ACC.16 Daily
65TH ANNUAL SCIENTIFIC SESSION & EXPO
APRIL 2, 2016 | CHICAGO
SATURDAY

**EXPO DAILY & MAP** INCLUDED INSIDE!

# ACC.16 Returns to the Windy City to Ignite CV Innovation

Thousands of cardiovascular medical professionals from around the world will engage in innovative, interactive, informative and interdisciplinary education over the next three days as part of ACC's 65th Annual Scientific Session and Expo (ACC.16).

Expanding on the successful "more learning, less lecturing" model embraced by attendees of last year's meeting, ACC.16 will feature a new ENGAGE@ACC.16 Studio, interactive question walls in the Lounge & Learn Pavilion, more sessions with audience response system/question texting capability and redesigned session rooms to enhance interaction between speakers, panelists and participants.

"ACC.16 will stand out as the learning and networking opportunity of the year in cardiology, with cutting-edge science and the technology that will pave the path of practice for the future," says **Kim Allan Williams Sr., MD, FACC**, president of the ACC. "Chicago is an outstanding venue, setting the standard to which all medical meetings aspire." Williams will kick-off the Opening Showcase Session this morning, which includes the Simon Dack Lecture presented by **David B. Nash, MD, MBA**, on the topic of population health, as well as the first Late-Breaking Clinical Trials of the meeting.

A substantial increase in abstract submissions means ACC.16 has more sci-

See ACC.16 RETURNS, page 6

**ACC.16 Opening Showcase Session** and the **2016 Simon Dack Lecture** will take place today from 8:00 – 10:00 a.m. in the **Main Tent (North Hall B1)**

## ACC Tackles Population Health as a Strategic Priority

**Simon Dack Lecture to Focus on Topic**

Population health is not easy to define. It is at a complex intersection between an increasingly diverse population, an evolving health care system, traditional public health and elaborate social policies.

As part of its Strategic Plan, the College has revved up efforts to engage partners and pursue global cardiovascular-related objectives, support members to improve the health of populations, and encourage cardiovascular team-facilitated patient education.

"If we are to successfully contribute to alleviating the cardiovascular disease burden, we must **work with our partners to address critical risk factors and design and support policies that generate the greatest health benefit** by improving cardiovascular health outcomes."

*Gerard R. Martin, MD, FACC*

Over the last several years, the ACC has actively advised the United Nations on its efforts to combat non-communicable diseases (NCDs). ACC Chapters across the U.S. have also had success in advocating for laws aimed at improving the health of populations, including smoke-free laws. In

See POPULATION HEALTH, page 26

## New Treatments, New Legislation Bring Change to the HF Landscape

Two new drugs approved for the treatment of heart failure (HF) with reduced ejection fraction (HFrEF) and emerging technologies for smaller, more durable ventricular assist devices (VADs) for patients with advanced HF are changing the landscape of managing HF. Strategies to remotely monitor pulmonary congestion for earlier detection to prevent HF hospitalization (HFH), such as the implantable CardioMEMS device, are being pursued. Together these advances are providing new tools to address the challenge of HFH and reduce mortality in an expanding HF population.

Entresto, the combination of sacubitril and valsartan, is the biggest advance in the last several years, says **Mary Norine Walsh, MD, FACC,** vice president of the ACC. Shown to be superior to best standard of care, the reduction in cardiovascular mortality and HFH with Entresto in the well-conducted PARADIGM-HF trial truly represents a paradigm shift, with the potential to improve care in many HF patients. This first-in-class drug, approved by the U.S. Food and Drug Administration (FDA) in July 2015, was shown to improve median survival by 1.5 years in a recent analysis of patients in the pivotal study, a substantial life extension for a condition that has a median survival of five years from its diagnosis.

Careful attention must be paid to the side effect profile of Entresto, particularly angioedema, as physicians consider moving their patients from the cornerstone treatment of angiotensin-converter enzyme inhibitors and angiotensin-receptor blockers to the angiotensin-receptor/neprilysin inhibitor combination. Cost will be another consideration, with patients and payers weighing in on the move from a generic to a nongeneric drug.

See HF LANDSCAPE, page 9

Download the free **ACC.16 eMeeting Planner mobile app** for the most up-to-date information.

## INSIDE

**10** **NCDR.16**
**ACC's annual conference for registry professionals focused on managing data during a time of significant change.**

**14** ***JACC* JOURNALS**
**The *Journal of the American College of Cardiology* continues to rank as the top cardiovascular journal worldwide.**

**22** **GLOBAL HEALTH LEADER**
**The college continues to grow as the professional home for cardiovascular professionals around the world.**

## MORE

When maximally tolerated statins and diet aren't enough to get patients with clinical ASCVD or HeFH to their LDL-C goal...

# ADD PRALUENT® (alirocumab): POWER LIKE NEVER BEFORE...


**Larry: Has ASCVD and achieved LDL-C reduction beyond statins[1]***

## INDICATIONS AND USAGE

- PRALUENT is a PCSK9 (Proprotein Convertase Subtilisin/Kexin Type 9) inhibitor antibody indicated as adjunct to diet and maximally tolerated statin therapy for the treatment of adults with heterozygous familial hypercholesterolemia or clinical atherosclerotic cardiovascular disease, who require additional lowering of LDL-C
- The effect of PRALUENT on cardiovascular morbidity and mortality has not been determined

## IMPORTANT SAFETY INFORMATION

- PRALUENT is contraindicated in patients with a history of a serious hypersensitivity reaction to PRALUENT. Reactions have included hypersensitivity vasculitis and hypersensitivity reactions requiring hospitalization
- Hypersensitivity reactions (e.g., pruritus, rash, urticaria), including some serious events (e.g., hypersensitivity vasculitis and hypersensitivity reactions requiring hospitalization), have been reported with PRALUENT treatment. If signs or symptoms of serious allergic reactions occur, discontinue treatment with PRALUENT, treat according to the standard of care, and monitor until signs and symptoms resolve
- The most commonly occurring adverse reactions (≥5% of patients treated with PRALUENT and occurring more frequently than with placebo) are nasopharyngitis, injection site reactions, and influenza
- Local injection site reactions including erythema/redness, itching, swelling, and pain/tenderness were reported more frequently in patients treated with PRALUENT (7.2% versus 5.1% for PRALUENT and placebo, respectively). Few patients discontinued treatment because of these reactions (0.2% versus 0.4% for PRALUENT and placebo, respectively), but patients receiving PRALUENT had a greater number of injection site reactions, had more reports of associated symptoms, and had reactions of longer average duration than patients receiving placebo
- Neurocognitive events were reported in 0.8% of patients treated with PRALUENT and 0.7% of patients treated with placebo. Confusion or memory impairment were reported more frequently by those treated with PRALUENT (0.2% for each) than in those treated with placebo (<0.1% for each)

*Not actual patients; individual results may vary.

†Patients started on PRALUENT 75 mg Q2W in addition to existing statin therapy: Up-titration to 150 mg Q2W occurred at week 12 in 17% of patients who did not achieve their predefined target LDL-C at week 8.[1]

**LDL-C =** low-density lipoprotein cholesterol; **ASCVD =** atherosclerotic cardiovascular disease; **HeFH =** heterozygous familial hypercholesterolemia.

