vs. CT-perfusion derived collateral status: association with clinical stroke outcomes

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### Introduction

Collateral status may be underestimated with single-phase CT-angiography (sp-CTA). As CT perfusion (CTP) is a multiphasic imaging modality, this may allow for the more accurate quantification of collaterals. This study aims to describe the difference between sp-CTA- and CTP-derived collaterals in ischemic stroke patients, and determine which measure correlates best with functional outcome and treatment effect.

### Methods

MR CLEAN-LATE trial records were reviewed. Eligibility criteria included the availability of baseline CTA and CTP. Sp-CTA imaging, CTP maximum intensity projection (CTP-MIP), and multiphase CT angiography-like images reconstructed from CTP datasets (mp-CTP) were derived. Sp-CTA and CTP-MIP images were evaluated using the Tan score, and mp-CTP images by use of the multiphase Menon score. All images were reviewed by an experienced neuroradiologist and a radiology resident. The primary outcome measure was the modified Rankin Scale (mRS) at 90 days. Multivariable linear, logistic and ordinal regression were used as appropriate. Possible interactions between collateral scores and endovascular treatment effect on functional outcome were explored.

### Results

We expect to include 418 patients. It is expected that the sp-CTA-, CTP-MIP- and mp-CTP collateral scores will all be associated with the mRS at 90 days, mortality at 90 days and final infarct volume. We recon that CTP-MIP and mp-CTP collateral scores will yield better model fits in comparison to sp-CTA collaterals. We expect no interaction effect between collateral scores and endovascular treatment on functional outcome at 90 days on any imaging modality.

### Conclusion

It is presumed that sp-CTA, CTP-MIP and mp-CTP collateral scores will all be significantly associated with functional outcomes and treatment effect, but that CTP-derived collaterals will be a better predictor of stroke outcomes.

## Comparison of 68Ga-DOTATOC PET metabolic tumour volume and RECIST for disease evaluation of gastroenteropancreatic neuroendocrine tumours

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### Introduction

Neuroendocrine tumours (NETs) are malignancies with increasing incidence and relatively long-term survival, consequently requiring more follow-up. CT-based evaluation using RECIST is the established means of follow-up but might not be the most accurate for NETs due to their different biological behaviours. We aimed to compare 68Ga-DOTATOC metabolic tumour volume to RECIST and the clinician's assessment for response evaluation in patients with gastroenteropancreatic (GEP)-NETs.

### Methods

This retrospective cohort study using the NENSEN database of all NET patients in the southeast of the Netherlands selected patients with grade 1 (G1) or grade 2 (G2) GEP-NETs who underwent at least two 68Ga-DOTATOC-PET/CT. Each 68Ga-DOTATOC PET/CT was measured for metabolic tumour volume and assessed according to RECIST, and subsequently compared to the previous scan. The clinician's conclusion of a patient's status was retrieved from the patient files. The scan comparisons and clinician's assessment were categorized into complete response (CR), partial response (PR), stable disease (SD), and progressive disease (PD). Weighted Cohen's  $\kappa$  was used to compare evaluation outcomes.

### Results

In total, 17 patients with G1 or G2 GEP-NETs were included, with 47 scan evaluations. 68Ga-DOTATOC-PET metabolic tumour volume showed PD more often where RECIST and the clinician's assessment showed SD. Weighted Cohen's  $\kappa$  for 68Ga-DOTATOC PET compared to RECIST was  $\kappa = 0.27$  (95% CI 0.023 - 0.515;  $p = 0.010$ ) and compared to the clinician  $\kappa = 0.28$  (95% CI 0.024 - 0.538;  $p = 0.013$ ). Weighted Cohen's  $\kappa$  showed a moderate agreement between RECIST and the clinician  $\kappa = 0.476$  (95% CI 0.156 - 0.797;  $p < 0.001$ ).

### Conclusion

The results of this study showed a fair agreement between 68Ga-DOTATOC PET metabolic tumour volume and RECIST for GEP-NETs G1 and 2. The difference might arise from the multiple factors influencing metabolic tumour volume of 68Ga-DOTATOC PET compared to the restricted parameters used in RECIST. A future study investigating the prognosis of patients with SD and PD on 68Ga-DOTATOC PET metabolic tumour volume compared with SD and PD on RECIST is warranted.



