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Atrial Fibrillation Catheter Ablation – Myths, Misconceptions and New Milestones

Dr CHAN, Kit Jacky

CME LIVE

HKMA CME Bulletin
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Contents

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EDITORIAL – September 2023 Issue

Dr SO, Yui Chi
Co-editor, Hong Kong Medical Association CME Bulletin

As the weather becomes hot and humid in recent months, many people feel fast heart beating and shortness of breath. There is a proportion of it is due to psychological factors (for example: stress). However, a number of them have real organic diseases underlying the symptoms.

Patients usually first think of the heart problems causing the chest tightness (even may causing death) and turn to cardiologist first. Therefore, the Spotlight article September 2023 Issue will turn on to the most common encounter arrhythmia – Atrial Fibrillation management so as to enrich the most common palpitations elderly people encounter.

The Cardiology article will focus on chronic rheumatic heart disease causing palpitations. Rheumatic heart disease was once upon a time common in Hong Kong but is rare now. However, it can still exist in the suburb areas in developing countries. In nowadays, we are facing more immigrants which may have contact of Streptococcus (rheumatic heart causative agent). A fresh review of our knowledge of rheumatic heart clinical features is essential.

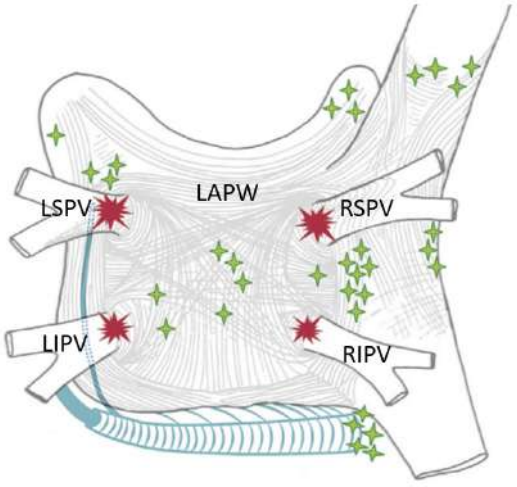
Hopefully, this CME Bulletin September Issue can help to brush up our knowledge of palpitations with common recognizable causes and proper managements.

Atrial Fibrillation Catheter Ablation – Myths, Misconceptions and New Milestones

Dr CHAN, Kit Jacky
MBBS (HK), MRCP (UK), FHKAM (Medicine), FHKCP, FACC, FRCP (Edin)
Specialist in Cardiology

Atrial fibrillation (AF) has affected nearly 60 million people globally [1]. Patients with AF have 5 times higher risk of stroke, 3 times higher risk of congestive heart failure (CHF) and 2-3 times higher risk of mortality compared with those without [2]. Currently, anti-arrhythmic drugs and AF catheter ablation are the 2 major treatment modalities in AF rhythm control. The use of antiarrhythmics has low success rate in maintaining sinus rhythm and is associated with long term systemic side effects [3].

Studies have demonstrated that ectopic electrical activities in pulmonary vein myocardial sleeves are the major triggers of AF [4]. (Figure 1). The foundation of AF ablation is electrical isolation of the pulmonary veins (Figure 2). The major modalities of AF catheter ablation include radiofrequency ablation (RFA), cryoballoon catheter ablation, laser balloon ablation and pulsed field ablation (PFA). Radiofrequency ablation employs high frequency (500-750 Hertz) electrical currents [5] to generate thermal injury. Cryoballoon employs liquid nitrogen (-80 degrees Celsius) to create cold-induced cellular injury. Pulsed field ablation (PFA) [6] is a non-thermal based ablation system. It employs high-voltage short-duration electrical impulses (up to ~1500-2000 volts) delivered in hundreds of microseconds. It changes cell membrane conductivity, permeability and creates nanometer-sized pores in cell membrane (electroporation), finally leading to cell apoptosis. (Figure 3). The article aims to review the myths/misconception about AF catheter ablation and clinical evidence of latest AF catheter ablation technologies.



Triggers of AF: Red star = pulmonary veins triggers. Green star = extra-pulmonary veins triggers. LAPW = Left atrium posterior wall. RSPV = Right Superior Pulmonary Vein. RIPV = Right Inferior Pulmonary Vein. LSPV = Left Superior Pulmonary Vein. LIPV = Left Inferior Pulmonary Vein.

Figure 1. Left atrium/pulmonary veins anatomy and triggers of atrial fibrillation. [7]

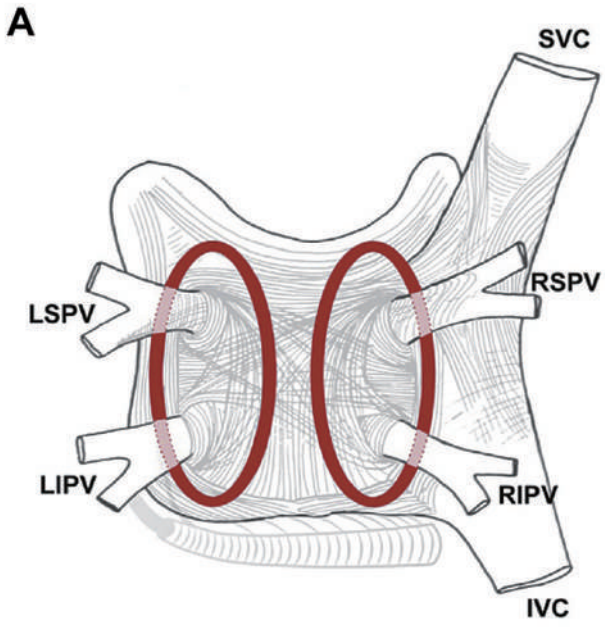


Figure 2. The foundation of AF ablation is electrical isolation of pulmonary veins (Pulmonary Veins Isolation – PVI) [7]

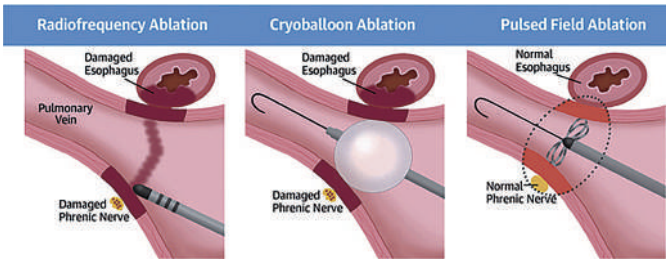


Figure 3. Three major modalities of AF catheter ablation: radiofrequency ablation (RFA), cryoballoon catheter ablation and pulsed field ablation (PFA). [8]

Myth and misunderstanding 1: AF ablation has no clinical benefit as rhythm control is not superior to rate control in AF.

In the AFFIRM study [9], 4060 AF patients (paroxysmal AF patients and AF patients who had received recent cardioversion) were randomized to rate-control and rhythm-control strategies. Rhythm-control strategy did not demonstrate survival benefit over the rate-control strategy (5 year mortality 23.8% versus 21.3% respectively. HR 1.15 (95% confidence interval (CI) 0.99-1.34; p=0.08)). There was no difference in stroke rate in both groups (about 1% per year). The rhythm-control group patients had more hospitalization and adverse drug effects. In the rhythm control group, more than 2/3 of the patients were treated with amiodarone.

Re-appraisal of the AFFIRM Study:

Firstly, the study was not a direct comparison of the efficacy of AF ablation versus medical therapy. Only 14 patients (0.7%) received radiofrequency catheter ablation for AF or atrial flutter in the rhythm control arm. The result could not be extrapolated to patients who have received AF catheter ablation.

Secondly, the study was not a comparison of the clinical outcome of AF versus sinus rhythm. It was only a comparison of pharmacological rhythm control versus rate control. At the end of the 5-year follow-up, only 34.6% of patients were in sinus rhythm. After 5 years of follow-up, about 14.9% of patients in the rate-control arm crossed over to the rhythm control arm, while 37.5% of patients in the rhythm control arm crossed over to the rate-control arm. The potential benefit of rhythm control was probably negated by the side effect of anti-arrhythmics and diluted by the high-cross over rate.

Thirdly, in the AFFIRM study [9], the result could not be generalized to patients with AF and CHF or left ventricular (LV) systolic dysfunction. The mean left ventricular ejection fraction (LVEF) of the patients was 54.7+/-13.5%. About 74% of the patients had normal LVEF. Only 23% of the patients had history of congestive heart failure.

New insights from the CABANA Randomized Control Trial:

The CABANA trial [10] is the first large scale randomized controlled trial of AF catheter ablation. A total of 2204 symptomatic AF patients were randomized to catheter ablation and medical therapy. The median age of the patients was 68 years. Approximately 43% and 57% of patients had paroxysmal AF and persistent AF respectively. Only about 15% of patients had history of CHF and less than 5% of patients had LVEF <=35%. At the conclusion of the study, 90.8% and 27.5% of patients in the catheter ablation arm and the drug therapy arm received AF catheter ablation respectively. Although there was no statistically significant difference in the primary composite end point of death, disabling stroke, serious bleeding or cardiac arrest between the 2 arms by intention-to-treat analysis at 48.5 months of follow-up (8% in the ablation arm and 9.2% in the drug therapy arm; HR 0.86 [95% CI 0.65-1.15] p=0.3) (Figure 4A), **AF catheter ablation was associated with significant reduction in composite endpoint of death or cardiovascular hospitalization (HR 0.83 [95% CI 0.74-0.93]; p=0.001) (Figure 4B) and AF recurrence (HR 0.52 [95% CI 0.45-0.6]; p<0.001) (Figure 4C)**. There was no statistically significant difference in death (5.2% in catheter ablation arm versus 6.1% in drug therapy arm. HR 0.85 [95% CI 0.6-1.21]; p = 0.38), disabling stroke (0.3% in catheter ablation arm versus 0.6% in drug therapy arm. (HR 0.42 [95% CI 0.11-1.62]; p = 0.19) and serious bleeding (3.2% in catheter ablation arm vs 3.3% in drug therapy arm. HR 0.98 [95% CI 0.62-1.56]; p=0.93). The therapeutic benefit of AF catheter ablation was affected by the significant crossover rate and lower-than expected event rates. **In the treatment received/per-protocol analysis, catheter ablation was associated with significant reduction of the above primary endpoint (HR 0.67 [95% CI 0.5-0.89]; p=0.006), all-cause mortality (HR 0.6 [95% CI 0.42-0.86]; p=0.005), and death or cardiovascular hospitalization (HR 0.83 [95% CI 0.74-0.94]; p=0.002). At 12-month follow-up, AF catheter ablation was associated with about 30% relative reduction of primary end point (HR 0.73 (95% CI 0.54-0.99); P =0.046) (Figure 4D)**.

The prevalence of persistent or long-standing persistent AF was reduced from 57% at baseline to 26% and 16% in patients in the drug therapy arm and the catheter ablation arm respectively. Regarding adverse event rates, 0.8%, 1.1% and 2.3% of patients in the catheter ablation arm developed cardiac tamponade, pseudoaneurysms and minor hematomas respectively. In the drug therapy arm, 0.8% and 1.6% of patients developed pro-arrhythmia and thyroid disorder respectively.

Long term 5-year follow-up of the CABANA patients [11] using biannual 96-hours Holter monitoring showed that any **AF recurrence was reduced by 48% (hazard ratio: 0.52; 95% confidence interval: 0.45 to 0.60; p < 0.001) and symptomatic AF recurrence was reduced by 51% (hazard ratio: 0.49; 95% confidence interval: 0.39 to 0.61; p < 0.001)**. The baseline AF burden was 48% in both arms. The 1-year AF burden was reduced to 6.3% in the ablation arm versus 14.4% in the drug-therapy arm. At 5 years, the corresponding percentages were 14.7% and 20.8%, respectively.

Summary: In AF patients who actually received successful catheter ablation, there was about 30% relative risk reduction (RRR) in primary composite endpoint of death, disabling stroke, serious bleeding or cardiac arrest, all-cause mortality and death or cardiovascular hospitalization compared with those who received drug therapy alone. Cather ablation also significantly reduced AF recurrence by about 50% compared with drug therapy.

