#AHA23

Điểm tin từ hội nghị khoa học Hội Tim mạch Hoa kỳ AHA'23

11-13/11, Philadelphia, Pennsylvania

PGS.TS.BS. Nguyễn Ngọc Quang, FASCC, FAPSIC, FSCAI, FACC, FESC

Bộ môn Tim mạch - Trường Đại học Y Hà Nội

Đơn vị Chăm sóc Mạch vành - Viện Tim mạch Việt Nam

American Heart Association.

Hội Tim mạch Hoa kỳ có bao nhiêu hội nghị?

- Tháng 2: International Stroke Conference
- Tháng 3: EPI|Lifestyle (Epidemiology and Prevention/Lifestyle and Cardiometabolic Health)
- Tháng 5: Vascular Discovery
- Tháng 7: Basic Cardiovascular Sciences
- Tháng 9: Hypertension
- Tháng 11: Scientific Sessions
  - Pre-Sessions Symposia & Early Career Day:
  - Quality of Care and Outcomes Research
  - Resuscitation Science Symposium
- …

Scientific Sessions

Chương trình khoa học của AHA 2023

American Heart Association.

FRIDAY, November 10	**SATURDAY,** November 11	**SUNDAY,** November 12	**MONDAY,** November 13
6:00 AM - 7:30 AM EST	**6:00 AM - 7:30 AM EST**	**6:00 AM - 7:30 AM EST**	**6:00 AM - 7:30 AM EST**
	Satellite Events	Satellite Events	Satellite Events
8:00 AM - 12:00 PM EST	**8:00 AM - 12:00 PM EST**	**8:00 AM - 12:00 PM EST**	**8:00 AM - 12:00 PM EST**
Early Career Programming	**Opening Session** Main Events Late-Breaking Science Concurrent Programming Science & Technology Hall 9 a.m. - 4:30 p.m. Heart Hub Simulation Zone 10 a.m. - 11:30 a.m. Industry Events Meet the Trialist	Main Events Late-Breaking Science Concurrent Programming Science & Technology Hall 9 a.m. - 5 p.m. Heart Hub Simulation Zone 9:30 a.m. - 11 a.m. Industry Events Meet the Trialist	Main Events Late-Breaking Science Concurrent Programming Science & Technology Hall 9 a.m. - 3 p.m. Heart Hub Simulation Zone 9:30 a.m. - 11 a.m. Industry Events Meet the Trialist
12:00 PM - 6:45 PM EST	**12:00 PM - 4:30 PM EST**	**12:00 PM - 4:45 PM EST**	**12:00 PM - 4:45 PM EST**
Early Career Lunch with Legends Congenital Heart Disease and Pediatric Cardiology Symposium Heart/Kidney Symposium QCOR at Sessions State-of-the-Art in Cardiovascular Care 2023	Main Events Late-Breaking Science Concurrent Programming Science & Technology Hall Heart Hub Simulation Zone 2 p.m. - 3:30 p.m. Industry Events Meet the Trialist Health Tech Competition All Member Reception 5 p.m. - 6 p.m.	**Presidential Session and Connor Lecture** Main Events Late-Breaking Science Concurrent Programming Science & Technology Hall Heart Hub Simulation Zone 3 p.m. - 4:30 p.m. Industry Events Meet the Trialist Health Tech Competition	Main Events Late-Breaking Science Concurrent Programming Science & Technology Hall Heart Hub Industry Events Meet the Trialist
6:00 PM - 9:00 PM EST	**6:00 PM - 9:00 PM EST**	**6:00 PM - 9:00 PM EST**	**6:00 PM - 9:00 PM EST**
Satellite Events	Satellite Events Council Events	Satellite Events	Satellite Events (Tentative)

Các nghiên cứu mới nhất công bố tại AHA 2023

- N/c SELECT: Semaglutide giảm 20% MACE ở người thừa cân/béo phì ko kèm đái đường
- N/c heart-1 (FIM): ở nhóm HeFH, chỉnh sửa DNA (VERVE-101) cho phép giảm LDL-C ổn định
- N/c KARDIA-1 (pha 2): Zilebesiran giảm huyết áp ổn định ở người THA nhẹ-vừa
- N/c SPEC-AI Nigeria: sàng lọc với ống nghe điện tử và AI tăng chẩn đoán bệnh cơ tim chu sản
- N/c SPEECH: Phân tích giọng nói giúp giảm biến cố do suy tim ở b/n suy tim ngoại trú NYHA II/III
- N/c CRHCP Dementia: Điều trị THA tích cực giảm 15% sa sút trí tuệ (ở vùng sâu/xa Trung Quốc)
- N/c POP-HT: Điều trị tích cực THA ở thai phụ có THA/tiền sản giật giúp giảm THA sau đẻ
- N/c CARDIA-SSBP: Chế độ ăn giảm muối giúp giảm huyết áp ở người trung niên dù có/ko THA
- N/c ESPIRIT: Hạ HA tích cực (<120 mmHg) giảm MACE/tử vong chung so với chuẩn (<140 mmHg)
- N/c ARTESIA: Rung nhĩ dưới lâm sàng, so với ASA: apixaban giảm 49% tắc mạch dù tăng chảy máu
- N/c ORBITA-2: PCI làm giảm đau ngực cho đau thắt ngực ổn định có bằng chứng thiếu máu cơ tim
- N/c MINT: Chiến lược truyền máu hạn chế ko khác truyền tự do ở người NMCT cấp có thiếu máu
- ...

SELECT

semaglutide | effects on cardiovascular outcomes in people with overweight or obesity

Semaglutide and Cardiovascular Outcomes in Patients with Overweight or Obesity and Cardiovascular Disease Who Do Not Have Diabetes

The SELECT Trial

A. Michael Lincoff, M.D.
for the SELECT Trial Steering Committee and Investigators

Vice Chair for Research, Cardiovascular Medicine
Professor of Medicine
Cleveland Clinic

Cleveland Clinic

Semaglutide giảm MACE & phòng đái đường

CLINICAL PROBLEM

Glucagon-like peptide-1 (GLP-1) receptor agonists can reduce the risk of adverse cardiovascular events in patients with diabetes. Whether the GLP-1 receptor agonist semaglutide can also reduce cardiovascular risk in patients with overweight or obesity but without diabetes is unknown.

CLINICAL TRIAL

Design: An international, double-blind, event-driven, randomized, placebo-controlled, superiority trial assessed the safety and efficacy of semaglutide in patients with preexisting cardiovascular disease, overweight or obesity (body-mass index, ≥27), and no history of diabetes.

Intervention: 17,604 adults ≥45 years of age were assigned to receive once-weekly subcutaneous semaglutide (2.4 mg) or placebo. The primary cardiovascular end point was a composite of the first occurrence of death from cardiovascular causes, nonfatal myocardial infarction, or nonfatal stroke in a time-to-event analysis.

% weight reduction: -8.5% (-8.8 to -8.3)
Time to HbA1c ≥ 6.5%: HR 0.27 (0.24 to 0.31)

RESULTS

Efficacy: Semaglutide was superior to placebo in reducing the incidence of primary end-point events during a mean follow-up of approximately 40 months.

Safety: More patients discontinued semaglutide than placebo because of adverse events, a result driven largely by a higher incidence of gastrointestinal symptoms with semaglutide.

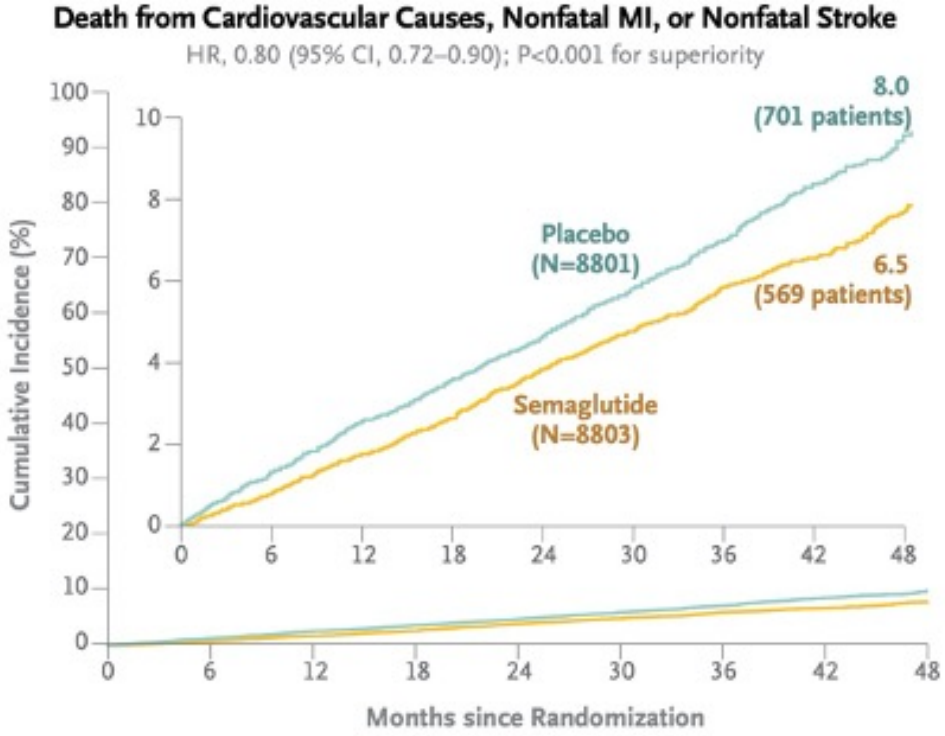
LIMITATIONS AND REMAINING QUESTIONS

- The trial was limited to patients with preexisting cardiovascular disease.
- The diversity of the trial population did not duplicate a globally representative population; specifically, women and patients identifying as Black were underrepresented.

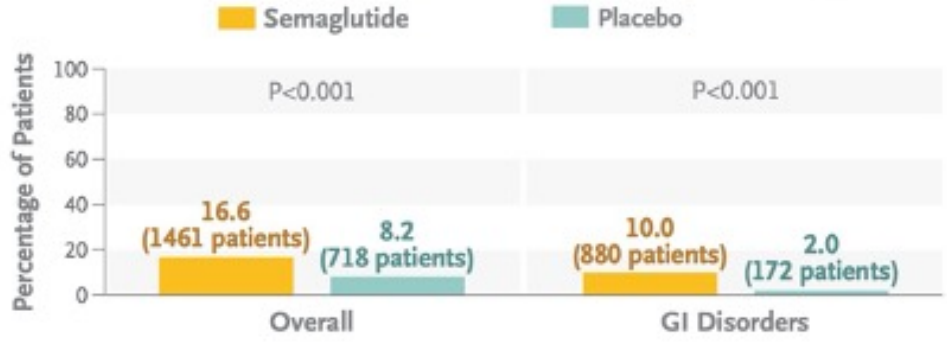
CONCLUSIONS

In patients with preexisting cardiovascular disease and overweight or obesity but without diabetes, once-weekly subcutaneous semaglutide at a dose of 2.4 mg was superior to placebo in reducing the incidence of death from cardiovascular causes, nonfatal myocardial infarction, or nonfatal stroke during a mean follow-up of approximately 40 months.

Death from Cardiovascular Causes, Nonfatal MI, or Nonfatal Stroke



Adverse Events Leading to Permanent Discontinuation of Regimen



Từ giảm cân đến giảm nguy cơ tim mạch

Orlistat
120 mg TID
- ↓ SBP, DBP and LDL
- CV outcomes: no trials available
- Use: approved as OTC for weight loss in adults and adolescents. AE: nausea, vomiting, diarrhea.

