Co-organized by:

Hong Kong College of Cardiology

Society for Cardiovascular Magnetic Resonance

HKCC SCMR SYMPOSIUM 2021

Program Book

26 - 27 June 2021

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1357 EXTRA 'GRANDAD' JOKES

THANKS TO THE PROTECTION YOU PROVIDE FOR YOUR PATIENTS WITH NVAF

With Xarelto®, you can protect your NVAF patients against stroke and CV death,[1,2] and give them better renal function preservation vs VKAs especially in those with diabetes.[3,4] So they can focus on what really matters, like 'entertaining' their family.

Indication: Prevention of stroke and systemic embolism in adult patients with non-valvular atrial fibrillation (NVAF) with one or more risk factors, such as congestive heart failure, hypertension, age > 75 years, diabetes mellitus, prior stroke or transient ischaemic attack.[5]

CV, cardiovascular; NVAF, non-valvular atrial fibrillation; VKA, vitamin K antagonist.

References:
1. Patel MR, *et al. N Engl J Med.* 2011;365:883–891. **2.** Bansilal S, *et al. Am Heart J.* 2015;170:675–682.e8. **3.** Yao X, *et al. J Am Coll Cardiol.* 2017;70:2621–2632. **4.** Bonnemeier H, *et al.* ESOC 2019, 22–24 May; Milan, Italy. Abstract AS25-066. **5.** Xarelto® 10mg, 15mg and 20mg prescribing information (BHC Hong Kong) NOV 2017.

Xarelto 10 mg / 15 mg / 20 mg film-coated tablets
Abbreviated Prescribing Information
(Please refer to the full prescribing information before prescribing)

Composition: Active ingredient: 10 mg / 15 mg / 20 mg rivaroxaban. Excipients: Microcrystalline cellulose, croscarmellose sodium, lactose monohydrate, hypromellose, sodium laurilsulfate, magnesium stearate, macrogol 3350, titanium dioxide (E171), iron oxide red (E172). **Indication and Posology:** *Prevention of stroke and systemic embolism in adult patients with non-valvular atrial fibrillation (NVAF) with one or more risk factors, such as congestive heart failure, hypertension, age ≥ 75 years, diabetes mellitus, prior stroke or transient ischaemic attack:* Recommended dose is 20 mg once daily (recommended maximum dose). *Treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE) and prevention of recurrent DVT and PE in adults:* The recommended dose for the initial treatment of acute DVT or PE is 15 mg twice daily for the first three weeks followed by 20 mg once daily for the continued treatment and prevention of recurrent DVT and PE. When extended prevention of recurrent DVT and PE is indicated (following completion of at least 6 months therapy for DVT or PE), the recommended dose is 10 mg once daily. A dose of 20 mg once daily should be considered in patients with high risk. *Prevention of venous thromboembolism (VTE) in adult patients undergoing elective hip or knee replacement surgery:* The recommended dose is 10 mg once daily. The initial dose should be taken 6 to 10 hours after surgery, provided that haemostasis has been established. For patients undergoing major hip surgery, a treatment duration of 5 weeks is recommended. For patients undergoing major knee surgery, a treatment duration of 2 weeks is recommended. **Patients with NVAF who undergo percutaneous coronary intervention (PCI) with stent placement:** There is limited experience of a reduced dose of 15 mg Xarelto once daily (or 10 mg Xarelto once daily for patients with moderate renal impairment [creatinine clearance 30 – 49 ml/min]) in addition to a P2Y12 inhibitor for a maximum of 12 months in patients with non-valvular atrial fibrillation who require oral anticoagulation and undergo PCI with stent placement. **Renal impairment:** No dose adjustment is necessary in patients with mild renal impairment (creatinine clearance 50 - 80 ml/min). In patients with moderate (creatinine clearance 30 - 49 ml/min) or severe (creatinine clearance 15 - 29 ml/min) renal impairment the following dosage recommendations apply: For the prevention of stroke and systemic embolism in patients with non-valvular atrial fibrillation, the recommended dose is 15 mg once daily. For the treatment of DVT, treatment of PE and prevention of recurrent DVT and PE: 15 mg twice daily for the first 3 weeks. Thereafter, the recommended dose is 20 mg once daily. When the recommended dose is 10 mg once daily, no dose adjustment from the recommended dose is necessary. Limited clinical data for patients with severe renal impairment (creatinine clearance 15 - 29 ml/min) indicate that rivaroxaban plasma concentrations are significantly increased; therefore, Xarelto is to be used with caution in these patients. Use is not recommended in patients with creatinine clearance < 15 ml/min. **Contraindications:** Hypersensitivity to the active substance or any of the excipients; active clinically significant bleeding; lesion or condition if considered a significant risk for major bleeding; concomitant treatment with any other anticoagulants except under specific circumstances of switching anticoagulant therapy or when unfractionated heparin is given at doses necessary to maintain an open central venous or arterial catheter; hepatic disease associated with coagulopathy and clinically relevant bleeding risk including cirrhotic patients with Child Pugh B and C; pregnancy and breast feeding. **Warnings and Precautions:** Clinical surveillance in line with anticoagulation practice is recommended throughout the treatment period. *Not recommended:* in patients receiving concomitant systemic treatment with strong concurrent CYP3A4- and P-gp-inhibitors, i.e. azole antimycotics or HIV protease inhibitors; in patients with increased bleeding risk; in patients with severe renal impairment (creatinine clearance < 15 ml/min); in the treatment of acute pulmonary embolism; *due to lack of data:* in patients below 18 years of age, in patients with prosthetic heart valves, in patients concomitantly treated with dronedarone, in NVAF-PCI patients with a history of stroke/transient ischemic attack. *Use with caution:* please refer to the full prescribing information. Xarelto contains lactose. **Undesirable effects:** *Common:* anaemia, dizziness, headache, eye haemorrhage, hypotension, haematoma, epistaxis, haemoptysis, gingival bleeding, gastrointestinal tract haemorrhage, gastrointestinal and abdominal pains, dyspepsia, nausea, constipation, diarrhoea, vomiting, pruritus, rash, ecchymosis, cutaneous and subcutaneous haemorrhage, pain in extremity, urogenital tract haemorrhage, fever, renal impairment, peripheral oedema, decreased general strength and energy, increase in transaminases, post-procedural haemorrhage, contusion, wound secretion. *Other undesirable effects (uncommon, rare, frequency not known):* please refer to the full prescribing information.

PP-XAR-HK-0087-1

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Xarelto® rivaroxaban

Vyndamax™ (tafamidis)

ATTR-CM, a life-threatening and progressive disease that is widely and frequently underdiagnosed[1,2]

25% of adults aged 80 years or older were found to have significant myocardial TTR amyloid deposition at autopsy[2]

What is ATTR-CM?[2]

- A type of cardiac amyloidosis
- Can occur as either wild type or hereditary type
- Progressive and life-threatening
- When the protein transthyretin misfolds, fibril deposits build up in the heart causing ATTR-CM

Please click the link below or scan the QR code to learn more about ATTR-CM and how you can save the lives of potential ATTR-CM patients

www.vyndamax.com.hk

The following *Red Flags* warrant your immediate attention[2-4]:

Cardiac:

- HFpEF[2]
- HF therapy intolerance*[3]
  *The standard therapies for HF, including ACEI, ARB, and BB[3]
- LVH on Echo[2]
- Imaging and ECG discrepancy**[2]
  **Imaging finding of LVH and normal/low QRS voltage on ECG[2]

Non-cardiac:

- Orthopaedic syndromes
  (e.g carpal tunnel syndrome, lumbar spinal stenosis and bicep tendon rupture)[2]
- Polyneuropathy[2]
- Family history of TTR amyloidosis[4]

Abbreviations: ACEI: Angiotensin-converting enzyme inhibitors; **ARB:** Angiotensin-receptor blockers; **ATTR-CM:** Transthyretin amyloid cardiomyopathy; **BB:** Beta blockers; **ECG:** Electrocardiogram; **Echo:** Echocardiography; **HF:** Heart failure; **HFpEF:** Heart failure with preserved ejection fraction; **LVH:** Left ventricular hypertrophy; **TTR:** Transthyretin

References: 1. Rapezzi C et al. *Nat Rev Cardiol.* 2010;7(7):398-408. **2.** Witteles RM et al. *JACC Heart Fail.* 2019;7(8):709-16. **3.** Castano A et al. *Heart Fail Rev.* 2015;20(2):163-78. **4.** Kittleson MM. *Circulation.* 2020;142(1):e7-e22.

VYNDAMAX ABBREVIATED PRESCRIBING INFORMATION

1. TRADE NAME: Vyndamax™ capsules (Tafamidis 61 mg) **2. PRESENTATION:** 61mg soft capsules **3. INDICATIONS:** Vyndamax is indicated for the treatment of wild-type or hereditary transthyretin amyloidosis in adult patients with cardiomyopathy (ATTR-CM). **4. DOSAGE:** The recommended dose is one capsule of Vyndamax 61 mg (tafamidis) orally once daily. **5. CONTRAINDICATIONS:** Hypersensitivity to the active substances or to any of the excipients of the drug (Please refer to the full prescribing information for details). **6. WARNINGS & PRECAUTIONS:** Women of childbearing potential should use appropriate contraception when taking tafamidis and continue to use appropriate contraception for 1-month after stopping treatment with tafamidis. Tafamidis should be added to the standard of care for the treatment of patients with transthyretin amyloidosis. Physicians should monitor patients and continue to assess the need for other therapy, including the need for organ transplantation, as part of this standard of care. Tafamidis should be discontinued in patients who undergo organ transplantation. **7. INTERACTIONS:** Substrates of efflux transporter BCRP (breast cancer resistant protein; e.g., methotrexate, rosuvastatin, imatinib); substrates of uptake transporters OAT1 and OAT3 (organic anion transporters; e.g., non-steroidal anti-inflammatory drugs, bumetanide, furosemide, lamivudine, methotrexate, oseltamivir, tenofovir, ganciclovir, adefovir, cidofovir, zidovudine, zalcitabine). **8. PREGNANCY AND LACTATION:** Tafamidis is not recommended during pregnancy and in women of childbearing potential not using contraception. Tafamidis should not be used during breast-feeding. **9. SIDE EFFECTS:** Flatulence and liver function test increased. A causal relationship has not been established. Reference: Prescribing Information HK PI (Version Jul 2020) Date of preparation: Nov 2020 Identifier number: VYNX1120 **FULL PRESCRIBING INFORMATION IS AVAILABLE UPON REQUEST.**

Pfizer Rare Disease

Pfizer Corporation Hong Kong Limited
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PP-VDM-HKG-0063 MAY 2021

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sacubitril/valsartan

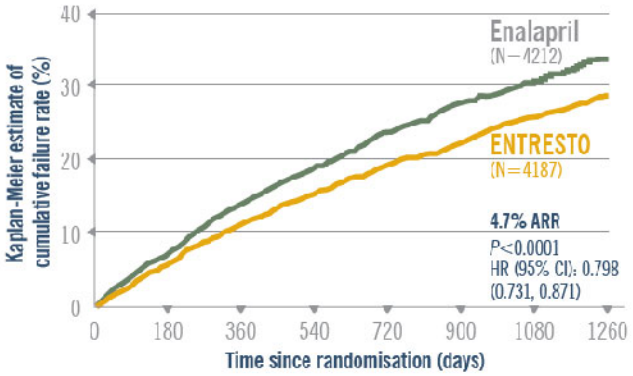
THE SOONER, THE BETTER.