## A new observer and patient assessment method (Dermatologic Assessment Scale of Scars, DASS) in onco-dermatology to compare different treatment options in terms of the cosmetic result.

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### Introduction

In order to evaluate and score the cosmetic result of dermatologic scars after therapy of skin cancer, a reliable assessment scale should be used. Previous research has shown that the Patient and Observer Scar Assessment Scale (POSAS) is not fully applicable to dermatological scars.

The aim is to validate the new scale (Dermatologic Assessment Scale of Scars, DASS) for the assessment of the cosmetic result after treatment of keratinocyte carcinoma (KC).

### Methods

This study was performed alongside two RCT-s comparing the effectiveness of (non-) invasive therapies for KC. Independent observers and patients used the DASS and POSAS for the assessment of dermatological scars after different skin cancer treatments (photodynamic therapy, 5% 5-fluorouracil cream, imiquimod cream, surgery). To validate the DASS in the SCIN population the intraclass correlations (ICC-s) for both the POSAS and the DASS were calculated. Additionally, the correlation between the overall opinion of DASS and POSAS was examined using a Kendall's Tau-b correlation coefficient. A binary logistic regression analysis was performed to examine the effect of different patient- and scar characteristics on the overall score.

### Results

A total of 395 patients were included in the study (SCIN-trial: n=145, BOWTIE-trial: n=250). At one year follow-up the ICC of the DASS was 0.883 (0.829-0.919) and at five years 0.847 (0.774-0.896) (average measures). These values are higher than the ICC-s of the POSAS (0.826 (0.721-0.886) and 0.783 (0.680-0.853). A Kendall's tau-b correlation showed a strong, positive and statistically significant correlation between the overall scores of the POSAS and the DASS rated by two observers ( $\tau_b = 0.779$ ,  $p < .001$  and  $\tau_b = 0.903$ ,  $p < .001$  respectively). The patient questionnaire showed similar results. A binary logistic regression analysis showed that the location of the lesion, type of treatment, initial treatment failure and the presence of erythema, pigmentation, hypertrophy/atrophy or suture marks had a significant effect on the outcome.

### Conclusion

The DASS is equivalent or better than the POSAS in assessing dermatological scars after treatment of KC. The scales correlate strongly. The DASS is validated in this validation-study and has proven to be more applicable to dermatology. The new scale can be used in future onco-dermatological research.

## Early outcomes after registration of finger implants in the Dutch arthroplasty register (LROI)

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### Introduction

The main goal of finger arthroplasty is to relieve patients with joint complaints of pain and try to preserve the function of the joint. Impacting factors have been shown to exist, however the evidence base is not very broad. The main aim of the study was to investigate and analyze data regarding primary finger joint arthroplasty from 2017 to 2021 to gain insights in implementation, possible risk factors for revision surgery, and registration completeness of finger implants.

### Methods

The Dutch arthroplasty register (LROI) provided data on finger arthroplasties from 2017 to 2021 in patients older than 18 years. Variables included demographics, operative details (approach, side, material, etc.), and revision data (revision, reason for revision). Two databases (LROI and VEKTIS) were used to compare the registration in the Dutch arthroplasty registry to the reported number of arthroplasties in the financial system, thereby assessing the completeness of registration.

### Results

951 Primary finger arthroplasties were registered. 688 (72.3%) Implants were used in females. The mean age was 65.0 years in primary surgery and 61.5 years in revisions. The PIP joint was most frequently operated on (65.1%). Osteoarthritis (71.4%) was the main indication. Regarding revisions, the MCP revision was registered in 42 cases (50.0%), while primary MCP arthroplasty only accounted for 26.8% of the total surgeries.

The registration completeness was compared, resulting in a registration completeness of 36.0-37.8% for plastic surgeons, 78.2-79.9% for orthopedic surgeons, and 9.5-10.0% for trauma surgeons.

### Conclusion

Gender and the PIP joint could be possible risk factors for primary arthroplasties. A younger age, surgery on the dominant hand and the MCP joint could be possible risk factors for revision arthroplasty. National participation rate for registration is not optimal yet. Orthopedic surgeons have a higher registration completeness, most likely due to the monitoring of their registration by the scientific association. National registries, such as LROI, can play a large role in research and independent quality control for finger arthroplasties, thereby increasing patient safety. More awareness on this topic is necessary and ease of registration should be actively improved.