Liraglutide
3.0mg SQ OD
- ↓ SBP, DBP and LDL
- CV outcomes: no trials available
- Use: approved for chronic weight management in patients with overweight/obesity and at least one weight-related condition. AE: gastrointestinal upset

Semaglutide
2.4mg SQ OW
- ↓ SBP, DBP and LDL
- CV outcomes: 20% reduction in MACE in SELECT trial
- Use: approved for chronic weight management in patients with overweight/obesity and at least one weight-related condition. AE: gastrointestinal upset

Sleeve gastrectomy
- ↓ SBP, DBP and LDL
- CV outcomes: observational studies suggest benefit. Clinical trials awaited
- Use: recommended for
  1. Patients with a BMI ≥40;
  2. Those with a BMI ≥35 and obesity-related complications
  3. Patients with BMI ≥30 and refractory T2D

Weight loss 5% 10% 15% 20%

Naltrexone/Bupropion
32/360 mg/day
- ↑ SBP, DBP and ↓ LDL
- CV Outcomes: unclear
- Use: approved for chronic weight management. Avoid in severe hypertension. AE: gastrointestinal upset, headache, tremors

Intensive lifestyle intervention
- ↓ SBP, LDL and ↔ DBP
- CV Outcomes: no benefit in Look AHEAD trial
- Use: should be considered in all overweight/obese patients. Weight loss maximum at 1 year, followed by regain

Tirzepatide
10-15mg SQ OW
- ↓ SBP, DBP and LDL
- CV Outcomes: SURMOUNT-MMO trial awaited
- Use: approved for chronic weight management in patients with overweight/obesity and at least one weight-related condition. AE: gastrointestinal upset

Roux-en-Y bypass
- ↓ SBP, DBP and LDL
- CV Outcomes: observational studies suggest benefit. Clinical trials awaited
- Use: recommended for
  1. Patients with a BMI ≥40
  2. Those with a BMI ≥35 and obesity-related complications
  3. Patients with BMI ≥30 and refractory T2D

Medical Surgical Lifestyle

STEP-HFpEF trial #ESCCongress

Once-weekly semaglutide in people with HFpEF and obesity

Conclusion
Semaglutide improves heart failure-related symptoms and physical function and results in greater weight loss compared with placebo in patients with heart failure with preserved ejection fraction (HFpEF) and obesity.

Impact on clinical practice
The results indicate that obesity is not simply a comorbidity in patients with HFpEF but a root cause and a target for therapeutic intervention.

Study objectives
The STEP-HFpEF trial tested the hypothesis that treatment with semaglutide can significantly improve symptoms, physical limitations and exercise function, in addition to weight loss, in patients with HFpEF and obesity.

Study population
HFpEF patients
- left ventricular ejection fraction ≥45%
- body mass index ≥30 kg/m2
- HF symptoms
- functional limitations (New York Heart Association functional class II-IV and Kansas City Cardiomyopathy Questionnaire Clinical Summary Score [KCCQ-CSS] <90 points)

Where?
13 countries in Asia, Europe, North America and South America — 96 sites

Who and what?
529 patients randomised 1:1 once-weekly for 52 weeks
- semaglutide 2.4 mg
- placebo

Primary endpoints
change from baseline to week 52 in KCCQ-CSS
- mean change: 16.6 points
- 8.7 points

estimated treatment difference 7.8 points
95% CI 4.8 to 10.9
p<0.001

change from baseline to week 52 in body weight
- mean change: -13.3%
- -2.6%

estimated treatment difference -10.7%
95% CI -11.9% to -9.4%
p<0.001

Serious adverse events
Rate%
- 13.3%
- 26.7%

p<0.001

ESC

#AHA23

SUSTAINED BLOOD PRESSURE REDUCTION WITH THE RNA INTERFERENCE THERAPEUTIC, ZILEBESIRAN: PRIMARY RESULTS FROM KARDIA-1, A PHASE 2 STUDY IN PATIENTS WITH HYPERTENSION

George Bakris[1], Manish Saxena[2,3], Anil Gupta[4], Fadi Chalhoub[5], Maxwell Lasko[6], Nune Makarova[6], Nitender Goyal[6], Weinong Guo[6], Dion Zappe[6], Akshay S Desai[7]

[1]University of Chicago Medicine, Chicago, IL, USA; [2]Barts Health NHS Trust, London, UK; [3]Queen Mary University of London, UK; [4]Albion Finch Medical Centre, Toronto, ON, Canada; [5]Clinical Neuroscience Solutions, Jacksonville, FL, USA; [6]Alnylam Pharmaceuticals, Cambridge, MA, USA; [7]Cardiovascular Division, Brigham & Women's Hospital, Boston, MA, USA

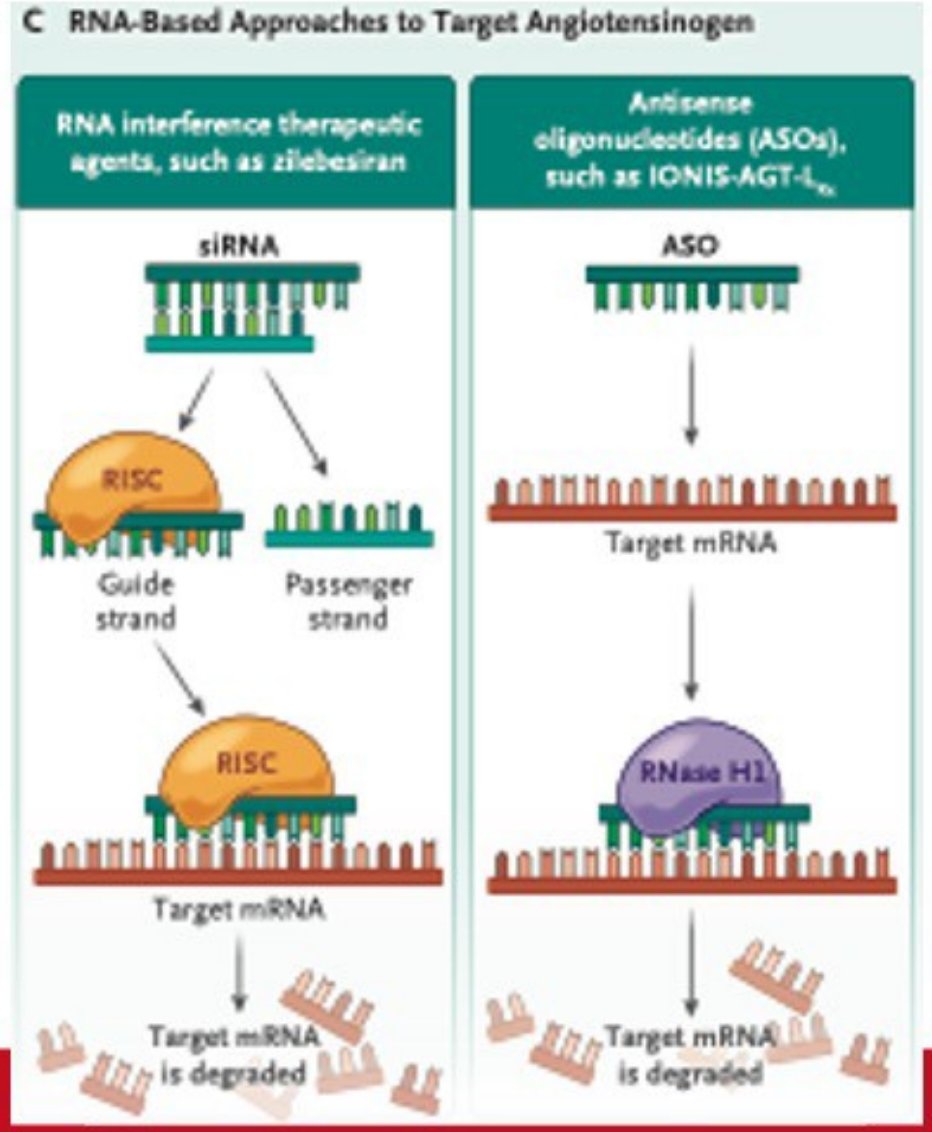
Presented at the American Heart Association Scientific Sessions, November 11–13, 2023, Philadelphia, PA, USA

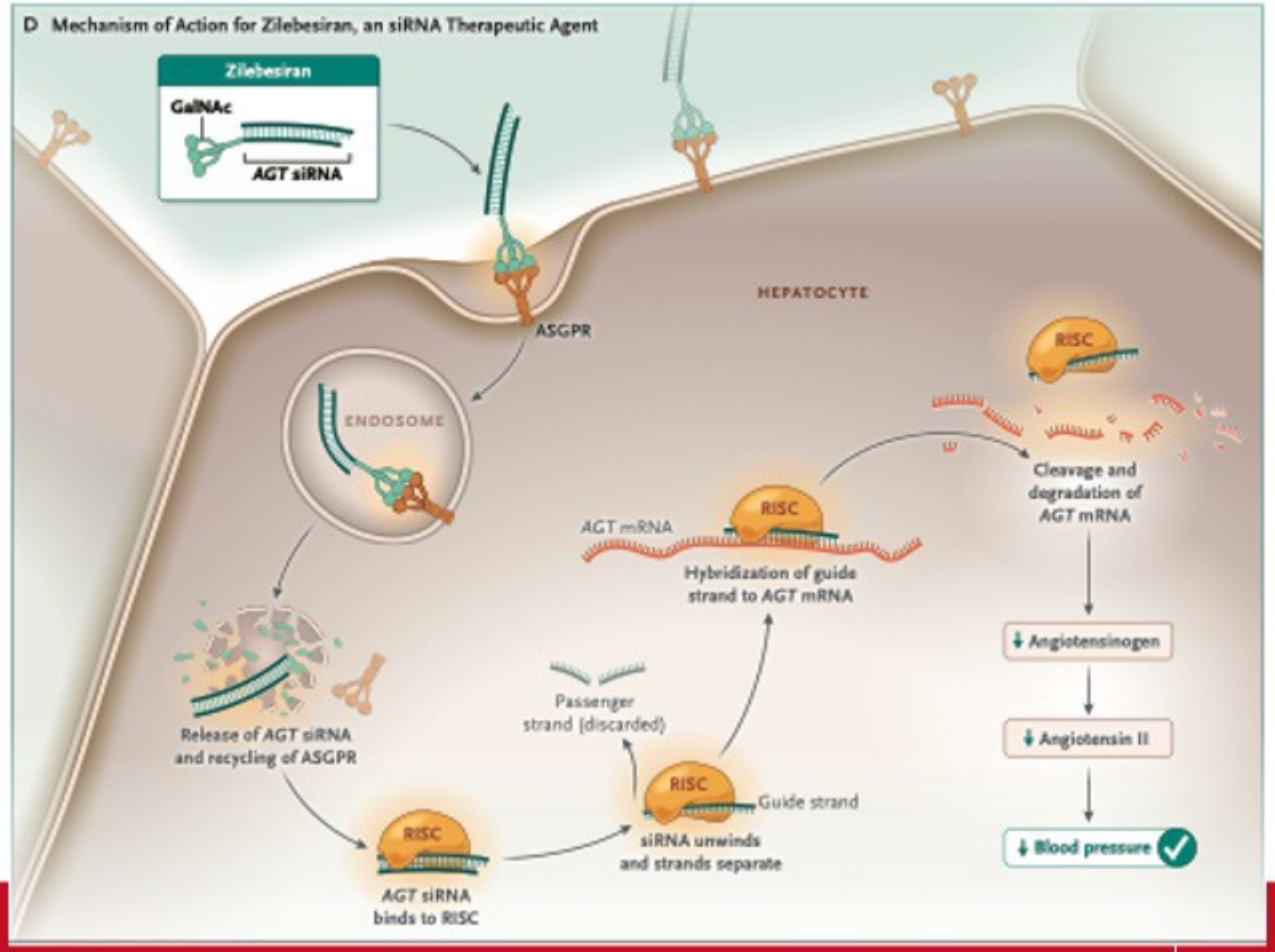
American Heart Association.