# ...AND MORE POWER IF YOU NEED IT


**Stephanie: Has ASCVD and achieved LDL-C reduction beyond statins[1]***

## PRALUENT offers 2 doses with 2 levels of efficacy[1]

**In COMBO I**

**44%** LDL-C reduction at 24 weeks on top of statins starting with **PRALUENT 75 mg**†

**In the LONG TERM Study**

**58%** LDL-C reduction at 24 weeks on top of statins with **PRALUENT 150 mg**

**The recommended starting dose is 75 mg every 2 weeks[1]**

## CLINICAL STUDIES

**COMBO I (Study 2)** was a multicenter, double-blind, placebo-controlled trial that compared PRALUENT (n=209) with placebo (n=107). Patients were taking maximally tolerated doses of statins with or without other lipid-modifying therapy, and required additional LDL-C reduction. The mean age was 63 years (range 39-87), 34% were women, 82% were Caucasian, 16% were Black, and 11% were Hispanic/Latino. Mean baseline LDL-C was 102 mg/dL. The primary efficacy endpoint, measured at week 24, was the mean percent change in LDL-C from baseline.[1]

**LONG TERM trial (Study 1)** was a multicenter, double-blind, placebo-controlled trial that compared PRALUENT 150 mg Q2W (n=1553) with placebo (n=788). The average LDL-C at baseline was 122 mg/dL. The primary efficacy endpoint, measured at week 24, was the mean percent change in LDL-C from baseline.[1]

## IMPORTANT SAFETY INFORMATION

- Liver-related disorders (primarily related to abnormalities in liver enzymes) were reported in 2.5% of patients treated with PRALUENT and 1.8% of patients treated with placebo, leading to treatment discontinuation in 0.4% and 0.2% of patients, respectively. Increases in serum transaminases to greater than 3 times the upper limit of normal occurred in 1.7% of patients treated with PRALUENT and 1.4% of patients treated with placebo
- The most common adverse reactions leading to treatment discontinuation in patients treated with PRALUENT were allergic reactions (0.6% versus 0.2% for PRALUENT and placebo, respectively) and elevated liver enzymes (0.3% versus <0.1%)
- PRALUENT is a human monoclonal antibody. As with all therapeutic proteins, there is a potential for immunogenicity with PRALUENT

**Please see brief summary of Prescribing Information on next page.**

**Learn more at PraluentHCP.com**

Praluent®
(alirocumab) Injection 75mg/mL 150mg/mL

**Redefining Possible**

**PRALUENT®** **Rx Only**

**(alirocumab) injection, for subcutaneous use**

**Brief Summary of Prescribing Information**

## 1 INDICATIONS AND USAGE

### 1.1 Primary Hyperlipidemia

PRALUENT® is indicated as an adjunct to diet and maximally tolerated statin therapy for the treatment of adults with heterozygous familial hypercholesterolemia or clinical atherosclerotic cardiovascular disease, who require additional lowering of LDL-C.

### 1.2 Limitations of Use

The effect of PRALUENT on cardiovascular morbidity and mortality has not been determined.

## 4 CONTRAINDICATIONS

PRALUENT is contraindicated in patients with a history of a serious hypersensitivity reaction to PRALUENT. Reactions have included hypersensitivity vasculitis and hypersensitivity reactions requiring hospitalization. [*See Warnings and Precautions (5.1)*]

## 5 WARNINGS AND PRECAUTIONS

### 5.1 Allergic Reactions

Hypersensitivity reactions (e.g., pruritus, rash, urticaria), including some serious events (e.g., hypersensitivity vasculitis and hypersensitivity reactions requiring hospitalization), have been reported with PRALUENT treatment. If signs or symptoms of serious allergic reactions occur, discontinue treatment with PRALUENT, treat according to the standard of care, and monitor until signs and symptoms resolve [*see Contraindications (4)*].

## 6 ADVERSE REACTIONS

The following adverse reactions are also discussed in the other sections of the labeling:

- Allergic Reactions [*See Warnings and Precautions (5.1)*.]

### 6.1 Clinical Trials Experience

Because clinical trials are conducted under widely varying conditions, adverse reaction rates observed in the clinical trials of a drug cannot be directly compared to rates in the clinical trials of another drug and may not reflect the rates observed in practice.

The safety of PRALUENT was evaluated in 9 placebo-controlled trials that included 2476 patients treated with PRALUENT, including 2135 exposed for 6 months and 1999 exposed for more than 1 year (median treatment duration of 65 weeks). The mean age of the population was 59 years, 40% of the population were women, 90% were Caucasians, 4% were Black or African American, and 3% were Asians. At baseline, 37% of patients had a diagnosis of heterozygous familial hypercholesterolemia and 66% had clinical atherosclerotic cardiovascular disease.

Adverse reactions reported in at least 2% of PRALUENT-treated patients, and more frequently than in placebo-treated patients, are shown in Table 1.

**Table 1 Adverse Reactions Occurring in Greater Than or Equal to 2% of PRALUENT-Treated Patients and More Frequently Than with Placebo**

| Adverse Reactions | Placebo (N=1276) | PRALUENT* (N=2476) |
|---|---|---|
| Nasopharyngitis | 11.1% | 11.3% |
| Injection site reactions† | 5.1% | 7.2% |
| Influenza | 4.6% | 5.7% |
| Urinary tract infection | 4.6% | 4.8% |
| Diarrhea | 4.4% | 4.7% |
| Bronchitis | 3.8% | 4.3% |
| Myalgia | 3.4% | 4.2% |
| Muscle spasms | 2.4% | 3.1% |
| Sinusitis | 2.7% | 3.0% |
| Cough | 2.3% | 2.5% |
| Contusion | 1.3% | 2.1% |
| Musculoskeletal pain | 1.6% | 2.1% |

*75 mg every 2 weeks and 150 mg every 2 weeks combined
†includes erythema/redness, itching, swelling, pain/tenderness

Adverse reactions led to discontinuation of treatment in 5.3% of patients treated with PRALUENT and 5.1% of patients treated with placebo. The most common adverse reactions leading to treatment discontinuation in patients treated with PRALUENT were allergic reactions (0.6% versus 0.2% for PRALUENT and placebo, respectively) and elevated liver enzymes (0.3% versus <0.1%).

*Local Injection Site Reactions*

Local injection site reactions including erythema/redness, itching, swelling, and pain/tenderness were reported more frequently in patients treated with PRALUENT (7.2% versus 5.1% for PRALUENT and placebo, respectively). Few patients discontinued treatment because of these reactions (0.2% versus 0.4% for PRALUENT and placebo, respectively), but patients receiving PRALUENT had a greater number of injection site reactions, had more reports of associated symptoms, and had reactions of longer average duration than patients receiving placebo.

*Allergic Reactions*

Allergic reactions were reported more frequently in patients treated with PRALUENT than in those treated with placebo (8.6% versus 7.8%). The proportion of patients who discontinued treatment due to allergic reactions was higher among those treated with PRALUENT (0.6% versus 0.2% ). Serious allergic reactions, such as hypersensitivity, nummular eczema, and hypersensitivity vasculitis were reported in patients using PRALUENT in controlled clinical trials [*see Warnings and Precautions (5.1)*].

*Neurocognitive Events*

Neurocognitive events were reported in 0.8% of patients treated with PRALUENT and 0.7% of patients treated with placebo. Confusion or memory impairment were reported more frequently by those treated with PRALUENT (0.2% for each) than in those treated with placebo (<0.1% for each).

*Liver Enzyme Abnormalities*

Liver-related disorders (primarily related to abnormalities in liver enzymes) were reported in 2.5% of patients treated with PRALUENT and 1.8% of patients treated with placebo, leading to treatment discontinuation in 0.4% and 0.2% of patients, respectively. Increases in serum transaminases to greater than 3 times the upper limit of normal occurred in 1.7% of patients treated with PRALUENT and 1.4% of patients treated with placebo.