Keep HFrEF patients alive, out of the hospital, and on the right path

The path to slowing disease progression starts with ENTRESTO. Improve survival by reducing the risk of HF events, and give them more time to keep doing what they love.

In the PARADIGM-HF study,

ENTRESTO reduced the risk of CV death or HF hospitalisation as a first event by 20% vs enalapril (primary end point)[1*]



70% of patients were NYHA Class II[2]

In post hoc analyses of the PARADIGM-HF study,

ENTRESTO reduced the risk of sudden cardiac death in HF patients by 20% vs enalapril ($P=0.0082$)[1†]

ENTRESTO reduced the risk of a primary end point event in both the most and least stable HF patients[3‡]

ENTRESTO helped slow the clinical progression of HF vs enalapril[4§]

- ↓ **16%** fewer CV hospitalisations ($P<0.001$)
- ↓ **30%** lower rate of ED visits ($P=0.017$)
- ↓ **16%** less likely to require intensification of outpatient HF therapy

By slowing disease progression, ENTRESTO helps keep HF patients out of the hospital and living longer.

ARR = absolute risk reduction; EF = ejection fraction; ACE = angiotensin-converting enzyme; ARB = angiotensin receptor blocker; HF = heart failure; HFrEF = heart failure with reduced ejection fraction

*PARADIGM-HF was a multinational, randomised, double-blind, active-controlled, 2-arm event-driven trial comparing the long-term efficacy and safety of enalapril and ENTRESTO in 8442 patients in NYHA classes II–IV with chronic symptomatic HF and reduced EF (LVEF ≤40%. This was changed to ≤35% by an amendment to the protocol on 13 December, 2010). Patients were required to discontinue their existing ACE inhibitor or ARB therapy and entered a sequential single-blind run-in period during which patients received treatment with enalapril 10 mg twice daily, followed by treatment with ENTRESTO 49 mg/51 mg twice daily, increasing to 97 mg/103 mg twice daily. Patients were then randomised to the double-blind period of the study to receive either ENTRESTO 97 mg/103 mg (n=4209) or enalapril 10 mg twice daily (n=4233). Patients received treatment for up to 4.3 years, with a median duration of follow-up of 27 months; 3271 ENTRESTO patients were treated for more than 1 year.[1] †This post hoc analysis of PARADIGM-HF examined the effect of ENTRESTO compared with enalapril on mode of death in HF patients (a total of 1346 patients died, including 711 in the ENTRESTO group and 635 in the enalapril group [17% and 19.8% of total patients, respectively]). The majority of deaths were cardiovascular (80.9%; n=1215), and the majority of these CV deaths were categorised as sudden (44.8%) or HF related (25.5%).[1] ‡This post hoc analysis of PARADIGM-HF examined the risk of the primary outcome based on presence of and time from a prior HF hospitalisation as a measure of clinical stability. Patients having their most recent HF hospitalisation within 3 months of screening (n=1611) were defined as least stable, while patients who had no prior HF hospitalisation (n=3125) were defined as the most stable. Compared to patients in the enalapril group, patients in the ENTRESTO group, regardless of presence of and time from a prior HF hospitalisation, had a reduction of at least 19% in the risk of a primary end point event.[3] §This post hoc analysis of PARADIGM-HF focused on prespecified measure of nonfatal clinical deterioration. In comparison with the enalapril group, fewer ENTRESTO patients required intensification of medical treatment for HF (320 for ENTRESTO vs 604 for enalapril; HR, 0.84; 95% CI, 0.74-0.94; P=0.003) or an ED visit for worsening HF (HR, 0.66; 95% CI, 0.52-0.83; P=0.001).[4]

References: 1. ENTRESTO Core Data Sheet, Version 1.2. Novartis Pharmaceuticals, July 2017. 2. McMurray JJ, et al. *N Engl J Med*. 2014;371(11):993-1004. 3. Solomon SD, et al. *JACC Heart Fail*. 2016;4(10):816-822. 4. Packer M, et al. [Abstract 1705]. *Circulation*. 2016;131(1):54-61.

ENTRESTO tablets Important note: Before prescribing, consult full prescribing information. **Presentation: ENTRESTO 50 mg film-coated tablets:** Each film-coated tablet contains 24.3 mg sacubitril and 25.7 mg valsartan (as sacubitril valsartan sodium salt complex). **ENTRESTO 100 mg film-coated tablets** Each film-coated tablet contains 48.6 mg sacubitril and 51.4 mg valsartan (as sacubitril valsartan sodium salt complex). **ENTRESTO 200 mg film-coated tablets** Each film-coated tablet contains 97.2 mg sacubitril and 102.8 mg valsartan (as sacubitril valsartan sodium salt complex). **Indications:** Treatment of symptomatic chronic heart failure (NYHA class II-IV) in adult patients with reduced ejection fraction to reduce the risk of cardiovascular death and hospitalization due to heart failure. **Dosage and administration: Adults:** • The recommended starting dose of ENTRESTO is 100 mg twice daily, the dose should be doubled at 2-4 weeks to the target dose of one tablet of 200 mg twice daily, as tolerated by the patient. • A starting dose of 50 mg twice daily is recommended for patients not currently taking an angiotensin-converting enzyme (ACE) inhibitor or an angiotensin II receptor blocker (ARB), and should be considered for patients previously taking low doses of these agents. • **Geriatric patients:** The dose should be in line with the renal function. • **Pediatric patients:** ENTRESTO has not been studied. Use of ENTRESTO is not recommended. • **Renal impairment:** No dose adjustment is required in patients with mild renal impairment (Estimated Glomerular Filtration Rate [eGFR] 60-90 ml/min/1.73 m2). A starting dose of 49 mg twice daily is recommended in patients with moderate renal impairment (eGFR 30-60 ml/min/1.73 m2). A starting dose of 50 mg twice daily and caution is recommended in patients with severe renal impairment (eGFR <30 ml/min/1.73 m2). Not recommended for patients with end-stage renal disease. • **Hepatic impairment:** No dose adjustment is required in patients with mild hepatic impairment (Child-Pugh A classification). A starting dose of 50 mg twice daily is recommended in patients with moderate hepatic impairment (Child-Pugh B classification) or with AST/ALT values more than twice the upper limit of the normal range, in patients with severe hepatic impairment use of ENTRESTO is not recommended. • **Method of administration** For oral use. May be administered with or without food. **Contraindications** • Hypersensitivity to the active substance sacubitril, valsartan, or to any of the excipients. • Concomitant use with ACE inhibitors. ENTRESTO must not be administered until 36 hours after discontinuing ACE inhibitor therapy. • Known history of angioedema related to previous ACE inhibitor or ARB therapy. • Concomitant use with aliskiren in patients with diabetes mellitus or in patients with renal impairment (eGFR <60 ml/min/1.73 m2). • second and third trimester of pregnancy. • hereditary or idiopathic angioedema • severe hepatic impairment, biliary cirrhosis and cholestasis **Warnings and precautions:** • **Dual blockade of the Renin-Angiotensin-Aldosterone System (RAAS):** ENTRESTO must not be administered with an ACE inhibitor due to the risk of angioedema. ENTRESTO must not be initiated until 36 hours after taking the last dose of ACE inhibitor therapy. If treatment with ENTRESTO is stopped, ACE inhibitor therapy must not be initiated until 36 hours after the last dose of ENTRESTO. • The combination of ENTRESTO with direct renin inhibitors such as aliskiren is not recommended. The combination of ENTRESTO with aliskiren containing products is contraindicated in patients with diabetes mellitus or in patients with renal impairment (eGFR <60 ml/min/1.73 m2). • ENTRESTO contains valsartan and therefore should not be co-administered with another ARB containing product • **Hypotension:** If hypotension occurs, temporary down-titration or discontinuation of ENTRESTO is recommended. Dose adjustment of diuretics, concomitant antihypertensive drugs, and treatment of other causes of hypotension (eg, hypovolemia) should be considered. Sodium and/or volume depletion should be corrected before starting treatment with ENTRESTO. • **Impaired renal function:** • Evaluation of patients with heart failure should always include assessment of renal function. Dose titration of ENTRESTO should be considered in patients who develop a clinically significant decrease in renal function. Caution should be exercised when administering ENTRESTO in patients with severe renal impairment (eGFR <30 ml/min/1.73 m2). • **Hyperkalemia:** Treatment should not be initiated if the serum potassium level is >5.4 mmol/l. Medications known to raise potassium levels (eg, potassium-sparing diuretics, potassium supplements) should be used with caution. If clinically significant hyperkalemia occurs, measures such as adjustment of concomitant medicine products, temporary down-titration or discontinuation should be considered. Monitoring of serum potassium is recommended especially in patients with risk factors such as renal impairment, diabetes mellitus, hypoaldosteronism, receiving a high potassium diet or mineralocorticoid antagonists. If serum potassium level is > 5.4 mmol/l discontinuation should be considered. • **Angioedema:** If angioedema occurs, ENTRESTO should be immediately discontinued and appropriate therapy and monitoring should be provided until complete and sustained resolution of signs and symptoms has occurred. ENTRESTO must not be re-administered. Patients with a prior history of angioedema were not studied. Active may be at higher risk for angioedema caution is recommended if ENTRESTO is used in these patients. ENTRESTO must not be used in patients with a known history of angioedema related to previous ACE inhibitor or ARB therapy. Black patients may have increased susceptibility to develop angioedema. • **Patients with renal artery stenosis:** Caution is required in patients with renal artery stenosis and monitoring of the renal function is recommended. • **Patients with NYHA functional classification IV:** caution should be exercised. • **B-type natriuretic peptide (BNP):** BNP is not a suitable biomarker of heart failure in patients treated with ENTRESTO. • **Hepatic impairment** Caution is recommended when using ENTRESTO in patients with moderate hepatic impairment (Child-Pugh B classification) or with AST/ALT values more than twice the upper limit of the normal range. ENTRESTO is contraindicated in patients with severe hepatic impairment, biliary cirrhosis or cholestasis (Child-Pugh C classification). **Pregnancy** The use of ENTRESTO is not recommended during the first trimester of pregnancy and is contraindicated during the second and third trimesters of pregnancy. **Breast feeding** It is not known whether ENTRESTO is excreted in human milk. Because of the potential risk for adverse drug reactions in breastfed newborns/infants, ENTRESTO is not recommended during breastfeeding. **Adverse drug reactions:** ***Very common*** *(≥ 1/10)* Hyperkalemia, hypotension, renal impairment ***Common*** *(≥ 1/100 to < 1/10)* Anaemia, hyperkalemia, Hypoglycaemia, Dizziness, Cough, Headache, Dyspnea, Vertigo, Orthostatic hypotension, Diarrhoea, Nausea, Cerebral Renal failure (renal failure, acute renal failure), Fatigue, Asthenia ***Uncommon*** *(≥ 1/1,000 to < 1/100)* Hypersensitivity, Dizziness postural, Pruritis, Rash Angioedema. **Interactions:** ***• Concomitant use contraindicated:*** aliskiren in patients with diabetes mellitus or in patients with renal impairment (eGFR < 60 ml/min/1.73 m2); Use with ACE inhibitors: ENTRESTO must not be started until 36 hours after taking the last dose of ACE inhibitor therapy ACE inhibitor therapy must not be started until 36 hours after the last dose of ENTRESTO. ***• Concomitant use not recommended:*** ARB containing products ***• Caution when used concomitantly*** with OAT1 and OAT3 substrates (e.g. statins), OAT3 inhibitors (e.g. sildenafil), lithium, potassium-sparing diuretics (triamterene, amiloride), mineral corticoid antagonists (e.g. spironolactone, eplerenone), potassium supplements, salt substitutes containing potassium, other agents that may cause increased serum potassium level (e.g. heparin, non-steroidal anti-inflammatory agents (NSAIDs) including selective cyclooxygenase 2 inhibitors (COX 2 inhibitors), inhibitors of OATP1B1, OATP1B3, OAT3 (e.g. rifampin, cyclosporine), OAT1 (e.g. tenofovir, adefovir) or MRP2 (e.g. ritonavir), furosemide, nitrates (e.g. nitroglycerine), metformin. Packs: 10mg, 28's; 100mg, 28's and 56's; 200mg, 56's. Not all pack sizes may be marketed. Legal classification: POM. Ref: PM Nov 2015. FULL PRESCRIBING INFORMATION IS AVAILABLE UPON REQUEST