Scientific Sessions

American Heart Association.

Cơ chế tác dụng của zilebesiran





Kết quả của thử nghiệm pha 1 của zilebesiran

CLINICAL PROBLEM

Nearly half of patients with hypertension do not reach guideline-recommended blood-pressure targets. Zilebesiran is an investigational RNA interference therapeutic agent that inhibits the production of angiotensinogen, the precursor of angiotensin, which plays a key role in the pathogenesis of hypertension.

CLINICAL TRIAL

Design: A four-part, multicenter, phase 1 study assessed the safety and blood-pressure–lowering effects of zilebesiran in adults ≤65 years of age with treated or untreated hypertension.

Intervention: 107 patients were enrolled. In Part A, patients were randomly assigned to a single subcutaneous dose of zilebesiran (at one of seven doses ranging from 10 to 800 mg) or placebo. In Part B, zilebesiran (800 mg) or placebo was administered under low- and high-salt dietary conditions, and in Part E, irbesartan was added to zilebesiran (800 mg). (Part C was removed during a protocol amendment, and Part D is ongoing.) The primary end point was the frequency of adverse events.

RESULTS

Safety: Overall, adverse events were not more frequent with zilebesiran than with placebo. Five zilebesiran recipients had mild, transient injection-site reactions. No patient received interventions for hypotension, hyperkalemia, or worsening of renal function.

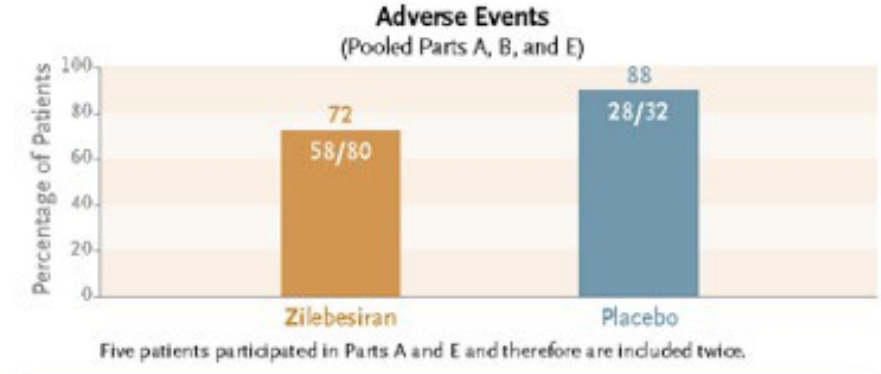
Efficacy: In Part A, single doses of zilebesiran of ≥200 mg were associated with dose-dependent decreases in blood pressure that were apparent by week 8 and were sustained for up to 24 weeks. In Part B, a high-salt diet appeared to attenuate the blood-pressure–lowering effects of zilebesiran. In Part E, irbesartan appeared to enhance the effects of zilebesiran.

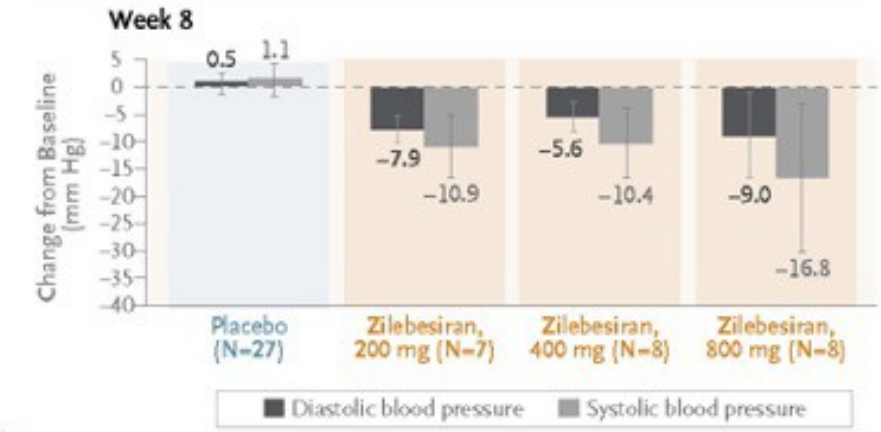
LIMITATIONS AND REMAINING QUESTIONS

- The efficacy end points were exploratory.
- The study was too small and short to fully assess safety.
- Whether zilebesiran has the teratogenic effects of other renin–angiotensin system inhibitors is unknown.

CONCLUSIONS

In patients with hypertension, the investigational RNA interference therapeutic agent zilebesiran was associated with mild injection-site reactions and led to dose-dependent decreases in blood pressure that were sustained at 24 weeks of follow-up.





KARDIA-1:
SUSTAINED BP REDUCTION WITH THE RNA INTERFERENCE THERAPEUTIC ZILEBESIRAN

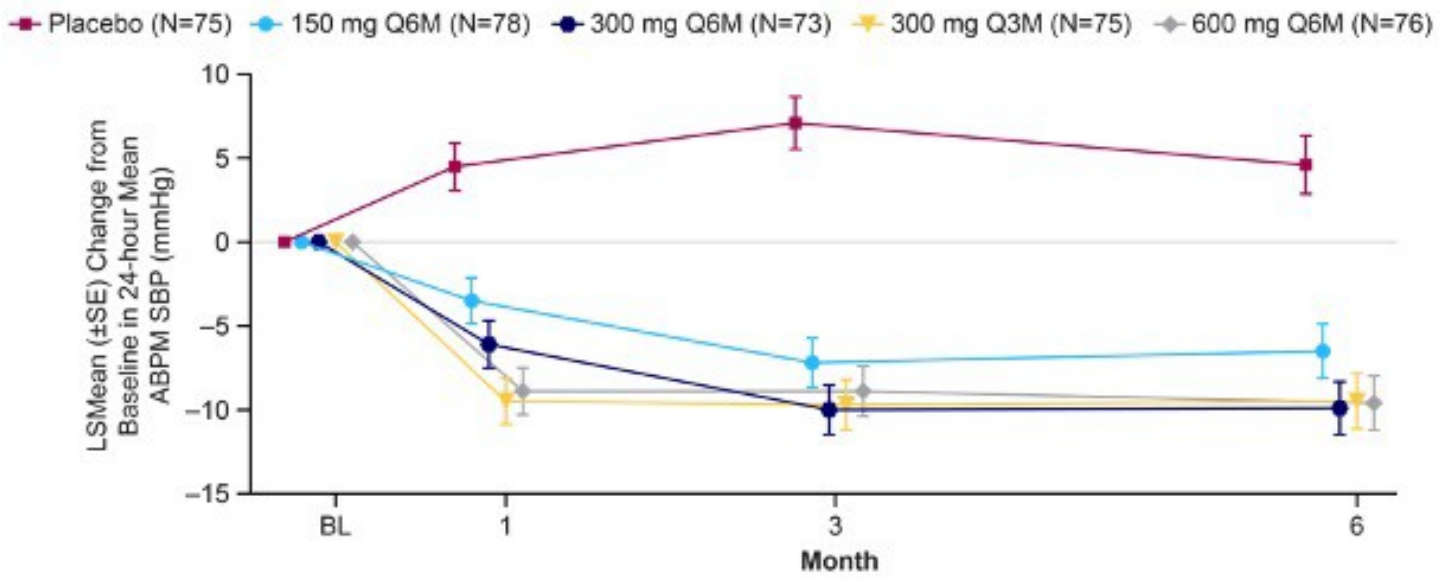
RESULTS: In adults with mild-to-moderate HTN, single doses of zilebesiran resulted in **c**linically meaningful and significant reductions in 24-hour mean SBP compared to placebo at 3 months sustained through 6 months.

PURPOSE: Designed to evaluate zilebesiran (single dose) vs placebo in adults with mild-to-moderate hypertension.

TRIAL DESIGN: Phase 2, randomized, double-blind, placebo-controlled, multi-center global, dose-ranging study.

	Change from Baseline, Least-Squares Mean Difference (LSMD) vs Placebo
Primary Endpoints (Month 3):	
24-Hour Mean Ambulatory SBP LSMD vs placebo, mmHg (95% CI)	
Office SBP least squares mean LSMD vs placebo, mmHg (95% CI)	
Secondary Endpoints (Month 6):	
24-Hour Mean Ambulatory SBP LSMD vs placebo, mmHg (95% CI)	
Office SBP least squares mean LSMD vs placebo, mmHg (95% CI)	

Figure: Change from baseline in 24-hour mean SBP, as measured by ABPM, through Month 6



Key Takeaways: Single doses of subcutaneous zilebesiran were effective in reducing blood pressure in adults with mild-to-moderate hypertension for up to 6 months

Safety and Pharmacodynamic Effects of VERVE-101

An Investigational DNA Base Editing Medicine Designed to Durably Inactivate the *PCSK9* Gene and Lower LDL Cholesterol – Interim Results of the Phase 1b heart-1 Trial

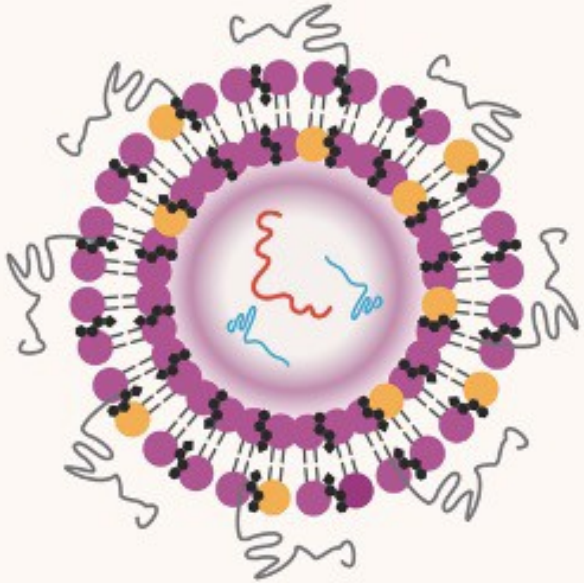
Scott B Vafai[1], Patrick A Gladding[2], Russell Scott[3], Jane Kerr[3], Jorg Taubel[4], Jaimini Cegla[5], Mahmoud Barbir[6], Steve E Humphries[7], Verena Karsten[1], Chelsey L Jensen[1], Richard Falzone[1], Troy Lister[1], Leslie E Stolz[1], Amit V Khera[1], Sekar Kathiresan[1], Andrew M Bellinger[1]

[1]Verve Therapeutics, Boston, MA, USA; [2]Te Whatu Ora Waitematā and Ascot Cardiology Group, Auckland, NZ; [3]New Zealand Clinical Research, Christchurch, NZ; [4]St. George's University of London, London, UK; [5]Imperial College London, London, UK; [6]Royal Brompton and Harefield Hospitals, London and Harefield, UK; [7]University College London, London, UK

Presented at the American Heart Association Scientific Sessions 2023
12 November 2023

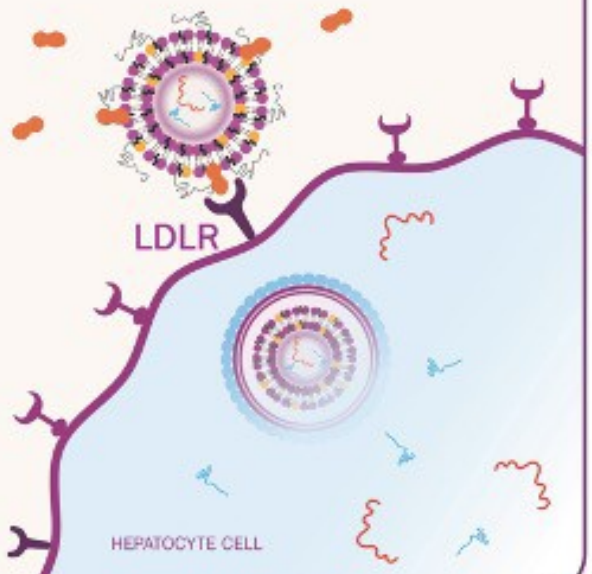
VERVE-101: novel CRISPR base editing medicine designed to inactivate hepatic *PCSK9* and lower LDL-C with a single DNA base pair change