*Low LDL-C Values*

In a pool of both placebo- and active-controlled clinical trials, 796 PRALUENT-treated patients had two consecutive calculated LDL-C values <25 mg/dL, and 288 had two consecutive calculated LDL-C values <15 mg/dL. Changes to background lipid-altering therapy (e.g., maximally tolerated statins) were not made in response to low LDL-C values, and PRALUENT dosing was not modified or interrupted on this basis. Although adverse consequences of very low LDL-C were not identified in these trials, the long-term effects of very low levels of LDL-C induced by PRALUENT are unknown.

### 6.2 Immunogenicity

As with all therapeutic proteins, there is a potential for immunogenicity with PRALUENT. In a pool of ten placebo- and active-controlled trials, 4.8% of patients treated with PRALUENT had anti-drug antibodies (ADA) newly detected after initiating treatment as compared with 0.6% of patients treated with control.

Patients who developed ADA had a higher incidence of injection site reactions compared with patients who did not develop ADA (10.2% vs 5.9%).

A total of 1.2% of patients treated with PRALUENT developed neutralizing antibodies (NAb) on at least one occasion as compared with no patients treated with control, and 0.3% of patients both tested positive for NAb and exhibited transient or prolonged loss of efficacy. The long-term consequences of continuing PRALUENT treatment in the presence of persistent NAb are unknown.

Immunogenicity data are highly dependent on the sensitivity and specificity of the assay as well as other factors. Additionally, the observed incidence of antibody positivity in an assay may be influenced by several factors, including sample handling, timing of sample collection, concomitant medications, and underlying disease. For these reasons, comparison of the incidence of antibodies to PRALUENT with the incidence of antibodies to other products may be misleading.

## 8 USE IN SPECIFIC POPULATIONS

### 8.1 Pregnancy

Risk Summary: There are no available data on use of PRALUENT in pregnant women to inform a drug-associated risk. In animal reproduction studies, there were no effects on embryo-fetal development when rats were subcutaneously administered alirocumab during organogenesis at dose exposures up to 12-fold the exposure at the maximum recommended human dose of 150 mg every two weeks. In monkeys, suppression of the humoral immune response was observed in infant monkeys when alirocumab was dosed during organogenesis to parturition at dose exposures 13-fold the exposure at the maximum recommended human dose of 150 mg every two weeks. No additional effects on pregnancy or neonatal/infant development were observed at dose exposures up to 81-fold the maximum recommended human dose of 150 mg every two weeks. Measurable alirocumab serum concentrations were observed in the infant monkeys at birth at comparable levels to maternal serum, indicating that alirocumab, like other IgG antibodies, crosses the placental barrier. FDA's experience with monoclonal antibodies in humans indicates that they are unlikely to cross the placenta in the first trimester; however, they are likely to cross the placenta in increasing amounts in the second and third trimester. Consider the benefits and risks of PRALUENT and possible risks to the fetus before prescribing PRALUENT to pregnant women.

In the U.S. general population, the estimated background risk of major birth defects and miscarriage in clinically recognized pregnancies is 2–4% and 15–20%, respectively.

Data; *Animal Data* - In Sprague Dawley rats, no effects on embryo-fetal development were observed when alirocumab was dosed at up to 75 mg/kg/dose by the subcutaneous route on gestation days 6 and 12 at exposures 12-fold the maximum recommended human dose of 150 mg every two weeks, based on serum AUC.

In cynomolgus monkeys, suppression of the humoral immune response to keyhole limpet hemocyanin (KLH) antigen was observed in infant monkeys at 4 to 6 months of age when alirocumab was dosed during organogenesis to parturition at 15 mg/kg/week and 75 mg/kg/week by the subcutaneous route, corresponding to 13- and 81-fold the human exposure at the maximum recommended human dose of 150 mg every two weeks, based on serum AUC. The lowest dose tested in the monkey resulted in humoral immune suppression; therefore it is unknown if this effect would be observed at clinical exposure. No study designed to challenge the immune system of infant monkeys was conducted. No additional embryo-fetal, prenatal or postnatal effects were observed in infant monkeys, and no maternal effects were observed, when alirocumab was dosed at up to 75 mg/kg/week by the subcutaneous route, corresponding to maternal exposure of 81-fold the exposure at the maximum recommended human dose of 150 mg every two weeks, based on serum AUC.

### 8.2 Lactation

Risk Summary: There is no information regarding the presence of alirocumab in human milk, the effects on the breastfed infant, or the effects on milk production. The development and health benefits of breastfeeding should be considered along with the mother's clinical need for PRALUENT and any potential adverse effects on the breastfed infant from PRALUENT or from the underlying maternal condition. Human IgG is present in human milk, but published data suggest that breastmilk IgG antibodies do not enter the neonatal and infant circulation in substantial amounts.

### 8.4 Pediatric Use

Safety and efficacy in pediatric patients have not been established.

### 8.5 Geriatric Use

In controlled studies, 1158 patients treated with PRALUENT were ≥65 years of age and 241 patients treated with PRALUENT were ≥75 years of age. No overall differences in safety or effectiveness were observed between these subjects and younger subjects, and other reported clinical experience has not identified differences in responses between the elderly and younger patients, but greater sensitivity of some older individuals cannot be ruled out.

### 8.6 Renal Impairment

No dose adjustment is needed for patients with mild or moderately impaired renal function. No data are available in patients with severe renal impairment. [*See Clinical Pharmacology (12.3) in the full prescribing information*.]

### 8.7 Hepatic Impairment

No dose adjustment is needed for patients with mild or moderate hepatic impairment. No data are available in patients with severe hepatic impairment. [*See Clinical Pharmacology (12.3) in the full prescribing information*.]

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SANOFI REGENERON


01/2016 US-PRB-1513 US.ALI.16.01.008

**Reference: 1.** PRALUENT® (alirocumab) Prescribing Information. Sanofi/Regeneron Pharmaceuticals, 2015.

## Today's Schedule:
# SATURDAY, APRIL 2

**ACC.16 Opening Showcase and the Joint ACC/JACC Late-Breaking Clinical Trials**
8:00 – 10:00 a.m.
**Main Tent (North Hall B1)**

**2016 Simon Dack Lecture (During the Opening Showcase Session)**
8:00 – 10:00 a.m.
**Main Tent (North Hall B1)**

**Expo Hall Open**
9:30 a.m. – 4:45 p.m.

**Poster Sessions**
9:30 a.m. – 12:30 p.m.
**South Hall A**

**FIT Jeopardy: Battle of the State Chapters I (Preliminary Rounds)**
9:45 – 11:45 a.m.
2:00 – 3:45 p.m.
**Engage@ACC.16 Studio (Expo #6098)**

**Lifestyle Medicine: A Little Less Drug, a Little More Sex, and a Lot More Rock and Roll I, II and III**
12:15 – 6:00 p.m.
**Grand Ballroom S100a**

**ACC.i2 Live Case Session I, II and III**
12:15 – 6:00 p.m.
**Main Tent (North Hall B1)**

**47th Annual Louis F. Bishop Lecture**
12:15 – 1:45 p.m.
**Room S406a**

**ACCF Study Session For MOC**
8:00 a.m. – 6:00 p.m.
**Room S105cd**

**Poster Sessions**
1:30 – 4:30 p.m.
**South Hall A**

**ACC Clinical Focus Sessions**
6:00 – 8:30 p.m.
**Rooms S401, S102 and Grand Ballroom S100bc**

Visit the **ACC.16 App** for additional session details.