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Organizer and Committee

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Dr. Jeffrey Ka-Tak WONG

Mr. Lawrance Kai-Chiu YIP

Patricia BANDETTINI

Dr. Bandettini is a cardiologist with expertise in cardiovascular magnetic resonance(CMR). She completed a cardiovascular imaging fellowship at the National Institutes of Health(NIH) in the United States, and after completing her training, Dr. Bandettini remained as faculty. Currently, Dr. Bandettini is a Medical Officer within the Heart Failure & Arrhythmias Branch of the National Heart, Lung, and Blood Institute. Dr. Bandettini is a strong advocate for CMR, serving within the SCMR, American College of Radiology Appropriateness Criteria Development Panel, and Medicare Evidence Development & Coverage Advisory Committee. She actively engages in performing research, teaching, and promoting clinical applications of CMR.

Gaia BANKS

Gaia Banks has more than 15 years of experience in the field of medical devices and cardiovascular imaging. She started her career with the leading Japanese medical device company, Terumo where she worked in the areas of Cardiac Surgery and Interventional Cardiology. In 2013 Gaia joined the Siemens Healthcare global headquarters in Erlangen, Germany where she held clinical marketing roles in angiography and cardiology. In 2018 she took over as Global Marketing Manager for Cardiovascular Magnetic Resonance imaging. Gaia holds a PhD from University of California, Irvine.

Chiara BUCCIARELLI-DUCCI

- MD, PhD, FESC, FRCP, FSCMR, FACC, FEACVI

Dr Bucciarelli-Ducci is a Senior Lecturer (equivalent to Associate Professor) in Cardiology since 2010 at the University of Bristol and honorary cardiologist at the Bristol Heart Institute, University Hospitals Bristol NHS Trust, Bristol, United Kingdom. She is the co-Director of the Clinical Research and Imaging Centre (CRIC) Bristol, University of Bristol. She was awarded a PhD in Cardiac Magnetic Resonance at the National Heart and Lung Institute, Imperial College London, UK.

In May 2019 she was also appointed Chief Executive Officer of the Society for Cardiovascular Magnetic Resonance (SCMR) with headquarters in the United States.

She is the past European Association of Cardiovascular Imaging (EACVI) Vice-President and chair of the cardiac MRI section (2016-2018), within the European Society of Cardiology (ESC).

Since September 2020, she is the Deputy Editor (Imaging) of the European Heart Journal.

Ping CHAI

• MBBS, MMed, FRCP(UK), FAMS, FAsCC

• Senior Consultant, Head of Department, Department of Cardiology, National University Heart Centre, Singapore

• Assistant Professor, Department of Medicine, Yong Loo Lin School of Medicine, National University of Singapore

Dr Chai graduated from the National University of Singapore in 1993. He underwent advanced specialty training in cardiology at the National University Hospital and was accredited as specialist in cardiology in Singapore in 2002. He trained in cardiovascular magnetic resonance at the Royal Brompton Hospital, London, United Kingdom. He is currently Senior Consultant and Head of the Department of Cardiology, National University Heart Centre, Singapore. His interests include non-invasive cardiovascular imaging, heart failure, telemedicine and clinical practice improvement. He is also passionate about teaching and is actively involved in medical and nursing education.

Andy Wai-Kwong CHAN

Dr. Andy Wai-Kwong CHAN is currently Honorary Consultant (Cardiology) at Department of Medicine & Geriatrics of United Christian Hospital and Clinical Associate Professor (Honorary) in Family Medicine of The Chinese University of Hong Kong. He was the Head of Cardiology and Director of Cardiac Catheterization Laboratory of United Christian Hospital for more than 10 years.

Dr. Chan has been serving a number of posts in local cardiology organizations. He is now the President-Elect of Hong Kong College of Cardiology. He also serves as Convener of Cardiac Intervention Chapter of the College. He was Vice Chairman of Hong Kong Public Hospital Cardiologists Association in 2006.

Ronnie Hiu-Lam CHAN

Dr Ronnie Chan is an Associate Consultant in the Pamela Youde Nethersole Eastern Hospital, Hong Kong. She is a Fellow of the Society of Cardiac Magnetic Resonance, a Fellow of the Hong Kong College of Cardiology and a member of the Scientific Committee of the Hong Kong College of Cardiology.

She is the Convenor of Cardiovascular Magnetic Resonance Chapter and an Honorary Clinical Associate Professor in the Faculty of Medicine, University of Hong Kong.

Eric Kwong-Yue CHAN

Dr. Eric Chan is an interventional cardiologist and Honorary Clinical Assistant Professor in Queen Mary Hospital, the University of Hong Kong. Previously he completed his structural and interventional cardiology fellowship program at Stanford University Medical Center under Dr. Alan Yeung and Dr. William Fearon, and has vast experience and interest in coronary physiology study (FFR, CFR and IMR testing), complex coronary interventions, alcohol septal ablation as well as structural heart interventions including TAVR and transcatheter edge-to-edge repair of mitral and tricuspid valves.

Wendy Wing-Lok CHAN

Dr. Wendy Wing-Lok Chan is currently the Clinical Assistant Professor of the Department of Clinical Oncology, The University of Hong Kong.
Dr. Chan obtained the Fellowship of the Royal College of Radiologists in Clinical Oncology and the Fellowship of Hong Kong College of Radiologists. After her fellowship, she obtained the MSc in Palliative Medicine (Cardiff, UK).
Her research focus is on breast cancer, cancer survivorship, geriatric oncology and endocrine malignancy. She has special focus on cardiac toxicities of breast radiotherapy. She published in various peer-review journals and has presented in multiple local and international cancer conferences.

Carmen Wing-Sze CHAN

Dr Carmen Chan was graduated from the University of Hong Kong. She is currently being the Consultant Cardiologist and the Clinical Honorary Associate Professor at Department of Medicine, Queen Mary Hospital, University of Hong Kong.
She is sub -specialized in advanced non-invasive cardiac imaging and has undergone one year fellowship training at Brigham and Women's Hospital, Harvard Medical School. Apart from providing clinical service, she is also interested and actively involved in clinical researches, guideline and reviewer in several peer group review journals and author of book chapters. She is also a council member of the Hong Kong College of Cardiology and the convener of CMR chapter and Women's Heart Health Campaign.

Kam-Tim CHAN

Dr. Kam Tim Chan graduated in University of HK with Bachelor of Medicine and Surgery in 1985. He is currently the Consultant Cardiologist of Queen Elizabeth Hospital, which is the center performing the highest volume of complex coronary and structural heart diseases intervention in HK. Dr. Chan has extensive administrative and clinical experiences in interventional cardiology. He is the past president of HK College of Cardiology and throughout these years; he is dedicated to uphold the professional standard of Cardiology practice by organizing continuous medical education activities to colleagues and actively involved in community heart health promotion.

Ngai-Yin CHAN

Dr Ngai-Yin Chan was conferred Doctor of Medicine [MD(HKU)] in 2019. He is currently the President of the Hong Kong College of Cardiology, Chief-of-Service and Consultant Physician in Department of Medicine & Geriatrics in Princess Margaret Hospital and North Lantau Hospital. He is an Honorary Clinical Associate Professor of Department of Medicine & Therapeutics of the Chinese University of Hong Kong. With his outstanding performance both professionally and in the community contribution, he won the Hong Kong Ten Outstanding Young Persons Award in the year of 2006 and the Hong Kong Humanity Award in the year of 2015.

Yu-Ho CHAN

Dr. Yu-Ho, Chan is currently the Director of Cardiology Centre, CUHK Medical Centre. Before joining his current post, he worked as Consultant Cardiologist in Pok Oi Hospital.

His expertise is in percutaneous coronary and structural heart disease intervention with a focus on complex PCI, CTO intervention and LAAO. He has also participated in organizing various academic meeting and educational program e.g. HKPHCA annual scientific meeting, HKSTENT CICF, APCTO club meeting and HKCC Fellowship Training Course …etc

Dr. Chan is the Fellow of American College of Cardiology, Council member of Hong Kong Society of Transcatheter Endo-cardiovascular Therapeutics, Honorary Secretary of Hong Kong Public Hospital Cardiologists Association and Council member of Hong Kong College of Cardiology. He is the fellow of APCTO club.

He has published on various aspects related to percutaneous coronary intervention, including chronic total occlusion intervention, dedicated bifurcation stent and drug eluting balloon in different peer reviewed journals such as Eurointervention and Catheter Cardiovascular Intervention.