VERVE-101



1x intravenous infusion

1 VERVE-101 delivery to the hepatocyte



2 Localization to *PCSK9* gene

3 A•T to G•C DNA change to disrupt *PCSK9* splice donor site

A to G "spelling" change in DNA to turn off gene

Lipid nanoparticle · Ionizable amino lipid · DSPC · LDL receptor (LDLR) · apoE · mRNA · gRNA · PEG Lipid · Cholesterol

DSPC, distearoyl-sn-glycerol-3-phosphocholine; gRNA, guide RNA; LNP, lipid nanoparticle; mRNA, messenger RNA; RNA, ribonucleic acid

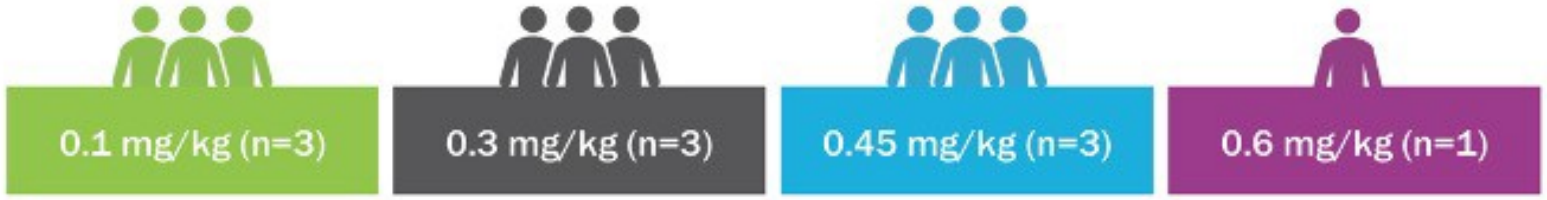
heart-1 is a first-in-human Phase 1b trial designed to evaluate the safety and tolerability of VERVE-101

heart-1

First-in-human, open-label, single ascending dose study in patients with HeFH and high risk for cardiovascular events

Interim update:
10 participants treated across 4 dose cohorts[5]

Data cut-off date October 16, 2023



STUDY POPULATION SUMMARY

- Males and females[1] (age 18 to 75)
- HeFH
- Established ASCVD
- Uncontrolled hypercholesterolemia[2]
- On maximally-tolerated oral lipid-lowering therapy[3]

DRUG ADMINISTRATION

- Pre-medication with dexamethasone and antihistamines
- VERVE-101 delivered as single infusion via a peripheral intravenous[4]

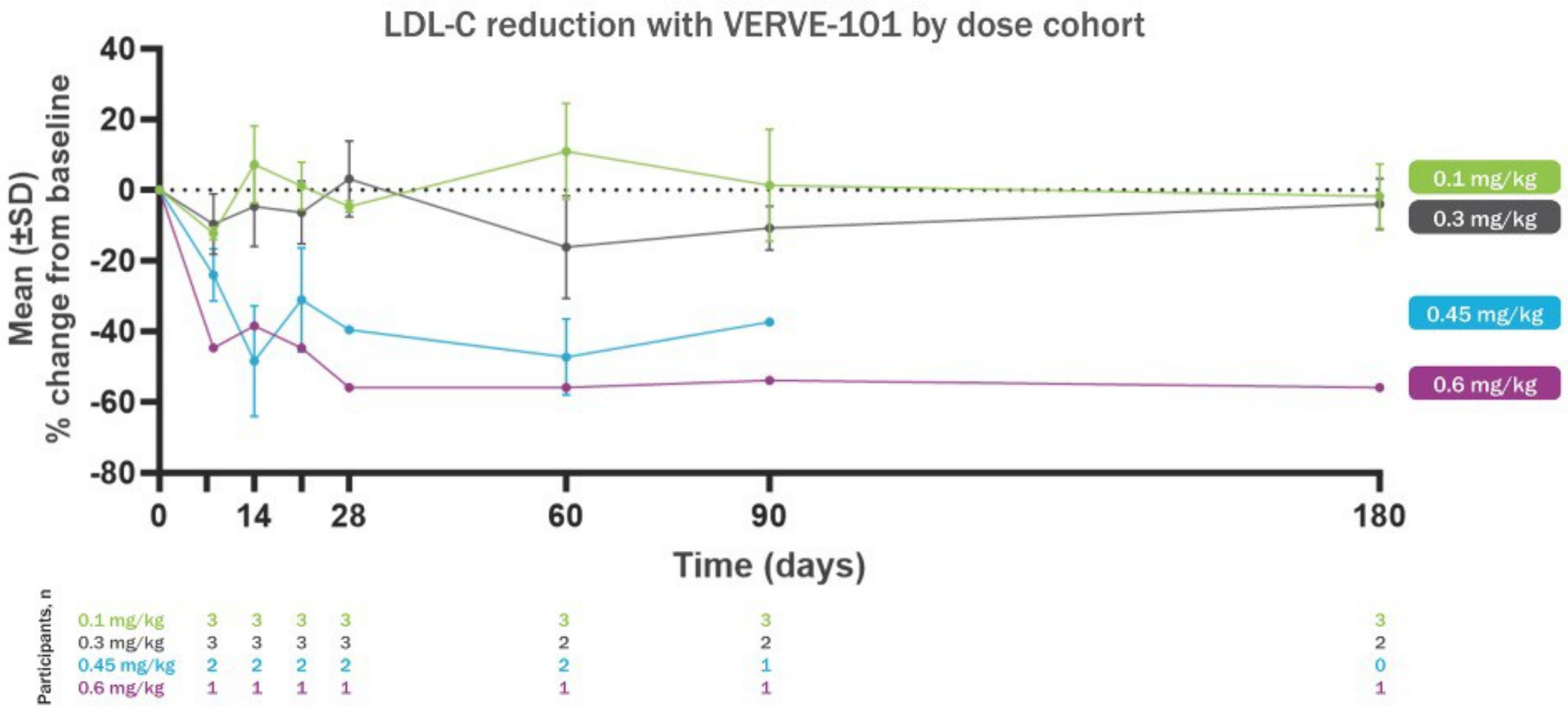
TRIAL ENDPOINTS

- Primary: Safety and tolerability
- Additional endpoints:
  - Pharmacokinetics of VERVE-101
  - Blood PCSK9 and LDL-C, quantified as percent change from baseline, time averaged from day 28 onward
- Study duration 1 year with long-term follow-up required by FDA for another 14 years

Clinical trial registration: NCT05398029; 1. Women of childbearing potential are excluded from the study; 2. LDL-C threshold for inclusion value varies by country-specific protocol; 3. maximum tolerated statin and/or ezetimibe (statin intolerant allowed). 4. dosing based on weight for participants ≤ 100 kg; participants > 100 kg are dosed on an assumed 100 kg weight; 5. 10 participants included in the safety analysis, but only 9 participants included in the pharmacodynamic analyses as the 10th participant had not reached the 28-day follow-up as of the data cut-off date. Single participant dosed at 0.6 mg/kg prior to initiation of 0.45 mg/kg cohort.

verve THERAPEUTICS

Durable 55% reduction in LDL-C extending up to 180 days in the single participant in the highest dose cohort



As of October 16, 2023. Data are from an ongoing study with an open database and have not been fully cleaned
SD, standard deviation

Conclusions: initial results of heart-1 trial demonstrated first proof-of-concept for *in vivo* DNA base editing in humans

1. Dose-dependent reductions in blood PCSK9 protein & LDL-C levels following VERVE-101 infusion

2. LDL-C reductions of 39%, 48%, & 55% among participants in the two highest dose cohorts

3. Durability extending to 6 months in the single participant in the highest dose cohort

4. Safety profile supports continued development of VERVE-101

In patients who require deep LDL-C lowering over decades, single-course gene editing medicines may emerge as an option to overcome limitations of the chronic care model

As of October 16, 2023. Data are from an ongoing study with an open database and have not been fully cleaned

Một số thử nghiệm về tăng huyết áp tại AHA 2023

- N/c KARDIA-1 (pha 2): Zilebesiran giảm huyết áp ổn định ở người THA nhẹ-vừa

- N/c CRHCP Dementia: Điều trị THA tích cực giảm 15% sa sút trí tuệ (ở vùng sâu/xa Trung Quốc)
- N/c POP-HT: Điều trị tích cực THA ở thai phụ có THA/tiền sản giật giúp giảm THA sau đẻ
- N/c CARDIA-SSBP: Chế độ ăn giảm muối giúp giảm huyết áp ở người trung niên dù có/ko THA
- N/c ESPIRIT: Hạ HA tích cực (<120 mmHg) giảm MACE/tử vong chung so với chuẩn (<140 mmHg)
- ...

ESPRIT: EFFECTS OF INTENSIVE BLOOD PRESSURE LOWERING TREATMENT IN REDUCING RISK OF CARDIOVASCULAR EVENTS

RESULTS: In participants at increased CV risk, an intensive BP lowering treatment (SBP target <120 mmHg) reduced major CV events by 12%, CV mortality by 39% and all-cause mortality by 21% at 3 years compared to standard treatment (SBP target <140 mmHg).

PURPOSE: To compare the effects of an intensive BP lowering treatment with standard BP lowering treatment on the incidence of major CV events in participants at increased CV risk.

TRIAL DESIGN: Multi-center (116 sites in China), open-label RCT (n=11,255).

	Intervention (Rate, % per year)	Standard (Rate, % per year)	HR or OR (95%CI)	P value
Primary Endpoint				
Composite outcome of MI, coronary or non-coronary revascularization, hospitalization or ER visit for HF, stroke or CV death	3.2	3.6	0.88 (0.78-0.99)	0.03
Secondary Endpoints				
CV death	0.3	0.5	0.61 (0.44-0.84)	
All-cause death	0.9	1.1	0.79 (0.64-0.97)	

Key Takeaways: Among patients who were at increased CV risk, intensive BP treatment (SBP target <120 mmHg) significantly reduced the risk of major CV events, CV mortality and all-cause mortality.

Presented by: Jing Li, MD, PhD, Fuwai Hospital, China. Scientific Sessions 2023.

CRHCP: EFFECTIVENESS OF BLOOD PRESSURE-LOWERING INTERVENTION ON RISK OF TOTAL DEMENTIA AMONG PATIENTS WITH HYPERTENSION

RESULTS: In patients with hypertension in rural China, the primary outcome of all-cause dementia was significantly reduced by 15% in the intensive BP lowering group compared to the usual care group at 48 months. In addition, intensive BP reduction significantly reduced cognitive impairment without dementia by 16% compared to the usual care group.

PURPOSE: To determine the effectiveness of an intensive BP lowering intervention (target BP <130/80 mmHg) on dementia risk and cognitive impairment without dementia compared to usual care among patients with hypertension in rural China.

TRIAL DESIGN: Cluster randomized trial, parallel assignment (n=33,995).

	Intervention (Rate, % per year)	Control (Rate, % per year)	RR (95%CI)	P value
Primary Endpoint				
Adjudicated all cause dementia	1.12	1.31	0.85 (0.76, 0.95)	0.0035
Secondary Endpoints				
Cognitive impairment without dementia	4.19	5.02	0.84 (0.80, 0.87)	<0.0001

Key Takeaways: Intensive BP lowering (target BP < 130/80 mm Hg) significantly reduced risk of all-cause dementia among patients with hypertension, supporting the use of intensive hypertension treatment to reduce the burden of dementia.

