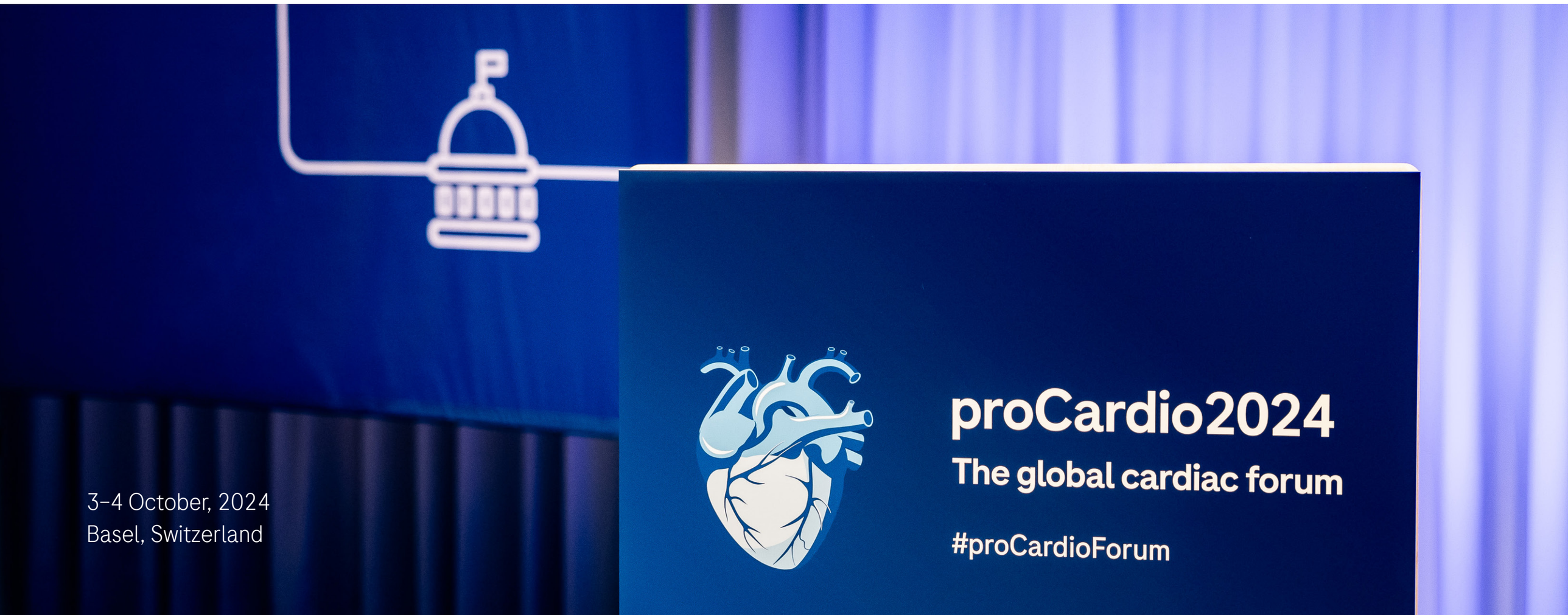
proCardio2024
The global cardiac forum
#proCardioForum

Executive Summary



proCardio 2024

The 13th International **proCardio** forum came home to the Roche headquarters in Basel, Switzerland, on the 3rd and 4th of October, 2024. For the first time, proCardio was a joint venture between Roche Diagnostics and Pharma, providing a platform for world-leading experts to come together and discuss the latest developments as well as highlight the areas for research and development in the cardiometabolic field. Held over two days, the program followed the cardiac patient journey, from prevention and diagnosis to therapy, including sessions on basic science, innovation, implementation and policy, before finishing the meeting with the current hot topics in cardiology and key unmet medical needs to consider.

Prof James L Januzzi, MD
proCardio *Chair*
Cardiology Division Massachusetts General Hospital, Harvard Medical School & the Baim Institute for Clinical Research

Prof Lori Daniels, MD
proCardio *Chair*
University of California San Diego

SESSION 1

Basic Science

Chairs:
Emily Lau
(Massachusetts General Hospital, USA)
Evangelos Giannitsis
(University of Heidelberg, Germany)

proCardio 2024 began with the scientific faculty presenting basic science research in cardiac disorders and biomarkers. **Gemma Figtree** (University of Sydney, Australia) initiated the session by emphasizing the need for discovering new biomarkers and therapies to help prevent myocardial infarction beyond the standard modifiable risk factors (SMuRFs), particularly for SMuRFless patients who are often overlooked in clinical trials and guidelines.

Coronary artery disease (CAD) poses a major public health challenge, with over 50% of heart attack patients showing no prior symptoms and ~25% lacking traditional risk factors. Early detection and treatment, especially of subclinical CAD, are crucial in preventing heart attacks.

Prof Figtree proposed a three-step pathway for heart attack prevention, which includes detection and treatment of known risk factors to reduce the risk of developing coronary artery disease, screening for coronary artery disease using CT imaging and new blood-based diagnostics including inflammatory biomarkers, and treatment of coronary artery disease before a myocardial infarction occurs.

Looking forward, the integration of genetic and biomarker data will enable personalized treatment plans, fostering a new era in preventative cardiology. The vision remains clear – to achieve a world without heart attacks through comprehensive, early detection and treatment of CAD.