### DON'T MISS TODAY'S **LATE-BREAKING CLINICAL TRIALS**

**The Joint ACC/JACC Late-Breaking Clinical Trials** (During the Opening Showcase Session)

- PARTNER 2
- HOPE-3
- HOPE-3: Effects of Rosuvastatin on CVD in Moderate Risk Primary Prevention in Diverse Ethnic Groups
- HOPE-3: Effects of Combined Lipid and BP-Lowering on CVD in a Moderate Risk Global Primary Prevention Population

Session 401
8:00 – 10:00 a.m.
Main Tent (North Hall B1)

**View complete news coverage at *ACC.org/ACC2016*.**

# **Accreditation** Added to ACC's Quality Improvement Offerings For Hospitals, Health Systems

One of ACC's key priorities is the development of a comprehensive health systems strategy. At the crux of this strategy is the need to provide hospitals, health systems and other facilities with an integrated, holistic approach to quality improvement across the cardiovascular care spectrum.

To date, the ACC has built the largest suite of hospital and outpatient cardiovascular clinical data registries (NCDR). In addition, as part of the broader Quality Improvement for Institutions umbrella, the College has successfully rolled out quality initiatives like Hospital to Home and Surviving MI to help hospitals close identified gaps in care and improve outcomes. However, gaps still exist in translating available data to improvement in care to patients.

> "We greatly **appreciate the work that has been accomplished** over the years in the cardiovascular **accreditation space on behalf of our members, practices and patients.**"
>
> *Richard A. Chazal, MD, FACC*

"While some health care systems and physicians have the infrastructure to optimally leverage this data to improve care, there are many who don't," says **Richard A. Chazal, MD, FACC**, president-elect of the ACC. "Accreditation processes – especially those integrated with clinical databases – have the potential to aid physicians and the cardiovascular care team in documenting and improving care."

It is for this reason that the College welcomed the Society of Cardiovascular Patient Care (SCPC) to its fold earlier this year. SCPC has played a pioneering role in the hospital accreditation space over the past 18 years, bringing together diverse stakeholders to improve the clinical processes within facilities for the early assessment, diagnosis and treatment of cardiovascular disease.

"The addition of SCPC to the ACC brings new thinking, new perspectives and new expertise to ongoing efforts to reduce the data burden on facilities by providing a streamlined, continuous approach to quality improvement," says ACC CEO **Shal Jacobovitz**.

As the merger is implemented in the coming year, the College is focused on creating a unique hospital system value proposition that includes, but also goes beyond accreditation, to integrate with relevant NCDR registries, quality improvement initiatives and education. "We greatly appreciate the work that has been accomplished over the years in the cardiovascular accreditation space on behalf of our members, practices and patients," says Chazal. "However, given the many changes in the health care environment – most notably a transition in focus from volume to value – the College needs a solid health system strategy of its own. We are excited by the opportunities to expand our quality offerings across the cardiovascular service line spectrum, including cardiac imaging, catheterization and electrophysiology labs, cardiac rehabilitation, and cardiac surgery."

> "The addition of SCPC to the **ACC brings new thinking, new perspectives and new expertise to ongoing efforts to reduce the data burden on facilities** by providing a streamlined, continuous approach to quality improvement."
>
> *Shal Jacobovitz*

For more information on current accreditation services, visit *SCPC.org*. For additional information on NCDR registries and quality improvement offerings for hospitals and institutions, visit *CVQuality.ACC.org*.

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*ACC.org*

## ACC.16 RETURNS from page 1

ence than ever before, according to ACC.16 Chair **Athena Poppas, MD, FACC**. She notes that the meeting includes far more presentations in the interactive moderated poster sessions and throughout the 12 learning pathways as a result of this increase. As always, Late-Breaking Clinical Trial sessions will unveil the hottest cardiovascular research and offer opportunities for discussion and debate.

Grounded in principles of different learning techniques for different learners, ACC.16 also offers a variety of session formats including "ACC Talks," case presentations, interviews, debates, games and competitions. New "Intensive Programs" will provide deep-dive, half-day sessions on timely topics, including lifestyle medicine, women's cardiovascular health, precision medicine and professional development, with the goal of providing take-home information, ideas and a review of clinical experiences that can be applied at the point of care. A lineup of experts in the field – including **Robert M. Califf, MD, MACC**, the newly-appointed commissioner of the U.S. Food and Drug Administration – will give keynote lectures on topics ranging from future directions in cardiovascular medicine to the latest outcomes in congenital heart disease.

"ACC.16 is a **true marriage of learning and engagement.**"

*Athena Poppas, MD, FACC*

The four I's – innovative, interactive, informative and interdisciplinary – are woven into all sessions for a unique learning experience that provides tangible information for immediate application says **Jeffrey Kuvin, MD, FACC**, co-chair of ACC.16 and incoming chair of ACC.17 and ACC.18. Starting this year, all core sessions are eligible for continuing medical education (CME), continuing nursing education (CNE) and continuing education (CE) credit, he adds.

"**ACC.16 will stand out as the learning and networking opportunity of the year in cardiology**, with cutting-edge science and the technology that will pave the path of practice for the future."

*Kim Allan Williams Sr., MD, FACC*

Building community is another guiding principle for ACC.16. The new ENGAGE@ACC.16 Studio – a 200-seat theater with a 180-degree stage designed for audience participation – is the hub for interactive experiences and interdisciplinary learning. The Studio will feature Simulation Sessions, a Cardiology Contest and an Ask the Experts session on valvular heart disease. Attendees can also meet cardiovascular legends, including **Marc A. Pfeffer, MD, PhD, FACC; Spencer B. King III, MD, MACC;** and **Peter K. Smith, MD, FACC,** or cheer on their state in the ACC.16 interstate Fellows in Training (FIT) Jeopardy competition.

The daily noontime Simulation Sessions led by a physician expert are deep-dives into acute and chronic cases. With the help of Body Interact simulation, the physician expert will lead participants through patient interaction, clinical decision-making and discussion.

The popular Lounge & Learn Pavilion has also returned, and provides a dedicated location for networking and discussions with colleagues with similar interests, along with structured and unstructured learning experiences. Key lounges include the FIT Lounge, Early Career Lounge, Women in Cardiology Lounge, Cardiovascular Team Lounge and International Lounge. The ACC Political Action Committee also has a presence in the lounge for U.S. members interested in advocacy and shaping health policy.

Complementing the official science is non-accredited, high-value, science-based education within the Expo. The expanded Sim Center provides real-time, virtual training experience through eight different clinical case presentations on the lifelike Body Interact digital patient simulator. The cases are also available for self-directed learning via iPads.

Along with the Industry-Expert Theaters, Innovation Stage, Interactive Learning Labs, and Patient Engagement Pavilion, there are more than 270 exhibitors representing cardiovascular devices, imaging technology, information technology, pharmaceuticals, and services such as education, research, publishing and best hospital practices.

"ACC.16 is a true marriage of learning and engagement," Poppas notes. Kuvin agrees adding that the "cornerstone of ACC education is the Annual Scientific Session."

ACC.16 will close on Monday evening with the time-honored tradition of **Convocation**. The College will welcome its newest class of Fellows and Associates of the ACC, recognize distinguished award winners, and install **Richard A. Chazal, MD, FACC**, as the new ACC president.

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†PARTNER II Trial high-risk and inoperable transfemoral SAPIEN 3 valve cohort 30-day results; average hospital stay is 6 days.

**See adjacent page for Important Safety Information.**

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## IMPORTANT SAFETY INFORMATION

### EDWARDS SAPIEN 3 TRANSCATHETER HEART VALVE WITH THE EDWARDS COMMANDER DELIVERY SYSTEM

**Indications:** The Edwards SAPIEN 3 transcatheter heart valve (THV), model 9600TFX, and accessories are indicated for relief of aortic stenosis in patients with symptomatic heart disease due to severe native calcific aortic stenosis who are judged by a heart team, including a cardiac surgeon, to be at high or greater risk for open surgical therapy (i.e., Society of Thoracic Surgeons operative risk score ≥ 8% or at a ≥ 15% risk of mortality at 30 days).