POP-HT CLINICAL TRIAL:
LONG-TERM BLOOD PRESSURE CONTROL AFTER PHYSICIAN OPTIMIZED POSTPARTUM BLOOD PRESSURE SELF-MANAGEMENT

RESULTS: In post partum patients with gestational hypertension or preeclampsia, the 24-hour mean diastolic and systolic blood pressures, measured at 9-months postpartum were lower in intervention group versus those who had received usual care.

PURPOSE: The purpose of this study was to assess if tight control of BP in postpartum period (few weeks after delivery) results in long term blood pressure and cardiac benefit for the mother.

TRIAL DESIGN: Prospective, single center, randomized controlled (1:1 to self monitoring with physical optimized antihypertensive titration compared to usual care), open-label, blinded endpoint trial.

	Interventional Group N=105	Control Group N=95	Mean Model-Adjusted Difference	P value
Primary Outcome				
24-hour mean diastolic blood pressure at 9 months postpartum	71.2 mmHg	76.6mmHg	-5.80 mmHg (95% CI -7.4 to -4.20)	<0.001
24-hour mean systolic blood pressure at 9 months postpartum	114.0 mmHg	120.3 mmHg	-6.51 (95% CI-8.80 to -4.22)	<0.001

Key Takeaways: In this single center trial, optimization of blood pressure during the immediate postpartum period resulted in lower blood pressure throughout the first-year postpartum.

Presented by: Paul Leeson MD, University of Oxford, Oxford, United Kingdom

CARDIA-SSBP:

EFFECTS OF DIETARY SODIUM ON SYSTOLIC BLOOD PRESSURE IN MIDDLE-AGED INDIVIDUALS: A RANDOMIZED ORDER CROSS-OVER TRIAL

RESULTS: In normotensive and hypertensive adults, a low sodium diet significantly lowered SBP. The decline in BP was independent of HTN status and anti-hypertensive medication use, consistent across subgroups, and did not result in excess adverse events.

PURPOSE: Dietary sodium recommendations are debated in part due to variable blood pressure (BP) response to sodium consumption. Further, the BP effect of dietary sodium among individuals on antihypertensive medications is understudied, particularly in randomized trials.

TRIAL DESIGN: N=213, randomized crossover trial in Coronary Artery Risk Development in Young Adults (CARDIA) study and non-CARDIA participants. Participants attended a baseline visit on usual diet, then completed one-week high- (~2,200 mg sodium added to usual daily diet) and low-sodium (~500 mg daily total) diets in random order.

	Change in 24-Hour Ambulatory BP	Median Reduction	P-value
Primary Endpoints:			
Change in Systolic Blood Pressure	74.4%, -21.6%	7 (IQR, 0 to 14) mm Hg	< .001
Change in Diastolic Blood Pressure	63.3%, -29.7%	2 (IQR, -1 to 6) mm Hg	< .001
Change in Mean Arterial Blood Pressure	73.4%, -25.6%	4 (IQR, 0 to 8) mm Hg	< .001
Change in Pulse Pressure	81.9%, -13.1%	5 (IQR, 1 to 8) mm Hg	< .001

Key Takeaways: The decline in SBP with a low-sodium diet was independent of hypertension status and anti-hypertensive medication use, consistent across subgroups, and did not result in excess adverse events.

Các nghiên cứu mới nhất công bố tại AHA 2023

- N/c SPEC-AI Nigeria: sàng lọc với ống nghe điện tử và AI tăng chẩn đoán bệnh cơ tim chu sản
- N/c SPEECH: Phân tích giọng nói giúp giảm biến cố do suy tim ở b/n suy tim ngoại trú NYHA II/III
- …

SPEECH:
VALIDATION OF A SPEECH ANALYSIS APPLICATION TO DETECT WORSENING HEART FAILURE EVENTS IN AMBULATORY HF PATIENTS

RESULTS: In NYHA Class II/III HF outpatients, this study developed a speech processing model and validated a novel speech analysis app that detected future HF events (HFEs) early with a high sensitivity and low unexplained notification rate, supporting its potential to reduce HFEs and improve patient outcomes.

PURPOSE: To develop and validate a practical user-friendly tool for predicting HFEs in ambulatory patients in advance of the requirement for hospitalization and/or intravenous therapies.

TRIAL DESIGN: Multicenter, non-interventional, single-arm clinical study enrolling 409 New York Heart Association (NYHA) Class II and III HF outpatients, irrespective of left ventricular ejection fraction (LVEF).

System Preliminary TEST Results

	True Positive	False Negative
ALL events sensitivity	71% (10 HFEs)	29% (4)
FIRST events sensitivity	77% (10 HFEs)	23% (3)

False Positive Priority Rate (one priority every ~ 3 months [average] per patient)

	FP rate per patient per year	Total analysis recording days
False Positive	2.67	94,202

Key Takeaways: In a trial of adults with heart failure, a speech analysis app predicted the need for hospitalization about three weeks in advance of a heart failure event.

SPEC-AI Nigeria:
Screening for Peripartum Cardiomyopathies Using Artificial Intelligence in Nigeria

RESULTS: In pregnant and postpartum women, AI-guided screening with a digital stethoscope was associated with an increase in the diagnosis of cardiomyopathy defined as LVEF <50% by echocardiography.

PURPOSE: To evaluate the effectiveness of a digital stethoscope with artificial intelligence-enabled ECG (AI-ECG) and phonocardiogram (PCG) compared to traditional ECG for cardiomyopathy detection in an obstetric population in Nigeria.

TRIAL DESIGN: Randomized, parallel assignment, open label

	Usual Care (+ traditional ECG) N = 608	Digital Stethoscope (+ traditional ECG) N = 587	HR or OR (95%CI)	p-value
Primary Endpoint				
Cardiac dysfunction with left ventricular ejection fraction (LVEF) <50%	11/608 (1.8%)	24/587 (4.1%)	OR 2.31 (95% CI: 1.12, 4.77)	p = 0.019
Secondary Endpoints				
Correct identification of left ventricular ejection fraction (LVEF) <50%		AUC = 0.95 (95% CI: 0.92, 0.99)		
Correct identification of LVEF <40%		AUC = 0.98 (95% CI: 0.97, 0.99)		

Key Takeaways: AI-guided screening resulted in double the number of cardiomyopathy cases diagnosed in pregnant and postpartum women, suggesting that half are likely under detected with usual care.

Presented by: Demilade Adedinsewo, MD, MPH, Mayo Clinic, Florida. Scientific Sessions 2023.

Các nghiên cứu mới nhất công bố tại AHA 2023

- N/c ARTESIA: Rung nhĩ dưới lâm sàng, so với ASA: apixaban giảm 49% tắc mạch dù tăng chảy máu
- N/c ORBITA-2: PCI làm giảm đau ngực cho đau thắt ngực ổn định có bằng chứng thiếu máu cơ tim
- N/c MINT: Chiến lược truyền máu hạn chế ko khác truyền tự do ở người NMCT cấp có thiếu máu
- …

ARTESIA: APIXABAN FOR THE PREVENTION OF STROKE IN PATIENTS WITH SUBCLINICAL ATRIAL FIBRILLATION (SCAF)

RESULTS: Patients with subclinical atrial fibrillation (SCAF) taking apixaban were 49% less likely to have stroke or a blood clot compared to patients who were taking aspirin daily but had an increased risk of bleeding.

PURPOSE: The purpose of this study was to compare apixaban with aspirin to reduce the risk of stroke in patients with device detected subclinical AF and additional risk factors for stroke.

TRIAL DESIGN: Multicenter randomized controlled trial enrolled 4012 individuals with SCAF lasting 6 minutes to 24 hours, detected by an implanted pacemaker, defibrillator or cardiac monitor, and who had additional stroke risk factors. Patients randomized in a double-blind, double-dummy fashion to apixaban at 5 mg twice daily (2.5 mg twice daily if meeting criteria for dose reduction) or aspirin 81 mg once daily.

	Apixaban N=2015	Aspirin N=1997	HR or OR (95%CI)	P value
Primary efficacy outcome of stroke or systemic embolism (Intention to Treat Analysis/ITT)	55 (0.78%)	86 (1.24%)	0.63 (0.45-0.88)	<0.007
Safety Endpoints all major **bleeding on treatment**	86 (1.71)	47 (0.94)	1.60 (1.26-2.57)	0.001

Key Takeaways: Patients with subclinical atrial fibrillation can benefit from apixaban to reduce the risk of stroke and systemic thromboembolism.

ORBITA-2:
A PLACEBO-CONTROLLED TRIAL OF PERCUTANEOUS CORONARY INTERVENTION FOR THE RELIEF OF STABLE ANGINA

RESULTS: In stable angina patients receiving minimal or no antianginal medication and exhibiting objective evidence of ischemia, PCI led to a lower angina symptom score than placebo procedure.

PURPOSE: To compare the effects of coronary angioplasty vs. placebo procedure on symptoms of stable angina without background anti-anginal therapy.

TRIAL DESIGN: Randomized, multicenter, double-blind, placebo-controlled trial.

	PCI (N=151)	Placebo (N=150)	OR (95%CI)	p-value
Primary Endpoint				
Angina symptom score	2.9	5.6	2.21 (1.41 – 3.47)	<0.001
Secondary Endpoints				
Mean treadmill exercise time (sec)	700.9	641.4	59.5 (16 – 103)	
Angina severity as assessed by the Canadian Cardiovascular Society class	0.9	1.7	3.76 (2.43 – 5.82)	<0.001

Key Takeaways: PCI outperformed a placebo procedure for people with minimal chest pain medication, enhancing chest pain relief, exercise ability, and overall quality of life.

MINT:
RESTRICTIVE VERSUS LIBERAL BLOOD TRANSFUSION IN PATIENTS WITH MYOCARDIAL INFARCTION AND ANEMIA

RESULTS: In patients with acute heart attack and anemia, there was no statistically significant difference in 30-day death or recurrent MI between a restrictive or liberal transfusion strategy.

PURPOSE: To compare the outcomes (death or MI) in heart attack patients with hemoglobin levels <10 g/dL, using different blood transfusion approaches: less blood with hemoglobin 7-8 g/dL vs. more blood with hemoglobin 10 g/dL.