Pedro Lopez Ayala (University Hospital Basel, Switzerland) followed by discussing the novel biomarker, cardiac myosin-binding protein C (cMyC, alternatively cMyBPC), which is released during myocardial ischemia. He began with a poll revealing that approximately half of the audience uses the ESC 0/1 hour algorithm in their clinical practice, an algorithm which utilises high sensitivity cardiac troponin (hs-cTn) for rapid rule-in or rule-out for myocardial infarction. However, early presenting patients (those presenting with chest pain onset less than three hours prior to the first blood draw) cannot be ruled out based on the first hs-cTn measurement, which is a major limitation of the single measurement strategy. Therefore, a novel biomarker to aid in the early rule-out of myocardial infarction would be beneficial. **Dr Ayala** presented research suggesting that cMyC, which is released significantly faster following myocardial injury than troponin, may provide an adjunctive to hs-cTn. The combination can increase efficiency in ruling out patients at the first blood draw and may help to rule-in patients presenting with early-onset chest pain due the fast release kinetics of cMyC. Preliminary research suggests that the dual biomarker strategy combining cMyC and hs-cTn can improve triage rates while providing similar long-term cardiovascular outcomes.

Finally, sex differences in cardiovascular diseases was discussed by **Emily Lau** (Massachusetts General Hospital, USA) Biological sex impacts circulating levels of protein biomarkers, including NT-proBNP and troponins, and can highlight distinct cardiovascular disease pathways. For example, compared with the opposite sex, inflammatory and obesity-related pathways are upregulated in women whereby fibrosis and platelet activation pathways are upregulated in men. In addition, sex differences can be seen with eicosanoid metabolites, and molecular profiles including menopause and hormone status. When post-menopausal women are given hormone replacement therapy, their biomarkers return to levels of a pre-menopausal state.

The topic of using sex-based and pre/post-menopausal cut-offs for biomarkers was further discussed among the audience and panel. Although using sex-based cut-offs can improve precision, it was acknowledged that this may not always be practical e.g. in the emergency room setting. Regarding menopausal status, more research is needed in biomarker changes over a woman's lifespan before that level of nuance is offered to patients. The obesity epidemic was also referenced, highlighting the need to conduct research on the impacts of adipose tissue on hormonal regulation and, subsequently, cardiovascular diseases (CVD).

SESSION 2

Prevention

Chairs:
Christie Ballantyne
(Baylor College of Medicine, USA)
Pam Taub
(University of California San Diego, USA)

Naveed Sattar (University of Glasgow, Scotland) began the session by exploring the potential of anti-obesity medications for CVD prevention. He shared exciting data from the STANDby trial which demonstrated that weight loss has been shown to reverse early type 2 diabetes (T2DM). He continued by highlighting the SELECT and SURMOUNT-4 clinical trials, which demonstrate the efficacy of medications semaglutide and tirzepatide for weight loss, diabetes remission, and reducing CV events. He believes that treating chronic diseases without tackling excess adiposity promotes multimorbidity. Therefore, targeting weight management much earlier in many chronic conditions and upscaling preventative policies are essential. This timely topic elicited further questions and debates around the cost-effectiveness and availability of anti-obesity medications within healthcare systems.

Prof Sattar noted that despite a relatively fair market price in the UK, the current cost burden on the National Health Service (NHS) would be too high due to the large number of eligible patients resulting from the rapidly growing incidence of obesity. With the demand for these drugs surging worldwide, data from other countries, e.g., Brazil, Germany and US, also indicate that anti-obesity medications are not cost saving at the current prices.

Dorien Kimenai (University of Edinburgh, Scotland) followed by discussing prevention of CVD in the general population. Her recent research emphasizes the importance of combining traditional CVD risk factors with non-traditional factors, such as socioeconomic deprivation and cardiac biomarkers (including NT-proBNP, GDF-15, and cardiac troponins), to improve primary prevention efforts. She demonstrated how crucial these non-traditional risk factors are; for example, those living in the most socioeconomically deprived area of the United Kingdom are four times as likely to die prematurely from CV death than those in the least deprived areas.

Using objective measurements for these risk factors may help reduce inequalities between patients. She advocated for the incorporation of non-traditional risk factor data and sex-specific analysis into models, with the ultimate goal of developing a dynamic and personalized CVD risk estimation system to improve health outcomes. However, the utility of the system is dependent on multiple biomarker measurements and regular updates.

New to proCardio this year was the on-site lipoprotein a (Lp[a]) testing. Elevated Lp(a) is highly prevalent, primarily genetically determined, and a causal driver of CVD risk. **Christie Ballantyne** (Baylor College of Medicine, USA) discussed the value of Lp(a) in diagnosis and therapy. Elevated Lp(a) is associated with complex, diffcult-to-treat atherosclerotic lesions and atherosclerotic cardiovascular disease events, even with statins, antiplatelet therapy, and low levels of LDL. Although not routinely conducted in real-world clinical practice, he proposed that Lp(a) should be measured at least once in all adults and considered as a critical factor in CVD risk assessment. However, clinical guidelines should consider using 'grey zones' when identifying risk thresholds to ensure high-risk patients are not ruled out. He shared promising data from targeted therapies, such as small interfering RNAs specific to Apo(a), which are currently being investigated to help lower elevated Lp(a).

