AMSj

Amsterdam Medical Student journal

INITIATIVES WITH IMPACT | WELLCOM TRANSLATION: ARTIFICIAL INTELLIGENCE TO BRIDGE LANGUAGE BARRIERS WITHIN HEALTHCARE

SOLVING EPIDEMIOLOGY | DISTINGUISHING STUDY POPULATION FROM TARGET POPULATION IN EPIDEMIOLOGICALRESEARCH

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The Amsterdam Medical Student journal (AMSj) is a scientific journal created and published by Amsterdam UMC staff members and students to promote research and to encourage other medical students to publish their clinical observations, research articles and case reports. Go to www.amsj.nl for publication options and to find out how you can contribute to AMSj as reviewer or member of the editorial board.

Editorial

Dear Readership,

It is with great pleasure that, on behalf of the entire editorial board, I present to you the 35th edition of the Amsterdam Medical Student journal (AMSj). I extend my heartfelt gratitude to our dedicated review team and the editorial board members for their hard work and commitment!

Before I dive into the broad range of articles that we have for you in this edition, I would gladly let you know that we have an entire new General Board!

As the editor-in-chief, I would like to take a moment to express my deep appreciation to the previous board for their exceptional contributions. The tireless efforts of Dasha Hageman, Stella Jacobs, Tycho ter Beek, Semih Ozkan, and Yaprak Ozturk have shaped AMSj into the journal it is today.

A special thanks goes to Dasha, whose exceptional leadership as chair ensured that tasks were picked up with diligence and care. Stella was a constant source of warmth and support for all of us, providing guidance whenever needed. Each member of the old board brought unique strengths, and their collective efforts have left a lasting legacy.

With their departure, we welcome the new editorial board, who will continue to uphold the high standards set by their predecessors and lead the AMSj into an exciting new chapter by bringing fresh energy, innovative ideas, and vibrant perspectives to the AMSj. We are confident that their enthusiasm and vision will lead the journal into a bright future!

In this issue, Johanna Voorham and Anna Emanuel explore the potential of a weight-loss medication, a combined GIP and GLP-1 receptor agonist, for the treatment of obstructive sleep apnea in adults with obesity. Moreover, we delve into advancements in the treatment of antipsychotic-induced akathisia, with promising insights into the use of three different symptom-reducing medications.

Stijn Mennes and Reinier van der Spek discuss the potential of new materials and nanotechnology delivery systems as alternatives to opioid pain management. Lastly, my fellow student Fabian Pusceddu shares more about an initiative he co-founded — Wellcom Translation — an AI-powered tool designed to improve communication with non-native speaking patients in the Dutch healthcare system, which has always been a hassle to a lot of us. Learn more about it on page 7!

Challenge your medical knowledge in three different fields on pages 9, 10, and 13! And don't miss out on Prof. Marcel Levi's expert perspective on medical myths in society, found on page 17.

We are also actively seeking new colleagues to join AMSj, including reviewers and editors. Keep an eye on our social media channels for information on open positions. If you're interested in working with us or would like to discuss any ideas, don't hesitate to reach out via chief-editor@amsj.nl. We're here to help!

Lastly, we warmly invite you to submit your original articles and immerse yourself in the world of scientific research publishing. I sincerely hope you enjoy this edition, which we've worked hard to bring to you. Wishing you all a wonderful start to the new academic year!

Yours sincerely,

Tina Vekua
Editor-in-Chief
Amsterdam UMC, location VUmc

WHAT'S NEW

INTENSIVE CARE

Lowering the incidence of hypoxemia during tracheal intubation in critically ill adults

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Recently, the New England Journal of Medicine published a randomized controlled trial on preoxygenation to prevent hypoxemia during tracheal intubation in critically ill adults1. Hypoxemia is associated with cardiac arrest and mortality and occurs in 10-20% of intubations. Researchers compared the effect of preoxygenation with noninvasive ventilation versus preoxygenation with an oxygen mask on the incidence of hypoxemia (defined as SpO2 ≤ 85%) during intubation. In current practice, preoxygenation is delivered by the use of an oxygen mask which can provide a FiO2 of up to 100%, but as low as 50% when used incorrectly (e.g. by using a loose-fitting mask).

In this study, 1301 patients from 17 intensive care units (ICUs) and 7 emergency departments in the United States were randomized and included in an intention-to-treat analysis. Noninvasive ventilation significantly reduced the occurrence of hypoxemia by 9.4 percentage points compared to an oxygen mask. There was no difference in the rates of aspiration.

This is the first multicenter study to compare these techniques for preoxygenation. For most critically ill patients, noninvasive ventilation shows to be the superior technique, without a higher risk of complications. This has important clinical implications, and the results of this trial may give rise to guideline updates in the ICU, reducing hypoxia rates and thereby improving patient care and patient safety.

1. Gibbs KW, Semler MW, Driver BE et al., Noninvasive Ventilation for Preoxygenation during Emergency Intubation. N Engl J Med. 2024 Jun 20 Vol 390 2165-2177.

GERIATRICS

Hyponatremia-associated hospital visits are not reduced by early electrolyte testing in older adults starting antidepressants

Eva A. Dankbaar[1] and Charlotte Nijskens[1]
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Every year, 4–18% of older adults start using antidepressants, mainly selective serotonin reuptake inhibitors (SSRIs). Approximately 9–16% of them develop hyponatremia, with 1-2% resulting in hospitalizations within the first month. Compared to other antidepressants, SSRIs and selective norepinephrine reuptake inhibitors (SNRIs) are associated with an increased risk of hyponatremia. Clinical guidelines therefore advise early electrolyte monitoring when starting these medications in older adults. However, the effectiveness of this monitoring in improving outcomes is uncertain.

Lane et al.[1] conducted a retrospective cohort study of 420,085 older adults to assess whether early electrolyte monitoring after starting SSRIs or SNRIs reduces the risk of emergency department (ED) or hospitalizations for any diagnosis with concurrent hyponatremia. Surprisingly, older adults who had their electrolytes measured within the first week were 2.31 times (95% CI 2.16–2.46) more likely to be admitted to the ED or hospitalised for any diagnosis with concurrent hyponatremia within the following 8–60 days. This association is likely due to confounding by indication, as doctors were inclined to check sodium levels specifically in frail patients who already were at risk of hyponatremia from any cause.

These findings leave open the question whether older adults benefit from routine electrolyte monitoring after starting antidepressants. Further research is needed to identify those at-risk patients in whom sodium monitoring is helpful.

1. Lane NE, Bai L, Seitz DP, et al. Hyponatremia-associated hospital visits are not reduced by early electrolyte testing in older adults starting antidepressants. J Am Geriatr Soc. 2024; 72(6): 1770-1780.

INTERNAL MEDICINE

New treatment for sleep apnea coming to the Netherlands

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Obstructive sleep apnea (OSA) affects approximately 900 million people worldwide. It can lead to daytime sleepiness and is an independent risk factor for cardiovascular disease. Treatment usually consists of mechanical support with Positive Airway Pressure (PAP). However, therapy adherence is a big problem and the benefits on cardiovascular disease are limited. Since obesity is a major factor in the etiology of the disease, patients with sleep apnea may benefit greatly from medicine that leads to weight reduction. Therefore, the SURMOUNT-OSA trials evaluated the safety and efficacy of Tirzepatide, a combined GIP (gastric inhibitory polypeptide) and GLP-1 (glucagon-like peptide-1) receptor agonist, for the treatment of adults with obstructive sleep apnea and obesity.[1]

The study consisted of two phase 3, double-blind, multicenter randomized, controlled trials which included adults with moderate-to-severe OSA and obesity. Patients were enrolled in trial 1 (not using PAP) or trial 2 (using PAP). In both trials, patients were randomized 1:1 to Tirzepatide (10 to 15mg) or placebo for 52 weeks. The apnea–hypopnea index – the number of (hypo)apneas during an hour of sleep - was significantly reduced in the Tirzepatide group compared to the placebo group in trial 1 (-25.3 vs -5.3 events per hour; P<0.001) and trial 2 (-29.3 vs – 5.5 events per hour; p<0.001). In addition, participants in both trials receiving Tirzepatide showed significant reductions in the sleep apnea-specific hypoxia burden, body weight, systolic blood pressure and hsCRP concentrations. These findings suggest that Tirzepatide may offer a solution for a worldwide problem.

1. Malhotra et al. (2024). Tirzepatide for the Treatment of Obstructive Sleep Apnea and Obesity. New England Journal Of Medicine. https://doi.org/10.1056/nejmoa2404881

GYNAECOLOGY

Is fezolinetant going to change the game for women in menopause?

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Hot flashes, night sweats, heart palpitations - vasomotor symptoms (VMS) have taunted women during menopause for ages. Traditionally, hormone replacement therapy (HRT) has been the standard of care, but it comes with increased risk of i.e. breast cancer and thrombo-embolic events. Non-hormonal options are available, yet often cause more side effects and are less effective than HRT.

Fezolinetant, approved last year by the FDA, is a non-hormonal neurokinin 3 (NK3) receptor antagonist, offering a new hope for treating VMS. By blocking neurokinin B on specific neurons, fezolinetant can directly moderate neuronal activity in the brain's thermoregulatory center, suppressing VMS

So, should fezolinetant become part of the standard VMS treatment regimen? Morga et al. (2024)[1] compared fezolinetant to HRT and non-HRT therapies in a systematic review and meta-analysis. Fezolinetant's effect on VMS frequency was similar to HRT but superior to non-hormonal treatments, reducing VMS frequency more than paroxetine 7.5 mg (MD 1.66; 95% CrI [0.63-2.71]), desvenlafaxine 50-200 mg (MD 1.12-2.16; 95% CrI [0.10-3.40]), and gabapentin ER 1800 mg (MD 1.63; 95% CrI [0.48-2.81]).

Fezolinetant appears to be the most effective non-HRT option for women who can't use HRT or prefer not to. This new treatment probably won't be a game-changer for managing moderate to severe VMS during menopause, but is another tool in the doctor's toolbox.

1. Morga A, Ajmera M, Gao E, Patterson-Lomba O, Zhao A, Mancuso S, et al. Systematic review and network meta-analysis comparing the efficacy of fezolinetant with hormone and nonhormone therapies for treatment of vasomotor symptoms due to menopause. Menopause. 2024;31(1):68-76.

WHAT'S NEW

PSYCHIATRY

Antipsychotic-induced akathisia and therapy effectiveness

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Antipsychotic-induced akathisia (AIA), a movement disorder marked by restlessness and excessive movements, occurs frequently in patients treated with antipsychotics. First-generation antipsychotics pose a higher risk of inducing akathisia than second-generation antipsychotics, with risks varying from a staggering 24-fold (first-gen. antipsychotics) to 1.9-fold (second gen. antipsychotics). This adverse effect is associated with multiple clinical consequences, including increased suicidality and therapy incompliance. The primary clinical recommendations for managing AIA consist of antipsychotic dose reduction, switching to an antipsychotic associated with a lower AIA risk or considering monotherapy. However, these strategies can be clinically challenging. Therefore, adjunctive drugs are usually essential for symptom alleviation.