**Contraindications:** The THV and delivery systems are contraindicated in patients who cannot tolerate an anticoagulation/antiplatelet regimen or who have active bacterial endocarditis or other active infections.

**Warnings:** Observation of the pacing lead throughout the procedure is essential to avoid the potential risk of pacing lead perforation. There is an increased risk of stroke in transcatheter aortic valve replacement procedures, as compared to balloon aortic valvuloplasty or other standard treatments. The devices are designed, intended, and distributed for single use only. **Do not resterilize or reuse the devices**. There are no data to support the sterility, nonpyrogenicity, and functionality of the devices after reprocessing. Incorrect sizing of the THV may lead to paravalvular leak, migration, embolization, and/or annular rupture. Accelerated deterioration of the THV may occur in patients with an altered calcium metabolism. Prior to delivery, the THV must remain hydrated at all times and cannot be exposed to solutions other than its shipping storage solution and sterile physiologic rinsing solution. THV leaflets mishandled or damaged during any part of the procedure will require replacement of the THV. Caution should be exercised in implanting a THV in patients with clinically significant coronary artery disease. Patients with pre-existing mitral valve devices should be carefully assessed prior to implantation of the THV to ensure proper THV positioning and deployment. Do not mishandle the delivery system or use it if the packaging or any components are not sterile, have been opened or are damaged (e.g., kinked or stretched), or if the expiration date has elapsed. Use of excessive contrast media may lead to renal failure. Measure the patient's creatinine level prior to the procedure. Contrast media usage should be monitored. Patient injury could occur if the delivery system is not un-flexed prior to removal. Care should be exercised in patients with hypersensitivities to cobalt, nickel, chromium, molybdenum, titanium, manganese, silicon, and/or polymeric materials. The procedure should be conducted under fluoroscopic guidance. Some fluoroscopically guided procedures are associated with a risk of radiation injury to the skin. These injuries may be painful, disfiguring, and long-lasting. THV recipients should be maintained on anticoagulant/antiplatelet therapy, except when contraindicated, as determined by their physician. This device has not been tested for use without anticoagulation.

**Precautions:** Long-term durability has not been established for the THV. Regular medical follow-up is advised to evaluate THV performance. Glutaraldehyde may cause irritation of the skin, eyes, nose, and throat. Avoid prolonged or repeated exposure to, or breathing of, the solution. To maintain proper valve leaflet coaptation, do not overinflate the deployment balloon. Appropriate antibiotic prophylaxis is recommended post-procedure in patients at risk for prosthetic valve infection and endocarditis. Safety, effectiveness, and durability have not been established for valve-in-valve procedures. Safety and effectiveness have not been established for patients with the following characteristics/comorbidities: non-calcified aortic annulus; severe ventricular dysfunction with ejection fraction < 20%; congenital unicuspid or congenital bicuspid aortic valve; mixed aortic valve disease (aortic stenosis and aortic regurgitation with predominant aortic regurgitation > 3+); pre-existing prosthetic heart valve or prosthetic ring in any position; severe mitral annular calcification (MAC), severe (> 3+) mitral insufficiency, or Gorlin syndrome; blood dyscrasias defined as leukopenia (WBC < 3000 cells/mL), acute anemia (Hb < 9 g/dL), thrombocytopenia (platelet count < 50,000 cells/mL), or history of bleeding diathesis or coagulopathy; hypertrophic cardiomyopathy with or without obstruction (HOCM); echocardiographic evidence of intracardiac mass, thrombus, or vegetation; a known hypersensitivity or contraindication to aspirin, heparin, ticlopidine (Ticlid), or clopidogrel (Plavix), or sensitivity to contrast media, which cannot be adequately premedicated; significant aortic disease, including abdominal aortic or thoracic aneurysm defined as maximal luminal diameter 5 cm or greater, marked tortuosity (hyperacute bend), aortic arch atheroma (especially if thick [> 5 mm], protruding, or ulcerated) or narrowing (especially with calcification and surface irregularities) of the abdominal or thoracic aorta, severe "unfolding" and tortuosity of the thoracic aorta; access characteristics that would preclude safe placement of 14F or 16F Edwards eSheath introducer set, such as severe obstructive calcification, severe tortuosity, or diameter less than 5.5 mm or 6 mm, respectively; or bulky calcified aortic valve leaflets in close proximity to coronary ostia.

**Potential Adverse Events:** Potential risks associated with the overall procedure including potential access complications associated with standard cardiac catheterization, balloon valvuloplasty, the potential risks of conscious sedation and/or general anesthesia, and the use of angiography: death; stroke/transient ischemic attack, clusters, or neurological deficit; paralysis; permanent disability; respiratory insufficiency or respiratory failure; hemorrhage requiring transfusion or intervention; cardiovascular injury including perforation or dissection of vessels, ventricle, myocardium, or valvular structures that may require intervention; pericardial effusion or cardiac tamponade; embolization including air, calcific valve material, or thrombus; infection including septicemia and endocarditis; heart failure; myocardial infarction; renal insufficiency or renal failure; conduction system defect which may require a permanent pacemaker; arrhythmia; retroperitoneal bleed; AV fistula or pseudoaneurysm; reoperation; ischemia or nerve injury; restenosis; pulmonary edema; pleural effusion; bleeding; anemia; abnormal lab values (including electrolyte imbalance); hypertension or hypotension; allergic reaction to anesthesia, contrast media, or device materials; hematoma; syncope; pain or changes at the access site; exercise intolerance or weakness; inflammation; angina; heart murmur; and fever. Additional potential risks associated with the use of the THV, delivery system, and/or accessories include: cardiac arrest; cardiogenic shock; emergency cardiac surgery; cardiac failure or low cardiac output; coronary flow obstruction/transvalvular flow disturbance; device thrombosis requiring intervention; valve thrombosis; device embolization; device migration or malposition requiring intervention; valve deployment in unintended location; valve stenosis; structural valve deterioration (wear, fracture, calcification, leaflet tear/tearing from the stent posts, leaflet retraction, suture line disruption of components of a prosthetic valve, thickening, stenosis); device degeneration; paravalvular or transvalvular leak; valve regurgitation; hemolysis; device explants; nonstructural dysfunction; mechanical failure of delivery system and/or accessories; and non-emergent reoperation.

### EDWARDS CRIMPER

**Indications:** The Edwards Crimper is indicated for use in preparing the Edwards SAPIEN 3 transcatheter heart valve for implantation.

**Contraindications:** There are no known contraindications.

**Warnings:** The devices are designed, intended, and distributed for single use only. **Do not resterilize or reuse the devices**. There is no data to support the sterility, nonpyrogenicity, and functionality of the devices after reprocessing.

**Precautions:** For special considerations associated with the use of the Edwards Crimper prior to transcatheter heart valve implantation, refer to the Edwards SAPIEN 3 transcatheter heart valve Instructions for Use.

**Potential Adverse Events:** There are no known potential adverse events associated with the Edwards Crimper.

**CAUTION: Federal (United States) law restricts this device to sale by or on the order of a physician.**



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Edwards

## HF LANDSCAPE from page 1

Corlanor (ivabradine), approved by the FDA in April 2015 for patients with HFrEF who are in sinus rhythm and have a heart rate >70 bpm, slows heart rate, but has few if any other cardiovascular effects. In the SHIFT trial, the reduction in HFH was the primary driver of the reduction in the combined endpoint of HFH and cardiovascular death with Corlanor. For patients unable to tolerate a beta-blocker, Corlanor provides a new treatment option.