Andrew Kai-Chun CHENG

Dr Cheng graduated from LKS Faculty of Medicine, The University of Hong Kong in 2010 and received radiology training in Queen Mary Hospital since 2012. He was awarded Fellowship of the Royal College of Radiologists (FRCR) in 2016. Dr Cheng underwent subspecialty radiology training in cardiovascular imaging in 2018 and received Best Scientific presentation award in ASCI Beijing China 2018. He was awarded Fellowship of the Hong Kong College of Radiologists (FHKCR) and Fellowship of the Hong Kong Academy of Medicine (FHKAM Radiology) in 2019. Currently Dr Cheng is working as the Associate Consultant of Radiology Department in Queen Mary Hospital and the Honorary Clinical Assistant professor in LKS Faculty of Medicine, The University of Hong Kong.

Stephen Chi-Wai CHEUNG

Dr. Cheung is a consultant radiologist at Queen Mary Hospital, Hong Kong with special interest in cardiovascular CT, MR and aortic interventions. He is keen about training young radiologists and has started the cardiovascular imaging subspecialty training program under the Hong Kong College of Radiologists. He is also active internationally, participating in various conferences organised by SCMR, EACVI and ASCI as speakers and moderators.

Calvin Woon-Loong CHIN

Asst. Prof Calvin Chin is a Senior Consultant, Clinician Scientist and the Director of the Cardiovascular Magnetic Resonance (CMR) Center at the National Heart Centre Singapore. His research examines cardiac remodeling in cardiometabolic diseases such as hypertensive heart disease; and translating novel CMR techniques such as exercise stress CMR to clinical practice. In recognition of his research, Dr. Chin has received several national and international awards, including the American Heart Association Young Investigator Award (2018), American College of Cardiology Young Investigator Award (2015), British Heart Valve Society Young Investigator Award (2015) and the Singhealth Publish Award (2015 and 2016). Asst. Prof Chin is the recipient of the Clinician Scientist Award in 2018, a talent development award by the National Medical Research Council in Singapore.

Victor A. FERRARI

Victor A. Ferrari, MD, MSCMR, FACC, FAHA, FASE, FRCP (Lond., Hon.) is a Professor of Medicine and Radiology at the University of Pennsylvania School of Medicine, and Chair of the Penn Cardiovascular Imaging Council. He is a Founding Member and Past President of SCMR, and Past Chair of the Certification Board for CMR. He served as Chair for the ISMRM Cardiac MR Study Group and served on the AHA Cardiac Imaging Committee. He is Past Chair of the ACC Imaging Council, and past ACC Board of Governors member. His research interests include ventricular function and remodeling, and high field imaging.

Vanessa FERREIRA

Professor Vanessa Ferreira is British Heart Foundation Associate Professor of Cardiovascular Medicine, Deputy Director of the Oxford Centre for Clinical Magnetic Resonance Research (OCMR) and Honorary Consultant Cardiologist at the University of Oxford. She obtained her Bachelor of Science at the Massachusetts Institute of Technology, and Doctor of Medicine at the University of British Columbia (Vancouver, Canada). She subsequently obtained a Doctor of Philosophy in Cardiovascular Medicine at the University of Oxford. She was a board member of the Society for Cardiovascular Magnetic Resonance, and serves on multiple SCMR committees. Prof Ferreira has expertise in quantitative CMR techniques, particularly T1-mapping.

Alison FLETCHER

Alison has 25 years' experience in MRI with 17 years dedicated to cardiac MR. She has worked in all areas of CMR and is currently the lead research radiographer at the Acute Vascular Imaging Centre, University of Oxford, U.K. and also works at OCMR in Oxford. Alison is extensively involved in CMR education nationally and internationally and was the technologist representative on the Board of Trustees of SCMR from 2014 – 2017 and is still actively involved with SCMR. She is a Fellow of the SCMR and a visiting lecturer for the post graduate program at City University U.K.

Arjun GHOSH

Dr Arjun K Ghosh MBBS, MSc, PhD, FHEA, FACC, FESC, FRCP, FICOS is a Consultant Cardiologist at Barts Heart Centre, St. Bartholomew's Hospital, London and at University College London Hospital. He is the first cardiologist in the UK to be appointed specifically in cardio-oncology and helped establish Cardio-Oncology services at both these hospitals which are now amongst the biggest services worldwide. Arjun leads the cardio-oncology service at UCLH.

Arjun is also actively involved in developing cardio-oncology curricula and guidelines and changing practice through the British Society of Echocardiography, British Cardio-Oncology Society and International Cardio-Oncology Society. He was joint first author of the first British cardio-oncology guidelines published earlier this year. You can find him on Twitter @arjunkg.

Lars GROSSE-WORTMANN

Dr. Grosse-Wortmann received his medical degree from the University of Würzburg in Germany, trained in pediatric cardiology in Aachen (Germany) & Toronto and completed a two-year fellowship in advanced cardiovascular imaging at the Hospital for Sick Children. He accepted a faculty position there in 2008 and directed the cardiovascular MRI section. He joined Oregon Health and Science University in 2019 as the division head of pediatric cardiology. Dr. Grosse-Wortmann specializes in echocardiography, MRI and CT imaging. His research focuses on myocardial health as well as on the physiology and long-term outcomes in patients with congenital heart disease.

Kate HANNEMAN

Dr. Kate Hanneman completed medical school and diagnostic radiology residency at the University of Toronto, a cardiovascular imaging fellowship at Stanford University, and a Masters in Public Health in Epidemiology at Harvard University. She is a cardiothoracic radiologist and Clinician Scientist at the University Health Network and Toronto General Hospital Research Institute. She is appointed as an Assistant Professor at the University of Toronto and is the Director of Cardiac Imaging Research at the Joint Department of Medical Imaging. Her research focuses on cardiac MRI and clinical outcomes in patients with non-ischemic cardiomyopathies.

Cally Ka-Lai HO

Dr Cally Ho is the Consultant Cardiac Surgeon currently working in Department of Cardiothoracic Surgery of Queen Mary Hospital, Hong Kong. Dr Ho obtained her degree of Bachelor of Medicine and Bachelor of Surgery in year 2000, and she obtained her Master of Medical Sciences in year 2011 from The University of Hong Kong.

She had her cardiothoracic surgical training in Grantham Hospital, Hong Kong since year 2004 and obtained her Fellowship in Cardiothoracic Surgery from The Royal College of Surgeons of Edinburgh and The College of Surgeons of Hong Kong in year 2008. Afterwards she went to Papworth Hospital in United Kingdom to specialised her training in Heart & Lung Transplantation and ventricular assist device. Her special interests are heart transplantation, lung transplantation, ventricular assist device, mechanical circulatory support, aortic surgery and complex redo valve surgery. She is actively involved in the aortic registry and also in the development of heart & lung transplantation & VAD programs in the department.

Ivan Fan Ngai HUNG

Professor Ivan Fan Ngai HUNG is currently Ru Chien and Helen Lieh Endowed Professor in Health Sciences Pedagogy, Professor of Medicine and Assistant Dean (Admissions), Chief of the Division of Infectious Diseases, Department of Medicine, LKS Faculty of Medicine, The University of Hong Kong, and Honorary Consultant in Queen Mary Hospital, Hong Kong. Professor Hung has published more than 240 international peer reviewed original articles, including research articles in the Lancet, the Lancet Infectious Diseases and the Clinical Infectious Diseases. His research interest includes influenza, SARS-CoV-2 and other respiratory virus antiviral treatment and vaccinology.

Faculty

Christopher M. KRAMER M.D.

Dr. Kramer is the George A. Beller/Lantheus Medical Imaging Distinguished Professor of Cardiovascular Medicine and Chief of the Cardiovascular Division at the University of Virginia. Dr. Kramer's principal research interest has been in cardiovascular magnetic resonance. He has published over 250 peer-reviewed publications, 4 books, and over 100 reviews and editorials on left ventricular remodeling, perfusion and viability, atherosclerotic plaque imaging, peripheral arterial disease (PAD), and hypertrophic cardiomyopathy. He is Associate Editor for Imaging at JACC and Treasurer of the ACC. In 2015 he won the Gold Medal of the SCMR and named the 2021 ACC Distinguished Mentor.

Sonia Hiu-Yin LAM

Dr. Sonia Lam is a Consultant Radiologist at Queen Mary Hospital, Hong Kong and the Clinical Assistant Professor of the Department of Diagnostic Radiology, the University of Hong Kong. Dr. Lam graduated from the University of Hong Kong. She underwent subspecialty training in Cardiovascular and Cardiothoracic Imaging at Queen Mary Hospital, Hong Kong and Royal Brompton Hospital, United Kingdom. She is currently the trainer of Thoracic Imaging and Co-trainer of Cardiovascular Imaging of the Department of Radiology, Queen Mary Hospital.

Yuk-Kong LAU

- Immediate Past President, Hong Kong College of Cardiology
- Honorary Clinical Associate Professor, University of Hong Kong
- Honorary Consultant, Ruttonjee & Tang Shiu Kin Hospitals
- MBBS (HK), FHKCP, FHKAM (Medicine), FRCP (London & Edinburgh), FACC

Dr Lau undertook 3-year cardiology training at Cedars-Sinai Medical Center/UCLA. He served in Grantham, Queen Mary, and then as the Consultant & Head of Cardiology of Ruttonjee Hospital for over twenty years. Dr Lau dedicates himself in promoting top quality professional training. He is the Founding Chair & currently the Program Co-Director of the international biannual Echo Hong Kong conference since 1997. He had been the Chair of the scientific committee and then the Chair (2006-2010) of Hong Kong Public Hospital Cardiologists Association.
During his presidency for the Hong Kong College of Cardiology (2017-2019), Dr Lau pioneered to organize the HKCC Core Cardiology Certificate Course. He actively recruits young enthusiastic colleagues for the College leadership. Dr Lau finds greatest satisfaction in patient care and teaching. He has been invited to deliver lectures & talks in numerous local, regional & international scientific meetings. His major interests are in the clinical management of ACS, echocardiography and emergency percutaneous coronary intervention including PPCI.

Benny LAWTON

I am a diagnostic radiographer with over 12 years of Cardiac MRI experience. I was the first Superintendent radiographer at the Bristol Heart Institute, one of the UK's largest single scanner CMR units. I was a co-founder/co-director of the Bristol Cardiac MRI Radiographers course for 5 years. After working for 20 years in the NHS, I have now moved to the independent sector as the Executive CMR Radiographer for St Joseph's Hospital in Wales. I currently sit on the Technologist committee for the Society of Cardiac MRI (SCMR), and the education committee for the European Association of Cardiovascular Imaging (EACVI).