The session continued with **Safia Chatur** (Harvard Medical School, USA) discussing gaps in the early identification of heart failure and associated implications. She shared data from several trials that have demonstrated the prognostic value of NT-proBNP in predicting heart failure progression and adverse outcomes. Pharmacologic therapy is available to reduce the progression of heart failure to symptomatic stages. As such, there is a large potential for identifying patients upstream of symptomatic heart failure in the community with biomarker-based-screening. Real-world evidence from the US showed that screening adults with diabetes with natriuretic peptides is helpful to identify stage B HF and trigger utilization of preventative cardiac care. Important steps to implement early heart failure detection in clinical practice include raising public awareness, providing tools to support clinicians at the point of care and an integrated approach across specialties.

SESSION 3

Diagnosis

Chairs:
Cynthia Papendick
(University of Adelaide, Australia)
Lori Daniels
(University of California San Diego, USA)

Next up, the latest developments to improve diagnostics were discussed. **Antoni Bayes-Genis** (Hospital Universitari Germans Trias I Pujol, Spain) opened the session by commenting that heart failure management often happens too late, leading to poor quality of life and worse outcomes. Therefore, early diagnosis of myocardial infarction and heart failure is essential. He noted how NT-proBNP can be used in screening for heart stress in asymptomatic patients at risk of CVD (e.g., those with T2DM) as well as in those with acute heart failure presenting to the emergency department. However, more support is required for primary care providers to enable them to diagnose and manage heart failure in an outpatient setting. He shared findings from the Revolution-HF trial, which highlights the need for a revolution in establishing a pragmatic NT-proBNP rule-in for heart failure diagnosis followed by prompt initiation of GDMT, even before echocardiography is performed.

Next, **Nicholas Mills** (University of Edinburgh, Scotland) began by discussing the under-utilization of NT-proBNP in acute care settings. There is high variation across the globe in the use and availability of NT-proBNP testing in the emergency departments, potentially due to some uncertainties in the interpretation of binary thresholds which can be affected by individual characteristics, e.g., biological sex, age and comorbidities. To help overcome these barriers, **Prof Mills** and his team have developed a novel algorithm, CoDE-HF, which aims to support clinicians in assessing the risk of acute heart failure. By combining patient characteristics with a continuous measure of NT-proBNP, CoDe-HF offers a more consistent and individualised approach to diagnosing acute HF.

Following the presentations, there was a discussion on the use of low NT-proBNP cut-offs. While concerns of false positives were raised, it was posed that such cut-offs could effectively identify patients at higher risk, justifying closer observation and re-testing NT-proBNP every six months. The experts agreed, stating that targeting the most appropriate downstream investigation to the right patient is vital, and using probabilities for risk-stratification is useful for this. Additionally, the panel advocated for the implementation of a population-wide natriuretic peptide screening programme for prevention in order to identify high risk individuals, similar to cancer screening programs.

Christian Müller (University Hospital Basel, Switzerland) began by demonstrating the benefits of implementing the ESC 0/1 hour rapid rule-in/out algorithm, such as high sensitivity, effective rule-in and improvement of early diagnosis of HF. Despite being extensively validated in both randomized clinical trials (RCTs) and with real-world evidence, implementation of the rapid protocol has been delayed in some institutions due to factors such as lack of knowledge or interest, and limitations on resources. As such, the PRESC1SE-MI study aims to assess the safety and efficacy of implementation of the ESC 0/1h algorithm in late adopters.

Prof Müller shared details on patient recruitment, which aimed to recruit over 50,000 patients across multiple study centers. The study is ongoing, but has already surpassed the target for enrolled participants, and he is excited to share the results in due course.

Hans-Peter Brunner-La Rocca (Maastricht University Medical Center, The Netherlands) focused on the role of artificial intelligence (AI) in supporting clinical decision making. CVD is complex, with many variables impacting clinical outcomes. However, humans struggle to process beyond six variables, highlighting a role for AI as an important tool for cardiologists. AI models require adequate data input for an optimal output, therefore, there is a need for data sharing across organizations. **Prof Brunner-La Rocca** has supported in the development of an AI model, Cardio Explorer®, to predict the presence of coronary artery disease, personalized to each patient, with the ability to input clinical and laboratory-derived data. Cardio Explorer® was validated in multiple cohorts and represents a highly accurate, cost-effective AI model which can support clinicians in their rule-in/rule-out decision-making.

Frank Peacock (Bayor College of Medicine, USA) & **Martin Than** (Christchurch Hospital, New Zealand) presented their thoughts on the future of point-of-care (POC) testing in the emergency department from a United States and Asian-Pacific perspective. **Prof Peacock** began with highlighting the overcrowding in emergency departments, and the impact this has on not only patients who present with chest pain, but all patients presenting to the emergency department. Blood draws are often not taken at the correct time, resulting in delays in troponin measurements. As such, a POC device to measure troponin could save time and money in the emergency department. Currently, there are no FDA-approved POC devices on the market, which was stressed as a priority for aiding in timely diagnosis. **Prof Than** then shared exciting data from Christchurch Hospital demonstrating that hs-cTn POC testing in the emergency department resulted in an immediate reduction in the length of stay for patients. These exciting presentations raised questions as to who should be prioritized for PoC testing in the emergency department. The presenters recommended that those who present as low-risk but have chest pain should be the priority as they can be discharged sooner, alleviating pressure on the emergency department. However, implementation is challenging; care pathways need to be developed with local expert leaders to drive change.