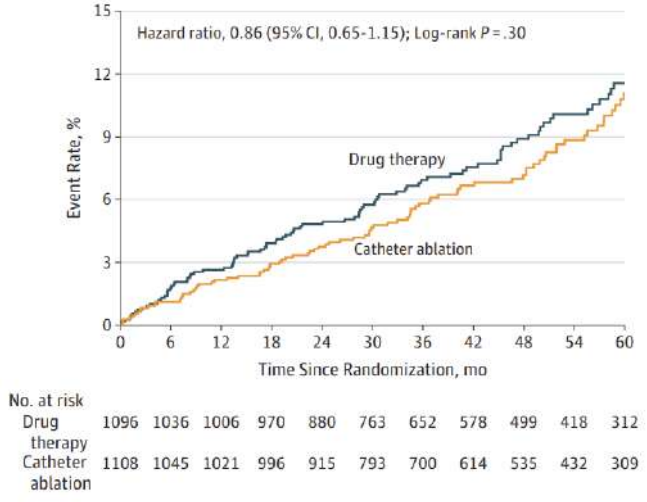


Figure 4A. CABANA Trial Kaplan-Meier survival curve of the Incidence of the primary composite endpoint of death, disabling stroke, serious bleeding or cardiac arrest by intention-to-treat analysis. There was no statistically significant difference in primary endpoint between AF catheter ablation arm and drug therapy arm. [10]

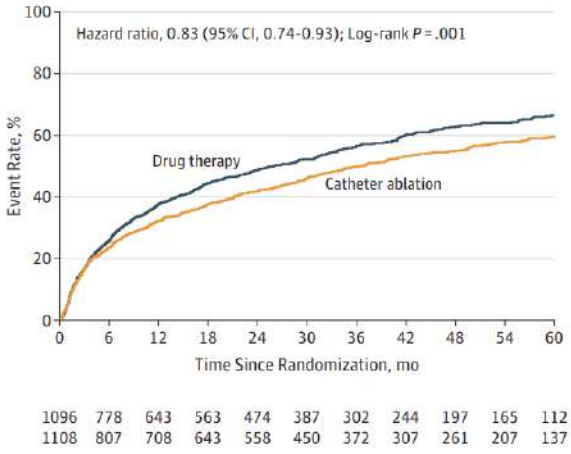


Figure 4B. CABANA Trial Kaplan-Meier survival curve of composite of mortality or cardiovascular (CV) hospitalization by intention-to-treat analysis. Patients in the catheter ablation arm had about 20% relative risk reduction (RRR) in mortality or CV hospitalization compared with those in the drug therapy arm. [10]

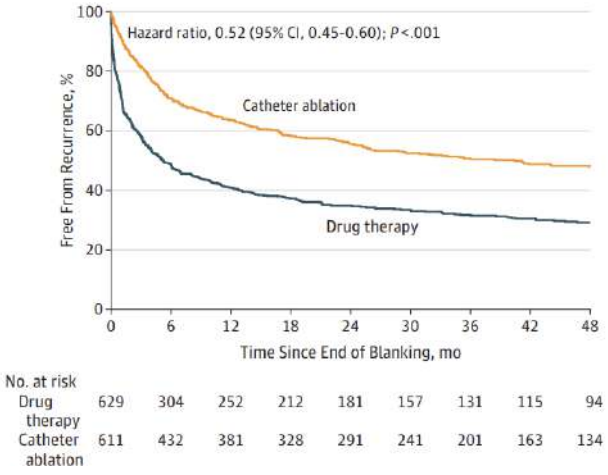


Figure 4C: CABANA Trial. Freedom from recurrence of atrial fibrillation. Catheter ablation was associated with almost 50% reduction in AF recurrence (HR 0.52 [95% CI 0.45-0.6]; p<0.001) compared with drug therapy. [10]

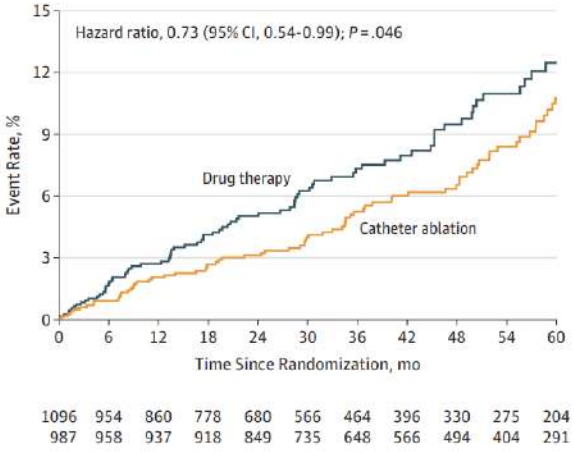


Figure 4D. CABANA Trial Kaplan-Meier survival curve of composite of mortality or cardiovascular hospitalization by treatment received/per-protocol analysis. Patients who had actually received catheter ablation had about 30% relative risk reduction (RRR) in composite of mortality or CV hospitalization compared with those in the drug therapy arm. [10]

New insights from the EAST-AFNET Trial:

In the EAST-AFNET 4 Trial [12], 2789 patients with early AF (median time from onset to diagnosis was 36 days) were randomized to early rhythm control or usual medical care. The patients in the early rhythm control arm received anti-arrhythmic or AF catheter ablation, while patients in the usual medical care received rhythm control treatment only for management of AF related symptoms. The primary endpoint was the composite of death from cardiovascular causes, stroke, heart failure hospitalization or acute coronary syndrome. About 95% of participants randomized to early rhythm control arm received anti-arrhythmics or catheter ablation. **In the early rhythm control arm, 8% and 19.4% of patients received AF catheter ablation upon study entry and at the end of the 2-year follow-up period respectively**. In the usual medical care group, 95.8% and 85.4% of patients did not receive anti-arrhythmics upon study entry and at the end of the 2-year follow-up period respectively. In the usual medical care group, 7% of patients received catheter ablation at the end of the 2-year follow-up period. The prevalence of sinus rhythm was 82.1% and 60.5% at 2 years in the early rhythm control arm and the usual medical care arm respectively. Mortality was similar in the 2 groups. **Early rhythm control was associated with approximately 20% relative reduction in primary endpoint (3.0 per 100 person-years versus 5 per 100 person-years; HR 0.79; 96% confidence interval, 0.66 to 0.94; P=0.005). (Figure 5)**. More patients in the rhythm control arm developed serious adverse events (4.9% versus 1.4%) compared with those in the usual medical care group. **However, the primary safety outcome event did not differ significantly between the 2 groups**. The left ventricular function at 2 years did not differ significantly between the groups.

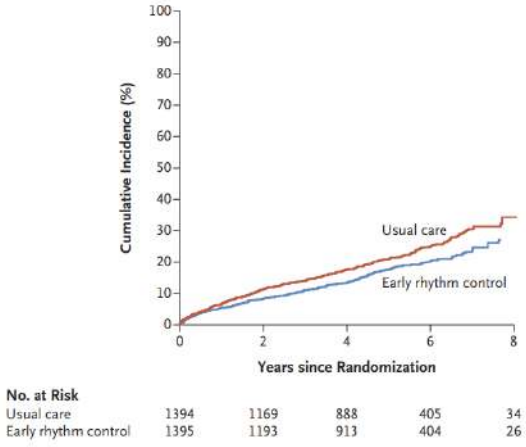


Figure 5. EAST-AFNET 4 Trial. Cumulative incidence curve of primary outcome of death from cardiovascular causes, stroke, heart failure hospitalization or acute coronary syndrome. Early rhythm control was associated with approximately 20% relative risk reduction (RRR) in primary endpoint (3.0 per 100 person-years versus 5 per 100 person-years; HR 0.79; 96% confidence interval, 0.66 to 0.94; P=0.005). [12]

Summary: Early AF rhythm control is associated with approximately 20% relative risk reduction (RRR) in primary composite endpoint of cardiovascular death, store, heart failure hospitalization or acute coronary syndrome in the EAST-AFNET Trial.

Myth & misunderstanding 2: AF catheter ablation does not improve survival.

The prevalence of AF was estimated to be 43%, 38% and 32% in patients with CHF with preserved ejection fraction (HFpEF), CHF with mildly reduced ejection fraction (HFmrEF) and CHF with reduced ejection fraction (HFrEF) respectively. Atrial fibrillation is associated with an increase of mortality in all heart failure subtypes [13]

Randomized controlled trials have demonstrated the survival benefit of catheter ablation in AF patients with heart failure.

In the CASTLE AF trial [14], 179 and 184 patients with symptomatic paroxysmal or persistent AF were randomized to catheter ablation or drug therapy. All recruited patients had New York Heart Association (NYHA) class II, III or IV heart failure, a LVEF less than or equal to 35% and an implantable cardioverter defibrillator. **Catheter ablation was associated with 38% relative risk reduction (RRR) of the primary composite end point of death or CHF hospitalization (28.5% versus 44.6%. HR 0.62 [95% CI 0.43-0.87]; p=0.007), 47% RRR of all-cause mortality (13.4% versus 25%. HR 0.53 [95% CI 0.32-0.86]; p=0.01), 51% RRR of cardiovascular death (11.2% versus 22.3%. HR 0.49 [95% CI 0.29-0.84]; p=0.009) and 44% RRR of CHF hospitalization (20.7% versus 35.9%. HR 0.56 [95% CI 0.37-0.83]; p = 0.004) (Figure 6).**

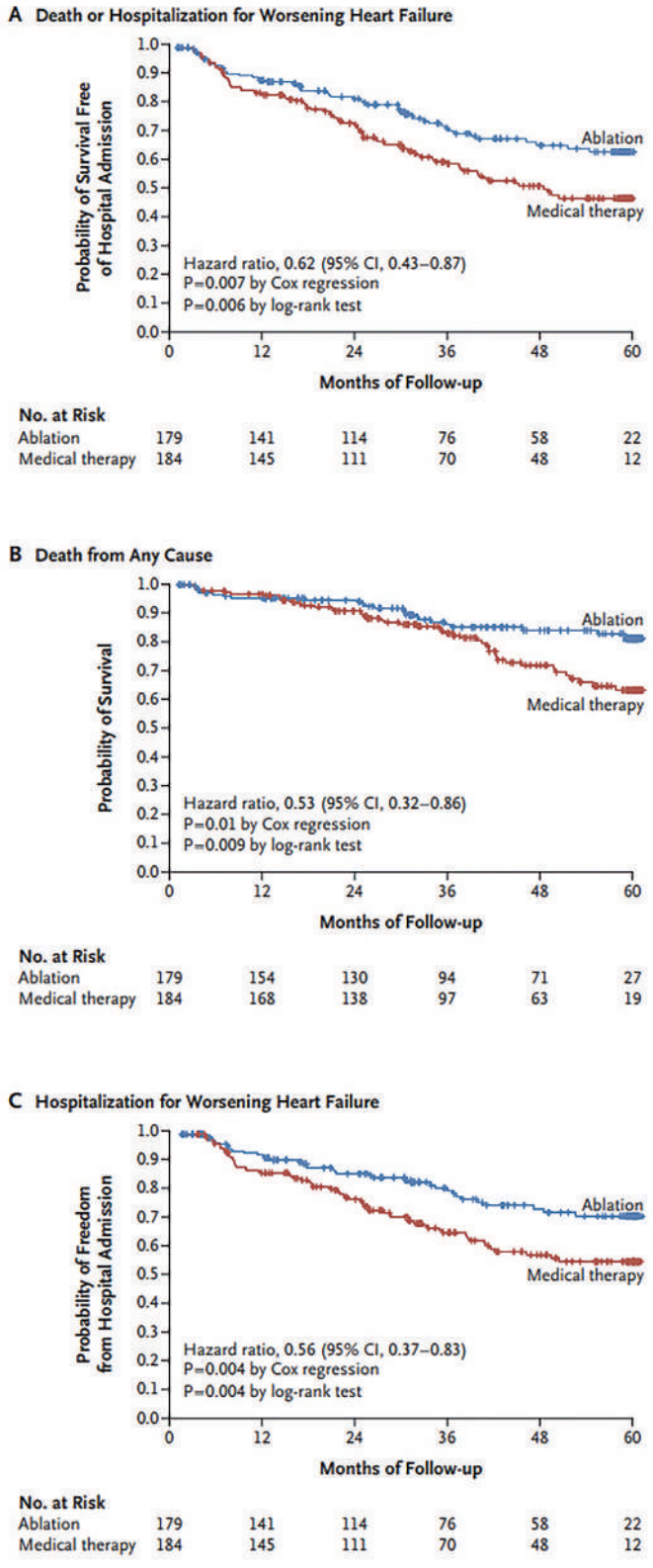


Figure 6: CASTLE AF Trial. Catheter ablation was associated with 38% relative risk reduction (RRR) of the primary composite end point of death or CHF hospitalization (28.5% versus 44.6%. HR 0.62 [95% CI 0.43-0.87]; p=0.007), 47% RRR of all-cause mortality (13.4% versus 25%. HR 0.53 [95% CI 0.32-0.86]; p=0.01), 51% RRR of cardiovascular death (11.2% versus 22.3%. HR 0.49 [95% CI 0.29-0.84]; p=0.009) and 44% RRR of CHF hospitalization (20.7% versus 35.9%. HR 0.56 [95% CI 0.37-0.83]; p = 0.004).[14]

In the AATAC randomized controlled trial [15], 203 patients with persistent AF, dual chamber implantable cardioverter defibrillator or cardiac resynchronization therapy defibrillator, NYHA II to III heart failure and LVEF <40% were randomized to catheter ablation or amiodarone therapy. At the end of the 2-year follow-up period, 70% and 34% of patients were free from AF recurrence in the catheter ablation group (after an average of 1.4+/-0.6 procedure) and amiodarone group respectively (p<0.001). Versus catheter ablation, amiodarone therapy was associated with 2.5 times higher risk of AF recurrence (HR 2.5; 95% CI 1.5-4.3; p<0.001). Catheter ablation was associated with 45% relative risk reduction in unplanned hospitalization (31% versus 57% p<0.001; RR 0.55; 95% CI 0.39-0.76) and 56% relative risk reduction in mortality (8% vs 18%; p=0.037).