Jonan Chun-Yin LEE

Dr Lee Jonan Chun Yin, MBChB, MRCP(UK), FHKCR, FHKAM (Radiology), FSCMR

Dr Lee is an associate consultant and the head of cardiovascular imaging in the Department of Radiology & Imaging, Queen Elizabeth Hospital, Hong Kong. He underwent overseas training in cardiac MR in 2016 at Flinders Medical Centre Adelaide, Australia, under the auspices of Professor Joseph Selvanayagam. He is a fellow of the SCMR and regularly reports cardiac MR on cardiomyopathy, ischaemic heart disease and adult congenital heart disease.

Eleanor Wei-Sze LEE

Dr. Lee Wei Sze Eleanor obtained her MbChB degree from the Chinese University of Hong Kong in 2003. She holds Fellowship of the Hong Kong Academy of Medicine (Medicine), Fellowship of the Hong Kong College of Physicians (Cardiology) and is Fellow of Hong Kong College of Cardiology. In 2013, she was granted the Lee Po Chun Charitable Trust Fund, Overseas Postgraduate Study and Professional Training Scholarships and underwent overseas training specializing in cardiovascular magnetic resonance imaging at Royal Brompton Hospital, London, United Kingdom. She is currently an associate consultant in Department of Medicine, North District Hospital, Hong Kong.

Danny LEUNG

Mr. Leung is a registered Part I Radiographer (D) of Hong Kong Radiographers' Board. He practices and manages multiple imaging modalities & oncological services as the Director of Diagnostic Imaging and Oncology Centre of Hong Kong Adventist Hospital – Stubbs Road. He is also the Vice Chairman of Hong Kong Radiological Technologists' Association, and founding committee member (VP for Professional Affairs) & member of Hong Kong Colleague of Radiographers & Radiation Therapists. Mr. Leung is also the members of multiple international professional organizations such as SMRT, RSNA, ISRRT, etc.

Andrew Ying-Wah LI

- MBBS, MRCP (UK), FRCP (Edin).

- Clinical Associate Professor (Honorary), Dept of Medicine & Therapeutics, CUHK

- Associate consultant and Director of Echo laboratory at United Christian Hospital

- Council member, HK Public Hospital Cardiologists Association

Dr Li completed his cardiovascular imaging fellowship in cardiac MRI, CT and Echo at the Royal Adelaide Hospital in Australia. He has authored peer-review publications in journals including European Heart Journal Cardiovascular Imaging, American Journal of Medicine, Heart, and Clinical Radiology. He is a fellow of the Society of Cardiovascular Magnetic Resonance (FSCMR), and holds Cardiovascular Board Certification of Cardiac CT (CBCCT).

Gary Yiu-Kwong MAK

Dr. Gary Y.K. Mak graduated in University of Hong Kong in 1982. He received his medical training in the Department of Medicine, Chinese university of Hong Kong and completed his Interventional and Nuclear Cardiology training in the University of Toronto. In 1989, he returned to CUHK to continue his clinical and teaching duties until 1993 when he starts his private practice.

He is currently the Director of the Pro-Care heart Clinic and Pro-Cardio Heart Disease and Stroke Prevention Center. He is also the Consultant cardiologist of Sir Run Run Shaw Heart & Diagnostic Center, St. Teresa's Hospital, Consultant Cardiologist & former Director of Cardiac Catheterization Lab. in Hong Kong Baptist Hospital.

Dr. Mak is the Past President of the Hong Kong Association of Sports Medicine & Sports Science. He is the Consultant Cardiologist of the Hong Kong Sports Institute for more than 20 years taking care of their elite athletes. He is also the visiting lecturers in the departments of cardiology and sports medicine in Chinese University of HK as well as HK Polytechnic University.

Dr. Mak started reading CMR since 2005 at the St. Teresa Hospital CMR and imaging center and report CMR regularly at STH and Exact MRI center.

His current research interests include CMR in athletes and CAD, cardiovascular response to exercise and exercise related sudden death, Coronary CTA, hypertension, novel oral anticoagulants, atherothrombosis, metabolic syndrome, and lipid disorders.

Chris MILLER

Dr Chris Miller is a National Institute for Health Research (NIHR) Advanced Fellow and Cardiologist at the University of Manchester and Manchester University NHS Foundation Trust, United Kingdom. His research interests include cardiovascular magnetic resonance and heart failure. He is Director of the British Heart Foundation Manchester Centre for Heart and Lung Magnetic Resonance Research, and leads a large heart failure with preserved ejection fraction clinical service.

Kanae MUKAI

Kanae Mukai, MD, FACC, FSCMR is the Medical Director of Non-Invasive Cardiovascular Imaging at Ryan Ranch Center for Advanced Diagnostic Imaging and Salinas Valley Memorial Healthcare System. She obtained her BS in chemical engineering from MIT and has previously worked in the semiconductor industry. She obtained her MD at Chicago Medical School and completed internal medicine residency at Mayo Clinic, fellowships in general and integrative cardiology at Scripps Clinic, and imaging subspecialty fellowships at Duke Cardiovascular Magnetic Resonance Center and UCSF. She holds Level III certification and is a boarded Diplomate in MRI, CT, nuclear imaging, and echocardiography.

Ngoc-Trang NGUYEN

Dr. Ngoc-Trang NGUYEN graduated from Hanoi Medical University, Vietnam. He currently is the senior radiologist at Bach Mai Hospital, Hanoi, Vietnam. He was a fellow at the University Hospital of Clermont Ferrand and Rouen (France) and the University of Sydney (Australia). He is now serving as an EC member of ASCI and General Secretary of the 14th Congress ASCI 2021, Vietnam. He interests in cardiac CT and CMR for congenital heart disease, cardiomyopathy, aortic valve… and AI in heart imaging.

Charlotte Manisty

Dr Charlotte Manisty is Clinical Lead for Cardio-Oncology at Barts Heart Centre, and Associate Professor at University College London. She set up and leads the largest cardio-oncology service in the UK at Barts, and is currently Vice-Chair of the Society of Cardiovascular MRI Cardio-Oncology group. She is Research Lead for British Cardio-Oncology Society and chairs the UK Cardiac Device MRI working group. She is regularly invited to speak around the world on both clinical cardiology and research, has received over £4 million funding for her medical research in the past 5 years, supervises several PhD students and is author of over 130 publications and books.

Ming-Yen NG

• Clinical Assistant Professor, Department of Diagnostic Radiology, The University of Hong Kong

• Division Chief of Cardiac Imaging at the HKU– Shenzhen Hospital, China

• HKU Cardiac Imaging MOOC Course Director

Dr. Ng is a fellow of the SCMR and vice-chair of the SCMR's education committee. He serves on the Society of Cardiovascular Computed Tomography's (SCCT) corporate relations committee and is an Associate Editor of the SCCT's official journal - Journal of Cardiovascular Computed Tomography.

He has published multiple cardiothoracic imaging papers in journals including JACC Cardiovascular Imaging, Circulation Cardiovascular Imaging, European Heart Journal Cardiovascular Imaging and Radiology.

Ntobeko NTUSI

Ntobeko Ntusi is a cardiologist and a Professor of Medicine, currently appointed as the Chair and Head of Medicine at the University of Cape Town and Groote Schuur Hospital, where serves as Program Director: Cardiovascular Magnetic Resonance. He is a Principal Investigator based at the Hatter Institute for Cardiovascular Research in Africa and the Cape Universities Body Imaging Centre as well as a Collaborating Investigator at the Wellcome Centre for Infectious Diseases Research in Africa. He is the Editor-in-Chief of the South African Heart Journal, and an Associate Editor of Circulation and BMC Medical Imaging. He has been actively engaged and contributed to improved understanding of cardiomyopathy, inflammatory heart disease, HIV-associated cardiovascular disease, and heart failure in South Africa and globally.

Karen ORDOVAS

Karen Ordovas, MD, MAS is a Professor of Radiology, Section Chief of Cardiothoracic Imaging at the University of Washington. She specializes in advanced Cardiac and Pulmonary Imaging, in particular cardiovascular MR and CT. She received her medical degree from Universidade Federal do Rio Grande do Sul, Brazil, and completed her residency in Radiology at the Instituto de Cardiologia do Rio Grande do Sul and Mae de Deus Hospital, Brazil. She has completed research and clinical fellowships in CardioThoracic Radiology at the University of California San Francisco (UCSF), and earned a Masters Degree in clinical research from the Department of Epidemiology and Biostatistics at UCSF.

She is a fellow of the Society of Cardiovascular MRI (SCMR), American Heart Association, and North American Society for Cardiovascular Imaging (NASCI).

In addition to serving at the SCMR Executive Board as Treasurer, Dr. Ordovas is deeply engaged in the main radiology and cardiology societies on her field. She is past-president of NASCI, Chair of the American College of Radiology Cardiology Research Committee, and Co-Chair of the RSNA cardiac program subcommittee. Dr. Ordovas' research interests include establishing evidence-based applications for CMR and CCT in several clinical settings, with emphasis on non-ischemic cardiomyopathies, women cardiovascular diseases, and adults with congenital heart disease.

Dr. Ordovas has more than 100 peer-reviewed articles and 26 book chapters. Her articles have appeared in the Radiology journal, the American Journal of Cardiology, the JACC Cardiovascular Journal, and Stroke: A Journal of Cerebral Circulation.

Steffen PETERSEN

Steffen Petersen is a Professor of Cardiovascular Medicine at the William Harvey Research Institute, Queen Mary University of London and a Consultant Cardiologist at Barts Heart Centre, Barts Health NHS Trust. He is President-Elect of the European Society of Cardiology's (ESC) European Association of Cardiovascular Imaging (EACVI). He holds an MBCHB and MDRES equivalent (Dr med.) from Johannes Gutenberg University Mainz, Germany, a DPHIL (OXON) from the Department of Cardiovascular Medicine, University of Oxford, an MPH from Harvard School of Public Health and an MSc in Health Economics, Outcomes and Management in Cardiovascular Science from the London School of Economics.

Maurizio PIERONI

Maurizio Pieroni is a cardiologist at San Donato Hospital in Arezzo (Italy). He obtained his specialization in Cardiology cum laude in 2001 and a PhD in human pathology in 2005. From 2006 to 2011 he worked as a cardiologist and researcher at Catholic University, and Arezzo Hospital in 2011 where he is Head of the Cardiomyopathies' Unit. Dr Pieroni was interested in the study of cardiac pathology and cardiomyopathies, in particular Fabry disease. He is skilled in execution and histological evaluation of endomyocardial biopsy, and echocardiography and cardiac MRI interpretation in the field of cardiomyopathies. He is deeply involved in both research and patients' management in the fields of lysosomal storage disorders, inherited cardiomyopathies and channellopathies.

Catherine SHEA

Dr. Shea graduated from the University of Hong Kong in 2009, and underwent Internal Medicine and Cardiology training at Queen Mary Hospital. She completed her overseas clinical fellowship in Advanced Heart Failure and Cardiac transplantation at the University Hospitals Cleveland Medical Center in 2019. Her interest is in advanced heart failure, mechanical circulatory support and inherited and acquired cardiomyopathies. She is currently an Associate Consultant at Queen Mary Hospital and provides expertise in advanced heart failure, cardiomyopathies, adult congenital heart disease, and high risk pregnancy cardiology services.