> "These are **important drug advances for HFrEF**, which carries a high baseline morbidity and mortality, with a high burden of HFH on our health care system."
>
> *Christopher O'Connor, MD, FACC*

"These are important drug advances for HFrEF, which carries a high baseline morbidity and mortality, with a high burden of HFH on our health care system," says **Christopher O'Connor, MD, FACC,** editor-in-chief of *JACC: Heart Failure*.

The coverage of cardiac rehabilitation by the Centers for Medicare and Medicaid Services is another important advancement. Shown to reduce HFH and improve quality of life in patients with HFrEF in the HF-ACTION study led by O'Connor, cardiac rehabilitation was assigned a Class Ia recommendation in the ACC/American Heart Association HF guidelines.

The miniaturization of VADs for patients with advanced, stage D HF is a major advance, and their use as destination therapy as a permanent alternative to heart transplant likely will continue to grow as more VADs are approved. Ultimately, in perhaps a decade, VADs that are sufficiently small enough, including the power source, to be fully implanted similar to a cardiac resynchronization device, will open the door to many more patients, says Walsh. The current generation of VADs require less surgical dissection, and other surgical approaches to further reduce this burden are being investigated, such as a lateral thoracotomy in the HVAD LATERAL trial.

Meaningful improvements in mid-term survival (median survival four years) and quality of life have been provided by the first continuous flow VAD approved for destination therapy, HeartMate II, for patients who otherwise face a very poor chance of survival, says **Sean Patrick Pinney, MD, FACC.** HeartMate 3 was recently shown to have a six-month survival of 92 percent in 50 patients and to improve quality of life and functional status in a European study comparing them with historical controls in the HeartMate II registry. The first results with HeartMate 3 in the U.S. are anticipated in early 2017 from the MOMENTUM 3 study. Results are awaited from the ENDURANCE Supplemental trial of the HeartWare device for its approval as destination therapy. The ENDURANCE trial had shown HeartWare was noninferior to any FDA-approved device for destination therapy.

> "The **MACRA** legislation is crucial and will have a direct impact on the care of HF."
>
> *Mary Norine Walsh, MD, FACC*

Also expected to be reported soon is the PAL-HF disease management study of palliative care in very advanced HF, with the predominant goal of identifying strategies to improve quality of life, regardless of mortality risk. O'Connor is also a co-investigator of this National Institutes of Health-funded study.

In the HFpEF arena, "there has been no big win yet," says Walsh. Notably, the NEAT trial demonstrated that nitrates are contraindicated in HFpEF patients, with physical activity lower and side effects higher with nitrates. The PARAGON-HF trial is examining Entresto in HFpEF, and is expected to wrap up in 2019. Signals from a Swedish registry and the TOPCAT trial suggest that neurohormonal activation may drive outcomes in HFpEF, too, says Pinney.

The move to value-based care requires more effective home-based disease management strategies. With the objective of reducing HFH, implantable and noninvasive devices are being investigated to monitor pulmonary congestion to provide actionable data for altering treatment earlier. The FDA-approved CardioMEMS pulmonary artery pressure monitor reduced HFH and rehospitalization at six months in the CHAMPION trial. However, realizing the potential of these devices requires a robust HF disease management program with a clinician dedicated to monitoring the data and making treatment decisions.

The *Medicare Access and CHIP Reauthorization Act of 2015* (MACRA) legislation is crucial and will have a direct impact on the care of HF, says Walsh, benefiting patients, clinicians and health care systems. Physician-directed, nurse-managed, value-based care will be more effectively delivered under a system that does not require a fee for individual components of care that require a lot of time and focus from the health care team.

Check out the following **Heart Failure Sessions** taking place today:

**Hot New Drugs For Heart Failure – Be Careful What You Wish For**
8:00 – 9:30 a.m.
**Grand Ballroom S100bc**

**The Failing Right Ventricle in Heart Failure**
12:15 – 1:45 p.m.
**Grand Ballroom S100bc**

**Diet and Life Style Modification in Heart Failure**
2:00 – 3:30 p.m.
**Grand Ballroom S100bc**

Search the **ACC.16 App** for additional Heart Failure and Cardiomyopathies Learning Pathway Sessions.

# NCDR.16: New Registries, Expanded Role of NCDR Data

The growth of the NCDR registries and their expanding role in quality improvement and hospital reimbursement took center stage this past week when a record number of registry participants gathered in Chicago for NCDR.16.

Participation is increasing in ACC's 10 NCDR hospital and outpatient registries as a result of their ability to improve the quality of health care delivery and patient outcomes, and more efficiently utilize resources. As a result, NCDR.16 was the largest Annual Conference to date, with more than 1,200 registry professionals, quality experts, cardiovascular administrators, and physicians coming together for a program focused on helping hospitals manage their data during a time of significant change.

Changes to reimbursement, as well as expansion of public reporting, is making registries particularly unique and valuable. In response to the new *Medicare Access and CHIP Reauthorization Act of 2015* (MACRA), the NCDR will be providing data that directly impact reimbursement to hospitals and physician practices. Additionally, the endorsement of many of NCDR's performance measures by the National Quality Forum makes the NCDR registries an "important linchpin for monitoring measures that are tied to value-based reimbursement," says **Ralph G. Brindis, MD, MPH, MACC**, co-chair of NCDR.16.

> "This is **my favorite meeting of the year** because it is an **opportunity for everyone on the quality team to come together and identify ways to make their quality even better**, and to bring NCDR to life in relation to informing activities within their hospital to improve care and outcomes of patients at a very practical level."
>
> *Frederick A. Masoudi, MD, MSPH, FACC*

The keynote lecture by **Thomas H. Lee, MD, MSc**, set the stage for understanding the strategic importance of registries in the context of quality improvement in the current environment. Other presentations provided insights into the role of specific registries within national quality improvement efforts, providing context for the work in the trenches in the hospitals.

Attendees were also able to customize NCDR.16 to their own interests and their role on the quality team, selecting from deep-dive concurrent workshops focused on registry-specific education, challenging case studies, and sharing of new tools and techniques. Best practices were shared in the poster sessions, where quality initiatives and outcomes were presented.

New this year, the LAAO Registry, which launched in December 2015, and the AFib Ablation Registry, set to launch in spring 2016, were highlighted in preconference sessions. "These two new registries will collect real-world data to track and evaluate the use of the proliferation of options for both stroke prevention and treatment in the fast-growing population of patients with atrial fibrillation," says **Richard A. Chazal, MD, FACC**, president-elect of the ACC.

The Interprofessional Track at NCDR.16 built on the growing participation of hospital administrators and physician champions in the conference and formalized the education specific to their roles in the team. Among the topics in the track: leveraging NCDR to engage physicians; communicating quality up the ladder; creating data displays to effect change; and understanding the role of the registry stakeholders.

"This is my favorite meeting of the year because it is an opportunity for everyone on the quality team to come together and identify ways to make their quality even better, and to bring NCDR to life in relation to informing activities within their hospital to improve care and outcomes of patients at a very practical level," says **Frederick A. Masoudi, MD, MSPH, FACC**, chair of the NCDR Management Board.

Don't miss the **NCDR Encore Session** today from 8:00 – 9:30 a.m. in room S104 for an overview of current registry-related topics relevant to practice. Search "NCDR" in the **ACC.16 App** for additional sessions. Visit ***CVQuality.ACC.org/NCDR*** for more information on ACC's registries.