In the CAMTAF Trial [16], 50 patients with persistent AF and symptomatic CHF with LVEF <50% were randomized to catheter ablation and drug therapy. The baseline LVEF of the patients was 32+/-8% and 34+/-12% in the catheter ablation group and the drug therapy group respectively. At 6-month follow up, the LVEF was 40+/-12% and 31+/-13% in the catheter ablation group and the medical therapy group respectively (p=0.015). Patients who received catheter ablation had higher peak oxygen consumption and Minnesota living with HF questionnaire score compared with those who received drug therapy. Freedom from AF at 6 months without anti-arrhythmic drugs was achieved in 81% of patients who received catheter ablation. The trial was stopped prematurely for efficacy after a median of 5.1 years of follow-up per patient. Patient assigned to the early rhythm control group had approximately 20% relative reduction of primary endpoints (3.9 per 100 person-year versus 5 per 100 person-years) (HR 0.79; 96% CI 0.66-0.94; p=0.005). There was no significant difference in primary safety outcome.

In a meta-analysis [17] involving 18 randomized controlled trials and 4464 AF patients, 2286 patients received catheter ablation while 2178 patients received medical therapy. Catheter ablation was associated with a approximately 30% relative reduction in all-cause mortality (RR, 0.69; 95% CI, 0.54–0.88; P=0.003). The survival benefit was mainly driven by patients with AF and CHF with reduced LVEF (RR, 0.52; 95% CI, 0.35–0.76; P=0.0009). Catheter ablation was associated with 44% cardiovascular hospitalizations (hazard ratio, 0.56; 95% CI, 0.39–0.81; P=0.002) and 58% lower risk of recurrent atrial arrhythmias (RR, 0.42; 95% CI, 0.33–0.53; P<0.00001).

In a latest meta-analysis [18] including 8 trials and 1390 patients with AF and CHF, 707 patients and 683 patients were randomized to catheter ablation and medical therapy respectively. The primary analysis showed that catheter ablation decreased mortality (RR 0.61; 95% CI 0.44-0.84 p=0.003) and CHF hospitalization (RR 0.6. 95% CI: 0.49-0.74; P<0.001) by approximately 40% compared with medical therapy alone. There was no statistically significant difference in prevalence of stroke.

Summary: Both randomized controlled trials and meta-analysis have demonstrated the catheter ablation is associated with survival benefit and reduction of heart failure hospitalization in AF patients with heart failure or left ventricular systolic dysfunction.

Myth and misunderstanding 3: AF ablation is only recommended as a bail-out option after failure of anti-arrhythmics.

Randomized controlled trials have demonstrated the benefit of early cryoballoon based AF ablation as first-line therapy over anti-arrhythmics.

In the STOP AF First Trial [19], 203 patients with paroxysmal AF were randomized to cryoballoon AF ablation and drug therapy as first line therapy. In the cryoballoon AF ablation group, acute procedure success was achieved in 97% of patients. One year success rate was 74.6% and 45% in the ablation group and the drug therapy group respectively (p<0.001). Only 2 safety endpoint events occurred in the ablation group (1 pericardial effusion and 1 phrenic nerve injury). **Cryoballoon AF ablation as first-line therapy was associated with about 30% and 66% absolute and relative higher rate of successful AF rhythm control at 1 year respectively, compared with drug therapy.** (Figure 7)

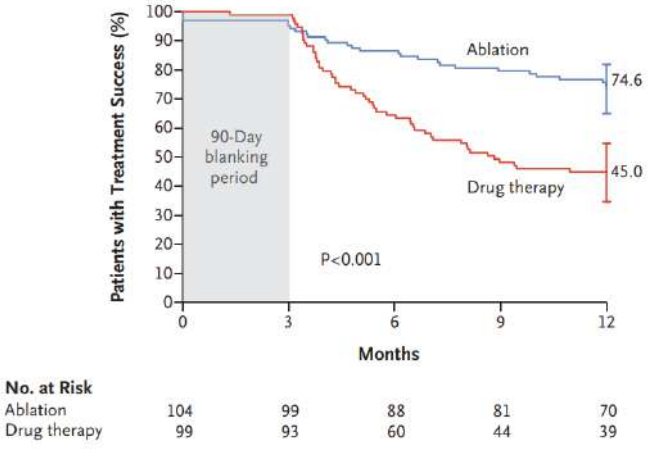


Figure 7. STOP AF First Trial. Cryoballoon AF ablation as first-line therapy was associated with about 30% and 66% absolute and relative higher rate of AF rhythm control success at 1 year compared with drug therapy. The one year success rate was 74.6% and 45% in the ablation group and the drug therapy group respectively (p<0.001). [19]

In the EARLY AF Trial [20], 303 symptomatic paroxysmal AF patients were randomized to cryoballoon AF ablation and drug therapy as first line therapy. All the patients received an implantable loop recorder (LR) to detect atrial arrhythmia. Recurrent atrial tachyarrhythmia occurred in 42.9% and 67.8% of patients who received cryoballoon AF ablation and drug therapy respectively at 1 year. Symptomatic atrial tachyarrhythmia recurrence occurred in 11% and 26.2% of patients who received cryoballoon AF ablation and anti-arrhythmic drug therapy respectively (HR 0.39; 95% CI 0.22-0.68). The ILR showed significant reduction of percentage of time in AF in the cryoballoon AF ablation group (0% versus 0.13%). Serious adverse events occurred in 3.2% and 4% of patients who received cryoballoon ablation and anti-arrhythmic drugs respectively. **Cryoballoon AF ablation as first-line therapy was associated with about 60% RRR of atrial tachyarrhythmia recurrence at 1 year compared with drug therapy, without significant increase in serious adverse event rate. (Figure 8)**

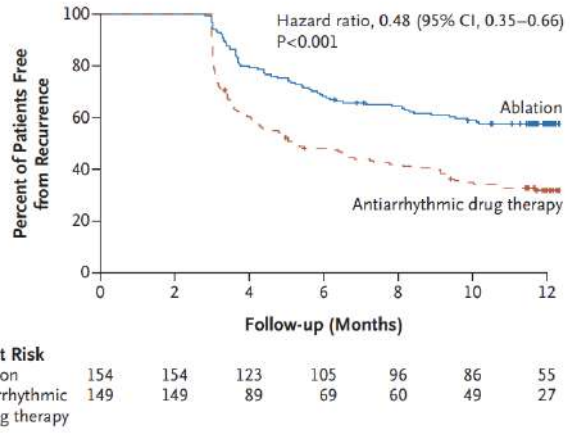


Figure 8. EARLY AF Trial. Cryoballoon AF ablation as first-line therapy was associated with about 60% RRR of atrial tachyarrhythmia recurrence at 1 year compared with drug therapy, without significant increase in serious adverse event rate. [20]

Meta-analysis of AF ablation as first line therapy in patients with paroxysmal AF:

A meta-analysis [21] of six randomized controlled trials involving 1212 paroxysmal AF patients (609 and 603 patients were randomized to AF ablation and drug therapy respectively) analyzed the efficacy and safety of AF ablation as first line therapy. Three trials studied radiofrequency AF ablation and 3 trials studied cryoballoon AF ablation. **Catheter ablation as first line therapy was associated with 38% RRR of recurrent atrial arrhythmia compared with anti-arrhythmic drug therapy (32.3% versus 53%; RR 0.62; 95% CI 0.51-0.74; p<0.001). The number needed to prevent 1 atrial arrhythmia was 5. Cather ablation was also associated with 56% relative risk reduction in symptomatic atrial arrhythmia (11.8% vs 26.4%; RR, 0.44; 95% CI, 0.27-0.72; P =.001; I2 = 54%) and 68% relative reduction in hospitalization (5.6% vs 18.7%; RR, 0.32; 95% CI, 0.19-0.53; P <.001).** There was no significant difference in serious adverse events between the 2 groups (4.2% vs 2.8%; RR, 1.52; 95% CI, 0.81-2.85; P =.19). The meta-analysis concluded that in patients with paroxysmal AF, catheter ablation as first line therapy was associated with reduction in atrial arrhythmia recurrence versus anti-arrhythmic therapy, with no significant difference in major adverse events.

Summary: Both randomized controlled trials and meta-analysis have demonstrated the benefit of early AF ablation as first-line therapy in achieving successful rhythm control and preventing AF recurrence versus anti-arrhythmic. AF ablation as first line therapy was associated with about 60% relatively higher success rate of AF rhythm control and about 50-60% relatively lower risk of AF recurrence compared with drug therapy.

Myth and misunderstanding 4: AF catheter ablation has low success rate and high recurrence rate.

In the world's largest AF ablation registry – the National Cardiovascular Data Registry (NCDR) AFib Ablation Registry [22], a total of 76219 patients were included (55.8% paroxysmal AF). The in-hospital acute procedure success rate was 92.4%. The long term recurrence rate was not collected in the registry.

In the ESC-EHRA Atrial Fibrillation Ablation Long-Term Registry [23], 3593 patients with AF (68% paroxysmal AF), the **1-year success rate of AF ablation was 68.6% and 56.3% for paroxysmal AF and long-standing persistent AF respectively.**

A meta-analysis of 6 trials with a total of 7624 persistent AF patients, the 1 year freedom from AF at 12 months was 51% (95% CI 46-56%) in patients who received catheter ablation [24].

In the Stop AF Pivotal Trial [25], 245 patients symptomatic paroxysmal AF patients (78% paroxysmal AF, 22% persistent AF) unresponsive to at least 1 anti-arrhythmic drug were randomized to cryoballoon AF ablation and drug therapy. One hundred and sixty three patients received cryoballoon pulmonary vein isolation. Acute isolation of all four pulmonary veins was achieved in 97.6% of patients. **At 1-year follow-up, treatment success was achieved in 69.9%** and 7.3% of patients who received cryoballoon AF ablation and anti-arrhythmic drug therapy respectively (p<0.001). About 79% of drug-treated AF patients crossed over to cryoballoon AF ablation during the 1 year follow-up period (mostly due to recurrent AF, symptomatic AF despite anti-arrhythmic treatment). Phrenic nerve palsy occurred in 11.2% of patients, among whom 86% resolved by 1 year.

In the Fire and ICE study [26], 762 paroxysmal AF patients were randomized to cryoballoon and radiofrequency ablation. At mean follow-up of 1.5 years, the primary efficacy endpoint of first documented clinical ablation failure (AF, atrial flutter, atrial tachycardia recurrence, use of anti-arrhythmic drugs or repeated AF ablation) occurred in 34.6% and 35.9% of patients who received cryoballoon ablation and radiofrequency ablation respectively (HR 0.96; 95% confidence interval 0.76-1.22; p<0.001), **translating into long term success rate of about 65%**. There was no statistically significant difference in the primary safety endpoint (composite of death, cerebrovascular events or serious treatment related adverse events) between the 2 groups. The study demonstrated the non-inferiority of cryoballoon AF ablation to radiofrequency AF ablation, with respect to efficacy and safety. (Figure 9)

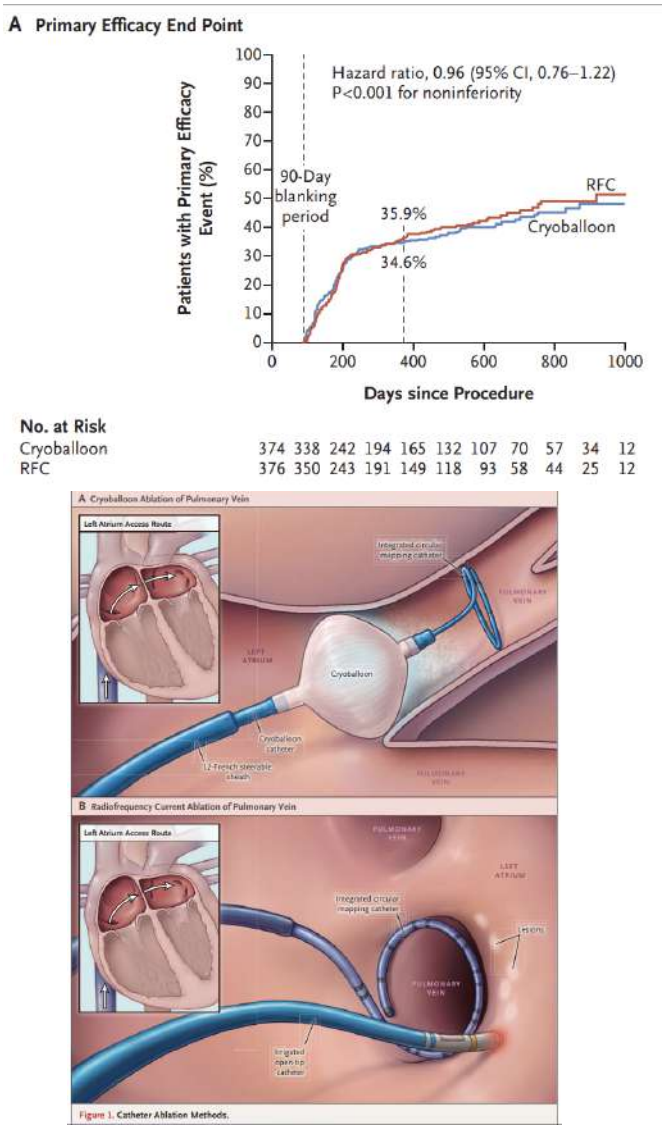


Figure 9. FIRE AND ICE Study. The study demonstrated the non-inferiority of cryoballoon AF ablation to radiofrequency AF ablation, with respect to efficacy and safety. [26]

The commonest cause of AF recurrence after catheter ablation is pulmonary vein reconnection [27]. Poor catheter contact is one of the commonest causes of pulmonary vein reconnection and unsuccessful pulmonary vein isolation [28]. The advance of contact force sensing ablation catheters and automated ablation index (AI) algorithm (which incorporates and computes the ablation catheter contact force, stability, ablation duration, and power) has significantly improved the efficacy of catheter ablation.