SESSION 4

Therapy

Chairs:
Martin Hülsmann
(Medical University of Vienna, Austria)
Naveed Sattar
(University of Glasgow, Scotland)

Christopher Granger (Duke University Medical Center, USA) began the session by considering novel treatment strategies for hypertension. Intensive treatment to lower blood pressure has been shown to reduce the risk of myocardial infarction, acute coronary syndrome, and other CVDs, however, long-term benefit was not observed. As such, new models of care for hypertension are needed. **Prof Granger** discussed how new treatments such as zilebesiran, administered subcutaneously every six months, may be transformative for treating hypertension. However, a CV outcomes trial is needed to test the role of zilebesiran in addition to usual care. In order to achieve optimal outcomes, patients should work with healthcare providers to lower blood pressure through the use of home monitoring and adhering to guideline-directed medical therapy.

Mark Petrie (University of Glasgow, Scotland) continued the session by discussing the future role of obesity drugs in heart failure. Traditionally, weight loss was thought to result in worse outcomes in heart failure patients. However, **Prof Petrie** proposed that this 'obesity paradox' is incorrect. He shared findings from the STEP-HFpEF trial, where the weight loss drug semaglutide reduced heart failure events, NT-proBNP, and improved the Kansas City Cardiomyopathy Questionnaire-Clinical Summary Score with greater benefit in patients with higher NT-proBNP levels. However, large RCTs investigating weight loss drugs are required in those with HFpEF and in those with reduced ejection fraction. Beyond the clinical trials, attention regarding communication around weight loss is necessary, with additional focus on counselling, education, and psychology.

James Januzzi (Massachusetts General Hospital, USA) discussed the importance of serial NT-proBNP measurements for clinical evaluation and management in heart failure patients. He commented on the STRONG-HF trial which demonstrated that NT-proBNP can help inform clinicians during guideline-directed medical therapy (GDMT) initiation and titration, and shared examples of implementing serial measurements and up-titration in his own clinics. In addition, serial measurements provide longitudinal information regarding risk for adverse events. However, this places a burden on healthcare professionals and laboratory testing. Heart failure patients often also have physical limitations resulting in difficulties accessing the laboratory, and disparities in socioeconomics can create unequal access to care. As such, **Prof Januzzi** is currently researching an at-home fingerstick test (Aina device, Jana Care, Inc.) to measure NT-proBNP, potassium and creatinine, which can offer broad utility across cardiovascular-kidney-metabolic diseases. The arrival of in-home testing would be a cost-effective solution to help streamline referrals to advanced heart failure specialist, facilitate GDMT adjustment, and allow ease of long-term follow-up.

Felix Mahfoud (University of Basel, Switzerland) finished the session by giving a comprehensive overview of the interconnected nature of cardiovascular, kidney and metabolic health, emphasizing the cardiorenal aspect. He highlighted that management for patients with diabetes and chronic kidney disease is often suboptimal, and these patients are at risk for heart failure hospitalization and cardiovascular-related deaths. Similarly, chronic kidney disease is the most common comorbidity in those with heart failure. Due to the overlap of cardiovascular-kidney-metabolic diseases, he discussed the ability for albuminuria testing to facilitate the detection of patients at high risk of CKD. **Prof Mahfoud** followed this by reviewing new treatment options for cardiovascular-kidney-metabolic disease, including SGLT2 inhibitors, GLP-1 receptor agonists, and finerenone, which have been shown to reduce heart failure events and CV outcomes.

During the discussion, it was questioned whether NT-proBNP could be used as a surrogate to measure improved ejection fraction. In patients who have a drastic drop in NT-proBNP levels after being on GDMT, there is a substantial likelihood their ejection fraction has improved above 45%. Renal function was also a hot topic of discussion, and whether cardiologists need to give greater consideration of renal function when managing patients, suggesting a need for further education for cardiologists on renal function and potassium.

SESSION 5

Innovation

Chairs:
Michael Gibson
(Harvard Medical School, USA)
Pam Taub
(University of California, USA)

Panellists:
Mark Petrie *(University of Glasgow, Scotland)* • **James Januzzi** *(Massachusetts General Hospital, USA)* • **David Morrow** *(Brigham and Women's Hospital, USA)* • **Muthiah Vaduganathan** *(Brigham and Women's Hospital, USA)* • **Gemma Figtree** *(University of Sydney, Australia)* • **Lisa Anderson** *(St George's University Hospitals NHS Foundation Trust, UK)*