# Entresto™
## (sacubitril/valsartan) tablets
**24/26mg • 49/51mg • 97/103mg**

## Use ENTRESTO™ in place of ACEis and ARBs for HF*r*EF patients[1]

**ENTRESTO was studied in the largest HF trial ever conducted[2]**

- Trial stopped early due to finding of significantly reduced risk of CV death and the primary end point being met[3]

**ENTRESTO has been proven superior to enalapril, a current standard-of-care[4] medication[1]**

- Superiority vs enalapril, a standard-of-care ACEi therapy, across a range of NYHA class II–IV patients with chronic HF and reduced ejection fraction

**20%** REDUCED RISK OF CV DEATH OR FIRST HF HOSPITALIZATION vs ENALAPRIL[1]

*P*<0.0001 HR (95% CI): 0.80 (0.73, 0.87)

**4.7%** ABSOLUTE RISK REDUCTION[1]

**REDEFINE EXPECTATIONS IN HEART FAILURE**

## INDICATION

ENTRESTO is indicated to reduce the risk of cardiovascular death and hospitalization for heart failure in patients with chronic heart failure (NYHA Class II-IV) and reduced ejection fraction.

ENTRESTO is usually administered in conjunction with other heart failure therapies, in place of an ACE inhibitor or other ARB.

## IMPORTANT SAFETY INFORMATION

**WARNING: FETAL TOXICITY**
- **When pregnancy is detected, discontinue ENTRESTO as soon as possible**
- **Drugs that act directly on the renin-angiotensin system can cause injury and death to the developing fetus**

ENTRESTO is contraindicated in patients with hypersensitivity to any component. ENTRESTO is contraindicated in patients with a history of angioedema related to previous angiotensin-converting enzyme (ACE) inhibitor or angiotensin receptor blocker (ARB) therapy.

ENTRESTO is contraindicated with concomitant use of ACE inhibitors. Do not administer within 36 hours of switching from or to an ACE inhibitor. ENTRESTO is contraindicated with concomitant use of aliskiren in patients with diabetes.

**Angioedema:** ENTRESTO may cause angioedema. Angioedema associated with laryngeal edema may be fatal. ENTRESTO has been associated with a higher rate of angioedema in Black patients and in patients with a prior history of angioedema. If angioedema occurs, discontinue ENTRESTO immediately, provide appropriate therapy, and monitor for airway compromise. ENTRESTO must not be re-administered.

**Hypotension:** ENTRESTO lowers blood pressure and may cause symptomatic hypotension. Patients with an activated renin-angiotensin system, such as volume- and/or salt-depleted patients (e.g., those being treated with high doses of diuretics), are at greater risk. Correct volume or salt depletion prior to administration of ENTRESTO or start at a lower dose. If hypotension persists despite dose adjustment of diuretics, concomitant antihypertensive drugs, and treatment of other causes of hypotension (e.g., hypovolemia) reduce the dosage or temporarily discontinue ENTRESTO. Permanent discontinuation of therapy is usually not required.

**Impaired Renal Function:** Decreases in renal function may be anticipated in susceptible individuals treated with ENTRESTO. In patients whose renal function depends upon the activity of the renin-angiotensin-aldosterone system (e.g., patients with severe congestive heart failure), treatment with ACE inhibitors and angiotensin receptor antagonists has been associated with oliguria, progressive azotemia and, rarely, acute renal failure and death. Closely monitor serum creatinine, and down-titrate or interrupt ENTRESTO in patients who develop a clinically significant decrease in renal function.

ENTRESTO may increase blood urea and serum creatinine levels in patients with bilateral or unilateral renal artery stenosis. In patients with renal artery stenosis, monitor renal function. Avoid use with aliskiren in patients with renal impairment (eGFR $<60$ mL/min/1.73 m$^2$).

In patients who are elderly, volume-depleted (including those on diuretic therapy), or with compromised renal function, concomitant use of non-steroidal anti-inflammatory drugs (NSAIDs), including COX-2 inhibitors, with ENTRESTO may result in worsening of renal function, including possible acute renal failure. These effects are usually reversible. Monitor renal function periodically.

**Hyperkalemia:** Hyperkalemia may occur with ENTRESTO. Monitor serum potassium periodically and treat appropriately, especially in patients with risk factors for hyperkalemia such as severe renal impairment, diabetes, hypoaldosteronism, or a high potassium diet. Dosage reduction or interruption of ENTRESTO may be required.

Concomitant use of potassium-sparing diuretics (e.g., spironolactone, triamterene, amiloride), potassium supplements, or salt substitutes containing potassium may lead to increases in serum potassium.

**ARBs:** Avoid use of ENTRESTO with an ARB, because ENTRESTO contains the angiotensin II receptor blocker valsartan.

**Lithium:** Increases in serum lithium concentrations and lithium toxicity have been reported during concomitant administration of lithium with angiotensin II receptor antagonists. Monitor serum lithium levels during concomitant use with ENTRESTO.

**Common Adverse Events:** In a clinical trial, the most commonly observed adverse events with ENTRESTO vs enalapril, occurring at a frequency of at least 5% in either group, were hypotension (18%, 12%), hyperkalemia (12%, 14%), cough (9%, 13%) dizziness (6%, 5%) and renal failure/acute renal failure (5%, 5%).

**Please see Brief Summary of Prescribing Information, including Boxed WARNING, on following pages.**

**STUDY DESIGN:** PARADIGM-HF was a multinational, randomized, double-blind trial comparing ENTRESTO to enalapril in 8442 symptomatic (NYHA class II–IV) adult HF*r*EF patients (left ventricular ejection fraction ≤40%). After discontinuing their existing ACEi or ARB therapy, patients entered sequential single-blind run-in periods during which they received enalapril 10 mg twice daily, followed by ENTRESTO 100 mg (49/51 mg) twice daily, increasing to 200 mg (97/103 mg) twice daily. Patients were then randomized to receive either ENTRESTO 200 mg (97/103 mg) (n=4209) twice daily or enalapril 10 mg (n=4233) twice daily. The median follow-up duration was 27 months, and patients were treated for up to 4.3 years. The primary end point was the first event in the composite of CV death or first HF hospitalization.[1]

ACEi = angiotensin-converting enzyme inhibitor; ARB = angiotensin II receptor blocker; HF*r*EF = heart failure with reduced ejection fraction; CV = cardiovascular; NYHA = New York Heart Association; HF=heart failure.

For more information, visit **EntrestoHCP.com**

**References: 1.** ENTRESTO [prescribing information]. East Hanover, NJ: Novartis Pharmaceuticals Corp; August 2015. **2.** McMurray JJV, Packer M, Desai AS, et al. Baseline characteristics and treatment of patients in Prospective comparison of ARNI with ACEI to Determine Impact on Global Mortality and morbidity in Heart Failure trial (PARADIGM-HF). *Eur J Heart Fail*. 2014;16(7):817-825. **3.** McMurray JJV, Packer M, Desai AS, et al. Angiotensin–neprilysin inhibition versus enalapril in heart failure. *N Engl J Med*. 2014;371(11):993-1004. **4.** Yancy CW, Jessup M, Bozkurt B, et al. 2013 ACCF/AHA guideline for the management of heart failure: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. *Circulation*. 2013;128(16):e240-e327.



**Novartis Pharmaceuticals Corporation**
East Hanover, New Jersey 07936-1080

12/15 ETR-1321798

NOVARTIS PHARMACEUTICALS

**ENTRESTO™ (sacubitril and valsartan) tablets, for oral use**
**Initial U.S. Approval: 2015**

**BRIEF SUMMARY: Please see package insert for full prescribing information.**

**WARNING: FETAL TOXICITY**
- **When pregnancy is detected, discontinue ENTRESTO as soon as possible (5.1)**
- **Drugs that act directly on the renin-angiotensin system can cause injury and death to the developing fetus (5.1)**

## 1 INDICATIONS AND USAGE

### 1.1 Heart Failure

ENTRESTO is indicated to reduce the risk of cardiovascular death and hospitalization for heart failure in patients with chronic heart failure (NYHA Class II-IV) and reduced ejection fraction.