Lynette TEO

Lynette is a radiologist at the National University Hospital, Singapore. She did her radiology training in Singapore with fellowships in cardiothoracic imaging at the Royal Brompton Hospital, United Kingdom in 2006/7 and 2011. She has been an EXCO member with the Asian Society of Cardiovascular Imaging (ASCI) since 2014. She has also served as ACGME-I radiology program director for more than 10 years and continues to be involved in undergraduate and postgraduate education; sitting on various radiology and educational-related committees. She is also involved in several cardiac-related research projects.

Sara TYEBALLY

Sara Tyebally is a senior cardiology registrar at Barts' Heart centre, specialising in advanced cardiac imaging, cardio-oncology and preventive cardiology. She has received her board certification in cardio-oncology from the International Cardio-Oncology Society.

Paaladinesh THAVENDIRANATHAN

Dr. Paaladinesh Thavendiranathan is a cardiologist at the Toronto General Hospital, University of Toronto. He is an associate professor of medicine and a clinician scientist. His clinical practice involves work with cardiac MRI, CT, and echocardiography. He is the Director of the Ted Rogers Program in Cardiotoxicity Prevention which focuses on cardiac toxicity from systemic therapies including cancer therapy. His research focus is in the use of advanced cardiac imaging techniques for detection and management of cardiomyopathy.

Mark WESTWOOD

Dr Mark Westwood is a Consultant Cardiologist at Barts Heart Centre, London, UK. He previously set up and delivered the cardiac MRI service at the London Chest Hospital which became one of the UK's largest CMR services. He is currently the President of BSCMR, the British Society of Cardiovascular Magnetic Resonance and he also has a strong interest in training and education where he is Vice President of the UK Specialty Advisory Committee, the national body for cardiology training in the UK.

Michael Ka-lam WONG

Dr. Michael Ka-lam WONG is a heart transplant, left ventricular assist device (LVAD) and extracorporeal membrane oxygenation (ECMO) physician in Cardiac Medical Unit, Grantham Hospital. Dr. Wong graduated from the University of Hong Kong in 2005 and completed Cardiology training in Queen Mary Hospital. He received training on ECMO from National Taiwan University Hospital in 2010 and then received overseas training in advanced heart failure and transplantation at the Mayo Clinic, USA. He is currently Associate Consultant in Grantham Hospital with clinical focus in advanced heart failure, mechanical circulatory support, heart transplantation and end-stage pulmonary arterial hypertension.

Jeffrey Ka-Tak WONG

Dr Wong graduated from Faculty of Medicine, The Chinese University of Hong Kong in 1995 and received radiology training in Prince of Wales Hospital from 1997. He was awarded Fellowship of the Royal College of Radiologists (FRCR) in 2000 and Fellowship of the Hong Kong College of Radiologists (FHKCR) and Fellowship of the Hong Kong Academy of Medicine [FHKAM (Radiology)] in 2003. Currently he is working as the Chief of Service of Department of Imaging & Interventional Radiology, Prince of Wales Hospital and Honorary Associate Professor, Department of Imaging and Interventional Radiology, The Chinese University of Hong Kong. His special interests include Non-invasive Cardiovascular Imaging and Interventional Radiology. Apart from clinical service provision, Dr Wong has published more than one hundred scientific articles in local / international peer-reviewed journals and as editor of four Radiology books.

Lawrance Kai-Chiu YIP

Lawrance Yip completed radiography training in Hong Kong Polytechnic University. He specialized in MRI and acquired Master degree in Magnetic Resonance Technology from University of Queensland, Australia. Currently, he is Department Manager in charge of Radiographic service and Senior Radiographer taking care of MRI service of Department of Radiology, Queen Mary Hospital, Hong Kong as well as Director of MRI Faculty of Hong Kong College of Radiographers and Radiation Therapists. He has conducted numerous presentations on various topics of MRI at local or overseas seminars and conferences. His main interest is in cardiovascular, body and neurological MRI applications.

Chun-Ho YUN

Dr. Chun-Ho Yun is currently the senior radiologist in MacKay Memorial Hospital, Taipei, Taiwan. In 2007~2008, He had one and half year fellowship in cardiovascular imaging corelab in Massachusetts General Hospital. He obtained his PhD degree in department of Biomedical Imaging and Radiological Sciences, National Yang-Ming University in 2016. In the past ten years, he has collaborated with colleagues in institutions in the United states and Europe including New York University, Castwestern university in Cleveland, Lawson Health Research institute, London, Canada and Oxford university. In clinical practice, Dr. Yun is the director of Cardiovascular imaging in MacKay memorial hospital and provides stress MR perfusion and coronary CTA services not only for patients but also for customers from the department of health evaluation center.

Scientific Program - 26 June 2021(Day 1)

TIME(HONG KONG)	TOPIC	SPEAKERS
09:00-10:30	Symposium 1 - CMR: Myocardium and Pericardium Moderators: Ronnie HL Chan (Hong Kong), Andrew KC Cheng (Hong Kong)	
09:10-09:30	Cine imaging for cardiac structure and function measurement	Victor Ferrari (US)
09:30-09:50	LGE imaging for viability and non-ischaemic patterns	Kate Hanneman (Canada)
09:50-10:10	Pericardial disease	Paaladinesh Thavendiranathan (Canada)
10:10-10:30	Cardiac masses: what's new	Patricia Bandettini (US)
10:30-11:00	Break	
11:00-12:30	Symposium 2 - CMR: Blood flow and tissue imaging Moderators: Carmen WS Chan (Hong Kong), Sonia Lam (Hong Kong)	
11:00-11:20	Valvular heart disease	Andrew YW Li (Hong Kong)
11:20-11:40	Shunts and flow measurements	Lars Grosse-Wortmann (US)
11:40-12:00	Stress perfusion imaging and interpretation	Kanae Mukai (US)
12:00-12:30	Cardiac parametric mapping for advanced tissue characterisation	Vanessa Ferreira (UK)
12:30-13:00	Break	
13:00-14:00	Luncheon Symposium: High risk screening and management of Fabry disease Moderators: Yuk-Kong Lau (Hong Kong), Jeffrey KT Wong (Hong Kong)	Maurizio Pieroni (Italy)
14:00-15:30	Symposium 3 - Common artefacts and pitfalls in CMR scanning Moderators: Danny Leung (Hong Kong), Andrew YW Li (Hong Kong)	
14:00-14:30	Optimizing CMR image quality to obtain the best diagnostic images	Alison Fletcher (UK)
14:30-15:00	Common CMR artifacts - recognition and solutions	Alison Fletcher (UK)
15:00-15:30	How to perform Parametric T1/T2 Mapping	Benny Lawton (UK)
15:30-16:00	Tea Break lecture: GOHeart workflows for CMR Exam in <30 minutes Moderator: Andy WK Chan (Hong Kong)	Gaia Banks (Germany)
16:00-16:05	Opening remarks	Ngai-Yin Chan (Hong Kong), Chiara Bucciarelli-Ducci (UK)
16:05-17:41	Symposium 4 - Case presentations: Ask the Experts Moderators: Carmen WS Chan (Hong Kong), Ronnie HL Chan (Hong Kong), Stephen CW Cheung (Hong Kong), Vanessa Ferreira (UK)	Jonan Lee (Hong Kong) Thuy Vu (Vietnam) Zahra Alizadeh Sani (Iran) Tosha Desai (India) RAMAKRISHNA N (India) Chuk-Man Hui (Hong Kong) Ansan Joseph Sara Tyebally (UK)

*Program is subject to change without prior notice.

Scientific Program - 27 June 2021(Day 2)

TIME(HONG KONG)	TOPIC	SPEAKERS
09:00-10:10	Symposium 5 - Acute myocardial infarction and its mimics Moderators: Eric KY Chan (Hong Kong), Eleanor WS Lee (Hong Kong)	
09:10-09:30	Acute Myocardial infarction & MINOCA	Calvin Chin (Singapore)
09:30-09:50	Acute myocarditis	Lynette Teo (Singapore)
09:50-10:10	Ischaemia with normal coronary arteries (INOCA)	Ming-Yen Ng (Hong Kong)
10:10-10:30	Break	
10:30-11:00	Tea Break Lecture: Individualizing antiplatelet therapy in high risk post PCI patients Moderators: Kam-Tim Chan (Hong Kong), Cally KL Ho (Hong Kong)	Yu-Ho Chan (Hong Kong)
11:00-12:30	Symposium 6 - CMR for cardiomyopathies Moderators: Gary YK Mak (Hong Kong), Catherine Shea (Hong Kong)	
11:00-11:20	Hypertrophic cardiomyopathy (HCM)	Christopher Kramer (US)
11:20-11:40	Infiltrative diseases (cardiac amyloidosis, iron overload)	Stephen CW Cheung (Hong Kong)
11:40-12:00	Dilated cardiomyopathy and Arrhythmogenic cardiomyopathy	Karen Ordovas (US)
12:00-12:30	CMR for differntiating Athlete's heart from cardiomyopathies	Ronnie Chan (Hong Kong)
12:30-12:40	Break	
12:40-14:00	Lunch symposium : technically and clinically challenging cases Co-Chairs: Sonia Lam (Hong Kong), Benny Lawton (UK), Andrew YW Li (Hong Kong), Lawrance Yip (Hong Kong)	Lawrance Yip (Hong Kong), Tanveer Iqbal Penwala (Malaysia), Anoop Ayyappan (India), Abhilash Kumar (India), Chonthicha Tanking (Thailand), Lok-Hang Yeung (Hong Kong)
14:00-15:30	Symposium 7 - CMR in Cardio-oncology and transplantation Moderators: Wendy WL Chan (Hong Kong), Michael KL Wong (Hong Kong)	
14:00-14:30	CMR of the transplanted heart	Christopher Miller (UK)
14:30-15:00	CMR and prognosis in heart failure patients	Carmen WS Chan (Hong Kong)
15:00-15:30	Cancer treatment and cardiotoxicity	The Cardio-Oncology team at Barts : Arjun Ghosh (UK), Charlotte Manisty (UK), Sara Tyebally (UK), Mark Westwood (UK)
15:30-16:00	Tea Break Lecture: COVID-19 and the heart Moderators: Vanessa Ferreira (UK), Ivan FN Hung (Hong Kong), Ming-Yen Ng (Hong Kong)	Steffen Petersen (UK)
16:05-17:35	Symposium 8 - Case presentations: Ask the audience Moderators: Carmen WS Chan (Hong Kong), Stephen CW Cheung (Hong Kong), Vanessa Ferreira (UK), Mark Westwood (UK)	
	Case sharing by the experts	Chiara Bucciarelli-Ducci (UK), Ntobeko Ntusi (South Africa), Chun-Ho Yun (Taiwan), Jeffrey KT Wong (Hong Kong), Mark Westwood (UK), Chai Ping (Singapore)
17:35	Closing remarks	Carmen WS Chan (Hong Kong), Vanessa Ferreira (UK)

*Program is subject to change without prior notice.