A recent network meta-analysis by Gerolymos et al.[1] aimed to assess the efficacy and tolerability of various adjunctive drugs for treating AIA. They analyzed data from 15 double-blind randomized clinical trials (492 participants), comparing ten different treatments against placebo, focusing on the reduction of akathisia severity as the primary outcome.

Key findings indicated that mirtazapine (15mg/day), vitamin B6 (600-1200 mg/day), and biperiden (6mg/day) were most effective in reducing akathisia. Mirtazapine showed the highest efficacy, although there were potential side effects (sedation and weight gain). Vitamin B6 had the best risk-benefit profile due to its excellent tolerability. Biperiden is a potential best choice in the event of vitamin B6 and mirtazapine therapy failure.

This comprehensive analysis offers evidence-based guidance for selecting adjunctive therapies, thereby enhancing patient outcomes and overall treatment effectiveness in managing AIA. Further research is suggested to confirm these results and explore the underlying mechanisms.

1. Gerolymos C, Barazer R, Yon DK, Loundou A, Boyer L, Fond G. Drug Efficacy in the Treatment of Antipsychotic-Induced Akathisia: A Systematic Review and Network Meta-Analysis. JAMA Netw Open. 2024;7(3):e241527

Advancements in postoperative pain management: Can we win against opioids?

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Postoperative pain management is an essential part of peri-operative surgical care: inadequate pain management results in slower recovery, prolonged hospital stays and a higher risk of chronic pain[1,2]. Post-operative pain management with opioids is an infamous contributor to the current opioid crisis; most patients with opioid use disorder are initially exposed through prescribed opioids[3]. Orthopaedic surgeons have been identified as high prescribers of opioids[4]. For instance, the rate of new long-term opioid users after the 50 most common orthopaedic surgeries is 5.3%[5].

Recently, non-opioid approaches with various delivery systems have been considered promising alternatives for postoperative pain management. Local anaesthetics such as peripheral nerve blocks, epidural analgesia or local infiltration are becoming increasingly popular as they are safe, reliable and most importantly produce adequate pain reduction. However, local anaesthetics generally provide a short window of analgesia and increasing dosage may result in systemic toxicity[6]. Using new materials and nanotechnology delivery systems for local drug delivery overcomes these pitfalls[6]. With these potential benefits in mind, Steverink et al.[7] developed a hydrogel ring with sustained release of bupivacaine compatible with various screws for spinal surgery.

Initial results of clinical trials in The Netherlands and Switzerland yield great promise. Eleven patients who underwent spinal surgery were treated with the implantable anaesthetic without any safety concerns. Patients treated with the hydrogel ring reported an average satisfaction of 9.1 out of 10 points, they needed 52% fewer opioids and experienced less pain compared to those treated according to current hospital protocols[8].

Integrating state-of-the-art delivery systems is a significant step forward in optimising postoperative pain management. This innovation has the potential to reduce opioid use in clinical care greatly and may play a crucial role in the everlasting battle against opioid addiction.

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8. https://www.sentryx.nl/news/june-2024. [Accessed on 19-07-2024]

Wellcom Translation: Artificial Intelligence to Bridge Language Barriers within Healthcare

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INTRODUCTION

My name is Fabian Pusceddu, and I am currently in the master's program of Medicine at the Vrije Universiteit. My academic journey started with a bachelor's in medicine, marking the start of my dedication to healthcare. However, it was a master's in financial management that expanded my perspective, sparking a passion for the intersection of healthcare, innovation, and business.

Having worked in various healthcare settings, I've seen firsthand the challenges of communicating with patients who don't speak Dutch or English. One memorable situation formed during the COVID-19 pandemic, when I encountered an Italian patient who only spoke Italian. I was able to communicate with him in his native language, which had a great positive impact on delivering good healthcare. This experience made me realise how language barriers in healthcare can lead to miscommunication, and potentially compromised patient care. It highlighted the urgent need to address these barriers to ensure high-quality, patient-centred and inclusive care for all patients, regardless of language proficiency or cultural background.[1]

To tackle these challenges, I co-founded Wellcom Translation, an initiative dedicated to enhancing communication for non-native speaking patients in the Dutch healthcare system. Collaborating with a growing team of four AI-developers which I lead from a medical perspective, Wellcom's team is developing a tool called TolkChat. This tool uses AI and Machine Learning translation technology and aims to be more effective than existing translation tools.

PROBLEM STATEMENT

Approximately 2.6 million people living in the Netherlands were born in another country. Many of them do not yet have sufficient proficiency in

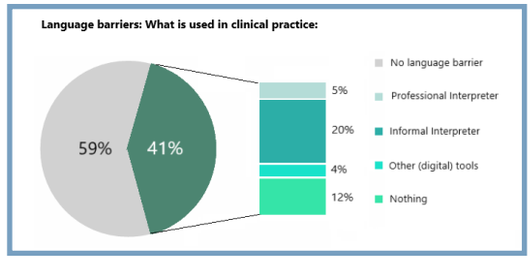

FIGURE 1 Triemstra M, Veenvliet C, Zuizewind C et al. Noodzaak en omvang van de inzet van professionele tolken in de zorg Een inventarisatie onder zorgverleners. Nivel; 2016. Available from: https://www.nivel.nl/sites/default/files/bestanden/Rapport_Tolken.pdf [2]

Dutch or English to effectively communicate within the Dutch healthcare system. Right now, there are two options: call and schedule an interpreter, or use digital translation tools like Google Translate. Both have their strengths and weaknesses, as discussed further.

While interpreters are the gold standard for overcoming language barriers in healthcare, they often prove to be impractical in high-stress situations, short conversations, or at outpatient clinics. Additionally, interpreters pose significant financial challenges, since Dutch hospitals bear the cost following the abolition of government-funded interpreter services in 2012. Large-scale research of Nivel (2016) pointed out that of all respondents, 41% had patients with language barriers that were too complicated to solve with English or Dutch. Notably, only 5% of healthcare staff utilise interpreters when a language barrier is recognized.2 Healthcare staff often opt for quick solutions or do nothing (12%). This highlights the significant gap between the need for and the accessibility of interpreter services in today's fast-paced healthcare environment.[3]

Digital translation tools such as Google Translate and SayHi (Amazon, discontinued) present substantial risks to data privacy of patients. Moreover, these platforms may store, retain, and even potentially sell sensitive health information that is entered for translation. Using these tools raises serious concerns about compliance with data protection regulations like AVG/GDPR and the potential for breaches of patient confidentiality. Additionally, these tools often lack the ability to accurately translate specific medical terminology across languages, are unable to integrate with electronic healthcare systems, and/or provide summaries after consultations to improve efficiency. The most used translation application in healthcare, SayHi, recently ended its services. Which has only increased the urgency for a translation tool.

Surprisingly, in my search for a dedicated medical translation tool, I found that none currently exists. A recent study by the Ministry of Health, Welfare, and Sport confirmed this, revealing that although 25 real-time translation apps were reviewed, none were specifically designed for healthcare communication.[4]

INITIATIVE

With these issues in mind, TolkChat was developed to address three key challenges found in existing translation tools for overcoming language barriers in healthcare: (1) privacy and data security, (2) accurate translation of medical terminology, and (3) seamless integration with current healthcare systems. Instead of reinventing translation technology, TolkChat focuses on enhancing and adapting current technology by adding these crucial functionalities, so it is tailored specifically to the healthcare sector.

In September/October, TolkChat will undergo pilot testing in three different healthcare settings for three months. This testing period is crucial for refining our general and AI software. Although these pilots are being conducted in collaboration with healthcare institutions, there's also an opportunity for doctors, nurses, and medical students to participate on their own and try TolkChat themselves. You can join our waiting list on our website: wellcom-translation.com.

We are eager to gather as much feedback as possible to create a tool that truly serves the needs of healthcare professionals and patients. Do you frequently encounter communication challenges in your practice and want to contribute to developing a patient-centred solution? If so, please don't hesitate to reach out to me at fabian@wellcom-translation.com. Your insights could be invaluable to our mission of creating a translation tool for healthcare, by healthcare.

Lastly, in developing this tool, I learned a great deal about the challenges of creating something within the healthcare sector, particularly concerning rules and compliance. However, I strongly encourage every medical student to look beyond clinical practice and explore opportunities to innovate and improve patient care.

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A neonate with respiratory distress

Soumaya Laabar[1] and Sanne Graaf[2]
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2 Department of Gynaecology, Haaglanden Medical Center The Hague, The Netherlands

CASE

A 4-hour old neonate with respiratory distress was presented at the emergency department of pediatrics. Gestational age was 41 weeks and two days. Birth weight was 3610 gram (P50). Apgar scores were 6, 9 and 10 at 1, 5 and 10 minutes respectively. Vital signs were 170/min, respiratory rate 75/min, saturation 89% and temperature 37.0 °C. Physical examination showed a light cyanotic neonate with nasal flaring, inter- and subcostal retractions. Pulmonary auscultation: symmetrical crackles and diffuse rhonchi. Nails showed a yellow-green staining. FIGURE 1 shows the chest x-ray.

QUESTION 1

What is most likely the diagnosis based on the presentation?

A. Pneumothorax
B. Infection
C. Meconium aspiration syndrome
D. Neonatal respiratory distress syndrome

QUESTION 2

What is not a possible complication of this clinical presentation?

A. Pulmonary hypertension of the newborn (PPHN)
B. Lung bleeding
C. Aspiration pneumonia
D. Cerebral hypoxia

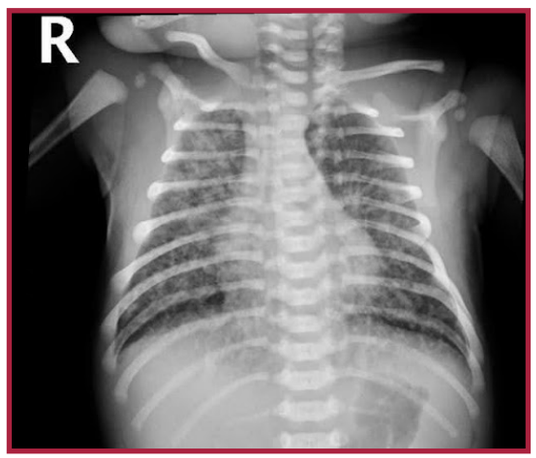

FIGURE 1 X-ray of a 4-hour old female neonate with tachypnea.[1]

Answer on page 35

Clinical Reasoning for Otorhinolaryngology Experts!