Contact-Force Sensing Ablation Technology

In a real-world multi-center cohort registry [29], 261 paroxysmal AF patients received AF ablation using contact-force sensing ablation catheter. **The acute pulmonary vein isolation rate was 98.8%. The 1-year freedom from symptomatic AF was 75.7%.**

In the Close-to-Cure Study [30], 105 patients with paroxysmal AF received radiofrequency AF ablation using contact-force sensing catheter under the guidance of region-specific ablation index (an automated index computed from force of contact, ablation power and duration), inter-lesion distance and stability, the **single procedure freedom from any atrial tachyarrhythmia was 87% at 1 year and 78% at 2 years**. The result was confirmed by implantable cardiac monitors. The median atrial tachy-arrhythmia (ATA) burden decreased from 2.68% at baseline to 0% during the second year of follow-up (reduction in ATA burden 100% [IQR 100%-100%]; P < 0.001). (Figure 10)

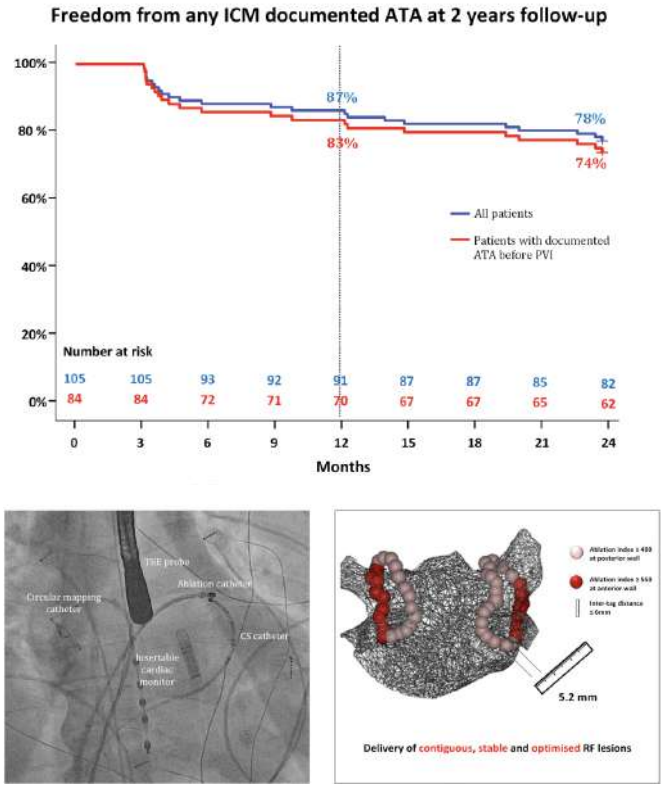


Figure 10. The CLOSE-TO-CURE Study. In paroxysmal AF patients who received catheter ablation using contact-force sensing catheter under the guidance of region-specific ablation index (an automated index computed from force of contact, ablation power and duration), inter-lesion distance and stability, the single procedure freedom from any atrial tachyarrhythmia was 87% at 1 year and 78% at 2 years. [30]

Pulsed Field Ablation (PFA)

In the IMPULSE, PEFCAT and PEFCAT II trials [31], 121 patients with paroxysmal AF were treated with PFA. The acute success rate was 100%. **The 1 year freedom from any atrial arrhythmia was 78.5+/-3.8% and 84.5+/-5.4% in the entire cohort and in those who received optimized biphasic energy PFA waveform respectively.** (Figure 11A & 11B)

In the PULSED AF pivotal study [32], 150 symptomatic paroxysmal AF and 150 symptomatic persistent AF patients refractory to anti-arrhythmics were treated with pulsed field ablation (PFA). The 1 year success rate was 66.2% (95% CI 57.9-73.2%) in patients with paroxysmal AF and 55.1% (95% CI, 46.7 to 62.7) in patients with persistent AF. Freedom from any symptomatic recurrent atrial arrhythmias was 79.7% and 80.8% in patients with paroxysmal and persistent AF respectively.

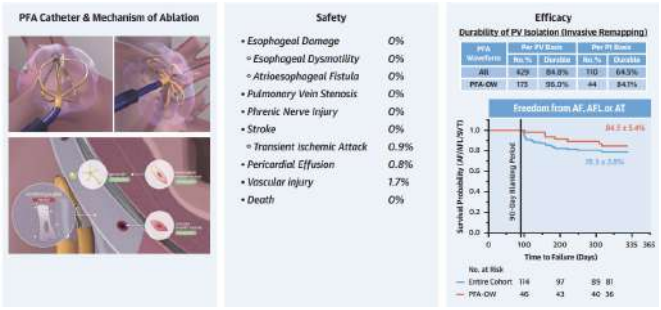


Figure 11A. The IMPULSE, PEFCAT and PEFCAT II trials. Pulsed field ablation (PFA) AF ablation could create irreversible electroporation and could achieve 1 year freedom from any atrial arrhythmia in 84.5+/-5.4% of patients who received optimized biphasic energy PFA waveform [31].

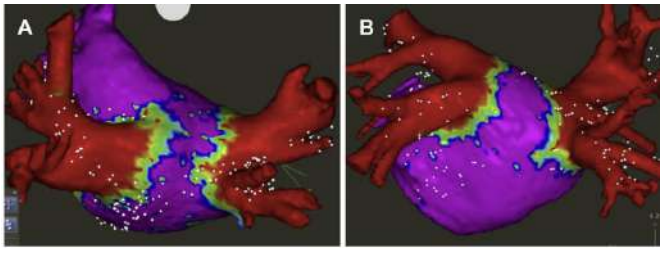


Figure 11B. Three dimensional electro-anatomical mapping of the left atrium and pulmonary veins showing successful electrical isolation of the pulmonary veins after pulsed field ablation (the electrically isolated pulmonary veins were coded in red) [31].

In the EU-PORIA Registry [33], 1223 all-comer AF patients were recruited. Extra-pulmonary vein ablation was performed in 14% of patients. **The 1 year anti-arrhythmic free survival was 74% (80% for paroxysmal AF** and 66% for persistent AF).

In latest meta-analysis of PFA AF ablation [34], 16 studies involving 485 patients with AF were analyzed. Acute procedure success was achieved in 100% of patients. The freedom from AF recurrence was quoted to be above 90% at 3 months to 1 year follow-up in most studies.

Summary: The advance of catheter ablation technologies like contact-force sensing ablation catheters/ablation index and PFA have improved the 1-year success rate of AF ablation to above 80% for patients with paroxysmal AF.

Myth and misunderstanding 5: AF catheter ablation is associated with long procedure time and high complication rate.

AF Ablation is becoming faster and safer than ever with the latest pulsed field ablation (PFA) technology.

Conventional catheter ablation strategies are associated with collateral damage such as atrio-esophageal fistula, phrenic nerve palsy, pulmonary vein stenosis, cardiac perforation/ cardiac tamponade and coronary artery injuries.

Compared with radiofrequency or cryoballoon ablation, pulsed field ablation (PFA) creates electroporation and achieves pulmonary vein isolation without inducing thermal injury. Cardiac tissue has lower threshold to electroporation compared with adjacent structures, allowing preferential ablation of myocardial tissues without inducing collateral damages such as atrio-esophageal fistula, phrenic nerve palsy, coronary arteries injuries or pulmonary vein stenosis. The procedure time for PFA is also much shorter compared with that of conventional AF ablation technologies.

According to large-scale national registry involving 25237 patients [35], the complication rate of AF ablation was 5.5% (including bleeding (3.31%), pericardial effusion (0.74%), and infection (0.44%), stroke/transient ischemic attack (0.24%), cardiorespiratory failure/shock (0.19%), and death (0.08%)). In a latest systematic review [36] involving 15701 patients (including 68 studies of radiofrequency ablation, 8 studies of cryoballoon AF ablation and 13 studies of combined radiofrequency and cryoballoon ablation), the overall and severe procedure-related complication rate were 4.51% and 2.44% respectively. The most frequent and second most frequent types of complication were vascular complications (1.31%) and pericardial effusion/cardiac tamponade (0.78%) respectively. The risk of procedure related stroke/transient ischemic attack was 0.17%. The overall procedure related mortality rate was 0.05%. There was no obvious difference in complications rate between radiofrequency and cryoballoon AF ablation.

In the IMPULSE, PEFCAT and PEFCAT II trials [31], PFA was associated with very low adverse events rate. Procedure complications occurred in only 2.5% of patients (2 pericardial effusion or tamponade, 1 hematoma and 1 transient ischemic attack).

The average procedure time of radiofrequency and cryoballoon ablation AF ablation was about 2.5 hour and 2 hours respectively in experienced centers [26, 37]. However, the procedure duration of conventional AF ablation could last up to over 4 hours in complex cases or in less experienced centers. In latest meta-analysis of PFA AF ablation [34], the total procedure duration was 94 minutes with average fluoroscopic time of 17 minutes. The complication rate was 2.23%.

In the EU-PORIA Registry [33], the median procedure time and fluoroscopy time were 58 minutes and 14 minutes respectively. The major complication rate was 1.7% (including pericardial tamponade and transient ischemic attack or stroke).

Summary: The advance of PFA has significant improved AF ablation procedure efficacy (1-year success up to ~80%), safety (complication rate ≤2%) and has shortened procedure time to below 1-1.5 hour.

	Radiofrequency Ablation	Cryoballoon Ablation	Pulsed Field Ablation
Acute Success Rate	>90%	>90%	~100%
1y Success Rate	60-70%	60-70%	up to 85%
Complication Rate	4-5%	4-5%	~2.5%
Procedure Time	3-4 hours	2-3 hours	1-1.5 hours

Figure 12. Different AF ablation modalities. The success rate, procedure time and complication rate of 3 different ablation technologies in treatment of paroxysmal AF [8].

AF Ablation – Current guideline recommendations:

The 2019 AHA/ACC/HRS Focused Update of the 2014 AHA/ACC/HRS Guideline for the Management of Patients With Atrial Fibrillation[38] recommends AF ablation in patients with heart failure and reduced LVEF to potentially lower mortality and CHF hospitalization (Class II b recommendation).

The 2020 European Society of Cardiology (ESC) guideline for the diagnosis and management of atrial fibrillation [2] recommends AF ablation for rhythm control in symptomatic paroxysmal AF or persistent AF patients who have failed or are intolerant to 1 class I or class III anti-arrhythmic drug (Class I recommendation). **Atrial fibrillation ablation is recommended as a first line therapy under the following situations: 1. To improve symptoms in patients with paroxysmal AF (Class II a recommendation) or persistent AF without major risk factors for AF recurrence (Class II b recommendation) as an alternative to anti-arrhythmic drugs. 2. to reverse left ventricular dysfunction when tachycardia-mediated cardiomyopathy is highly probable, irrespective of symptom (Class I recommendation). 3. To improve survival and to reduce CHF** hospitalization in AF patients with CHF and reduced ejection fraction (HFrEF) (Class II a recommendation).