The future of cardiometabolic care

The discussion began with the majority of attendees (~66%) stating they do not currently use the cardio-kidney-metabolic (CKM) model in their practice, highlighting the need for further discussions and education on the topic. **Prof Petrie** discussed the need for standardized language, commenting that terms such as 'CKM' are not used in wider clinical practice and that clinical trials need to be more accessible to all cardiologists, not just leading experts in the combined field. **Dr Anderson** and **Prof Januzzi** stated that in the coming decades, cardiologists will have to move away from being specialists to generalists and work to better understand interconnected diseases such as diabetes, and treat the patient holistically instead of referring the patient to an endocrinologist. **Dr Vaduganathan** and **Dr Anderson** added that there is a financial benefit of looking at CKM as a whole; it is too expensive to overlook. Oftentimes, these patients are at the apex of service use with high admission rates and high associated costs. Therefore, if patients are identified early and treated accordingly, end-stage treatments such as dialysis can be delayed. The roundtable continued focusing on the introduction of new mechanism of action pharmaceuticals such as incretins, and their influence on the future of care in the context of the CKM model.
Dr Vaduganathan and **Dr Morrow** commented that single trials for new therapies need to include subsets of participants with heart failure, chronic kidney disease and other CKM diseases in sufficient numbers, and this could be more efficient than individual trials for each disease alone. However, **Prof Petrie** disagreed, commenting that although this is a valid trial design, it will be difficult for cardiologists to relate and implement the findings in clinical practice. **Prof Januzzi** echoed this, stating that trial cohorts need to be representative of the patients seen in practice.

Finally, **Dr Morrow** discussed the role of biomarkers as surrogate endpoints in clinical trials. Currently, biomarkers are key in clinical trials to help refine the population and estimate risk, however, having a biomarker as the endpoint is more uncertain. Biomarkers have often been unsuccessfully used in the clinical trials in the past, and can be challenging to gain approval from regulatory authorities. **Prof Januzzi** continued this by highlighting the need for education on biomarkers such as NT-proBNP in the healthcare agency space to support the trial approvals process. **Prof Pop-Busui** noted that endocrinologists use the biomarker Hb1AC, which the FDA recognised as an effective surrogate and approved new drugs as a result. Working closely with endocrinologists was noted as a key to success in future clinical trials and gaining FDA approvals. Finally, during an interactive poll, the majority of attendees noted they would use the CKM model in their clinical practice moving forward.

Empowering Patients to Achieve Value- Driven Care and Reduced Hospitalization

Dr Taub opened the panel by asking to what extent should patients be encouraged to monitor their own risk factors and report early symptoms to their clinicians. **Dr Morrow** noted that empowering patients, and getting them engaged and motivated is vital. Shared decision-making and patient participation is the most desired outcome from his perspective. However, with regards to wearable and patient-accessible technology, clinicians have a responsibility to ensure the data is interpreted correctly. **Prof Figtree** followed on from this, noting that although patient engagement is important, it is vital that clinicians treat patients individually and access may need to be limited in highly anxious patients when it is no longer benefiting their overall health. Similarly, **Dr Anderson** provided her perspective, whereby the majority of people admitted to hospital are those who do not engage with their own well-being. **Prof Januzzi** highlighted the benefit of wearable and implantable technology for those who live in a 'healthcare desert' where routine access to healthcare is limited. The panel collectively agreed that clinical trials demonstrating the efficacy of wearable devices regarding CVD are needed.

Prof Gibson continued by asking the panel what strategies can be implemented to enable early diagnosis and avoid hospitalisation? **Dr Vaduganathan** believes that clinicians should proactively collect data on risk factors, such as symptom and health-related quality of life questionnaires as part of routine clinical practice. However, **Prof Januzzi** commented that technology that is readily available to the patient, such as smart watches, can also lead to anxiety in patients and an influx of data or even consultations for clinicians. **Prof Morrow** agreed, noting that it would be beneficial in the future to ensure a filter for clinicians to manage this level of data.

The topic concluded with deliberating on the most promising tools currently in development that have the potential to revolutionize healthcare in terms of tracking risk factors, monitoring disease progression, and assessing treatment effects. **Prof Januzzi** noted that an approved fingerstick test for NT-proBNP would be revolutionary in identifying patients early, which **Prof Figtree** echoed. During the discussion, it was highlighted that wearable and implantable technologies need to be assessed at different stages including prevention and early to late disease-stages, to gain a better understanding of what is the best use case for them. Additionally, education for patients on how to use devices is vital.

How to overcome implementation barriers?

The majority of attendees agreed that there are significant gaps in the implementation of NT-proBNP and hs-cTn in clinical practice. The reasons behind this were explored by the panel. **Prof Figtree** noted that despite the vast amount of papers published on cardiac biomarkers, moving from a trial setting to a clinical setting is challenging, thus, researchers need to change the way data are presented to make it more accessible. She noted the difference to oncology biomarker trials, stating that they are often positioned to detect a specific cancer, rather than prevent death, so cardiologists may need to position their trials in a similar fashion. **Dr Anderson** suggested guiding primary care providers to the correct processes in order to reduce referral errors. For example, she suggested removing access to echocardiogram referral for general practitioners without a prior order for an NT-proBNP measurement.

The panel continued by discussing future trends they see developing over the coming years. The panel agreed that AI will play a vital role, specifically in echocardiograms. Similarly, there was a general consensus that the field will see an increase in at-home testing and a greater emphasis on prevention and early detection.