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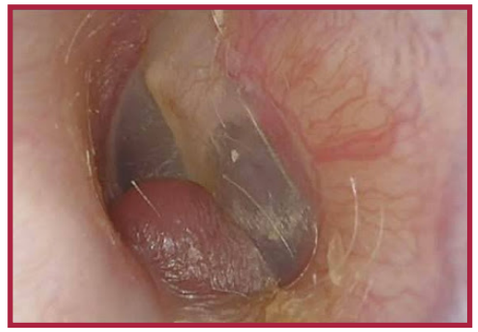
2 University Medical Center Utrecht, Department of Otorhinolaryngolog

CASE

A 40-year-old woman was referred to the otorhinolaryngologist due to pulsatile tinnitus. Upon otoscopy, the following condition of the tympanic membrane was observed.



QUESTION 1

In which ear was this otoscopy performed?

A. Right ear
B. Left ear

QUESTION 2

What clinical sign was observed in this otoscopy?

A. “Rising sun” sign
B. “Bubble” sign
C. “Hammer” sign

QUESTION 3

What is the most likely diagnosis?

A. Hemotympanum
B. Cholesteatoma
C. Jugulo-tympanic paraganglioma
D. Aberrant course of the internal carotid artery

Answer on page 36

Distinguishing Study Population from Target Population in Epidemiological Research

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2 Post Doctorate Epidemiology and Health Behavior, Amsterdam UMC, locatie VUmc.

INTRODUCTION

Epidemiology is the study of the distribution, patterns, and determinants of health and disease conditions in populations. It provides crucial information used to plan and evaluate strategies for preventing illness as well as managing already developed diseases. It is frequently studied for the purpose of public health interventions, such as helping to identify risk factors, track disease outbreaks, and implement measures to protect and improve public wellbeing. A crucial aspect of epidemiology is clearly defining the populations that are being studied. For instance, it is essential to clearly distinguish between the study population and target population to generalize research findings effectively. Failure to appropriately distinguish between the study and target populations is a common issue in research that can undermine the validity and applicability of the study results, leading to bias or misleading outcomes.[1] Therefore, our aim of this Solving Epidemiology edition is to describe the differences and relationship between the study population and target population.

UNDERSTANDING THE TARGET AND STUDY POPULATION

A population is simply a group of individuals that share a specific set of characteristics. For example, all people with hypertension. The target population refers to a broad group of individuals to which study findings are intended to be generalized. Researchers aim to draw conclusions about the target population based on their study results. The target population is frequently defined by specific characteristics relevant to the research question, such as age, sex or geographic location. For example, all adults in the Netherlands aged 60+ with hypertension. The study population is the subset of the target population that is available to participate and is defined by specific inclusion and exclusion criteria. The study population should be representative of the target population to ensure generalizability of the findings. Therefore, the study sample is the group chosen from the study population to actually participate in the study, such as 250 hypertensive patients aged 60+ in the Netherlands.[2]

THE RELATIONSHIP BETWEEN THE TARGET AND STUDY POPULATION

The relationship between the target and study population is visualized in FIGURE 1. This figure highlights the concepts of sampling and inference in the context of internal and external validity. Sampling (black arrows) involves selecting samples from larger populations. In this process it is critical that the sample accurately represents the population from which it is drawn. The steps in sampling are from the target population to target sample and study population to study sample. Inference (dotted arrows) involves generalizing findings from samples to larger populations. This process allows researchers to extend the obtained results from the sample to the entire population. Internal validity measures how accurately the results of a study reflect the actual situation for the population from which the sample was taken. It assesses whether the observed effects are due to the treatment or intervention rather than other factors. Key aspects of internal validity include dealing with how treatment groups are assigned, to ensure that selection bias is minimized. External validity refers to how well the study results can be generalized beyond the study sample. It deals with the applicability of the study findings to the target population. External validity focuses on the relationship between the study population and target population.[3]

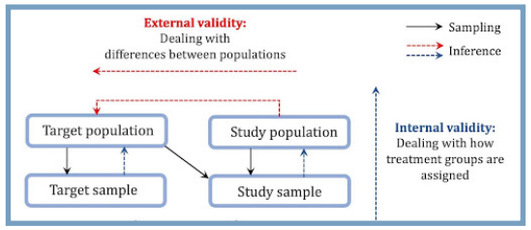

FIGURE 1 The relationship between target and study populations, highlighting the concepts of sampling and inference in the context of internal and external validity[3]

CONCLUSION

In conclusion, distinguishing between the study population and target population is crucial in epidemiological research to ensure the validity and applicability of study results. The target population is the broader group to which researchers aim to generalize their findings, defined by characteristics relevant to the research question. The study population is a subset of the target population, selected based on specific inclusion and exclusion criteria, and must be representative of the target population to maintain generalizability. Understanding the differences and the relationship between these populations, in the context of internal and external validity, is crucial for accurately defining these populations to enhance the accuracy and generalizability of study findings.

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Hand Swelling in Patient with Rheumatoid Arthritis

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CASE

A 62-year-old female patient with a medical history of rheumatoid arthritis (RA) that had been well-managed with tocilizumab until recently, noticed a gradual increase in her RA symptoms over the past few months. In addition to these symptoms, she also detected a painless, slowly growing swelling on the dorsal side of her right hand. Based on the patient's history and physical examination during her most recent outpatient appointment, the rheumatologist could not definitively diagnose the nature of the swelling at the fourth carpometacarpal joint and referred the patient for an ultrasound (US) of the affected area. During the US, the radiologist captured the following image with the probe:

QUESTION 1

Which forearm tendon runs through the fifth extensor compartment (MC5)?

A. Extensor digiti minimi
B. Extensor carpi ulnaris
C. Extensor carpi radialis brevis

QUESTION 2

What hyperechoic structure can be seen right below the "MC5" marking on FIGURE 1?

A. Right radial bone
B. Right ulnar bone
C. Fat tissue

QUESTION 3

What is the most likely cause of the swelling in our patient?

A. Lipoma
B. Ganglion cyst
C. Tenosynovitis of the extensor digiti minimi

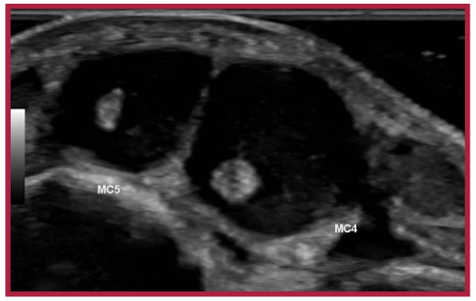

FIGURE 1 Transversal oriented image of her ultra-sound, that shows the fourth (MC4) and fifth extensor compartments (MC5) of her right wrist.

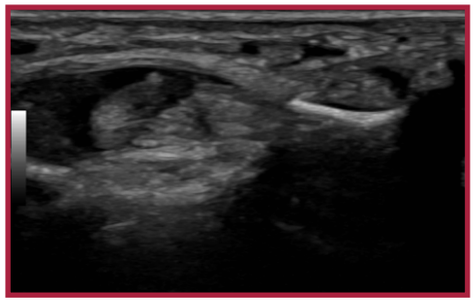

FIGURE 2 Sagittal view from the ultra-sound of her right wrist.

Answer on page 37

Updated recommendations for the treatment and prophylaxis of (sr-)GVHD

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For a successful allogeneic hematopoietic cell transplantation (allo-HCT), the recipient's immune system needs to be suppressed in order to prevent rejection. On the other hand, in the early post-transplant period donor lymphocytes need to be suppressed to prevent graft-versus-host disease (GVHD). An allogeneic reaction of donor lymphocytes to healthy tissue of the recipient.[1]

The first line of treatment for GVHD are glucocorticoids, which suppress the immune response of the donor lymphocytes. However, steroid-refractory GVHD (SR-GVHD) does not respond to treatment with glucocorticoids. There has been considerable research into the development of both prevention and treatment of (SR-)GVHD. This has prompted the European Society for Blood and Marrow Transplantation (EBMT) to update its recommendations for the management of GVHD[2].

An expert panel consisting of 22 allogeneic transplantation physicians formulated research questions reviewed available research and proposed recommendations per research question. Recommendations were graded using a modified version of the National Comprehensive Cancer Network (NCCN) classification of evidence and consensus. Classification 1 are recommendations based on high-level evidence. Classification 2 includes lower quality evidence (2A and 2B). In the modified version classification 3 (not approved) is replaced by classification 2C (not directly supported by evidence).

For profylaxis, the EBMT now recommends either post-transplantation cyclophosphamide (PTCy) or rabbit anti-T-cell globulin (rATG) in patients receiving alloHCT from matched unrelated donors (Class 1) and mismatched unrelated donors (Class 2A). In previous recommendations the EBMT only recommended rATG as profylaxis of GVHD.

For treatment of both acute and chronic SR-GVHD (SR-GVHD), the EMBT now strongly recommends ruxolitinib (JAK1 and 2 inhibitor) as first-line therapy (Class 1). Other potential treatments for chronic SR-GVHD are belumosudil (ROCK2 inhibitor) (Class 2C) and ibrutinib (BTK inhibitor) (Class 2B). Both of which are not yet available in the Netherlands. There is not enough quality of evidence to recommend treatment options other than ruxolitinib in acute SR-GVHD. In such cases, the EBMT recommends that patients are enrolled in research trials.

> "For treatment of both acute and chronic SR-GVHD, the EMBT now strongly recommends ruxolitinib as first-line therapy."

This article discussed the main updated recommendations for the treatment and prophylaxis of sr-GVHD. For all other recommendations, please refer to the updated EBMT consensus recommendations published in the Lancet Haematology

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Lateral extra-articular tenodesis: the solution for rotational instability in ACL injury?

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CENTRAL MESSAGE

The ACL is a key knee ligament that prevents anterior tibial translation and provides rotational stability. Lateral extra-articular tenodesis can be considered besides traditional ACL reconstruction to reinforce the anterolateral complex, the main secondary stabilizer of the knee. A strip of the iliotibial band is harvested and attached to the lateral femur condyle, passing underneath the lateral collateral ligament.

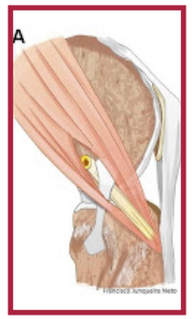

FIGURE 1 Illustration of finished modified Lemaire procedure. The Iliotibial strip is attached to the lateral femoral condyle through bone anchorage. Image courtesy of D.C. Marshall et al.[11]. Distributed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International license

An otherwise healthy 22-year-old male injures his right knee during a football match. His knee was forced into a valgus position while pivoting during a duel. Physical examination reveals swelling, painful knee movement, and a positive pivot shift test. Magnetic resonance imaging (MRI) confirms rupture of the anterior cruciate ligament (ACL). After consultation, it is decided to treat this patient surgically. Besides ACL reconstruction (ACLR), a lateral extra-articular tenodesis (LET) through a modified Lemaire procedure is planned.