Summary:

Atrial fibrillation is a chronic arrhythmic disease associated with multiple systemic complications. Early rhythm control with catheter ablation in symptomatic patients is associated with ~60% higher chance of long term sinus rhythm maintenance and ~60% lower risk of AF recurrence compared with anti-arrhythmic drug therapy. Among AF patients with CHF and/or left ventricular (LV) systolic dysfunction, AF ablation is associated with about 40-50% reduction in mortality and CHF hospitalization. Multiple randomized control trials, meta-analysis and latest international guidelines support the adoption of catheter ablation as a first line therapy for symptom control in AF patients who are unresponsive to, intolerant to or who have refused anti-arrhythmic drugs. Latest evidence and guidelines also endorse AF ablation for AF patients with CHF or LV dysfunction to reduce mortality and CHF hospitalization, irrespective of symptom. The advance of ablation technologies like PFA has significantly improved long term AF ablation procedure success rate (to >80%), procedure safety (complication rate <2.5%) and shortened procedure time (to <1-1.5 hours).

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Q&A Assessment Questions

Complete Spotlight, **1 CME Point** will be awarded for at least five correct answers

Answer these on page 18 or make an online submission at: www.hkma.org.

Please indicate whether the following statements are true or false.

1. The commonest trigger for atrial fibrillation originates from the ectopic electrical activities in the pulmonary veins muscular sleeves.
2. The cornerstone of AF ablation is electrical isolation of pulmonary veins
3. In the EAST-AFNET 4 Trial, early rhythm control was associated with approximately 20% relative reduction in primary composite endpoint of death from cardiovascular causes, stroke, CHF hospitalization or acute coronary syndrome in early onset AF patients.
4. In the STOP AF First and EARLY AF randomised control trials, early rhythm control with catheter ablation as first line therapy in symptomatic paroxysmal AF patients was associated with about 60% higher chance of long term sinus rhythm maintenance and about 60% lower risk of AF recurrence compared with anti-arrhythmic drug therapy at 1 year follow up.
5. In the CABANA randomised controlled trial, among paroxysmal and persistent AF patients who actually received AF catheter ablation, there was about 30% relative risk reduction (RRR) in primary composite endpoint of death, disabling stroke, serious bleeding or cardiac arrest, all-cause mortality and death or cardiovascular hospitalization compared with those who received drug therapy alone. Cather ablation also significantly reduced AF recurrence by about 50% compared with drug therapy.
6. The latest ESC AF Guideline 2020 DOES NOT recommend AF ablation as FIRST LINE treatment to reverse left ventricular dysfunction when tachycardia-mediated cardiomyopathy is highly probable, irrespective of symptom (Class I recommendation).
7. The latest ESC AF Guideline 2020 DOES NOT recommend AF ablation as FIRST LINE treatment to improve survival and to reduce CHF hospitalization in AF patients with CHF and reduced ejection fraction (HFrEF) (Class II a recommendation).
8. In the CASTLE AF trial, AF catheter ablation was associated with 38% relative risk reduction (RRR) of the primary composite end point of death or CHF hospitalization.
9. AF ablation is only recommended as a bail-out option after failure of or intolerance to anti-arrhythmics.
10. The advance of ablation technologies like PFA has significantly improved long term AF ablation procedure success rate (to >80%), procedure safety (complication rate <2.5%) and shorted procedure time (to <1-1.5 hours).

Answer to August 2023

Spotlight - Type 2 Inflammatory Airway Disease

1. F 2. T 3. T 4. T 5. T 6. T 7. T 8. T 9. F 10. F

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Complete Cardiology case,
0.5 CME POINT will be awarded for
at least 2 correct answers in total

A 55-Year-Old Lady Had Chronic Rheumatic Heart Disease with An Increased Shortness of Breath and Palpitation for Few Weeks

A 55-year-old lady was known to have chronic rheumatic heart disease with moderate mitral stenosis since adulthood. She was asymptomatic and was in sinus rhythm before. She has been under regular surveillance and yet she has defaulted on follow up 10 years ago. This time she was admitted to a medical ward for increased shortness of breath and palpitation for few weeks. Chest X-ray showed cardiomegaly with mild pulmonary congestion, and ECG showed atrial fibrillation with heart rate 110 beats per minute.

She was given frusemide for decongestion with symptoms improvement. Echocardiogram showed progression of disease with severe mitral stenosis, preserved LV ejection fraction 65%. There was no significant mitral regurgitation. There was mild tricuspid regurgitation. RV systolic pressure was estimated to be 50 mmHg, suggesting possible pulmonary hypertension.

Q&A Please answer ALL questions

Answer these on page 18 or make an online submission at: www.hkma.org.

1. **Apart from diuresis, which of the following medications would be most useful in helping her symptoms control?**
   A. Betablocker
   B. Angiotensin-Converting Enzyme Inhibitors
   C. SGLT-2 inhibitor
   D. Angiotensin Receptor-Neprilysin Inhibitors
   E. Nitrate

2. **What should the stroke prevention strategy for her?**
   A. Tabulate the CHA2DS2-VaSc score first and decide the strategy accordingly
   B. Aspirin
   C. Clopidogrel
   D. Warfarin
   E. Direct oral anti-coagulant (DOAC)

Surgical management has been discussed with her. She refused to consider open heart surgery and asked if percutaneous transvenous mitral commissurotomy (PTMC) could be an option.

3. **The followings are factors to be considered for PTMC feasibility, except:**
   A. Presence of significant mitral regurgitation
   B. Degree of mitral valve calcification
   C. Mobility of mitral valve
   D. Presence of left atrial/appendage thrombus
   E. Presence of atrial fibrillation

Cardiology August Answers

1. **C.**
Mechanical heart valves are more durable as compared with bioprosthetic heart valves which are prone to degeneration over time. TTE showed satisfactory mechanical heart valves function without much elevation of transvalvular gradient or significant valvular regurgitation. Patient INR level was within therapeutic range, making mechanical valves thrombosis, one of the major causes of mechanical valves dysfunction, less likely.

   LV systolic function was also satisfactory in the recent TTE. Severe valvular regurgitation, be it transvalvular or paravalvular, can also cause heart failure symptoms with a normal LV systolic function. However, other than reduced exercise tolerance, there was no associated heart failure symptoms such as orthoponea or lower limb oedema. Patient symptoms were less likely related to heart failure.

   There was a significant drop in Hb over half a year which correlated with patient's recent onset of shortness of breath and reduced exercise tolerance.

   Further history such as smoking history, occupational history such as silica dust exposure and associated chest symptoms like sputum production may help to differentiate the cause.

2. **B.**
Following the above question, respiratory condition is less likely although lung function test can help us to exclude concomitant chronic lung disease.

   The above blood tests were suggestive of haemolytic anaemia, with macrocytosis, elevated indirect bilirubin and elevated LDH level. A low haptoglobin and elevated reticulocytes count would further support the diagnosis of haemolytic anaemia. The haptoglobin level of the patient was 0.08 g/L (ref 0.4-2.68), which was consistent with the diagnosis.

   Cardiac stress test such as cardiac SPECT can help to look for any inducible myocardial ischaemia but is less appropriate in such case.

   Bone marrow exam is not part of the routine to diagnose haemolytic anaemia. The other cell lineage was normal, suggesting production problem of marrow is less likely. It can be performed if peripheral blood smear showed other suspicious features.

3. **B.**
The Transoesophageal echo showed significant septal paravalvular leak at 3 o'clock of mechanical MV from surgeon's view, with the vena contracta measuring at 0.55cm, which signifies a significant leak.

4. **D.**
The likely diagnosis is significant paravalvular leak causing the haemolysis with significant symptoms. Reoperation on the prosthetic valve or percutaneous closure of the PVL by vascular plug is likely required in such case.

   Summary:

   The patient was suffering from haemolytic anaemia due to a significant paravalvular leak (PVL) of mechanical mitral valve. Turbulent flow across mechanical heart valve can cause intravascular red cell destruction. Haemolysis is common in mechanical heart valves, especially aortic valve due to the high velocity of blood flow. Most of the cases are mild and patients usually remain asymptomatic. Severe haemolysis can occur, especially when associated with valvular degeneration or PVL. Patient could present with anaemia, with associated signs and symptoms suggestive of haemolytic anaemia, such as jaundice and dark urine. Apart from anaemia, PVL can also cause heart failure. As discussed in question 1, either a paravalvular or transvalvular regurgitation of prosthetic valve, if severe, can lead to heart failure, as in those seen native valvular regurgitation.

   The diagnosis, as illustrated by the case, required detailed history and physical examination, blood tests to confirm haemolysis and echocardiography to assess the prosthetic valve function. A transoesophageal echo is usually required in view of artifact associated with mechanical prosthesis. Echocardiography can also help to identify the haemodynamic effect of the regurgitation such as LV dilatation or dysfunction.

   For mild case, patient can be managed conservatively with iron and folate supplement. Blood transfusion may occasionally be required. Reoperation or percutaneous intervention such as plugging of the PVL should be considered if anaemia is severe and not responsive to iron/folate supplement, or with significant regurgitation causing heart failure.

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Specialists in Dermatology & Venereology
九月皮膚科個案研究之內容承蒙**鄭學輝醫生、鄧旭明醫生、陳厚毅醫生、梁偉耀醫生、關志強醫生、吳順展醫生**及**許招財醫生**提供。

Complete Dermatology case,
0.5 CME POINT will be awarded for at least 2 correct answers in total

A 54-Year-Old Female Had an Asymptomatic Nodule over Her Left Ankle for 6 Months

A 54-year-old madam presents with an asymptomatic nodule that slowly develops over her left ankle across 6 months. There is no recalled trauma history. Clinically it is a solitary, papillomatous pinkish firm nodule with intact and lobulated surface contour. It is non-tender, mobile, and does not bleed upon manipulation. Dermoscopy shows conspicuous presence of blood vessels but no abnormal pigment network. The nodule measures 0.6cm across while its base measures 0.5cm across. It is 2cm below the lateral malleolus and 3.5cm above the left heel.

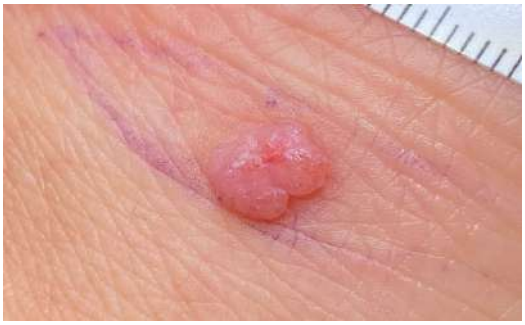

Figure 1

Q&A Please answer ALL questions

Answer these on page 18 or make an online submission at: www.hkma.org.

1. **What is the diagnosis?**
   A. Eccrine poroma.
   B. Wart.
   C. Squamous cell carcinoma.
   D. Malignant melanoma.

2. **Over what other bodily regions would you expect to come across this skin condition?**
   A. Genitalia.
   B. Scalp and face.
   C. Oral mucosa.
   D. Nail unit.

3. **What is the investigation of choice?**
   A. Excisional skin biopsy.
   B. Wood's lamp.
   C. Dermoscopy.
   D. Diascopy.

4. **What is the treatment of choice?**
   A. Cryotherapy.
   B. Surgery.
   C. Shave removal.
   D. Electrocautery and curettage.

Dermatology August Answer

1. **c**
The chest wall lesion is a 2.5x2cm annular greyish pink plaque with multifocal crusting ulcerations in the centre and scattered blackish brown pigmentations at its periphery. Clinically, it is highly suspicious for pigmented superficial basal cell carcinoma. Basal cell carcinoma (BCC) is both the most common skin cancer and human cancer, while pigmented BCC is more commonly found in Asian (~50%) in contrast to Caucasians (~6%). It is a locally invasive, keratinocyte cancer (also known as non-melanoma skin cancers) derived from basal cells of the interfollicular epidermis and hair follicle. The risk of BCC steadily increases with age, while exposure to ultraviolet radiation is the most important risk factor supported by evidence including its predilection for sun-exposed skin area (e.g. 64% on head). Other risk factors include radiation therapy, chronic arsenic exposure, genetic susceptibility (e.g. nevoid basal cell carcinoma syndrome also known as Gorlin syndrome) and organ transplant recipients on immunosuppressants (~10 folds risk comparing to general population). Superficial BCC presents as annular, mildly scaly plaque and occurs mainly on the trunk, while nodular BCC is classically described as a pearly papule or nodule, often with telangiectasia, over head and neck region and in time it may develop erosions or ulcerate. Other clinical subtypes are sclerosing/morphoeic and infiltrating BCC mimicking scars, and pigmented BCC resembling melanoma.

2. **c**
Dermoscopes, with an internal light source and 10x magnification have become the essential device in skin cancer diagnosis. By combining the polarised and non-polarised modes now available in most dermoscopes, the greatest diagnostic features can be seen through this device which is simple to utilise, quick to apply anywhere. Besides, reflectance confocal microscopy and optical coherence tomography are novel non-invasive diagnostic techniques for skin cancer diagnosis in development.