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REFERENCE:
1. Piorkowski C, et al. Early real-world adoption of mobile remote monitoring using the Confirm Rx Insertable Cardiac Monitor. Poster presented at: APHRS; 2018.

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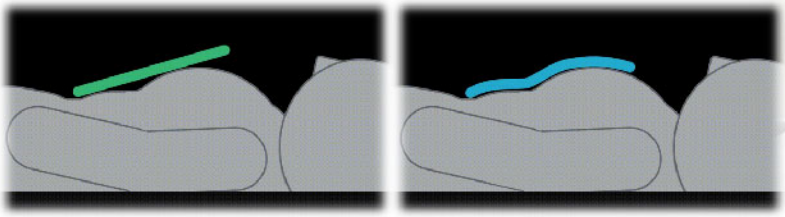

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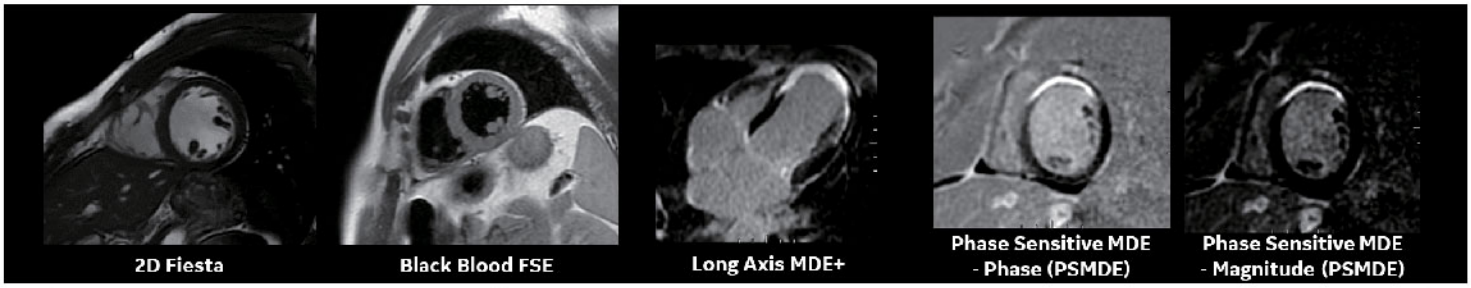

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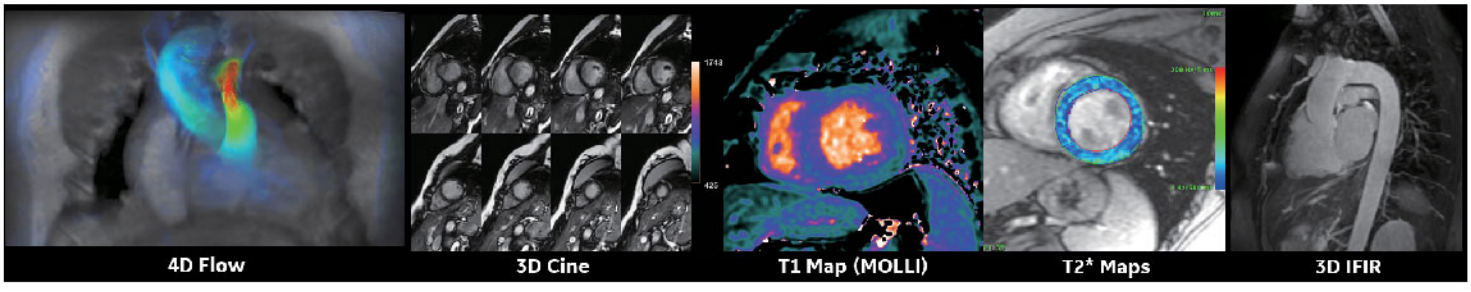

Cardiovascular Magnetic Resonance for the Assessment of Left Ventricular Hypertrophy

Andrew JM Lewis DPhil MRCP, OCMR, University of Oxford, OX3 9DU, United Kingdom

Cardiologists frequently encounter patients with left ventricular hypertrophy (LVH) of initially unknown origin. The accurate differentiation of either "pathological" hypertrophy (hypertensive heart disease, hypertrophic cardiomyopathy, myocardial storage / infiltrative disease and others), or "physiological" hypertrophy (athletic training) is key to further management and prognostication.

CMR has excellent reproducibility, an unrestricted field of view and provides non-invasive tissue characterization without ionising radiation using both gadolinium-enhanced and contrast-free techniques. As a result, CMR has become a key tool for the early diagnosis and treatment assessment of LVH, primarily via patterns of late gadolinium enhancement (LGE). Novel T1 mapping, extracellular volume (ECV) fraction and diffusion tensor imaging (DTI) techniques also have a growing role in the CMR assessment of LVH.

Significant LVH (usually defined as an LV wall thickness > 13mm) immediately opens a broad differential diagnosis. Figure 1 demonstrates 5 hypertrophied hearts which, by LV geometry alone, cannot be easily separated, but reflect 5 different pathologies which can be distinguished according to their LGE patterns.

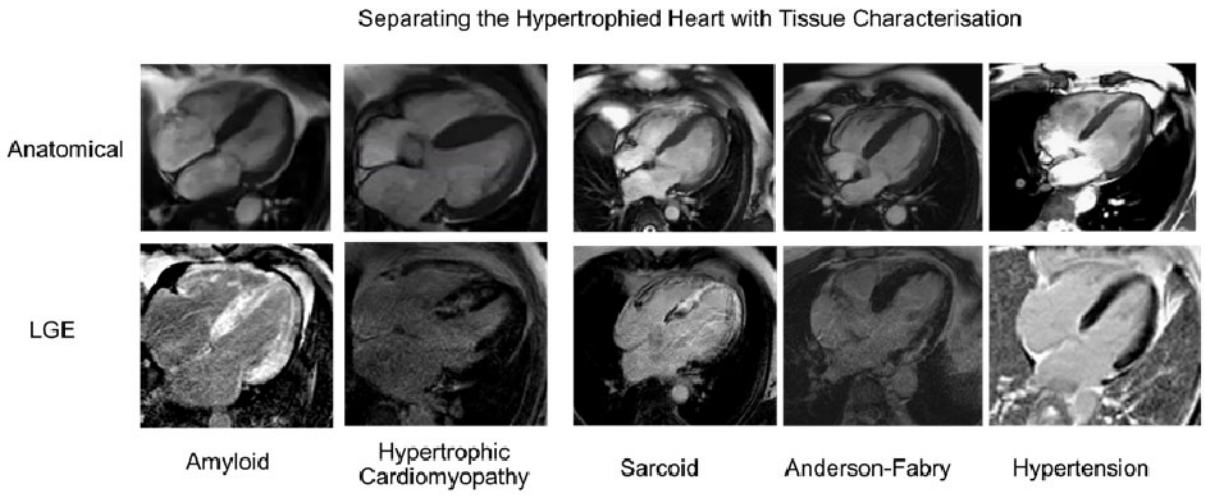

Figure 1. Upper Row; 5 CMR horizontal long axis (anatomical) views of 5 hypertrophied hearts with similar phenotype, but differing diagnoses (left to right) Amyloid, Hypertrophic Cardiomyopathy, Sarcoid, Anderson-Fabry Disease, and Hypertensive Heart Disease. The lower row highlights the late gadolinium enhancement (LGE) findings that allow separation of these diseases (from Lewis AJ and Rider OJ. CDT 2020;10(3):568).

Typical CMR LGE findings in **cardiac amyloidosis** include enhancement of both the RV and LV endocardium (giving rise to the so-called "Zebra sign") and a generally high myocardial signal (Figure 1a). This leads to a very characteristic dark blood pool and difficulty in 'nulling' the myocardial signal. CMR is a valuable tool for diagnosing cardiac amyloidosis but is not reliable in classification of amyloid subtype (1). Parametric mapping techniques including native T1 mapping and extracellular volume (ECV) fraction estimation may offer improved sensitivity to early amyloid disease detection compared to LGE.

In suspected **hypertrophic cardiomyopathy (HCM),** CMR provides three-dimensional tomographic cardiac imaging with high spatial and temporal resolution in any plane. This leads to important advantages over transthoracic echocardiography for the assessment of the apex of the heart (which may be challenging in patients with suboptimal acoustic windows). It is generally accepted that the presence of LGE is predominantly observed at the RV-LV insertion points and in the regions of hypertrophy, where patchy and mid-wall enhancement is common. Extensive LGE corresponds to adverse prognosis in HCM.

CMR is also well-suited to imaging cardiac sarcoidosis as it can detect oedema / inflammation and fibrosis. Common patterns include patchy regions of LGE that would not be typical for myocardial infarction (sparing the endocardium and not in a coronary territory, Figure 1). However, cardiac sarcoidosis can mimic almost all patterns of LGE. Quantitative myocardial tissue characterization with T1 and T2 mapping can assess activity of myocardial inflammation in patients with systemic sarcoidosis, by detecting oedema (2).

CMR is an excellent technique to non-invasively diagnose cardiac involvement in **Anderson-Fabry disease (AFD).** The classical CMR features of AFD are concentric hypertrophy and inferolateral and mid- myocardial scar on LGE imaging (Figure 1). In addition to the LGE imaging, native T1 mapping detects lower T1 values in AFD due to the deposition of sphingolipids(3) (4), which does not occur in other forms of LVH, providing additional diagnostic information.