The ACL is a key ligament in the knee that prevents anterior tibial translation and provides rotational stability. It also plays a role in hyperextension prevention. ACL tears are a serious health concern in sports, as the average injury incidence rate is 1 in every years for 25-player (professional) football teams. Common are non-contact or indirect contact (not directly on the knee) situations in which the forces are acting in the knee in valgus position.[1]

The LET, more specifically the modified Lemaire tenodesis, is a surgical procedure that aims to improve rotational stability after ACL injury to reduce failure. ACL injuries are often accompanied by injuries of the anterolateral complex[2], which acts as the main secondary stabilizer of the knee[3]. The LET procedure aims to reinforce this complex.

After conventional ACL reconstruction, a small incision on the lateral side of the knee is made and the iliotibial band (ITB) is identified. Next, a strip of the ITB is harvested by dissecting the proximal fibers, but leaving the distal attachment to Gerdy's tubercle intact. The strip is subsequently passed underneath the lateral collateral ligament. Then, the strip is attached to the lateral femur condyle through, for example, a bone anchor or surgical staples.[4] This technique places an additional constraint on the anterolateral complex, decreasing laxity and thus improving stability.

TABLE 1
Considerations surrounding LET.[8-10]

Considerations to include LET	Considerations to avoid LET
Patients <25 years of age	Accompanying posterolateral corner injury
High anterolateral laxity (pivot shift grade 2)	Lateral compartment osteoarthritis
Generalized ligamentous laxity	Skeletally immature patients
Knee hyperextension >10°	
Lateral coronal plate laxity	
Increased posterior slope	
Concomitant lateral mescus deficiency	
MRI evidence of anterolateral complex njury	
Segon fracture (lateral tibal plateau avulsion fracture)	

The technique was based on the idea of the French surgeon Marcel Lemaire, hence the name. It has regained new popularity during the past decade after a large review found that LET significantly reduced rotational instability after ACL surgery when measured through a positive pivot shift test.[5] There have been concerns about LET placing too much constraint on the knee and restricting natural internal rotation capacities of the tibia.[6] However, recent studies found significantly fewer failures and positive pivot shift tests while improving patient reported outcomes.[7]

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Debunking medical myths by proper research

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"Don't rub your eyes, boy," my mother always said, "or you'll have poor eyesight later." Nonsense, of course, but she believed it wholeheartedly. Just like she believed drinking buttermilk would prevent acne or that you'd get sick if you sat on the draught. Like me, millions of people grow up with well-intenåtioned health and lifestyle advice that makes no sense. Drinking beer after wine will give you a worse hangover, sugar makes kids hyperactive, swimming right after eating causes stomach cramps, and shaving makes your facial hair grow faster: all complete nonsense that people continue to believe in despite heaps of evidence to the contrary. And that's at least coming from people who mean well.

> "...all complete nonsense that people continue to believe in despite heaps of evidence to the contrary."

But it doesn't get any easier when you also encounter a bunch of fairly dim-witted influencer types on social media these days, who spout blatant nonsense about the harmful effects of sunscreen, promote the most useless or even unsafe dietary supplements and vitamins, or advocate bizarre and naturally ineffective methods to lose weight.

Tom Cruise has publicly criticized psychiatry and the use of psychiatric medication. For example, he infamously criticized actress Brooke Shields for using medication to treat her postpartum depression. Victoria Beckham has shared her health and beauty routines on social media, often mentioning the vitamins and supplements she uses. She speaks endlessly about taking fish oil supplements, vitamin C, and other nutrients to maintain her skin and hair. Former president Donald Trump made several controversial and medically unfounded statements during the COVID-19 pandemic, including suggesting that injecting disinfectant or using ultraviolet light inside the body could treat COVID-19.
A recent study from Scotland revealed that more than 90% of the health, nutrition, or lifestyle advice shared by influential people with large followings on social platforms is completely absurd.. But even professional experts in the field of disease and health can endlessly cling to medical myths and pointless rituals. For example, many doctors firmly believe that if you're on anticoagulants, drinking alcohol is not allowed because it thins the blood too much. Additionally, many highly educated healthcare professionals still think that getting the annual flu shot makes you more likely to get the flu. Hence, it turns out that even a good education doesn't free you from silly prejudices or incorrect beliefs.

Medical myths can lead to dangerous practices, delays in seeking appropriate care, and the use of ineffective or harmful treatments. The best way to combat the spread of medical myths and medical misinformation is clear communication and proper research. Conducting thorough research ensures that health-related decisions and advice are based on reliable, evidence-based information. By deflating myths through adequate research and prioritizing accurate information, we can make informed health choices, debunk false claims, and ultimately improve public health outcomes.

> "By deflating myths through adequate research and prioritizing accurate information, we can ultimately improve public health outcomes."

"When you have meat, you share it with your neighbor!"

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The field of Oral and Maxillofacial surgery is special in many ways. Needless to say, most special is that it forms a bridge between the fields of dentistry and medicine. Apart from that there are two more reasons as to why it is quite a unique specialty.

> "The field of Oral and Maxillofacial surgery is special in many ways."

Firstly, it is a very hands-on specialty as many treatments can take place under local anesthesia. Treatments such as (wisdom)teeth extractions, apical resections, dental implant placements and taking biopsies for diagnosing oral pathologies can take place directly in the clinic.

Secondly, the patients seeking consultation/treatment are very diverse. Factors such as age, gender, social-economical status, comorbidities, intellectual capacity, income, ethnicity and culture are all irrelevant as anyone can end up in the chair of the OMF-surgeon. To see all these patients, each with a different problem and each their own attitude towards their situation, will always be special.

> "To see all these patients, each with a different problem and each their own attitude towards their situation, will always be special."

A case which comes to mind is that of an older African man of roughly fifty years of age, being referred for the extraction of his final tooth in the upper jaw for the placement of a new prosthesis. His dental X-ray showed that the tooth already had quite some bone loss around it, which meant that an extraction should be easy to perform. This led me to ask the question as to why his dentist did not extract the last tooth as he already extracted all other teeth in the upper jaw. Why did he refer him to us? The man, who had quite a jolly character, replied by stating that he is from Liberia, a country in West-Africa, and that they have this old saying, namely: "When you have meat, you share it with your neighbor!"

Another case is that of a thirty years-old lady who was referred for the extraction of a very carious tooth. The patient was very anxious and scared to the point she was crying. She felt ashamed of her teeth. Her dental X-ray, however, showed only a few teeth with obvious caries. Many teeth were still good. Eventually, after calmly explaining everything she can expect during and after the treatment, she was so satisfied after the treatment that she later returned to the clinic handing me and the OMF-surgeon boxes of chocolate.

> "It is your duty to navigate not only the surgical procedure, but also the psychological state of all these patients to ensure they all receive the best treatment possible."

Within the field of OMF-surgery you may come across all layers of society. Some have lost all of their teeth and still have a positive attitude, whilst others may lose only one tooth and truly feel torn. It is your duty to navigate not only the surgical procedure, but also the psychological state of all these patients to ensure they all receive the best treatment possible.

The effectivity and safety of recombinant human activated factor VIIa in the management of postpartum hemorrhage: a systematic review

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ABSTRACT

Postpartum hemorrhage (PPH) is the leading cause of maternal mortality globally, necessitating effective treatment strategies. Current management of PPH includes three pillars: treatment for uterine atony, treatment for volume resuscitation, and hemostatic treatment for correcting coagulopathy. This systematic review determines the effectiveness and safety of rhuFVIIa in managing PPH. To determine effectiveness of rhuFVIIa, two questions were assessed: 'Did rhuFVIIa lead to cessation or reduction of bleeding?' and 'Was an additional intervention required after rhuFVIIa administration?'. Safety was assessed by analyzing adverse events, particularly thromboembolism, a significant potential complication of rhuFVIIa treatment. To determine the effectivity and safety of rhuFVIIa, a literature search was performed in PubMed on January 5, 2023. From the initial 183 hits, ten studies were selected. The study characteristics and primary outcomes were extracted and analyzed. For 327 patients, the use of rhuFVIIa has been observed to be effective in cessation or reduction of bleeding, and an additional intervention was required for 146 patients (146/472 (31%)). Furthermore, 14 thromboembolic events were registered after administration of rhuFVIIa (14/472 (3,0%)). In 33 out of 80 patients who did not receive rhuFVIIa, the bleeding ceased or reduced (41,3%%), and an additional intervention was required for 67 patients (67/80 (84,8%)). Zero thromboembolic events were registered in this group. In conclusion, the findings in this systematic review suggest a potential effective and a potential safe role of rhuFVIIa in the management of PPH. However, to determine whether rhuFVIIa can be applied safely in women with PPH further research is required.

KEYWORDS - Recombinant human activated factor VIIa · Postpartum hemorrhage · Bleeding · Additional interventions · Thromboembolic events

INTRODUCTION

Postpartum hemorrhage (PPH), the leading cause of maternal mortality worldwide, claims 140.000 lives yearly.[1,2] PPH is defined by the World Health Organization as ≥500mL blood loss within 24 hours after giving birth.[1] It can cause anemia, organ failure, hemorrhagic shock, venous thromboembolism, and peripartum hysterectomy resulting in infertility.[3]

PPH has four causal components: failure of the uterus to contract after separation and expulsion of the placenta (70% of the cases), retained placenta, coagulation disorder, or birth canal injury.[4] Risk factors for these events include HELLP (hemolysis, elevated liver enzymes, and low platelets) syndrome and bleeding disorders (e.g., von Willebrand factor), detectable during pregnancy or childbirth.[4] However, most women who develop PPH lack detectable risk factors, leaving every pregnant woman at risk.[5]

PPH management involves three main approaches: treating uterine atony (using uterotonics and surgery), volume resuscitation (with crystalloid and blood products), and hemostatic treatment for correcting coagulopathy (involving plasma, tranexamic acid, fibrinogen, and recombinant human activated factor VIIa (rhuFVIIa)).[6] For hemostatic management, rhuFVIIa activates factor X, ensuring the conversion of prothrombin into thrombin which promotes clotting.[7] However, the use of rhuFVIIa in the management of PPH has, up until recently, been off-label because it has never been shown to be effective. Nevertheless, rhuFVIIa was used in emergency situations based on the individual assessment of the healthcare provider.[8] Subsequently, it was discovered that rhuFVIIa was strongly correlated with an increased risk of thromboembolic events.[8] Due to the increased risk of thromboembolic events and the inconclusive evidence of effectiveness, it was hardly used in the management of PPH anymore. Recently however, the European Medicines Agency (EMA) has registered rhuFVIIa on 22 April 2022 as a drug for the treatment of PPH when uterotonics are insufficient to achieve haemostasis.[9]

The aim of this systematic review is to determine the effectiveness and safety of rhuFVIIa in the management of PPH. To achieve this aim, literature is identified and analyzed according to the research question for this systematic review: 'Does administration of recombinant human activated factor VIIa compared to the absence of recombinant human activated factor VIIa in women with postpartum hemorrhage lead to cessation or reduction of bleeding, fewer additional interventions, and more thrombotic events?'