3. **e**
In the dermoscopic view of the lesion, lots of blue-grey globules, some larger blue-grey ovoid nest, ulcerations and linear and arborizing vessels could be found. Other reported dermoscopic findings of BCC include short white streaks (chrysalis pattern), multiple small erosions, shiny white-red structureless areas, maple leaf-like areas, spoke wheel areas, concentric structures and in-focus dots.

4. **a**
In general, the standard of care in treating primary tumours of BCC is surgical excision and most of time with diagnostic skin biopsy beforehand for the histology proof, subtype and other risk factors stratification. One can stratify the local BCCs into low risk and high risk groups according to clinical and histology features to decide for treatment options:

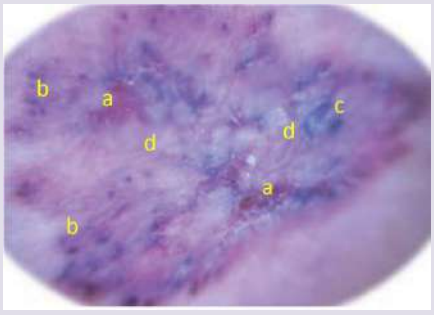

Figure 2

Figure 2: Explanation of content:
a. Ulceration
b. Blue-grey globules
c. Blue-grey ovoid nest
d. Linear and arborizing vessels

Low risk group: location at trunk or extremities with size <2cm; well-defined borders; primary lesion; pathology of nodular, superficial subtypes

High risk group: location at trunk or extremities with size ≥2cm, head (mask area of face has higher risk than cheeks, forehead, scalp), neck, hands, feet and anogenital of any size; poorly defined borders; recurrent; on immunosuppression or site of prior radiation therapy, pathology of aggressive growth patterns including infiltrative, micronodular, morpheaform, basosquamous, sclerosing, or carcinosarcomatous differentiation features in any portion of the tumour, and/or perineural involvement

National Comprehensive Cancer Network (NCCN) Guidelines Version 1.2023 Basal Cell Skin Cancer Treatment recommendation:

Low risk group: i) standard excision with 4mm clinical margins and postoperative margin assessment (positive vs negative) OR ii) curettage and electrodesiccation (C&E) or shave excision (If tumor appears to extend beyond the dermis, surgical or shave excision should generally be performed rather than C&E) OR iii) radiation therapy (RT) for non-surgical candidates OR iv) topical therapy (e.g. topical imiquimod may be considered for superficial BCC)

High risk group: i) standard excision with wider surgical margins and postoperative margin assessment (due to the wide variability of clinical characteristics that may define a high-risk tumor, it is not feasible to recommend a defined margin for standard excision of high-risk BCC. Keen awareness of the subclinical extension of BCC is advised when selecting a treatment modality without complete margin assessment for a high-risk tumor. These margins may need to be modified base on the tumour- or patient-specific factors.) OR ii) Mohs micrographic surgery or other forms of peripheral and deep en face margin assessment (PDEMA) OR iii) RT/systemic therapy (Hedgehog pathway inhibitors ie, vismodegib, sonidegib; Cemiplimab-rwlc) if curative RT not feasible for non-surgical candidates OR iv) neoadjuvant vismodegib followed by PDEMA for patients in whom surgery may cause significant functional damage.

Dermatology Series for August 2023 is provided by:
Dr NG, Shun Chin, Dr TANG, Yuk Ming, William, Dr CHAN, Hau Ngai, Kingsley, Dr LEUNG, Wai Yiu, Dr KWAN, Chi Keung, Dr CHENG, Hok Fai and Dr KOH, Chiu Choi
Specialists in Dermatology & Venereology
八月皮膚科個案研究之內容承蒙**吳順展醫生、鄧旭明醫生、陳厚毅醫生、梁偉耀醫生、關志強醫生、鄭學輝醫生**及**許招財醫生**提供

Name

HKMA Membership No.

HKID No. - xxx(x)

Signature:

Contact Tel No.:

Answer Sheet

September 2023

ANSWER SHEET

Please answer ALL questions and write the answers in the space provided.

SPOTlight

Complete Spotlight, 1 CME point will be awarded for **at least 5** correct answers

1	2	3	4	5	6	7	8	9	10

Cardiology

Complete Cardiology, 0.5 CME point will be awarded for **at least two** correct answers

1	2	3

Dermatology

Complete Dermatology, 0.5 CME point will be awarded for **at least two** correct answers

1	2	3	4

A maximum of 20 points can be awarded for self-study per year and no upper limit of CME points for attending CME lectures

Please return the completed answer sheet to the HKMA Secretariat (email: cme@hkma.org or Fax: 2865 0943) on or before 15 October 2023 for documentation.

If you want to complete the exercise online, please scan the below QR code and you are NOT required to return the answer sheet by fax/email.

CME Self-Studies Series

You can register the CME Lectures and finish the CME Self-Studies Series within the webpage (https://www.thkma.org/cme/continuous_medical_education/).

Don't wait! Please register and create your own account through https://www.thkma.org/members/register.phpc (*1st time register account is limited on desktop ONLY*) to experience our new Members Portal.

Please scan the QR code below to access the latest CME Self-Studies Series online.

HKMA CME Lecture Policy and Procedure

Lecture in Physical Attendance Mode

1. Unless otherwise specified, registrations are accepted from HKMA Members or Medical Practitioners in Hong Kong ONLY. Non-Medical Practitioners will not be served.
2. Prior registration is strictly required.
3. Registration is basically on a first-come-first-served basis except for district-based lectures that registration priorities will be given to doctors practicing in the related districts.
4. No walk-in will be accepted. Attendance without registration will not be recognized and no CME point(s) will be awarded. (*Please refer to the policy of "Non-registrants at CME Lecture in Physical Attendance Mode")
5. HKMA Members and Medical Practitioners intending to register for CME lectures must complete the online registration form at https://www.thkma.org/cme/continuous_medical_education/and return to HKMA Secretariat before deadline.
6. Confirmation emails will be sent out by the HKMA Secretariat to successful registrants before each lecture. Please ensure that registration is confirmed before coming to CME lecture.
7. Successful registrants must attend the lecture in real-time and sign in person the attendance form(s) for obtaining the CME point(s).
8. Successful registrants can only attend ONE lecture at a time regardless of which CME providers. Only 1 Lecture will be counted if the doctor watches multiple CME Lectures conducted at the same time.

Non-registrants at CME Lecture in Physical Attendance Mode

1. Basically, all CME lectures require prior registration and entertain no non-registrant. But under exceptional circumstances that non-registrants come to CME lecture without prior registration, a non-registrant fee will be charged.
2. If under such exceptional circumstances, non-registrants must produce proof of personal identity together with MCHK registration for verification by the on-site HKMA staff.
3. Non-registrants must settle the exact amount of the non-registrant fees in cash or cheque before accessing the lecture. Electronic payment is not accepted, and no change will be provided.
4. The non-registration fees schedule is shown below:

	HKMA Premises	Venues outside HKMA Premises
HKMA Member	HK$150 per person	HK$300 per person
Non-HKMA Member	HK$300 per person	HK$600 per person

5. Any non-registrants in breach of the above policy will have to bear full legal responsibilities. The HKMA serves rights to take action against non-registrants for loss incurred for the non-observance.
6. This policy takes effect from 1 June 2023.

Lecture in Online (via ZOOM)

1. Registration is open to HKMA Members or Medical Practitioners in Hong Kong ONLY. Non-Medical Practitioners will not be served.
2. Prior registration is strictly required.
3. Registration is basically on a first-come-first-served basis.
4. No walk-in will be accepted. Attendance without registration will not be recognized and no CME point(s) will be awarded.
5. Please complete the online registration form at https://www.thkma.org/cme/continuous_medical_education/ and return to HKMA Secretariat before deadline.
6. Confirmation / notification emails will be sent out by the HKMA Secretariat to successful registrants 1 day and 1 hour before each lecture. Please ensure that registration is confirmed before attending the CME lecture online.
7. CME accreditation will apply to both specialist and non-specialist doctor for each lecture. If the CME accreditation is for non-specialist doctors only, there will be a notice showing in the registration form.
8. CME point(s) will be awarded to successful registrants after attending the lecture and completing the quiz with at least 50% correct answers.
9. Successful registrants must watch the lecture in real-time and complete the online quiz within the designated time after the lecture. Late submission of the quiz will not be accepted.
10. Successful registrants can only attend ONE lecture at a time regardless of which CME providers. Only 1 Lecture will be counted if the doctor watches multiple CME Lectures conducted at the same time.
11. Successful registrants may install ZOOM app/launcher system to join the lecture online.
12. Wi-Fi connection is recommended on your mobile device or computer while watching the lecture via ZOOM. Unstable internet connection may cause interruption to the broadcasting.
13. In case of technical issue and broadcast interruption, please be patient while the HKMA Secretariat works on fixing the problem; the video should resume in a few minutes.

Lecture in Hybrid Format (Online + Physical Attendance)

1. Registration policy applies the same statements as above.
2. Please ensure that registration is confirmed before attending the lecture.

General lecture policy

1. Doctor should sign for own CME.
2. Registration will cease when Q & A Session starts.
3. No recording unless permission is granted by the HKMA.
4. If doctor has attended CME Lecture in physical attendance and CME online at the same point of time, only CME Point(s) for the Lecture in physical attendance would be counted.
5. The HKMA will investigate when non-compliance at CME Session is reported, further action will be considered to ensure all CME activities are properly held.

Special weather arrangement

When Tropical Storm Warning Signal No. 8 (or above) or a Black Rainstorm Warning Signal is in force within 3 hours of the commencement time, the relevant CME function will be cancelled. (i.e., CME starting at 2:00 pm will be cancelled if the warning signal is hoisted or in force any time between 11:00 am and 2:00 pm).

The function will proceed as scheduled if the signal is lowered three hours before the commencement time. (i.e., CME starting at 2:00 pm will proceed if the warning signal is lowered at 11:00 am but will be cancelled even if it is lowered at 11:01 am).

When Typhoon No. 8 Signal or a Black Rainstorm signal is in force after CME commencement, an announcement will be made depending on the conditions as to whether the CME will be terminated earlier or be conducted until the end of the session.

The above are general guidelines only. Individuals should decide on their CME attendance according to their own transportation and work/home location considerations to ensure personal safety.

Contact

For enquiries, please contact the CME Department of the HKMA Secretariat at 2527-8452 or cme@hkma.org.

HKMA Monthly Self-Study Video

Dear HKMA Members,

The HKMA Monthly Self-Study Video is launched in HKMA website!

This is to acknowledge you that the HKMA Monthly Self-Study Video had been launched in our website for non-specialist doctors to gain 1 CME point for each video. Interested doctors, please click **www.hkma.org** for more details!

(HKMA Website Homepage → Login to Members Home Page → CME → Monthly Self-Study Series)

Remarks: A maximum of 20 points can be awarded for self-study per year and no upper limit of CME points for attending CME lectures per year.

Please contact the HKMA Secretariat at 2527 8452 or by email **cme@hkma.org** for assistance.

Important Note:

1. CME point is accredited for non-specialist ONLY.
2. No extra CME point will be granted if you have already attended the same lecture through Live broadcasting.
3. Quiz submission period: 16th of each month to 15th of next month (Submission before/after the stated dates will NOT be considered)
4. Complete each quiz, 1 CME point will be awarded for at least FIVE correct answers (only 1 attempt). A confirmation email will be automatically sent to doctors once who have submitted the quiz.
5. No CME point will be granted for incorrect personal information. Data collected will be used and processed for the purposes related to this self-study only. All personal information will be used to process CME records, and if required, may transfer to other CME Administrators for cross-checking and recording purposes.

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CME LIVE
zoom LIVE

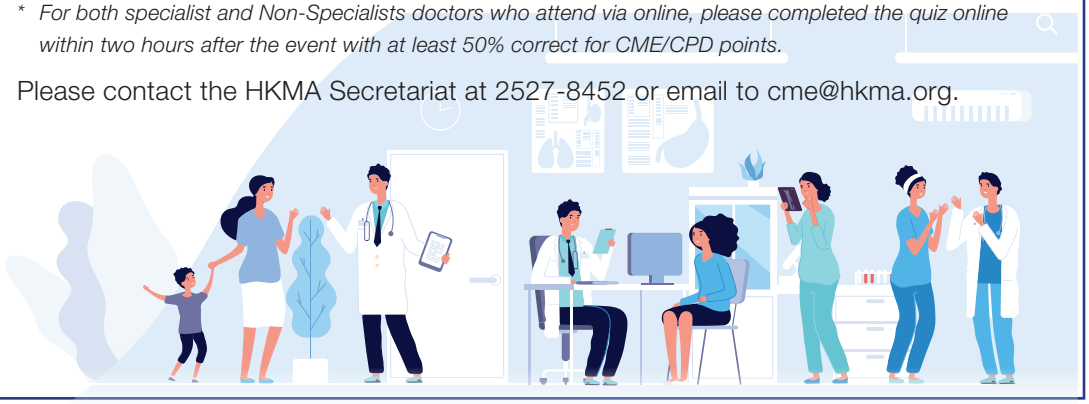
Introduction of eHealth Adoption Sponsorship Scheme and the HKMA CMS 5.0

12 October 2023, Thursday

The HKMA Clinic Management System 5.0 (CMS 5.0) is targeted to be launched this year to offer an up-to-date solution for doctors to manage their clinics. To familiarise doctors with our system, CME Lectures with live demonstrations have been organised. In view of the requirements of Primary Care Directory for the Chronic Disease Co-care Pilot Scheme, an additional CME lecture on the use of CMS 5.0 under the eHealth adoption sponsorship scheme will be held on Thursday, 12 October 2023. Interested members please refer to the details below for registration.