Session 5

SESSION 6

Implementation

Chairs:
Yader Sandoval
(Northwestern Hospital and Center for Coronary Artery Disease, USA)
Richard Body
(University of Manchester, UK)

Christopher Baugh (Brigham and Women's Hospital, USA) began the session by discussing how to implement novel digital tools for triaging and diagnosing cardiac patients in the emergency department. He highlighted that in the United States, there is a lack of standardization, standardized terminology, incentives, and transferability of clinical decision support algorithms across institutions He discussed how these clinical decision support tools should be integrated within medical record systems, but designed to work within each institution's practices. In addition, they should be easily accessible for clinicians with AI support without jeopardizing autonomy. This interesting topic raised further discussions on the need for novel digital tools to be accessible across a variety of care centers in order to reach the greatest number of patients. However, the cost and infrastructure to develop and implement these tools is a barrier; ultimately, leadership and all relevant stakeholders need to see the value and prioritize adoption. However, gaining regulatory approval of algorithms and digital tools is vital to support those who are driving for change which can also be challenging due to country or region-specific requirements.

The session continued with **Christoph Reich** (Heidelberg University Hospital, Germany) commenting on the implementation and comparison of chest pain triage with and without the use of digital tools. With the current climate of emergency department overcrowding, there is a need for accelerated diagnosis. Chest pain is one of the most common complaints in the emergency department, therefore, safe rule-out of these patients, with the option to discharge, is critical to combat overcrowding. As highlighted throughout proCardio, ESC guidelines recommend rapid triage of those with suspected acute myocardial infarction using the ESC 0/1-hour algorithm. However, in a real-world setting, it is often challenging to obtain the second blood draw at the 1-hour mark. As such, **Dr Reich** presented that digital clinical decision support tools can help control the numbers of patients and help with the timing of blood draws, resulting in a shortened length of stay and reduced unnecessary hospitalizations and invasive procedures.

Lisa Anderson & **Matthew Sunter** (St George's University Hospitals NHS Foundation Trust, UK) then discussed their implementation of the STRONG-HF protocol using a multidisciplinary team approach. In STRONG-HF, patients with acute heart failure are rapidly uptitrated to optimal doses of GDMT, accompanied by close follow-up procedures and guided by NT-proBNP as a safety marker. **Dr Anderson** and **Mr Sunter** shared exciting developments and successes from St. George's hospital in London, an early-adopter of the STRONG-HF protocol, as well as two other sites in the United Kingdom. Currently, they have enrolled three patients into this programme. Patients are subject to daily in-hospital reviews, but the overarching aim is to transfer this to a community team from week 2 onwards. It is vital that organizational boundaries allow for optimal implementation. This also ensures pooled data for valid real-world evidence generation. Discussion with respect to patient satisfaction and adherence followed this presentation. The presenters confirmed that patients have responded positively, feeling reassured with a more rigid follow-up. Additionally, point-of-care testing will be necessary for patient follow-up post-discharge and more data on this will be available in the near-future. Watch this space!

Danielle Menosi Gualandro (University Hospital Basel, Switzerland) commented on diagnostics and management for perioperative myocardial infarction/injury (PMI). There are over 4 million perioperative deaths per year, 50% of which are cardiovascular-related deaths. Yet frequently, cardiologists have not been involved in the perioperative care of these patients. PMI screening, using measurements of hs-cTn pre- and post-operatively, is recommended in patients with an increased cardiovascular risk. It can ultimately improve patient prognosis and assist with clinical decision-making.

She noted that screening patients can be supported by using electronic alerts during the anaesthesia consultation, in addition to implementing a management algorithm and education surrounding PMI. The discussion session highlighted the variety of patients benefiting from the perioperative screening. **Dr Gualandro** described several examples including patients who have a high volume of analgesics, which could mask symptoms, and patients who are ventilated.

Rodica Pop-Busui (Harold Schnitzer Diabetes Center, USA) concluded the session by discussing implementation of NT-proBNP-based screening for heart failure prevention in people with diabetes. Prevalence and incidence of heart failure in diabetes patients is high, resulting in a poor prognosis. She presented the best practice advisory algorithm, currently used by the University of Michigan health system. In accordance with the recommendations from the American Diabetes Association, people with diabetes are at risk of heart failure and should undergo testing of NT-proBNP levels. If NT-proBNP levels are elevated, a patient is prescribed GDMT and a referral to a cardiologist is considered. In order to be successful, system-wide education is needed to ensure clinicians are guided through the new best practice logic workflow and are equipped to understand NT-proBNP cut-offs. The cut-offs of NT-proBNP were further discussed during the question and answer session; with NT-proBNP levels noted as a continuum. As this does not provide easy enough guidance for clinicians, setting a threshold was regarded as the best way to identify patients who can benefit from cardioprotective treatment.

SESSION 7

Policy

Chair: **James Januzzi**
(Massachusetts General Hospital, USA)

Making the case for political urgency in addressing CVD

Panellists:
Ed Harding *(The Health Policy Partnership, UK)*
Marie Lamy *(ACCESS Health International, Singapore)*
Antoni Bayes-Genis *(Hospital Universitari Germans Trias I Pujol, Spain)*

The speakers began the session by wanting to establish what policy is and why it is important to shape policy for CVD. Policy is often overcomplicated, but ultimately amounts to if a healthcare system funds or demands the necessary services across the care pathway to deliver the full potential of guideline-based prevention and care.