METHODS

Search strategy

A literature search using the PICO procedure was conducted in the PubMed database on January 5, 2023.

The MeSH and tiab terms used for the search were as follows: "Postpartum Hemorrhage"[Mesh] OR Fluxus*[tiab] OR Hemorrhage* postpart*[tiab] AND "recombinant FVIIa" [Supplementary Concept] OR rFVIIa*[-tiab] OR NovoSeven*[tiab] OR eptacog beta*[tiab] OR rhuFVIIa*[tiab] OR Recombin* factor VII*[tiab].

Definitions

PPH was defined as ≥500mL blood loss within 24 hours post-delivery, regardless of the mode of birth according to WHO guidelines.[1]

Study objectives

The primary outcomes of this review include the effectiveness and safety of rhuFVIIa in PPH management. To identify the effectiveness of rhuFVIIa, two questions were assessed: 'Did rhuFVIIa lead to cessation or reduction of bleeding?' and 'Was another intervention required after administration of rhuFVIIa?'. To quantify the safety of rhuFVIIa, all adverse events were analyzed. Specifically, thromboembolism, since this is one of the most important potential complications of treatment with rhuFVIIa.

In-/exclusion criteria

Initial screening excluded articles on rhuFVIIa use in other diseases, systematic reviews, comments, case reports, and non-English articles. Twenty articles remained after this first screening.

Full-text assessment excluded articles that were not available in full text, guidelines, and articles lacking effectiveness or safety outcomes. Ten articles were ultimately included.

Data extraction

The extracted data was divided in study characteristics (author, publication year, total number of patients, design and setting, number of patients receiving a single dose of rhuFVIIa, number of patients receiving standard care without rhuFVIIa, mean initial dose of rhuFVIIa, the volume of blood loss for inclusion of women with PPH, and exclusion criteria) and primary outcomes (number of patients with a cessation or reduction of bleeding, number of patients who needed an additional intervention after rhuFVIIa, number of patients who needed hysterectomy, total adverse events, and total thromboembolic events).

RESULTS

The combination of the MeSH and tiab terms resulted in a total of 183 hits.

Study characteristics

The characteristics of the ten studies, conducted in sixteen different countries, are summarized in TABLES 1 and 2. Three were comparative, and seven were non-comparative. In total, 552 women with PPH were included: 472 received a single dose of rhuFVIIa (intervention group), while 80 received standard care without rhuFVIIa (control group). The average initial rhuFVIIa dose was 90 µg/kg, ranging from 60 µg/kg to 106 µg/kg.

The volume of blood loss for inclusion of women with PPH differed between the studies. In four studies, this was not described.[10,14,17,19] Three studies included women with a blood loss volume > 1500 mL.[11,12,13] Two studies included women with a blood loss volume > 1000 mL.[15,18] Barillari et al. (2009) defined the definition for PPH depending on the mode of birth: blood loss > 500 mL after vaginal delivery or > 1000 mL after cesarean section.

The Lavigne-Lissalde et al. (2015)[11] and Huber et al. (2012)[13] studies explicitly mentioned an exclusion criteria. Women in the Lavigne-Lissalde et al. (2015)[11] study were excluded if they previously experienced thrombotic events, and women in the Huber et al. (2012)[13] were excluded if they had factor VII or IX deficiency.

Primary outcomes

Effectivity of rhuFVIIa

The effectiveness of rhuFVIIa was assessed by whether bleeding ceased or reduced, and by whether additional interventions were required after administration of rhuFVIIa.

327 patients (69,3%) experienced bleeding cessation/reduction after rhuFVIIa; for eleven patients, this data was unavailable. In the control group, 33 patients (41,3%) experienced bleeding cessation/reduction. Five out of ten studies mentioned this bleeding cessation/-

TABLE 1

Study characteristics. Abbreviations: RCT, Randomized Controlled Trial; MC, multicenter; SC, single center

Authors (Reference)	**Total patients**	**Design and setting**	**Patients receiving a single dose of rhuFVIIa** (Intervention)	**Patients receiving standard care without rhuFVIIa** (Control)	**Mean initial dose of rhuFVIIa** (µg/kg)	**Volume of blood loss by which patients are included**	**Exclusion criteria**
Ahonen et al., 2007[10]	48	Non-randomized controlled trial (SC) in Finland	26	22	100	Not clear	-
Lavigne-Lissalde et al., 2015[11]	84	RCT (MC) in France and Switzerland	42	42	60	>1500 mL	Personal history of thrombotic events
Hossain et al., 2007[12]	34	Retrospective Cohort (SC) in Pakistan	18	16	70	>1500 mL	-
Huber et al., 2012[13]	22	Prospective Cohort (SC) in Switzerlan	22	-	71	>1500 mL	Women with factor VIII or IX deficiency
Phillips et al., 2009[14]	105	Retrospective Cohort (MC) in New Zealand and Australia	105	-	92	Not clear	-
Alfirevic et al., 2007[15]	92	Prospective Case Series (MC) in Denmark, Finland, France, Iceland, Ireland, the Netherlands, Norway, Sweden, United Kingdom	92	-	90	>1000 mL	-
Barillari et al., 2009[16]	35	Retrospective Case Series (MC) in Italy	35	-	87,5	>500 mL after vaginal delivery or >1000 mL after caesarean section	-
Blatný et al., 2011[17]	80	Retrospective Case Series (SC) In Czech Republic	80	-	106	Not clear	-
Bouma et al., 2008[18]	27	Retrospective Case Series (SC) in the Netherlands	27	-	79	>1000 mL	-
Kobayashi et al., 2011[19]	25	Retrospective Case Series (MC) in Japan	25		84	Not clear	-
Total	552	-	472	80	-	-	-

reduction, but lacked clear definitions.[10,14,16,18,19] Hossain et al. (2007)[12] and Alfirevic et al. (2007)[15] mentioned a reduction in bleeding, and Blatný et al. (2011)[17] mentioned cessation of bleeding. However, these studies lacked a clear definition. Only two studies mentioned a clear definition for cessation of bleeding, with Lavigne-Lissalde et al. (2015)[11] defining cessation when < 30 minutes < 15 mL blood loss was observed after first intervention, and Huber et al. (2012)[13] reporting cessation of bleeding when the visible bleeding stopped within 30 minutes after administering rhuFVIIa.

As presented in **TABLE 2**, 146 of 472 rhuFVIIa-treated patients (31%) and 67 of 80 control patients (84%) needed additional interventions to stop bleeding. Applied additional interventions were: arterial ligation, arterial embolization, B-lynch Sutures, Bakri-Balloon, and hysterectomy. Hysterectomy was applied in 80 patients of the intervention group (17,8%) and in 20 patients of the control group (25%).

Safety of rhuFVIIa

After administering rhuFVIIa, 86 adverse events were observed in 472 patients (18,2%), including 14 thromboembolic events (3%). In the patients who did not receive rhuFVIIa, 10 adverse events were registered (12,5%), of which 0 were thromboembolic events (0%). Thromboembolic events included deep vein thrombosis (DVT), pulmonary embolism (PE), ovarian, jugular, and subclavian vein thrombosis. In most cases, the recovery of these thromboembolic events was uneventful after anticoagulant treatment. However, one patient in the Phillips et al. (2009)[14] study and one patient in the Kobayashi et al. (2011)[19] study required admittance to the intensive care unit (ICU). Other adverse events were pulmonary edema, renal failure, paralytic ileus, exanthem, fever, hypopituitarism, ileus, allergic reaction, acute myocardial infarction, acute respiratory syndrome, multiorgan failure, disseminated intravascular coagulopathy (DIC), and sepsis.

TABLE 2

Primary outcomes. [a]Bleeding cessation was defined when < 30 minutes < 15 mL blood loss was observed after first intervention. [b]Bleeding was considered to have stopped when visible bleeding stopped within 30 minutes after administering of rhuFVIIa. [c]In eleven patients it was not retrievable. [d]Only mortality reported. [e]No percentage mentioned because in eleven patients it was not retrievable if the bleeding ceases or reduced

Authors (Reference)		**Total patients**	**Effectivity**			**Safety**	
			Cessation or reduction of bleeding	Necessity of additional intervention	Necessity of hysterectomy	Total adverse events	Thrombo-embolic events
Ahonen et al., 2007[10]	Intervention	26	17	9	9	2	1
	Control	22	22	20	6	2	0
Lavigne-Lissalde et al., 2015[11]	Intervention	42	20[a]	22	3	2	2
	Control	42	3	39	8	0	0
Hossain et al., 2007[12]	Intervention	18	15	15	11	4[d]	0
	Control	16	8	8	6	8[d]	0
Huber et al., 2012[13]	Intervention	22	20[b]	2	2	3	0
Phillips et al., 2009[14]	Intervention	105	60[c]	13	13	39	2
Alfirevic et al., 2007[15]	Intervention	92	77	54	33	24	4
Barillari et al., 2009[16]	Intervention	35	23	15	6	0	0
Blatný et al., 2011[17]	Intervention	80	53	9	9	0	0
Bouma et al., 2008[18]	Intervention	27	24	5	5	1	1
Kobayashi et al., 2011[19]	Intervention	25	18	2	2	11	4
Total intervetnion	-	472	327[e]	146 (31%)	84 (17,8%)	86 (18,2%)	14 (3,0%)
Total control	-	80	33 (41,3%)	67 (84,8%)	20 (25%)	10 (10,5%)	0 (0%)

Kobayashi et al. (2011)[19] and Phillips et al. (2009)[14] tracked adverse events for 28 days, while Lavigne-Lissalda et al. (2015)[11] did so for 5 days. Seven studies did not specify the follow-up duration.[10,12,13,15-18]

DISCUSSION

Main findings

For 327 patients (327/472 (69,3%)), the use of rhuFVIIa has been observed to be effective in cessation or reduction of bleeding, and an additional intervention was required for 146 patients (146/472 (31%)). 86 adverse events were registered in this rhuFVIIa group (86/472 (18,2%)) of which 14 were thromboembolic events (14/472 (3%)). In 33 out of 80 patients who did not receive rhuFVIIa, the bleeding ceased or reduced (41,3%), and an additional intervention was required for 67 patients (67/80 (84,8%)). 10 adverse events were registered in this control group (10/80 (12,5%)) of which 0 were thromboembolic events (0/80 (0%)).