PROGRAMME	
2:00 – 2:05 p.m.	**Introduction**
2:05 – 2:45 p.m.	**Introduction of eHealth Adoption Sponsorship Scheme and the HKMA CMS 5.0** **Dr CHAN, Pierre** *Vice President, The Hong Kong Medical Association* *Specialist in Gastroenterology and Hepatology* **Representative from Electronic Health Record Registration Office** *Electronic Health Record Registration Office, Health Bureau, Hong Kong*
2:45 – 3:00 p.m.	**Q&A Session**

Fee:	Free-of-charge
Registration Deadline:	**Wednesday, 11 October 2023**
Registration:	Please register through **https://forms.gle/ePBGXPmTtz9VWvWo6** or scan the QR code if you are interested to attend.
CME Accreditation:	For Non-specialist Doctors: 1 CME point * Accreditation for Specialist Doctors: Yes #* # *Accreditation from various colleges are pending.* * *For both specialist and Non-Specialists doctors who attend via online, please completed the quiz online within two hours after the event with at least 50% correct for CME/CPD points.*
Enquiry:	Please contact the HKMA Secretariat at 2527-8452 or email to cme@hkma.org.



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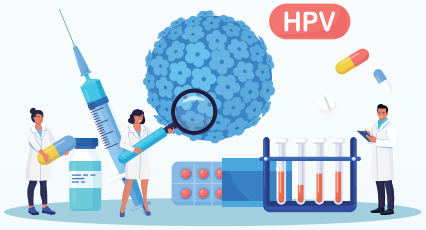
CME LIVE
zoom LIVE

Adult Immunisation Campaign 2023

The Hidden Disease Burden of HPV-Related Head and Neck Cancers in Hong Kong

13 October 2023, Friday

HPV (Human papillomavirus) is a sexually transmitted infection that can cause various health issues, including genital warts and certain types of cancer, such as cervical, anal, and throat cancer. A CME lecture will be held to focus on hidden disease burden of HPV-related head and neck concession in Hong Kong. Interested members please refer to the details below for registration.



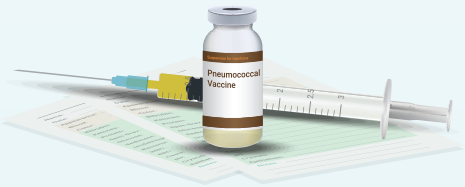
Time	:	2:00-2:45pm Lecture 2:45-3:00pm Q&A
Speaker	:	**Dr LAM, Wai Hung Eddy** *Specialist in Otorhinolaryngology*
Fee	:	Free-of-charge
Registration Deadline	:	**Friday, 6 October 2023**
CME Accreditation	:	**For Non-specialist Doctors: 1 CME point #** **Accreditation for Specialist Doctors: Yes #** # Accreditation from various colleges are pending. For specialists, please completed the quiz online within two hours after the lecture with at least 50% correct for CME/CPD points. Non-Specialists doctors must also complete lecture quiz (10 Q&A) within two hours after the lecture with at least 50% correct.

Sponsor: MSD

The Impact of Introducing Higher Pneumococcal Conjugate Vaccine

27 October 2023, Friday

Pneumococcal refers to a bacterial infection caused by Streptococcus pneumoniae, commonly leading to respiratory infections such as pneumonia and can be prevented by vaccination. A CME lecture will be held to update on the impact of higher Pneumococcal conjugate vaccine. Interested members please refer to the details below for registration.



Time	:	2:00-2:45pm Lecture 2:45-3:00pm Q&A
Speaker	:	**Dr WONG, King Ying** *Specialist in Respiratory Medicine*
Fee	:	Free-of-charge
Registration Deadline	:	**Friday, 20 October 2023**
CME Accreditation	:	**For Non-specialist Doctors: 1 CME point #** **Accreditation for Specialist Doctors: Yes #** # Accreditation from various colleges are pending. For specialists, please completed the quiz online within two hours after the lecture with at least 50% correct for CME/CPD points. Non-Specialists doctors must also complete lecture quiz (10 Q&A) within two hours after the lecture with at least 50% correct.

Sponsor: Pfizer

If you are interested to attend above CME Live lectures,
please register through https://forms.gle/4Mf5zThFBLatpYsf8 or scan the QR code.
Please contact the HKMA Secretariat at 2527-8452 or email to cme@hkma.org.

The HKMA CME Live Lecture in September 2023

All lectures start at 2:00-3:00 p.m.

	Date	Organiser and Topic	Speaker	CME Point	CME Accreditation from Colleges (Pending)#
1.	25 September (Mon)	**The Hong Kong Medical Association** Acute Diarrhea Management in Pediatric Patients *Sponsor: Abbott Laboratories Limited*	**Dr LAM, Jenks Albinus** *Specialist in Paediatrics*	1	Yes
2.	26 September (Tue)	**The Hong Kong Medical Association** Management of Male LUTS: More Than Treating Symptoms? *Sponsor: Synmosa Biopharma (HK) Co. Ltd*	**Dr HOU, See Ming Simon** *Specialist in Urology*	1	Yes
Physical Attendance Mode					
3.	29 September (Fri) 2:00-3:00 p.m.	**The HKMA District Health Network (Kowloon West)** COVID-19 Oral Antiviral Treatment Real World Evidence Update & Clinical Experience Sharing *Sponsor: Pfizer Corporation Hong Kong Limited*	**Dr WONG, King Ying** *Specialist in Respiratory Medicine*	1	Yes

The HKMA CME Live Lecture in October 2023

All lectures start at 2:00-3:00 p.m.

	Date	Organiser and Topic	Speaker	CME Point	CME Accreditation from Colleges (Pending)#
1.	3 October (Tue)	**The Hong Kong Medical Association** Latest Psoriatic Disease Management- What Is Achievable Today? *Sponsor: AbbVie Limited*	**Dr WONG, Tak Lung Victor** *Specialist in Rheumatology*	1	Yes
2.	6 October (Fri)	**The Hong Kong Medical Association** Embracing Heart Failure Management in Patients with Preserved or Reduced Ejection Fraction: What Do the Latest Hong Kong Data Say *Sponsor: Boehringer Ingelheim (Hong Kong) Limited*	**Dr NG, Kei Yan Andrew** *Specialist in Cardiology*	1	Yes
3.	9 October (Mon)	**The Hong Kong Medical Association** Recent Advancement of Gut Microbiome Research and its Application in Infections, Vaccination and Quality of Life Management *Sponsor: G-NiiB, Genie Biome Limited*	**Dr CHAN, Nor Norman** *Specialist in Endocrinology, Diabetes & Metabolism*	1	Yes
6.	16 October (Mon)	**The Hong Kong Medical Association** Effective Management of Hypertension and Albuminuria in Hypertensive Patients for Prevention of Diabetic Nephropathy *Sponsor: Sanofi Hong Kong Limited*	**Dr HUNG, Yu Tak** *Specialist in Cardiology*	1	Yes
7.	19 October (Thu)	**The Hong Kong Medical Association** Recommendations for the Screening, Diagnosis, and Management of Helicobacter Pylori in Hong Kong *Sponsor: Abbott Laboratories Limited*	**Dr LAM, Long Yan** *Specialist in Gastroenterology & Hepatology*	1	Yes

The HKMA CME Live Lecture in October 2023 (continued)

	Date	Organiser and Topic	Speaker	CME Point	CME Accreditation from Colleges (Pending) #
8.	24 October (Tue)	**The Hong Kong Medical Association** Practical Approach on the Management of Lower Urinary Tract Symptoms *Sponsor: Synmosa Biopharma (HK) Co. Ltd*	**Dr POON, Yick Kwan Vincent** *Specialist in Urology*	1	Yes
11.	31 October (Tue)	**The Hong Kong Medical Association** Prevention and Risk Reduction of CRC with the Recent Advancement of Gut Microbiome Research & Guideline *Sponsor: G-NiiB, Genie Biome Limited*	**Doctor Who Is Specialist in Gastroenterology & Hepatology**	1	Yes

Physical Attendance Mode

Points to note for CME Lecture with Physical Participation:

1. **Enrolment for CME lecture with physical attendance will be given to HKMA Members or Medical Practitioners in Hong Kong ONLY.**
2. **On behalf of the policy for lecture with physical participation, please refer to P. 19 for more details.**

	Date	Organiser and Topic	Speaker	CME Point	CME Accreditation from Colleges (Pending) #
1.	5 October (Thu) 2:00-3:00pm	**The HKMA District Health Network (Kowloon East)** IBS and Overlapping FGID Symptoms Venue: Crowne Plaza Hong Kong Kowloon East, 3 Tong Tak Street, Tseung Kwan O, Hong Kong *Sponsor: Abbott Laboratories Limited*	**Dr CHEUNG, Sai Wah** *Specialist in Gastroenterology & Hepatology*	1	Yes
2.	18 October (Wed) 2:00-3:00pm	**The HKMA District Health Network (Shatin)** Improving Cardiovascular Prognosis with Early and Massive LDL-C Reduction Venue: Ballroom 1, 2/F, Courtyard by Marriott Hong Kong Sha Tin, 1 On Ping Street, Sha Tin New Territories, Hong Kong *Sponsor: Sanofi Hong Kong Limited*	**Dr LI, Siu Lung Steven** *Director, Heart Centre and Head, Department of Medicine, Union Hospital*	1	Yes
3.	20 October (Fri) 2:00-3:00pm	**The HKMA District Health Network (Kowloon City)** The Contemporary Management on Typical and Atypical Diabetes Mellitus Venue: Spotlight Recreation Club (博藝會), 4/F., Screen World, Site 8, Whampoa Garden, Hunghom, Kowloon *Sponsor: Novo Nordisk Hong Kong Limited*	**Dr WONG, Cheuk Lik** *Specialist in Endocrinology, Diabetes & Metabolism*	1	Yes

Please register through https://forms.gle/qiwmsPVbiKo8DibQA or scan the QR code if you are interested to attend. For enquiry, please contact the Secretariat at 2527 8285.

Accreditation from various colleges pending, for specialists, please complete the quiz online within two hours after the lecture with at least 50% correct for CME/CPD points. For lecture without "Yes", CME Accreditation is for Non-Specialists Only. Non-Specialists doctors must complete lecture quiz (10 Q&A) and answer questions within two hours after the lecture with at least 50% correct.

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HKMA-CUHK Medical Centre CME Programme 2023

香港中文大學醫院 CUHK Medical Centre
Pioneering Solutions in Healthcare 開拓醫護新領域

zoom LIVE

Time : 1:00 – 2:00pm Lunch
2:00 – 2:45pm Lecture
2:45 – 3:00pm Q&A

Format : Hybrid; ZOOM/The Hong Kong Medical Association Central Premises, Dr. Li Shu Pui Professional Education Centre, 2/F, Chinese Club Building, 21-22 Connaught Road Central, Hong Kong

Fee : Free-of-charge

Capacity : The capacity for physical attendance is 30. Registration for both physical attendance and virtual format are strictly required on a first-come, first-served basis.

Registration Deadline : Tuesday, 3 October 2023

Registration : [If you have already registered for this CME Programme, you are already registered for the whole Programme. You will receive the notification email 1 day and 1 hour before each lecture. Therefore, you are not advised to register the Programme repeatedly.]

Please register through https://forms.gle/5azipM5jaxmfdqjg6 or scan the QR code if you are interested to attend.

CME Accreditation : For Non-specialist Doctors: 1 CME point for each lecture #
Accreditation for Specialist Doctors: Yes #

\# *Accreditation from various colleges are pending. For specialists, please completed the quiz online within two hours after the lecture with at least 50% correct for CME/CPD points. Non-Specialists doctors must also complete lecture quiz (10 Q&A) within two hours after the lecture with at least 50% correct.*

Enquiry : Please contact the HKMA Secretariat at 2527-8452 or email to cme@hkma.org.