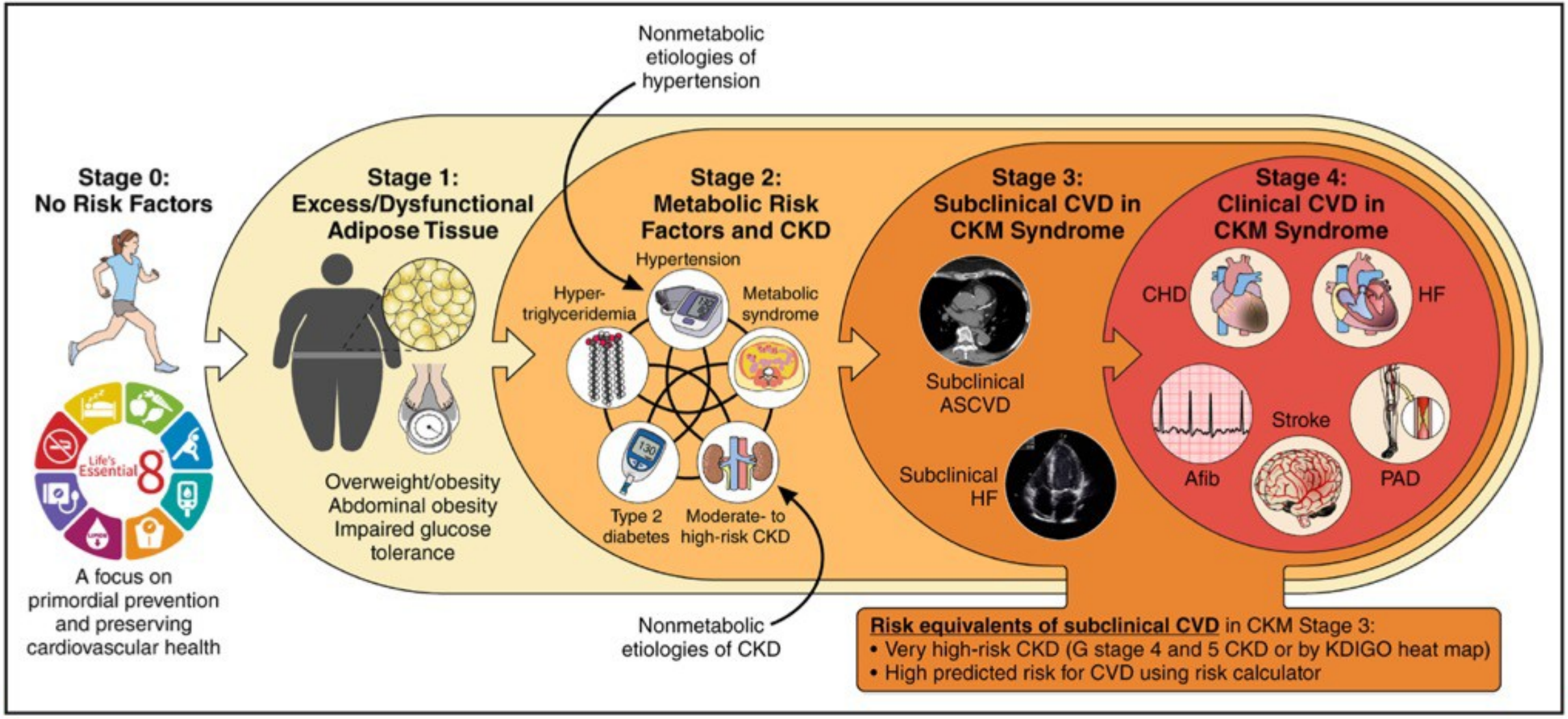
TRIAL DESIGN: Randomized controlled trial, multinational, multicenter, n=3506.

	Restrictive transfusion strategy	Liberal transfusion strategy	RR (95%CI)	p-value
Primary Endpoints				
The composite of all-cause mortality and Myocardial infarction (MI) through 30 days	295/1749 (16.9%)	255/1755 (14.5%)	1.15 (0.99, 1.34)	0.07
Secondary Endpoints				
Death	173/1749 (9.9%)	146/1755 (8.3%)	1.19 (0.96, 1.47)	
MI	8.5%	7.2%	1.19 (0.94, 1.49)	

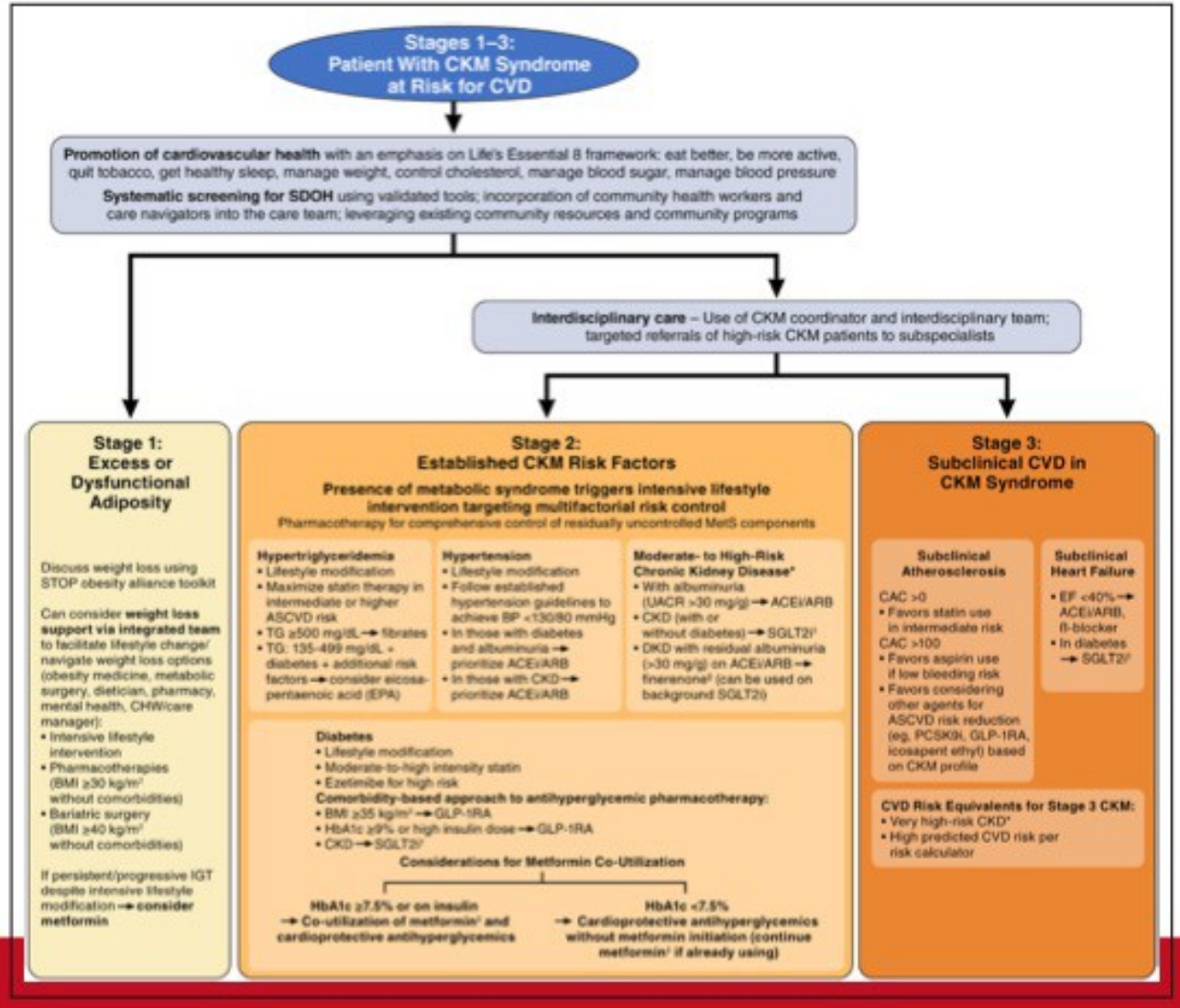
Key Takeaways: A liberal transfusion strategy has the potential for clinical benefit with low risk in anemic patients with MI.

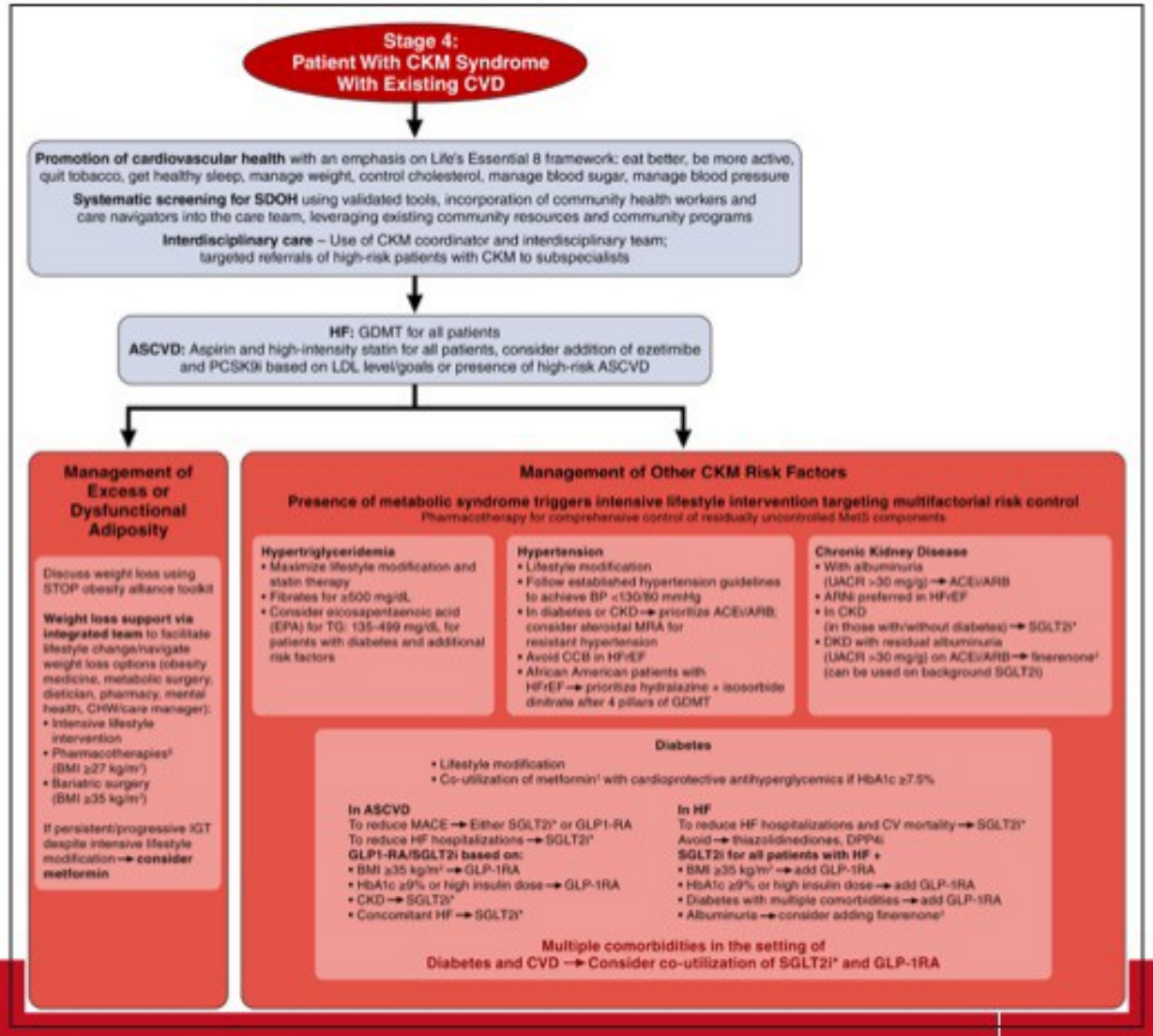
Presented by: Jeffrey L. Carson, MD. Rutgers Robert Wood Johnson Medical School, U.S.. Scientific Sessions 2023.