Results in relation to previous studies

The systematic reviews published in this subject area recorded higher rates on cessation or reduction of bleeding, higher rates on the necessity of hysterectomy, and lower rates on the thromboembolic events.[20-25] These differences can probably be explained by the fact that these systematic reviews were published between 2006 and 2011. This systematic review was written in 2023, based on more recent studies such as Lavigne-Lissalde et al. (2015)[11], Huber et al. (2012)[13], Blatný et al. (2011)[17], and Kobayashi et al. (2011)[19] studies. Especially the Lavigne-Lissalde et al. (2015)[11] study reported a lower rate on cessation or reduction of bleeding (20/42 (47,6%)); this could have impacted the overall result. The lower rates on the necessity of hysterectomy in this review could be explained because all the four studies published later on (Lavigne-Lissalde et al., Huber et al., Blatný et al., Kobayashi et al.) reported lower rates.[11,13,17,19] These were not included in the systematic reviews written between 2006-2011. Finally, the higher rates of thromboembolic events in this review could be explained by the

fact that Lavigne-Lissalde et al. (2015)[11] and Kobayashi et al. (2011)[19] reported a higher risk of thromboembolic events compared to the other studies (2/42 (4,76%) and 4/25 (16%), respectively).

Validity of the included studies

The most important conclusion emerges from the three comparative studies in this systematic review, because it can identify similarities and differences between the two groups (a group that received a single dose of rhuFVIIa and a group receiving standard care without rhuFVIIa). This can provide valuable insights into factors influencing a certain outcome.[10-12] Besides this, comparative studies are one of the best ways to find evidence for a treatment's effectivity – in this case, the effectivity of rhuFVIIa in the management of PPH. The RCT, which is one of the comparative studies that is included in this systematic review, has a small sample size (n=84). Additionally, it was an open label trial, meaning the RCT is not double-blinded.[11] Because this RCT had several problems, we cannot simply rely on this trial. The Hossain et al. (2007)[12] study, which is also comparative, showed higher mortality and hysterectomy rates in the intervention group compared to the other studies (mortality: 22% instead 18,2%, hysterectomy: 61,1% instead of 17,8%). Probably because this study is conducted in Pakistan, where fewer resources are likely to be available. This ensures that the results cannot be extrapolated to high resource settings.

The other seven studies were non-comparative observational studies, which generally run the risk of selection bias, information bias and confounding, compared to trials.[13-19] Case series are typically not included in systematic reviews because, they only report data from people who received treatment, potentially resulting in selection bias. However, case series were included in this systematic review because the primary outcome safety can often better be obtained from observational studies than from clinical trials, due to the possible rarity of adverse events.

Strengths and limitations

The strengths of this systematic review were a described study selection, mentioned in-, and exclusion criteria, an included flow chart, and no conflict of interests. Additionally, sixteen different countries were represented, making the results applicable in a wide range of nations.

Besides these strengths, there were several limitations in this systematic review. First, the review was impacted by heterogeneity between the different studies. The mean initial dose of rhuFVIIa, the time to administration of rhuFVIIa in women with PPH, and the definition of what cessation or reduction of bleeding means differs between the studies. Two studies defined a clear definition for cessation of bleeding.[11,13] The other eight studies had no clear definition. Furthermore, some studies presented the number of patients who had a cessation or reduction of bleeding, some who had reduction of bleeding, and some who had a cessation of bleeding. These three differences will have influenced the results and the quality of the conclusion.

Second, 9 out of 10 studies had patients with an abnormal invasive placenta which elevated the (advanced) probability of a postpartum hysterectomy.[10-16,18,19] However, this increased risk could not have been prevented using rhuFVIIa and therefore these patients bias the results of the effectivity outcome measure.

Third, the Huber et al. (2012)[13] study administered anticoagulant medication during pregnancy to women with a history of thrombotic events. Lavigne-Lissalde et al. (2015)[11] excluded women who had a history of thrombotic events. This probably ensures that these studies are no longer generalizable.

Fourth, the follow-up time of the adverse events differed between the ten analyzed studies, or was not even mentioned. As a result, this systematic review might underestimate the actual percentage of thromboembolic events.

Fifth, in addition to thromboembolic events, other adverse events were recorded, such as pulmonary edema, renal failure, paralytic ileus, exanthem, fever, hypopituitarism, ileus, allergic reaction, acute myocardial infarction, acute respiratory syndrome, multiorgan failure, disseminated intravascular coagulopathy (DIC) and sepsis. It is important to keep in mind that the other adverse events could also occur due to life-threatening hemorrhage rather than rhuFVIIa, which the authors of the studies described as most likely, but it is still hard to say with 100% certainty because it is hard to research.

Sixthly, a limited number of studies are comparable, which makes it more difficult to translate the results into practice.

Finally, the only database used to find relevant articles was PubMed. Consequently, not all relevant articles may have been included in this review.

Implications for research

Further research is required to answer the question whether to use rhuFVIIa. RCTs are required because they are almost non-existent and are one of the best designs for finding evidence for the effectiveness of a treatment. Furthermore, observational studies are more at risk of relevant bias, with potentially less valid results. However, observational studies are still important in discovering new and more adverse events when it comes to interventions. Thus, both large RCTs and observational studies must be conducted to provide a definitive answer to the research question.

CONCLUSION

In conclusion, the comparative studies suggest a potential effective role of rhuFVIIa in the management of PPH and the case series suggest a potential safe role of rhuFVIIa. However, further research is required to determine whether rhuFVIIa can be applied.

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Total Hip Arthroplasty

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CASE

An 82-year-old man was cleaning his gutter when he slipped while climbing the ladder and fell from a height of approximately two meters to the ground. He sustained a fracture of his right hip. The patient has no significant medical history, other than a treated basal cell carcinoma. He lives independently and walks without the assistance of devices. Prior to the trauma, he experienced symptomatic osteoarthritis in his right hip. The patient was deemed a candidate for total hip arthroplasty and underwent surgery via the anterior approach. Postoperatively, the patient made a full recovery.

Over the past decades, total hip arthroplasty (THA) has become indispensable in treating disabling conditions of the coxo-femoral joint[1]. Consequently, in the US, it is projected that by 2030, THA procedures will have grown to 635,000 annually[2]. THA can be useful in cases of end-stage hip osteoarthritis and certain trauma-related cases, such as displaced collum femoris fractures (particularly in patients <70y/o) and post-traumatic arthritis following e.g. acetabular fractures[3-5]. THA provides pain relief and improved joint function, thereby increasing the mobility and quality of life for the numerous patients affected each year worldwide[6].

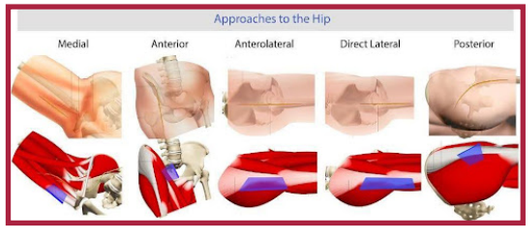

FIGURE 1 Surgical Approaches for Total Hip Arthroplasty.
Source: https://www.orthobullets.com/recon/12116/tha-approaches

> "Over the past decades THA has become indispensable in treating disabling conditions of the coxo-femoral joint."

There is much more to the surgical technique of THA than might be expected at first glance. One should carefully aim to achieve and preserve smooth and durable articulation in THA. This requires a patient specific approach and consideration of multiple factors such as size and materials of the different components (e.g. metal, polyethylene or ceramic elements). Another consideration is whether to use cementing or cementless implanting techniques. Positioning and fixating the acetabular and femur components require knowledge of, for instance, desired angles and inclination. Not to mention the ongoing advancements in surgery techniques such as minimally invasive techniques, robotics and computer-assisted surgery. For instance, Melcher et al. (2023) researched a new minimal-invasive muscle preserving approach for THA[7].

We will focus on existing literature addressing different surgical approaches in THA (FIGURE 1). In the Netherlands the most commonly used approaches are: anterior (AA), posterior (PA) and lateral (LA)[8]. Similar to Higgins et al. (2014) and Meermans et al. (2017), Ang et al. (2023) conducted a systematic review comparing different approaches in THA. They found that AA has better early outcomes (e.g. shorter length of stay, post-operative pain and function) but was associated with longer operative time compared to PA. There was no difference in dislocations, neurapraxias, periprosthetic fractures or venous thrombo-embolism. No clear superiority of any approach was demonstrated[9-11]. The prospective, multicenter, RCT by Moerenhout et al. (2020) also failed to provide a conclusive answer favoring a certain approach[12].

> "No clear superiority of any approach was demonstrated."

Briefly, knowledge and careful consideration of surgical techniques are essential for outcomes following THA. Each of the approaches (anterior, lateral and posterior) is acceptable in THA. The differences in outcome between these approaches are small in the literature, and each approach has its own benefits and complications. For example, all the techniques require incision and reflection of various muscles to gain exposure of the hip joint. If the posterior approach is used, however, it is advised to reconstruct the posterior capsule and external rotators to diminish the risk of dislocation[8]. The choice of THA approach should be based on the surgeon's experience and preference, as well as patient factors.

> "The choice of THA approach should be based on the surgeon's experience and preference, as well as patient factors."

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The Coalition for Lifestyle in Healthcare: a governmental initiative with Impact

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THE IMPORTANCE OF LIFESTYLE

The health landscape in the Netherlands is undergoing a complex transformation. Life expectancy is rising, but the obesity epidemic presents a concerning trend. Over the past 40 years, global obesity rates have tripled. In the Netherlands, the obesity rate has reached 15%, with an additional 35% of the population being overweight, which results in a total of 50% of all adults having excess weight.[1] This shift has led to an increase in lifestyle-related diseases, such as osteoarthritis, diabetes, cardiovascular disease, reproductive-, respiratory-, gastrointestinal-, musculoskeletal problems, and increased risk of at least 12 types of cancer.[1] Tackling lifestyle factors has the potential to mitigate up to 20% of the overall disease burden, with specific ailments such as cancer exhibiting a 40% reduction potential, and notably, cardiovascular disease presenting the highest prevention rate at 80%.[1-3] This underscores the critical significance of preventive measures and embracing healthy lifestyles.

Current obesity medications, such as Ozempic, address symptoms, but often fail to tackle the underlying lifestyle causes. Withdrawal of these medications results in weight gain, suggesting the need for a sustainable solution.[4] Adopting healthy lifestyle habits could address these underlying causes, and thereby improve population health and alleviate the pressure on healthcare systems. Integrating lifestyle changes into daily practice through various approaches is essential to achieving these outcomes.

THE COALITION FOR LIFESTYLE IN HEALTHCARE

The Coalition for Lifestyle in Healthcare (in Dutch: Coalitie leefstijl in de zorg) is an initiative aimed at integrating lifestyle into regular healthcare in the Netherlands.[5] The primary goal is ambitious yet clear: by 2025, lifestyle interventions should become a standard component of care for individuals with health conditions or diseases. Lifestyle is defined based on the Coalition's adapted 'BRAVO' concept, an abbreviation which stands for Bewegen (physical activity), Roken (smoking cessation), Alcoholmatiging (responsible alcohol consumption), Voeding (a healthy diet), and Ontspanning (relaxation), as well as the now added social communication skills, behavioural change, and social demographics to further support possible changes in lifestyle.