With regards to cardiovascular diseases, there is a significant lost opportunity to help address it being a leading cause of mortality, loss of economic growth and productivity. Beyond this, policy can also help ensure the necessary innovation can occur.

Based on analyses conducted by the APAC CVD Alliance and the HFPN, national action plans for CVD are not adequate to address the burden of heart failure. While CVD is the number one cause of death in APAC, there is a large disparity between economies and demographics impacting disease burden and outcomes. Therefore, policy needs to be tailored to the specific needs of the region. Similarly, policies are lacking throughout Europe with only the UK out of 11 countries having a policy for heart failure. However, the policy in the United Kingdom remains insufficient, lacking policies on nurse accreditation expansion and reimbursement for the use of NT-proBNP in the community setting.

Advanced physicians can at times influence direct change at a local or regional level regarding CVD policy in Europe, for example by setting clinical pathways. However, at a national level, a strong relationship needs to be established between accredited health societies (for example, ESC) and the ministry of health in order to elicit change. The United States has a similar approach; member-driven societies, such as the American College of Cardiology and the American Diabetes Association, are active in advocacy with frequent legislative conferences with stakeholders including clinicians and legislators.

It is vital that CVD policies are shaped to foster a collaborative ecosystem to ensure comprehensive and effective care . Setting clear goals, such as the reduction of avoidable admissions, is also crucial for effective implementation. In addition, commercial solutions should work alongside public health policy, to help generate beneficial and informative data. Beyond aggregating policymakers, financing investment at a regional or state level is a hurdle, and the focus should be on healthcare equity.

During the discussion, **Dr Anderson** was invited to join the panel due to her groundbreaking work on policy and the National Health Service in the United Kingdom, specifically around the implementation of the STRONG-HF protocol. Clinicians are experienced at communicating with patients, but need training to communicate with legislators and politicians. This is seen beyond the United Kingdom, as the audience advocated the importance of lobbying congress in the United States. This is often carried out by healthcare societies and associations, therefore, the board of these organisation can utilise a policy officer to help bridge the gap between clinicians and legislators. In addition to clinicians, patient voices are important and are frequently persuasive to legislators. Furthermore, cost efficacy needs to be demonstrated. Policymakers are often focused on short-term costs, whereas investing in CVD prevention has long-term cost-benefits. A united message from healthcare providers and unequivocal health economic evidence is needed to present to policy makers to help drive change.

SESSION 8

Hot topics and unmet medical needs

Chairs:
Allan Jaffe
(Mayo Clinic College of Medicine and Science, USA)
Martin Möckel
(Universitätsmedizin Berlin, Germany)

Marianna Fontana (NHS National Amyloidosis Centre, UK) opened the hot topics session by discussing amyloidosis, a disease characterized by deposits of misfolded, insoluble amyloid protein in tissues, disrupting structure and function. Transthyretin (TTR) amyloidosis is a common cause of heart failure; amyloid fibril deposition leads to organ dysfunction, particularly restrictive cardiomyopathy. She provided an overview of the different targets of current and upcoming therapeutic options: reduction in TTR production, TTR stabilisation and removal of amyloid. In particular, combining gene therapy for the suppression of TTR synthesis with antibody therapy accelerating amyloid removal appears a promising strategy, provided cost challenges are addressed. The presentation raised further discussion regarding the use of NT-proBNP, eGFR and troponin as surrogate biomarkers to assess disease progression and treatment efficacy in patients with amyloidosis.

Iacopo Olivotto (Careggi University Hospital, Italy) discussed the diagnosis and management of hypertrophic cardiomyopathy (HCM). He shared findings from a recent study highlighting the high variability of the maximal wall thickness biomarker in HCM, and better standardization efforts are needed to improve clinical decision-making in these patients. Additionally, AI and proprietary assays can help measure changes in velocity and force of contraction in the cardiac muscle. He commented that more trials are needed to better understand HCM, however, trial design is challenging due to the high variability between patients. He reviewed the results of recent trials on the treatment of symptomatic obstructive hypertrophic cardiomyopathy and mentioned upcoming trials on different types of gene therapies in cardiomyopathies.

The session continued with **Ambarish Pandey** (UT Southwestern Medical Center, USA) commenting on the need for earlier recognition and treatment of diabetic cardiomyopathy. Echoing **Prof Pop-Busui's** earlier comments, cardiomyopathy is common among patients with diabetes, and is associated with an increased risk of heart failure. He showed early findings of a machine learning-based approach to help identify those with diabetes who have a high-risk diabetic cardiomyopathy phenotype, based on echocardiographic and cardiac biomarker abnormalities. The combination of the WATCH-DM risk score and NT-proBNP testing in those with low score, could be an optimal screening approach to identify at-risk patients. He then commented on SGLT-2 inhibitors which have been shown to be effective treatment options for heart failure prevention in people with diabetes, and highlighted the need for novel, more specific therapies, targeting diabetic cardiomyopathy, such as aldose reductase inhibitors. **Prof Pop-Busui** joined the discussion regarding the increased risk in patients with type 1 diabetes. She highlighted that there is a high level of evidence regarding the role of fatty acid metabolism and the imbalance between fatty acids and glucose in CVD. The added complication of autonomic dysfunction in type 1 diabetes, impacting the oxidative metabolism of the heart and myocardial efficiencies, was also discussed.