Hypertensive heart disease and aortic stenosis are both common causes of LVH due to pressure loading. Whilst the cause of both is usually apparent at the diagnosis of LVH, CMR is often sought to exclude another pathology, such as amyloidosis. The assessment of LGE can be valuable, as it is more likely to be seen or to have a characteristic pattern reflecting one of the pathological caused outlined above. Mid-wall enhancement is seen with severe chronic pressure remodelling and is detected in 19–62% of patients with severe AS where it is has prognostic value. (5)

In summary, CMR offers excellent imaging for the differentiation and diagnosis of unexplained LVH (6). Whilst ventricular geometry and patterns of LGE remain the current cornerstones of diagnosis using CMR, new quantitative imaging technologies will further improve the reliability of diagnosis, and the ability to track responses to treatment. CMR should therefore be considered for the diagnosis of unexplained LVH

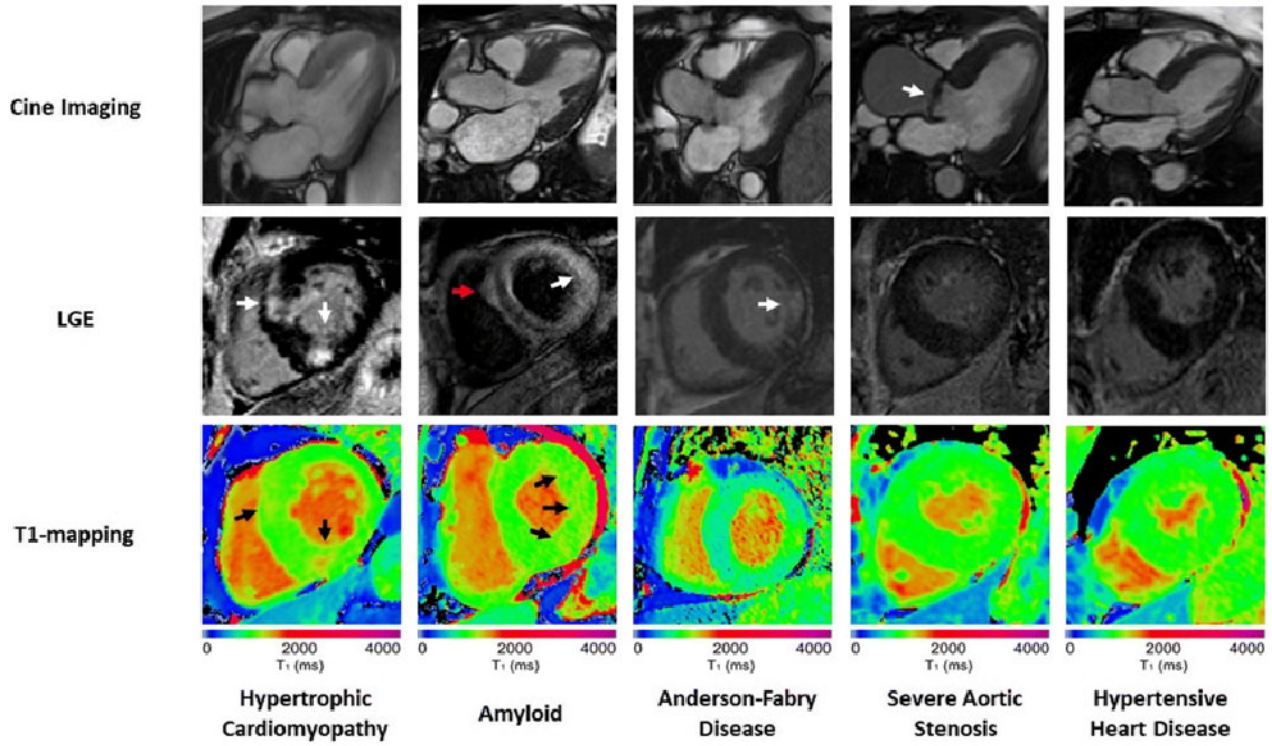

Figure 2. Differences in anatomical, T1-mapping and LGE tissue characterisation features on CMR between LVH phenotype (from Burrage M and Ferreira V. Curr Heart Fail Rep 17, 192–204 (2020).

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The Role of Cardiac MRI in the Diagnosis, Management and Prognosis of Heart Failure

Dr Jonathan Lai MRCP (UK), FHKAM (Medicine),
Pamela Youde Nethersole Eastern Hospital, Hong Kong

The application of Cardiac MRI in clinical practice is forever growing, and this is also evident in the field of heart failure. Due to recent advances in the knowledge of heart failure and also in scanner technology, Cardiac MRI plays an increasingly pivotal role in the diagnosis, establishing the aetiology, risk stratification and also monitoring of treatment response in patients with heart failure (1). Although echocardiography is most commonly used for the measurement of ejection fraction, Cardiac MRI can give a more accurate measurement due to its high spatial resolution and better reproducibility as compared to echocardiography. Cardiac MRI is currently the gold standard in the measurement of RV systolic function (2). In addition to this, the high spatial resolution of CMR aids clinicians in establishing the cause of heart failure, which helps us greatly to target the underlying pathophysiological process, to produce better clinical outcomes.

Using delayed enhancement imaging CMR is able to characterize the underlying disease based on the pattern and location of scar. CMR enables us to differentiate common causes of heart failure, such as ischaemic cardiomyopathy and non - ischaemic cardiomyopathy, as well as uncommon ones, such as amyloidosis and sarcoidosis especially using novel mapping techniques such as T1 mapping (1). Moreover CMR also plays an important role in risk stratification and in providing prognostic information across a spectrum of cardiac diseases that lead to heart failure. Many a times delayed enhancement implies adverse outcomes, as scar is a substrate for ventricular arrhythmia which can lead to sudden cardiac arrest. CMR can also quantify scar size which predicts survival (1). As mentioned before due to the reproducibility of cardiac MRI, it is an ideal way to monitor therapy response, such as serial measurement of ejection fraction or scar burden. The role of T2* in assessment of response to therapy in iron overload is already an established entity while a potential role for T1 in specific therapies for cardiac amyloidosis and Anderson-Fabry Disease is emerging (3).

Indeed there are any advantages of CMR in helping us manage patients with heart failure, however one must remember that it does have its drawbacks such as high cost, low availability in many centres across the world and the difficulty for the patient to lie flat for an extended period of time such as in the setting of acute heart failure, just to name a few. But the advantages of CMR over other non-invasive imaging modalities such as accuracy, reproducibility, unrestricted field of view, the lack of ionizing radiation, and the ability to characterize myocardial tissue, make it an important diagnostic, prognostic and reliable management tool for patients with heart failure. It makes it more exciting that we are growing in knowledge in the field of CMR and that we are still discovering novel CMR techniques which we can apply to help and managing patients with heart failure.

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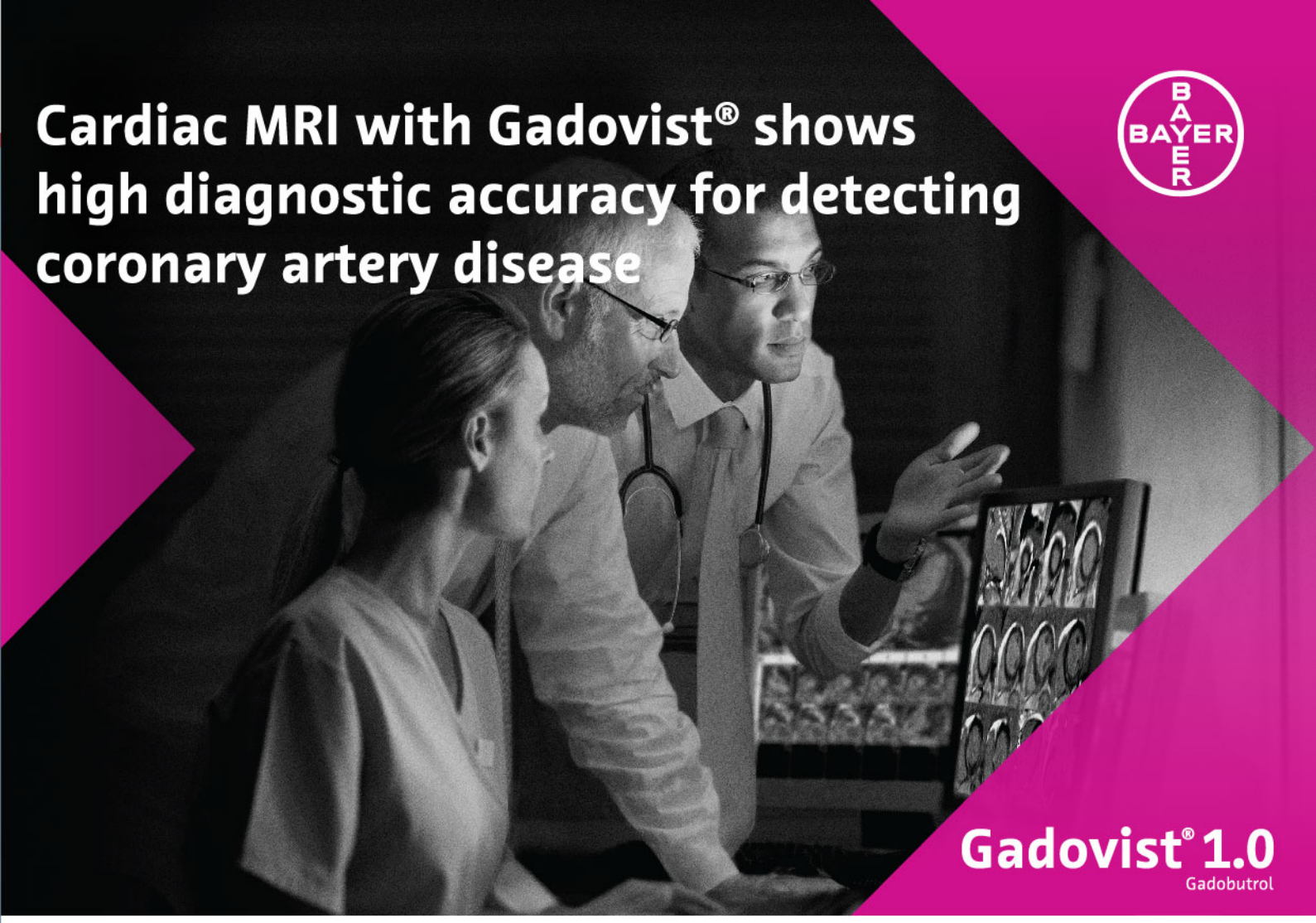

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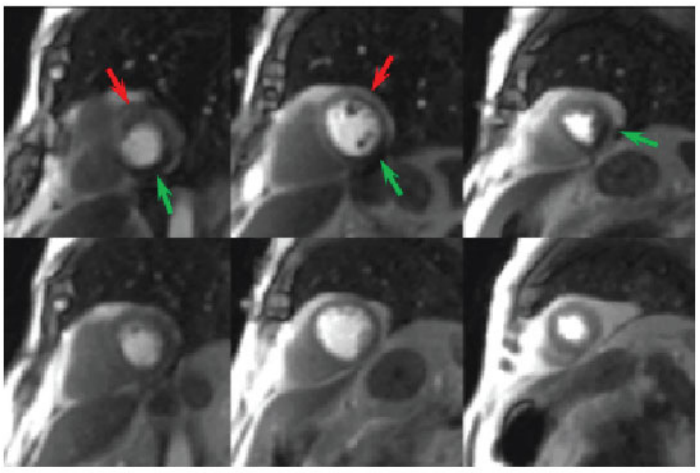

Andrew E. Arai et al. Gadobutrol-Enhanced Cardiac Magnetic Resonance Imaging for Detection of Coronary Artery Disease; JACC Volume 76, Issue 13, September 2020.

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