Date (Wednesday)	Theme	Topic	Speaker
11 October	Common Health Problems for The Elderly	How to Fight Common Elderly Health Problems-Dementia and Sarcopenia	Dr HO, Wan Sze Wency *Specialist in Geriatric Medicine*
8 November	Women's Health	Common Breast Pathology	Dr IP, Yiu Tung *Specialist in Pathology*
13 December		Breast Health and Breast Surgery	Dr CHAN, Ho Yan Yolanda *Specialist in General Surgery*

香港醫學會
THE HONG KONG MEDICAL ASSOCIATION

HKMA-GHK CME Programme 2023

Gleneagles Hospital HONG KONG 港怡醫院

zoom LIVE

Time : 1:00 – 2:00pm Lunch
2:00 – 2:45pm Lecture
2:45 – 3:00pm Q&A

Format : Hybrid; ZOOM/The Hong Kong Medical Association Central Premises, Dr. Li Shu Pui Professional Education Centre, 2/F, Chinese Club Building, 21-22 Connaught Road Central, Hong Kong

Fee : Free-of-charge

Capacity : The capacity for physical attendance is 30. Registration for both physical attendance and virtual format are strictly required on a first-come, first-served basis.

Registration Deadline : Friday, 6 October 2023

Registration : [If you have already registered for this CME Programme, you are already registered for the whole Programme. You will receive the notification email 1 day and 1 hour before each lecture. Therefore, you are not advised to register the Programme repeatedly.]

Please register through
https://forms.gle/sutCWaBkf4Ky8w9HA
or scan the QR code if you are interested to attend.

CME Accreditation : For Non-specialist Doctors: 1 CME point #
Accreditation for Specialist Doctors: Yes #

Accreditation from various colleges are pending. For specialists, please completed the quiz online within two hours after the lecture with at least 50% correct for CME/CPD points. Non-Specialists doctors must also complete lecture quiz (10 Q&A) within two hours after the lecture with at least 50% correct.

Enquiry : Please contact the HKMA Secretariat at 2527-8452 or email to cme@hkma.org.

Date (Tuesday)	Topic	Speaker
17 October	Topic in Cardiology	Dr NG, Kei Yan *Specialist in Cardiology*
21 November 2023	The remaining lecture shall be announced in coming CME Bulletin issues.	

香港醫學會
THE HONG KONG MEDICAL ASSOCIATION

HKMA-HKSTP CME Programme 2023

HKSTP

zoom LIVE

Series 3: Infectious Disease
Diagnosis + Treatment / Rehabilitation Solution

Time : 1:00 – 2:00pm Lunch
2:00 – 2:45pm Lecture
2:45 – 3:00pm Q&A

Format : Hybrid; ZOOM/The Hong Kong Medical Association Central Premises, Dr. Li Shu Pui Professional Education Centre, 2/F, Chinese Club Building, 21-22 Connaught Road Central, Hong Kong

Fee : Free-of-charge

Capacity : The capacity for physical attendance is 30. Registration for both physical attendance and virtual format are strictly required on a first-come, first-served basis.

Registration Deadline : Friday, 20 October 2023

Registration : [If you have already registered for this CME Programme, you are already registered for the whole Programme. You will receive the notification email 1 day and 1 hour before each lecture. Therefore, you are not advised to register the Programme repeatedly.]

Please register through
https://forms.gle/AMe1QGz6ymVzg3ft7
or scan the QR code if you are interested to attend.

CME Accreditation : For Non-specialist Doctors: 1 CME point #
Accreditation for Specialist Doctors: Yes #

\# *Accreditation from various colleges are pending. For specialists, please completed the quiz online within two hours after the lecture with at least 50% correct for CME/CPD points. Non-Specialists doctors must also complete lecture quiz (10 Q&A) within two hours after the lecture with at least 50% correct.*

Enquiry : Please contact the HKMA Secretariat at 2527-8452 or email to cme@hkma.org.

Date (Thursday)	Topic	Speaker
26 October	ID Microbes Using Metagenomic and Big Data Bioinformatics	Dr YE, Bin *CEO & Co-Founder Decode Cure Limited*
23 November 2023 to 29 February 2024		The remaining lectures shall be announced in coming CME Bulletin issues.

The Hong Kong Medical Association

Dr Raymond LIANG giving a CME lecture on 1 August 2023

Dr Kelvin HO giving a CME lecture on 9 August 2023

Dr Winnie YEUNG giving a CME lecture on 15 August 2023

(From left) Dr Raymond TSO (Moderator), Dr CAO, Yun Long (Speaker), Dr CHU, Wai Sing (Speaker) and Dr Eric GAO (Speaker) giving the CME Symposium on 19 August 2023

Dr HO, Kwan Lun giving a CME Live lecture on 23 August 2023

Dr Francois FONG giving a CME lecture on 24 August 2023

The HKMA District Health Network – Central Coordination Committee

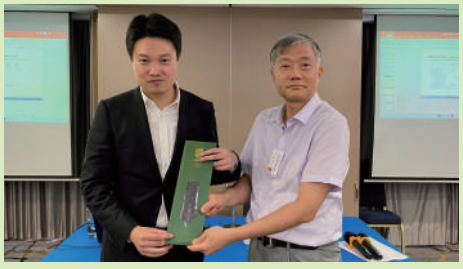
CME lecture of the HKMA District Health Network (Shatin)

Speaker Dr Raymond KAN (left) receiving a souvenir from Moderator Dr Victor YEUNG (right) on 16 August 2023

CME lecture of the HKMA District Health Network (Tai Po)

(From left) Dr Kenny NG (Speaker), Dr Conrad LEE (Speaker), Dr Candace HO (Speaker) and Dr John CHOW (Moderator) giving the CME Seminar on 23 August 2023

CME lecture of the HKMA District Health Network (Central, Western & Southern)



Speaker Dr CHUNG, Ho Yin (left) receiving a souvenir from Moderator Dr POON, Man Kay (right) on 30 August 2023

HKMA CME Bulletin
Monthly Self-Study Series
Call for Articles

Since its publication, the HKMA CME Bulletin has become one of the most popular CME readings for doctors. This monthly publication has been serving more than 10,000 readers each month through practical case studies and picture quizzes. To enrich its content, we are inviting articles from experts of different specialties. Interested contributors may refer to the General Guidance below. Other formats are also welcome.

General Guidance for Authors

Intended Readers	:	General Practitioners
Length of Article	:	Approximately 8-10 A-4 pages in 12-pt fonts in single line spacing, or around 1,500-2,000 words (excluding references).
Review Questions	:	Include 10 self-assessment questions in true-or-false format. (It is recommended that analysis and answers to most questions be covered in the article.)
Language	:	English
Highlights	:	It is preferable that key messages in each paragraph/section be highlighted in bold types.
Key Lessons	:	Recommended to include, if possible, a key message in point-from at the end of the article.
Others	:	List of full name(s) of author(s), with qualifications and current appointment quoted, plus a digital photograph of each author.
Deadline	:	All manuscripts for publication of the month should reach the Chief Editors before the 1st of the previous month.

All articles submitted for publication are subject to review and editing by the CME Bulletin and Online Editorial Board.

For further information, please contact CME Dept. at 2527 8452 or by email at cme@hkma.org.

CME Calendar

September 2023

25 September (Mon) 2:00-3:00 p.m.
The Hong Kong Medical Association
Acute Diarrhea Management in Pediatric Patients
HKMA CME Live Lecture
HKMA CME Dept. – Tel: 2527 8452

26 September (Tue) 2:00-3:00 p.m.
The Hong Kong Medical Association
Management of Male LUTS: More Than Treating Symptoms?
HKMA CME Live Lecture
HKMA CME Dept. – Tel: 2527 8452

27 September (Wed) 2:00-3:00 p.m.
The Hong Kong Medical Association
HKMA Adult Immunisation Campaign 2023
Respiratory Syncytial Virus (RSV) in Older Adults
HKMA CME Live Lecture
HKMA CME Dept. – Tel: 2527 8452

28 September (Thu) 2:00-3:00 p.m.
The Hong Kong Medical Association and the Hong Kong Science and Technology Park
The Future of Non-Invasive Treatments for Ocular Diseases and Beyond: Ultrasound Drug Delivery Platform
HKMA CME Hybrid Lecture
HKMA CME Dept. – Tel: 2527 8452

29 September (Fri) 2:00-3:00 p.m.
The HKMA District Health Network (Kowloon West)
COVID-19 Oral Antiviral Treatment Real World Evidence Update & Clinical Experience Sharing
HKMA CME Physical Lecture
HKMA District Health Network Dept. – Tel: 2861 1979

October 2023

3 October (Tue) 2:00-3:00 p.m.
The Hong Kong Medical Association
Latest Psoriatic Disease Management- What Is Achievable Today?
HKMA CME Live Lecture
HKMA CME Dept. – Tel: 2527 8452

5 October (Thu) 2:00-3:00 p.m.
The HKMA District Health Network (Kowloon East)
IBS and Overlapping FGID Symptoms
HKMA CME Physical Lecture
HKMA District Health Network Dept. – Tel: 2861 1979

6 October (Fri) 2:00-3:00 p.m.
The Hong Kong Medical Association
Embracing Heart Failure Management in Patients with Preserved or Reduced Ejection Fraction: What Do the Latest Hong Kong Data Say
HKMA CME Live Lecture
HKMA CME Dept. – Tel: 2527 8452

9 October (Mon) 2:00-3:00 p.m.
The Hong Kong Medical Association
Recent Advancement of Gut Microbiome Research and its Application in Infections, Vaccination and Quality of Life Management
HKMA CME Live Lecture
HKMA CME Dept. – Tel: 2527 8452

11 October (Wed) 2:00-3:00 p.m.
The Hong Kong Medical Association and the CUHK Medical Centre
How To Fight Common Elderly Health Problems-Dementia and Sarcopenia
HKMA CME Hybrid Lecture
HKMA CME Dept. – Tel: 2527 8452

12 October (Thu) 2:00-3:00 p.m.
The Hong Kong Medical Association
Introduction of eHealth Adoption Sponsorship Scheme and the HKMA CMS 5.0
HKMA CME Live Lecture
HKMA CME Dept. – Tel: 2527 8452

13 October (Fri) 2:00-3:00 p.m.
The Hong Kong Medical Association
HKMA Adult Immunisation Campaign 2023
The Hidden Disease Burden of HPV-Related Head and Neck Cancers in Hong Kong
HKMA CME Live Lecture
HKMA CME Dept. – Tel: 2527 8452

16 October (Mon) 2:00-3:00 p.m.
The Hong Kong Medical Association
Effective Management of Hypertension and Albuminuria in Hypertensive Patients for Prevention of Diabetic Nephropathy
HKMA CME Live Lecture
HKMA CME Dept. – Tel: 2527 8452

17 October (Tue) 2:00-3:00 p.m.
The Hong Kong Medical Association and the Gleneagles Hong Kong Hospital
Topic in Cardiology
HKMA CME Hybrid Lecture
HKMA CME Dept. – Tel: 2527 8452

18 October (Wed) 2:00-3:00 p.m.
The HKMA District Health Network (Shatin)
Improving Cardiovascular Prognosis with Early and Massive LDL-C Reduction
HKMA CME Physical Lecture
HKMA District Health Network Dept. – Tel: 2861 1979

19 October (Thu) 2:00-3:00 p.m.
The Hong Kong Medical Association
Recommendations for the Screening, Diagnosis, and Management of Helicobacter Pylori in Hong Kong
HKMA CME Live Lecture
HKMA CME Dept. – Tel: 2527 8452

20 October (Fri) 2:00-3:00 p.m.
The HKMA District Health Network (Kowloon City)
The Contemporary Management on Typical and Atypical Diabetes Mellitus
HKMA CME Physical Lecture
HKMA District Health Network Dept. – Tel: 2861 1979

24 October (Tue) 2:00-3:00 p.m.
The Hong Kong Medical Association
Practical Approach on the Management of Lower Urinary Tract Symptoms
HKMA CME Live Lecture
HKMA CME Dept. – Tel: 2527 8452

26 October (Thu) 2:00-3:00 p.m.
The Hong Kong Medical Association and the Hong Kong Science and Technology Park
ID Microbes Using Metagenomic and Big Data Bioinformatics
HKMA CME Hybrid Lecture
HKMA CME Dept. – Tel: 2527 8452

27 October (Fri) 2:00-3:00 p.m.
The Hong Kong Medical Association
HKMA Adult Immunisation Campaign 2023
The Impact of Introducing Higher Pneumococcal Conjugate Vaccine
HKMA CME Live Lecture
HKMA CME Dept. – Tel: 2527 8452

31 October (Tue) 2:00-3:00 p.m.
The Hong Kong Medical Association
Prevention and Risk Reduction of CRC with the Recent Advancement of Gut Microbiome Research and Guideline
HKMA CME Live Lecture
HKMA CME Dept. – Tel: 2527 8452