> "The primary goals is ambitious yet clear: by 2025, lifestyle interventions should become a standard component of care for individuals with health conditions or diseases."

The Coalition for Lifestyle in Healthcare is structured into several specialised teams. These include the Research Team, which develops a comprehensive knowledge agenda; the Learning and Collaboration Team, focused on bottom-up learning about the role of lifestyle in disease prevention and treatment; the Guidelines Team, responsible for creating and updating medical practice guidelines that incorporate lifestyle factors. The Practice Implementation and Quality Team ensures the implementation of tools and enhances professionals' ability to work with them effectively, while the Education and Professionalization Team ensures healthcare workers have the necessary skills. The Patient Team provides supplementary support to patients, working alongside healthcare providers to promote lifestyle changes. The team ensures patients have better access to reliable information, particularly online. The Financing and Costs Team addresses funding and scaling interventions within healthcare frameworks. Members of these teams are passionate advocates on the front line, armed with scientific knowledge and ready to drive significant change. Key organisations involved include TNO, NFU, Patient Federation of the Netherlands, Vereniging Arts en Leefstijl, and ZonMw.[5]

MY ROLE IN THE COALITION

As a medical student taking the elective course in Lifestyle Medicine, I have dedicated part of my curriculum to the important topic of lifestyle. This elective course has highlighted the significant health benefits achievable through prevention and treatment focused on lifestyle changes, which I find particularly relevant as a future doctor. Under the guidance of my supervisors, who are members of the coalition, I contribute to several key activities. These include conducting an inventory of lifestyle education, developing learning objectives, and developing educational materials. We are also examining which universities excel in teaching lifestyle and identifying the factors behind their success. By promoting lifestyle interventions among fellow students and integrating these into the medical curriculum, we aim to enhance individuals' quality of life and reduce healthcare costs.

CONCLUSION

Integrating lifestyle into healthcare is crucial for both prevention and treatment. By incorporating lifestyle interventions into standard care, we can create a healthier population, reduce healthcare costs, and relieve the strain on the healthcare system. Prevention is key to a sustainable and effective healthcare system, and it is up to us as future healthcare professionals to make this a reality. The Coalition for Lifestyle in Healthcare is leading the way in this transformative approach, emphasising the importance of lifestyle in achieving long-term health improvements and system sustainability.

> "Integrating lifestyle into healthcare is crucial for both prevention and treatment."

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RNA may also be used to treat high cholesterol

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During the pandemic, it became widely known that mRNA could be used to let the body synthesize its own viral spike protein, thereby feeding the immune system with this information. Nucleic acids are being investigated as prophylaxis for certain types of malignancies, and recombinant DNA-vectors are already on the market as gene therapies for hereditary diseases, such as spinal muscular atrophy and metabolic disorders. But did you also know that short interfering RNA strands (siRNA) are an established last-line drug against LDL-cholesterol?

Inclisiran (Leqvio®) is an LDL-lowering injectable that was approved for use in 2021.[1] LDL particles are removed from the blood by LDL-receptors on hepatocytes. PCSK9 is a regulatory protein that marks LDL-receptors for degradation. As you may have discovered already, the class or mechanism of a drug can often be deduced from its generic name. The suffix -siran in inclisiran indicates that the drug is a strand of siRNA. Inclisiran binds to PCSK9-mRNA in the cytosol of hepatocytes, targeting it for degradation by RISC and preventing translation. The result is increased LDL uptake by the liver from the blood.[2] One registered indication is familial hypercholesterolemia (FH), a genetic disease most often caused by a loss-of-function mutation in the LDL-receptor. It may also be prescribed to treat dyslipidemia in adults when target LDL concentrations are not reached, preferably in combination with other lipid-lowering drugs. Either this or contra-indications for regular statins are a prerequisite for reimbursement.[1]

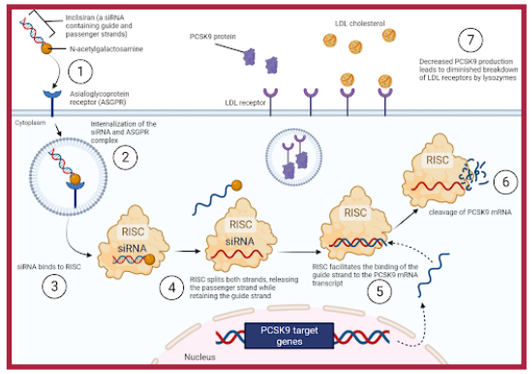

FIGURE 1 Mechanism of action of inclisiran[6]

Unlike small molecules like simvastatin and ezetimibe, inclisiran is a synthetic biomolecule. There are two other biologicals for dyslipidemia on the market, namely the IgG-antibodies evolocumab and alirocumab, both direct inhibitors of PCSK9. Biomolecules are often too large to be absorbed in the gastrointestinal tract. Additionally, pancreatic enzymes such as chymotrypsin and (deoxy) ribonuclease break these substances down before they enter the systemic circulation. Therefore, as a rule of thumb, you can assume biomolecules to be administered parenterally. Inclisiran must be injected subcutaneously every six months. Although its plasma half-life is only nine hours[3], it is quickly absorbed by the target cells in the liver. A decrease in LDL-cholesterol of around 40–50% can be detected after four years.[2] Due to its unique target and specific binding characteristics, inclisiran has no clinically relevant interactions.[4] Apart from occasional injection site reactions, it has few adverse effects and contraindications.[4] Because of the relatively complex production process, extensive quality control requirements, and unexpired patents, biomolecules tend to be expensive as a medicine. One disposable syringe of inclisiran costs around €2000, but due to its infrequent dosing schedule, annual costs are comparable to anti-PCSK9 mAbs.[3]

Having high plasma levels of a subspecies of LDL known as lipoprotein(a) (LPA) is associated with a higher risk of cardiovascular events. Olpasiran is currently being developed in clinical trials.[5] Now, can you deduce the mechanism and general characteristics of this innovative drug?

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Phasing out of anaesthetic gases

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1 Faculty of Medicine, Amsterdam UMC, location VUmc
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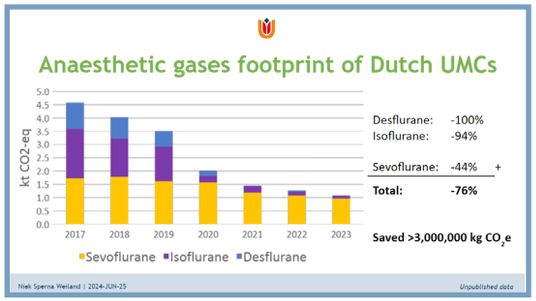
The development of anaesthetic gases is a significant milestone in medical history. In 1846 diethyl ether was first used as an anaesthetic during public surgery at Massachusetts General Hospital. Since then, diethyl ether has been a commonly used gas due to its potent anaesthetic properties. In the late 1840s, chloroform was presented as an alternative anaesthetic. When chloroform appeared to carry various risks, including hepatotoxicity, this led to a decline in use. Later, more safe and effective anaesthetic gases were developed. In the 1950s, halothane became a widely used anaesthetic due to its potency as well as the quick induction and recovery times of the patients. In the 20th century, even more advancements were made, leading to the development of isoflurane, sevoflurane, and desflurane.[1]

The evolution continued with the development of intravenous anaesthetics like propofol, which enabled anaesthesia using only intravenous drugs. The debate about which type of anaesthesia is associated with better patient outcomes is still ongoing. This is recently investigated by a large systematic review and meta-analysis that pooled over 300 randomised controlled trials and compared intravenous anaesthesia with inhalational anaesthesia (using gases). This review concluded that both types of anaesthesia are safe and effective with regard to postoperative mortality or morbidity. Additionally, propofol-based intravenous anaesthesia led to a higher quality of recovery from anaesthesia, with lower incidences of emergence delirium and less nausea and vomiting.[2]

At the same time, concerns about the environmental impact of the traditional anaesthetics grow. Many anaesthetic gases are potent greenhouse gases with long atmospheric lifetimes contributing to climate change. To gain insight into the global warming impact, emission levels are converted into CO2 equivalents. For instance, the emission



of 1 kg of desflurane equals 505 kg of CO2 equivalents, the emission of 1 kg isoflurane equals 1920 kg of CO2 equivalents, and the global warming impact of desflurane even rises to 6930 kg of CO2 equivalents.[3] This impact is significant and worth the attention.

To conclude, the history of anaesthesia reflects a remarkable shift from the discovery of various gases to intravenous anaesthesia. Research shows that this shift is advantageous for the patient. There is also a growing awareness of the fact that anaesthetic gases have a significant impact on climate change. This change in perspective is already visible in the annual figures. Since 2017, there has been a clear decrease in the use of anaesthetic gases within Dutch UMCs (FIGURE). The Amsterdam UMC is at the forefront of this effort. The use of inhalational anaesthesia has been minimized and desflurane, the most potent anaesthetic gas, has been phased out entirely.

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MEET OUR TEAM

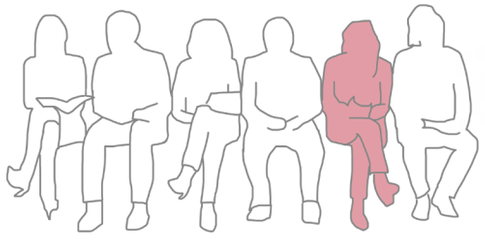
Sanne Bingen, Secretary of AMSj

Hi everyone,

My name is Sanne and I am one of the newest members of the General Board. I am a 24-year-old medical student and currently busy with my minor at the VU. This year, I will be the secretary of the AMSj board. That means I will be running our website, make sure all the new editions gets distributed and take notes during our meetings. I am also in charge of the e-mail of AMSj, so you will be talking with me when you send a mail!

I have been studying for quite some time now; I started with Nursery school in 2019. I loved working with patients and learning from practise, but I missed the depth of the 'research part' of the study. That's why I chose to switch studies and I started with Medicine in 2021 at the VU. When I heard of AMSj, I felt instantly attracted and decided to apply for Secretary. And with success!

Next year, I want to delve into all the different aspects of my function. One of them includes that I am gonna deepen myself in the website and hope to give it an even more fresh appearance. With the board, we are eager to start big projects and I am really excited for this next year. Overall, my goal this year with AMSj is to give people a great opportunity to learn about the publication process and make them enthousiastic for medical research. And maybe even grow name recognition of the journal outside our city Amsterdam.