Cardiovascular-Kidney-Metabolic Health

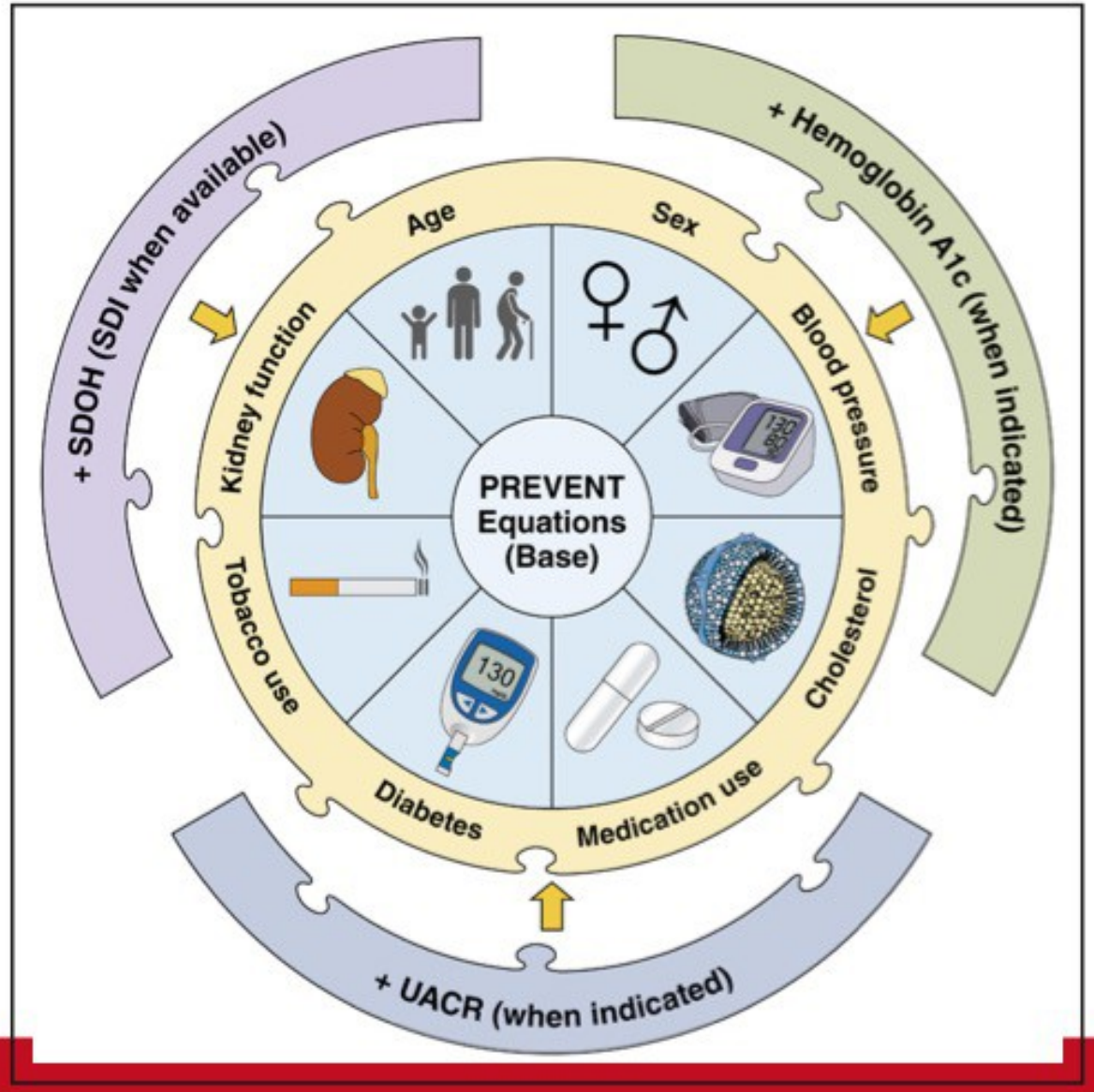


Cardiovascular-Kidney-Metabolic Health:



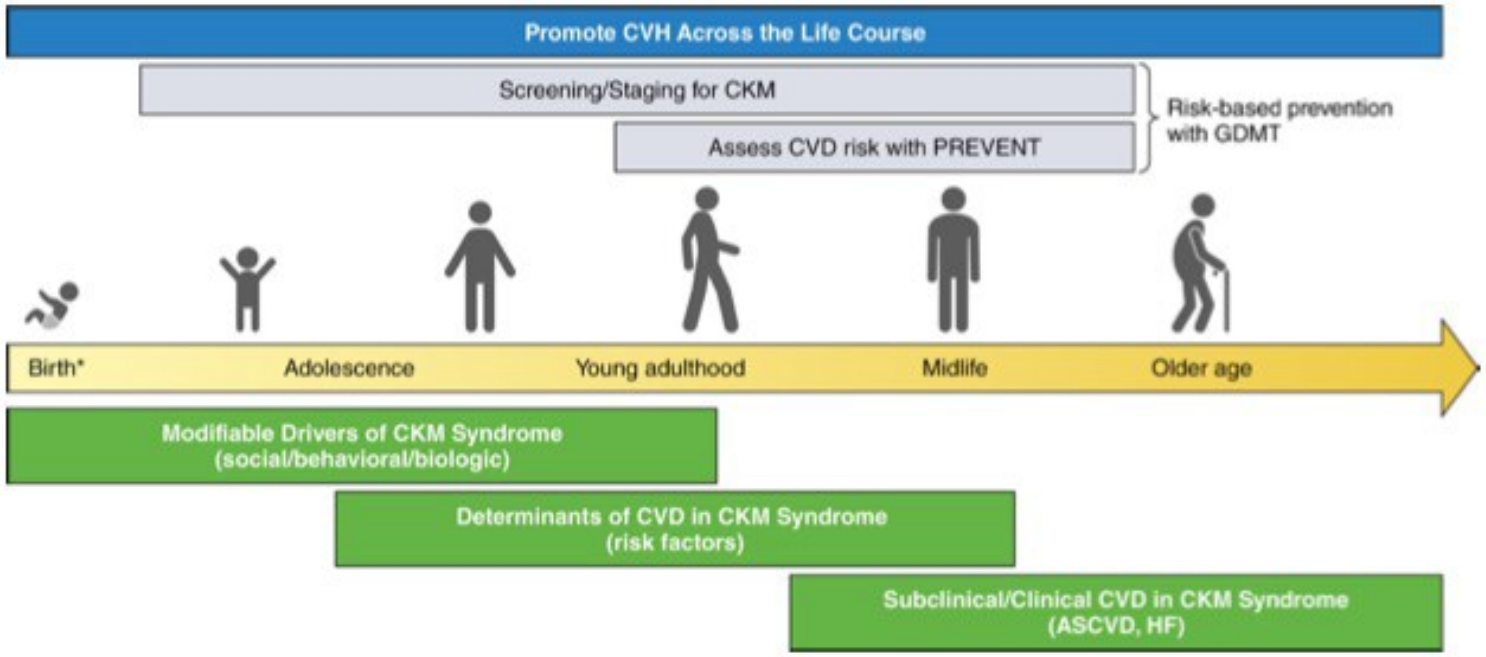


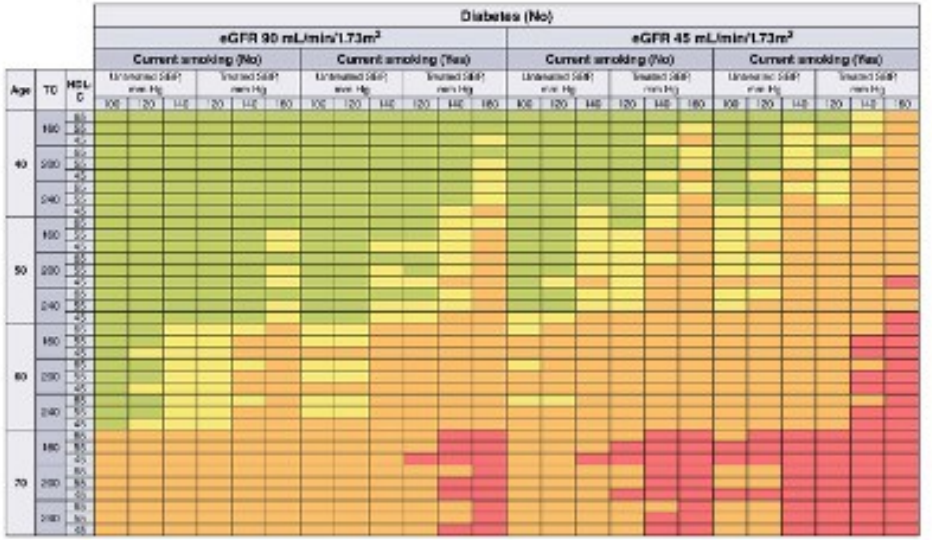
Ước tính nguy cơ tim mạch theo mô hình PREVENT



	PREVENT	PCEs
Demographic factors		
Age	Modeled as the time scale	Predictor
Sex	Sex-specific equations	Sex-specific equations
Race	Race free	Race specific
Clinical predictors		
Systolic blood pressure	X	X
Antihypertensive treatment	X	X
Total cholesterol		X
Non-HDL cholesterol	X	
HDL cholesterol		X
Statin treatment	X	
Diabetes	X	X
HbA1C*	X	
Tobacco use	X	X
eGFR	X	
UACR*	X	
Social Determinants of Health		
Education		
Income		
SDI*	X	
Outcomes†		
CHD	X	X
Stroke	X	X
HF	X	

Ước tính nguy cơ tim mạch theo mô hình PREVENT





Screen for CKM Risk

- Assess Life's Essential 8 (dietary patterns, physical activity, sleep duration and quality, nicotine exposure, body mass index, blood pressure, lipids, and blood sugar)
- Consider additional testing as clinically indicated: HbA1c, UACR, etc.

Assess CVD Risk

Among adults aged 30-79 y

- Calculate: 10- and 30-y absolute risk of CVD, ASCVD, and HF with PREVENT
- Personalize: In the setting of a clinician-patient discussion, consider risk-enhancing factors for shared decision-making
- Reclassify: In those at intermediate risk or when there is uncertainty, consider sequential testing with biomarkers or imaging

Determine CKM Stage

- CKM Stage 0: No CKM risk factors
- CKM Stage 1: Excess or dysfunctional adiposity
- CKM Stage 2: Metabolic risk factors or CKD
- CKM Stage 3: Subclinical CVD, very high-risk CKD, or high predicted CVD risk by PREVENT
- CKM Stage 4: Clinical CVD

Reduce CKM Risk

- Promote CKM health, prevent CKM progression, prioritize CKM regression
- Treat CKM factors and consider cardioprotective therapies according to guideline recommendations when indicated (eg, statin, SGLT2i, GLP-1RA)
- Screen for and address adverse SDOH
- Reassess CKM factors at guideline-recommended intervals

Thông khí đủ trong cấp cứu ngừng tuần hoàn

ORIGINAL RESEARCH ARTICLE

Bag-Valve-Mask Ventilation and Survival From Out-of-Hospital Cardiac Arrest: A Multicenter Study

Ahamed H. Idris, MD; Elisabete Aramendi Ecenarro, PhD; Brian Leroux, PhD; Xabier Jaureguibeitia, MSc; Betty Y. Yang, MD, MS; Sarah Shaver, MD; Mary P. Chang, MD, MPH; Tom Rea, MD, MPH; Peter Kudenchuk, MD; Jim Christenson, MD; Christian Vaillancourt, MD, MSc; Clifton Callaway, MD, PhD; David Salcido, PhD; Jonas Carson; Jennifer Blackwood, MPH; Henry E. Wang, MD, MS, MPH

BACKGROUND: Few studies have measured ventilation during early cardiopulmonary resuscitation (CPR) before advanced airway placement. Resuscitation guidelines recommend pauses after every 30 chest compressions to deliver ventilations. The effectiveness of bag-valve-mask ventilation delivered during the pause in chest compressions is unknown. We sought to determine: (1) the incidence of lung inflation with bag-valve-mask ventilation during 30:2 CPR; and (2) the association of ventilation with outcomes after out-of-hospital cardiac arrest.

METHODS: We studied patients with out-of-hospital cardiac arrest from 6 sites of the Resuscitation Outcomes Consortium CCC study (Trial of Continuous Compressions versus Standard CPR in Patients with Out-of-Hospital Cardiac Arrest). We analyzed patients assigned to the 30:2 CPR arm with ≥2 minutes of thoracic bioimpedance signal recorded with a cardiac defibrillator/monitor. Detectable ventilation waveforms were defined as having a bioimpedance amplitude ≥0.5 Ω (corresponding to ≥250 mL V_T) and a duration ≥1 s. We defined a chest compression pause as a 3- to 15-s break in chest compressions. We compared the incidence of ventilation and outcomes in 2 groups: patients with ventilation waveforms in <50% of pauses (group 1) versus those with waveforms in ≥50% of pauses (group 2).