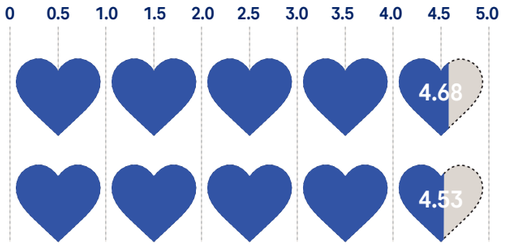
The final presentation by **Muthiah Vaduganathan** (Brigham and Women's Hospital, USA) covered cardiovascular-kidney-metabolic syndrome. He highlighted the strong epidemiological overlap of cardiovascular, kidney and metabolic disorders, which has been seen in several HFmrEF and HFpEF trials over time. However, this overlap is a critical driver of risk among heart failure patients; **Dr Vaduganathan** presented that the risk of cardiovascular death increases as kidney function declines. Additionally, impaired kidney function can be a stronger predictor of mortality than a history of myocardial infarction. Beneficially, the same therapies appear to modify disease progression in both chronic kidney disease and heart failure.

However, new interdisciplinary models of care are needed to manage the growing burden of cardio-kidney-metabolic disorders worldwide. The urgent need for specialists was further discoursed. Due to the high prevalence of cardio-kidney-metabolic syndrome in the population, the panel advocated that multidisciplinary teams should be aware of the diagnosis and potential treatment options. The increased demand for obesity specialists was also noted, suggesting that perhaps a new metabolic speciality ought to be a focal point for cardio-kidney-metabolic care in the future.

Overall impressions

Participants rated the event and topics highly

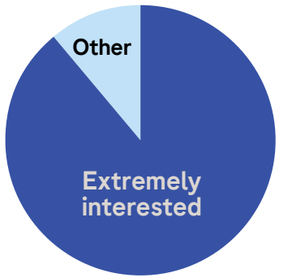
Average rating *(1–low, 5–high)*



How would you rate the event overall?

How relevant were the topics?

89% of people would be extremely interested in participating in the next proCardio!



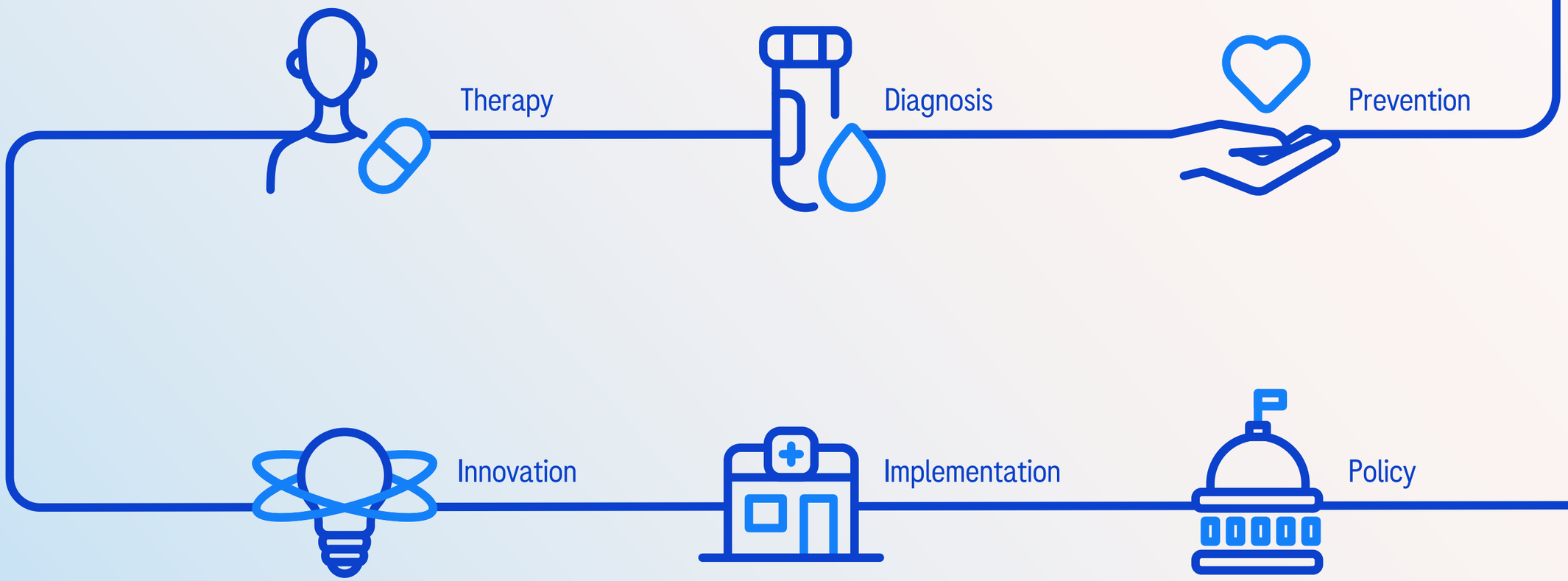
> *"I have never quite experienced an event like this where it felt so natural to just walk up to the speakers and talk to them. Everyone was very welcoming."*

> *"Excellent* **proCardio2024** *event, very inspiring!"*

> *"Great event, amazing speakers."*

proCardio2024

The global cardiac forum



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