Yours sincerely,

Sanne Bingen

Translating the "Pocket Cardiology and Vascular Medicine" for a Global Audience

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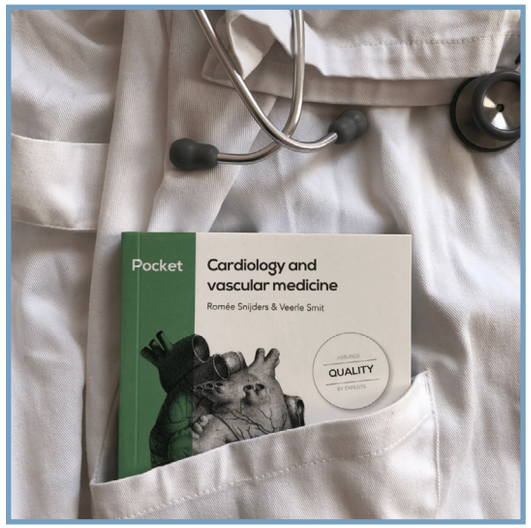
1 Department of Cardiology, Erasmus MC University Medical Center, Rotterdam, the Netherlands



In today's interconnected world of medicine, access to standardized, concise, and reliable information is crucial. This is particularly true for medical students, junior doctors, and residents. The Dutch Compendium Geneeskunde Pocket Cardiology and Vascular Medicine has been used by medical students in the Netherlands for years. Designed for quick reference, this guide provides concise yet comprehensive coverage of core cardiology and vascular medicine topics. However, its use has been limited to Dutch-speaking healthcare professionals. Our team embarked on an initiative to translate the popular Dutch pocket, Pocket Cardiologie en Vasculaire Geneeskunde, into English. The result is the globally available Compendium Medicine Pocket Cardiology and Vascular Medicine that opens access to crucial cardiology and vascular medicine information for a broad international audience.

The journey of translating the pocket fit for an international audience was an exciting challenge. We had to take into account several aspects, like new guidelines, new treatment options but also regional differences and diversity. Our team carefully reviewed and incorporated new clinical recommendations from the European Society of Cardiology (ESC) and the American College of Cardiology (ACC), ensuring that the guide aligns with current best practices. We also expanded the scope of the guide to include newly recognized conditions such as pulmonary hypertension and non-dilated left ventricular cardiomyopathy, addressing gaps in previous editions. To accomplish all of this we had an international team of authors and a close collaboration with an international team of experts.

In this pocket, we didn't just aim for medical students—we know junior doctors and residents need all the help they can get too. After all, every doctor still has nightmares about that one night shift early on, juggling multiple unstable patients and wondering if sleep would ever be a thing again. To ease those sleepless nights (a little), we've included handy flowcharts to guide you through acute situations like life-threatening arrhythmias or even a full-blown cardiac arrest.

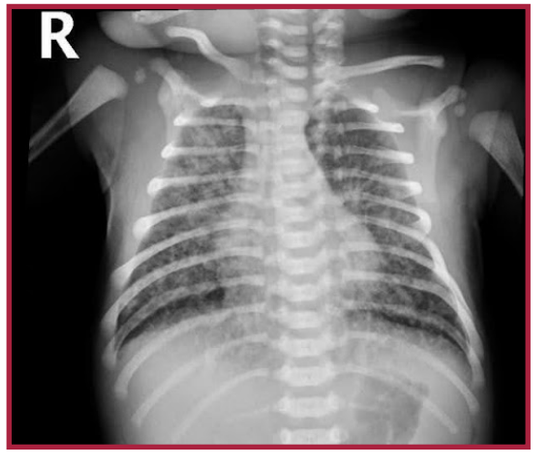
In addition to updating the clinical guidelines and content, we took special care to ensure that this edition of the promotes diversity and inclusivity in medical education. Historically, medical resources have often been limited in their representation of different ethnicities, particularly when it comes to clinical presentations that may vary based on skin color or other demographic factors.

To address this, we included images, diagrams, and case examples that reflect a wide range of ethnicities, aiming to provide a more inclusive learning experience. For instance, clinical photographs depicting skin-related symptoms are shown on patients of various skin tones. This effort ensures that future healthcare professionals can better recognize these signs in diverse populations, fostering a more equitable approach to diagnosis and care.
By actively incorporating diverse images and content, we are not only hoping to enhance the educational value of the guide but also contributing to the broader goal of reducing healthcare disparities. We hope that medical students and clinicians using this guide will develop a more comprehensive understanding of how cardiovascular diseases may present across different individuals.

In this pocket, we aimed to provide a concise yet essential overview of cardiology for students and junior doctors worldwide. Our goal was to offer a resource that not only guides through the complexities of cardiovascular care but also supports doctors in navigating acute, high-pressure situations with confidence. By paying special attention to diversity, we worked to ensure that everyone—both healthcare professionals and patients—feels seen and included. We hope this guide empowers the next generation of doctors to deliver exceptional, inclusive care wherever they are in the world.

Answers 'A neonate with respiratory distress'

Armel Boes and Liffert Vogt



Correct answers: 1C, 2B

EXPLANATION

Question 1

Meconium aspiration syndrome (MAS). The main key points for this answer include the respiratory distress just hours after birth and the yellow-green staining on the nails. MAS can occur when the neonate inhales meconium during delivery or in utero which can lead to airway obstruction, chemical inflammation, surfactant inactivation and even respiratory failure.[2]

Question 2

MAS can lead to severe complications including PPHN, aspiration pneumonia and cerebral hypoxia due to a long term of a lack of oxygen. Lung bleeding is not one of the complications of MAS.[3]

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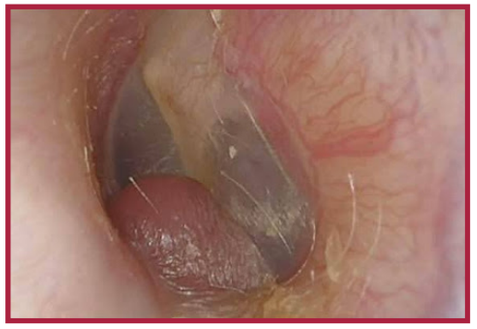
Answers 'Clinical Reasoning for Otorhinolaryngology Experts!'

Kevin Yah and Johannes A. Rijken



Correct answers: 1B, 2A, 3C

EXPLANATION

The clinical narrative, combined with the otoscopic findings, suggests a diagnosis of jugulo-tympanic paraganglioma (JTP). Paragangliomas are rare catecholamine secreting neuroendocrine tumors.[1] However, in the head- and neck area catecholamines are rarely produced.[2] JTP specifically originates from the tympanic plexus and the wall of the jugular bulb. It is six times more prevalent in women, with an onset typically occurring between the ages 30 and 50.[3,4] Common symptoms include unilateral hearing loss, pulsatile tinnitus, (lower) cranial nerve deficits, otalgia and/or otorrhea[5,6]. Sometimes, JTPs may present asymptomatically.

During physical examination, a characteristic feature in otoscopy is the presence of a pulsatile red or purple mass in the hypo- or mesotympanum (different parts of the middle ear cavity). Additionally, a “rising sun” sign may be observed, indicating the red appearance of a tumor ascending from the floor of the middle ear cavity in the hypotympanum. However, while this sign suggests the presence of a lesion. The specific type of lesion remains unclear[7].

Differential diagnoses include both benign and malignant neoplasms, as well as vascular lesions in the middle ear region. In terms of neoplasms, schwannomas, meningiomas, chondrosarcomas, carcinomas, cholesteatomas, chondromas, lymphangiomas and inflammatory granulomas are ranked in order of incidence. Vascular differential diagnoses include an aberrant or laterally displaced internal carotid artery in the middle ear[4]. Neuroimaging is crucial for differentiation among these diagnoses. It is imperative to distinguish between neoplasms and vascular lesions, as biopsy performed on a blood vessel could yield disastrous consequences.

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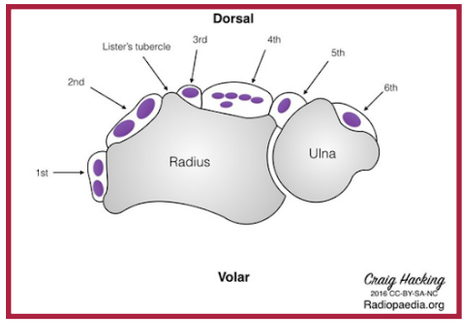
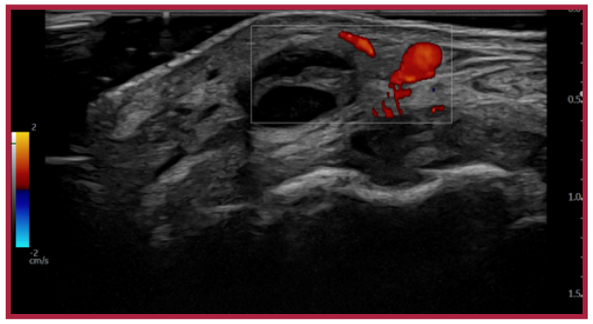
Answers 'Hand Swelling in Patient with Rheumatoid Arthritis'

Matthijs J. van Ee, Glenn de Vries and Prof. Dr. Mario Maas





Correct answers: 1A, 2B, 3C

EXPLANATION

Initially, physicians suspected a benign lipoma, but ultrasound revealed a chronic tenosynovitis of the extensor digiti minimi. This is an inflammation of the synovial membrane within the tendon sheath. The synovium normally produces a small amount of fluid to lubricate the tendon, allowing smooth movement within the sheath. However, inflammation can lead to the overproduction of synovial fluid and synovial thickening.[1]

Tenosynovitis can cause symptoms such as pain, swelling, and limited range of motion. It is commonly seen in the hands or wrists, particularly in patients with rheumatoid arthritis (RA).[2,3]

Ultrasound is used to diagnose tenosynovitis. It may show hypoechoic (gray) or anechoic (black) fluid surrounding the tendons, indicating the presence of excess synovial fluid. This condition is detectable on ultrasound, where it may reveal fluid accumulation around the tendons and/or synovial thickening, as seen in this case. Doppler imaging might also reveal increased blood flow to the inflamed synovium, further supporting the diagnosis.[4]

Treatment of tenosynovitis involves addressing the underlying cause, such as RA management, along with anti-inflammatory medications, corticosteroid injections, or even surgical intervention if necessary.

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Colophon

Amsterdam Medical Student journal (AMSj) is a scientific medical journal with the purpose to enable medical students to publish clinical observations, research articles and case reports. The journal was founded by students from the Amsterdam UMC, location AMC and VUmc, in Amsterdam with the intention to provide education and development of academic skills for medical students. The entire journal is created and published by staff members and students from both medical faculties.

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'De anatomische les van Dr. Nicolaes Tulp' *(1632)* by Rembrandt van Rijn. Courtesy of Mauritshuis, Den Haag

A depiction of the anatomical lesson given by Dr. Nicolaes Tulp in January 1632. The body used for this demonstration was that of Adriaen Adriaensz, alias Aris Kindt, a repeat offender who had been sentenced to death and hanged for robbery.