RESULTS: Among 1976 patients, the mean age was 65 years; 66% were male. From the start of chest compressions until advanced airway placement, mean±SD duration of 30:2 CPR was 9.8±4.9 minutes. During this period, we identified 26 861 pauses in chest compressions; 60% of patients had ventilation waveforms in <50% of pauses (group 1, n=1177), and 40% had waveforms in ≥50% of pauses (group 2, n=799). Group 1 had a median of 12 pauses and 2 ventilations per patient versus group 2, which had 12 pauses and 12 ventilations per patient. Group 2 had higher rates of prehospital return of spontaneous circulation (40.7% versus 25.2%; $P<0.0001$), survival to hospital discharge (13.5% versus 4.1%; $P<0.0001$), and survival with favorable neurological outcome (10.6% versus 2.4%; $P<0.0001$). These associations persisted after adjustment for confounders.

CONCLUSIONS: In this study, lung inflation occurred infrequently with bag-valve-mask ventilation during 30:2 CPR. Lung inflation in ≥50% of pauses was associated with improved return of spontaneous circulation, survival, and survival with favorable neurological outcome.

Key Words: cardiography, impedance ■ cardiopulmonary resuscitation ■ heart arrest ■ patient outcome assessment ■ ventilation

Editorial, see p 1857

EDITORIAL

"Hard and Fast" Resuscitation Guidelines May Need a Bit of "Breathing" Room

Michael Christopher Kurz, MD, MS

Clinical guidelines reduce variability in outcomes by establishing and disseminating best practices independent of treatment environment. At no time is this more important than when illness is critical and complex and the therapeutic window for intervention is vanishingly small. Arguably, cardiac arrest represents the most extreme example of a complicated, time-dependent condition: survival drops by 10% for every 60 s of pulselessness,[1] and favorable outcomes can vary 5-fold between municipalities.[2]

Article, see p 1847

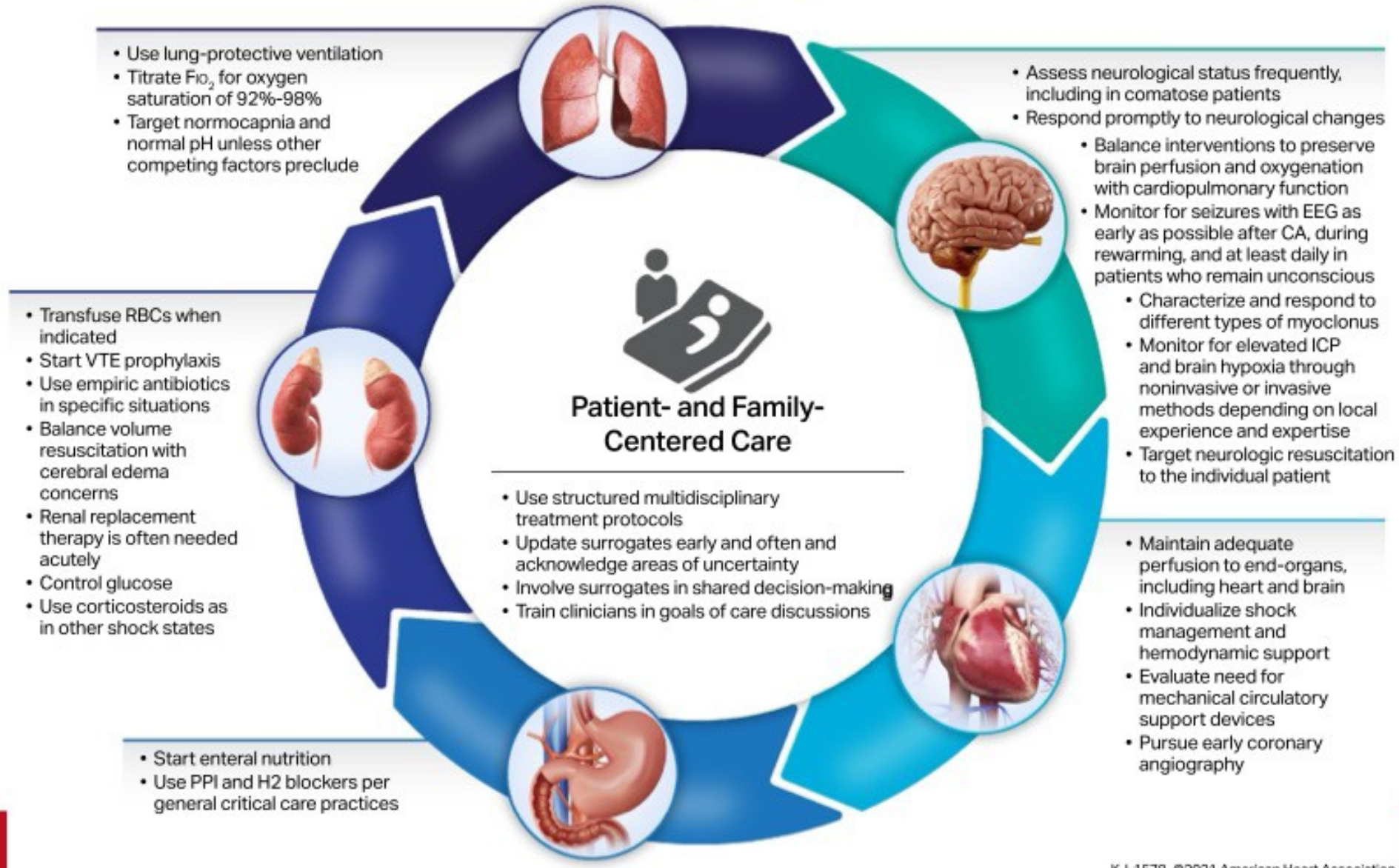
Acknowledging the need to standardize resuscitation, in 1966 the American Heart Association set forth the first set of guidelines to prescribe treatment of cardiac arrest.[3] This uniform approach, including the once familiar paradigm Airway, Breathing, Circulation (ABC), defined resuscitation science for >4 decades. In 2010, after rigorous evaluation of available science, the guidelines for advanced cardiac life support reordered this founding paradigm to Circulation, Airway, Breathing (CAB), prioritizing circulation with prompt cardiopulmonary resuscitation (CPR) over airway.[4] Contemporary evidence measuring CPR quality demonstrated that immediate initiation of chest compressions, rather than first addressing a victim's airway, improved the number and duration delivered.[5] Furthermore, pulse oximetry data proved cardiac arrest victims had sufficient respiratory reserve to maintain adequate oxygenation for >4 minutes after pulselessness.[6] Inherent to this fundamental change in the advanced cardiac life support guidelines are 2 assumptions: (1) No method exists to measure the effectiveness of early ventilatory support outside the confines of a health care facility (ie, out-of-hospital cardiac arrest [OHCA]), and (2) the majority of OHCA occurred in adults with a cardiac arrythmia.

Within 8 months of the publication of the 2010 American Heart Association guidelines, the Resuscitation Outcomes Consortium (ROC) enrolled its first subject in the CCC (Trial of Interrupted or Continuous Chest Compressions During CPR). Briefly, the National Institutes of Health–funded multicenter CCC trial randomized >23 000 subjects with OHCA to receive either continuous chest compressions or a traditional 30:2 duty cycle (ie, 30 chest compressions followed by 2 ventilations, repeated indefinitely) before the placement of an advanced airway. Conducted across 8 ROC sites in the United States and Canada, the CCC trial went to unprecedented lengths to validate provider CPR proficiency and appropriate trial enrollment. The investigators mandated the use of next-generation monitor defibrillators by each of the 114 emergency medical services agencies involved.[7] Their ability to collect CPR process data, including chest compression rate, depth, and duty cycle fraction, proved pivotal to the trial's study design.

Although the CCC trial ultimately concluded that continuous chest compressions did not provide significantly higher rates of survival or favorable neurologic function than standard 30:2 CPR, Idris and colleagues in this issue of *Circulation* demonstrate valuable dividends drawn from the trial's ambitious methodology.[8] Returning to retained CCC monitor defibrillator data, the authors extracted thoracic bioimpedance signals incorporated into 2 of 3 commercially available monitor defibrillators used in the CCC trial. Using novel,

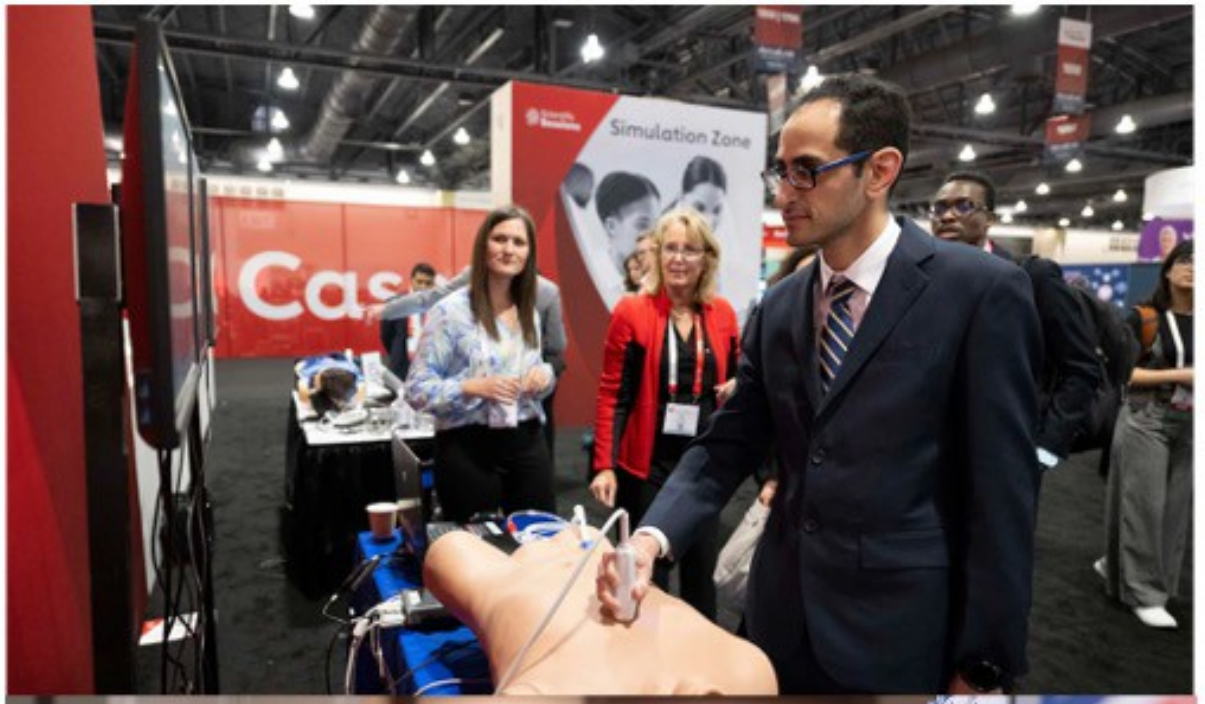
Key Words: Editorials ■ cardiac arrest ■ out-of-hospital ■ respiration, artificial

Hồi sức sau ngừng tuần hoàn




Abbott - Cardiac Rhythm


Scientific Sessions
Health Innovation Pavilion


Simulation Zone

Hoạt động của VNHA với AHA

Global Roundtable:

- How to Optimize Hypertension Control Globally
- Quality of Care, Outcomes and Research in Heart Failure Prevention & Treatment
- *Maternal Cardiovascular Health Worldwide Trends and Opportunities*

- Interamerican Society of Cardiology)
- Argentine Society of Cardiology
- Israel Heart Society
- Vietnamese National Heart Association

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"Tim mạch học Một năm nhìn lại"

1330-1700 chiều thứ 7, ngày 20/1/2024

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