ENTRESTO is usually administered in conjunction with other heart failure therapies, in place of an ACE inhibitor or other ARB.

## 4 CONTRAINDICATIONS

ENTRESTO is contraindicated:
- in patients with hypersensitivity to any component
- in patients with a history of angioedema related to previous ACE inhibitor or ARB therapy *[see Warnings and Precautions (5.2)]*
- with concomitant use of ACE inhibitors. Do not administer within 36 hours of switching from or to an ACE inhibitor *[see Drug Interactions (7.1)]*
- with concomitant use of aliskiren in patients with diabetes *[see Drug Interactions (7.1)]*.

## 5 WARNINGS AND PRECAUTIONS

### 5.1 Fetal Toxicity

ENTRESTO can cause fetal harm when administered to a pregnant woman. Use of drugs that act on the renin-angiotensin system during the second and third trimesters of pregnancy reduces fetal renal function and increases fetal and neonatal morbidity and death. When pregnancy is detected, consider alternative drug treatment and discontinue ENTRESTO. However, if there is no appropriate alternative to therapy with drugs affecting the renin-angiotensin system, and if the drug is considered lifesaving for the mother, advise a pregnant woman of the potential risk to the fetus *[see Use in Specific Populations (8.1)]*.

### 5.2 Angioedema

ENTRESTO may cause angioedema. In the double-blind period of PARADIGM-HF, 0.5% of patients treated with ENTRESTO and 0.2% of patients treated with enalapril had angioedema *[see Adverse Reactions (6.1)]*. If angioedema occurs, discontinue ENTRESTO immediately, provide appropriate therapy, and monitor for airway compromise. ENTRESTO must not be re-administered. In cases of confirmed angioedema where swelling has been confined to the face and lips, the condition has generally resolved without treatment, although antihistamines have been useful in relieving symptoms.

Angioedema associated with laryngeal edema may be fatal. Where there is involvement of the tongue, glottis or larynx, likely to cause airway obstruction, administer appropriate therapy, e.g., subcutaneous epinephrine/adrenaline solution 1:1000 (0.3 mL to 0.5 mL) and take measures necessary to ensure maintenance of a patent airway.

ENTRESTO has been associated with a higher rate of angioedema in Black than in non-Black patients.

Patients with a prior history of angioedema may be at increased risk of angioedema with ENTRESTO *[see Adverse Reactions (6.1)]*. ENTRESTO should not be used in patients with a known history of angioedema related to previous ACE inhibitor or ARB therapy *[see Contraindications (4)]*.

### 5.3 Hypotension

ENTRESTO lowers blood pressure and may cause symptomatic hypotension. Patients with an activated renin-angiotensin system, such as volume- and/or salt-depleted patients (e.g., those being treated with high doses of diuretics), are at greater risk. In the double-blind period of PARADIGM-HF, 18% of patients treated with ENTRESTO and 12% of patients treated with enalapril reported hypotension as an adverse event *[see Adverse Reactions (6.1)]*, with hypotension reported as a serious adverse event in approximately 1.5% of patients in both treatment arms. Correct volume or salt depletion prior to administration of ENTRESTO or start at a lower dose. If hypotension occurs, consider dose adjustment of diuretics, concomitant antihypertensive drugs, and treatment of other causes of hypotension (e.g., hypovolemia). If hypotension persists despite such measures, reduce the dosage or temporarily discontinue ENTRESTO. Permanent discontinuation of therapy is usually not required.

### 5.4 Impaired Renal Function

As a consequence of inhibiting the renin-angiotensin-aldosterone system (RAAS), decreases in renal function may be anticipated in susceptible individuals treated with ENTRESTO. In the double-blind period of PARADIGM-HF, 5% of patients in both the ENTRESTO and enalapril groups reported renal failure as an adverse event *[see Adverse Reactions (6.1)]*. In patients whose renal function depends upon the activity of the renin-angiotensin-aldosterone system (e.g., patients with severe congestive heart failure), treatment with ACE inhibitors and angiotensin receptor antagonists has been associated with oliguria, progressive azotemia and, rarely, acute renal failure and death. Closely monitor serum creatinine, and down-titrate or interrupt ENTRESTO in patients who develop a clinically significant decrease in renal function *[see Use in Specific Populations (8.7) and Clinical Pharmacology (12.3) in the full prescribing information]*.

As with all drugs that affect the RAAS, ENTRESTO may increase blood urea and serum creatinine levels in patients with bilateral or unilateral renal artery stenosis. In patients with renal artery stenosis, monitor renal function.

### 5.5 Hyperkalemia

Through its actions on the RAAS, hyperkalemia may occur with ENTRESTO. In the double-blind period of PARADIGM-HF, 12% of patients treated with ENTRESTO and 14% of patients treated with enalapril reported hyperkalemia as an adverse event *[see Adverse Reactions (6.1)]*. Monitor serum potassium periodically and treat appropriately, especially in patients with risk factors for hyperkalemia such as severe renal impairment, diabetes, hypoaldosteronism, or a high potassium diet. Dosage reduction or interruption of ENTRESTO may be required *[see Dosage and Administration (2.1) in the full prescribing information]*.

## 6 ADVERSE REACTIONS

Clinically significant adverse reactions that appear in other sections of the labeling include:
- Angioedema *[see Warnings and Precautions (5.2)]*
- Hypotension *[see Warnings and Precautions (5.3)]*
- Impaired Renal Function *[see Warnings and Precautions (5.4)]*
- Hyperkalemia *[see Warnings and Precautions (5.5)]*

### 6.1 Clinical Trials Experience

Because clinical trials are conducted under widely varying conditions, adverse reaction rates observed in the clinical trials of a drug cannot be directly compared to rates in the clinical trials of another drug and may not reflect the rates observed in practice.

In the PARADIGM-HF trial, subjects were required to complete sequential enalapril and ENTRESTO run-in periods of (median) 15 and 29 days, respectively, prior to entering the randomized double-blind period comparing ENTRESTO and enalapril. During the enalapril run-in period, 1,102 patients (10.5%) were permanently discontinued from the study, 5.6% because of an adverse event, most commonly renal dysfunction (1.7%), hyperkalemia (1.7%) and hypotension (1.4%). During the ENTRESTO run-in period, an additional 10.4% of patients permanently discontinued treatment, 5.9% because of an adverse event, most commonly renal dysfunction (1.8%), hypotension (1.7%) and hyperkalemia (1.3%). Because of this run-in design, the adverse reaction rates described below are lower than expected in practice.

In the double-blind period, safety was evaluated in 4,203 patients treated with ENTRESTO and 4,229 treated with enalapril. In PARADIGM-HF, patients randomized to ENTRESTO received treatment for up to 4.3 years, with a median duration of exposure of 24 months; 3,271 patients were treated for more than one year. Discontinuation of therapy because of an adverse event during the double-blind period occurred in 450 (10.7%) of ENTRESTO treated patients and 516 (12.2%) of patients receiving enalapril.

Adverse reactions occurring at an incidence of ≥5% in patients who were treated with ENTRESTO in the double-blind period are shown in Table 1.

**Table 1: Adverse Reactions Reported in ≥5% of Patients Treated with ENTRESTO in the Double-Blind Period**

| | ENTRESTO (n = 4,203) % | Enalapril (n = 4,229) % |
|---|---|---|
| Hypotension | 18 | 12 |
| Hyperkalemia | 12 | 14 |
| Cough | 9 | 13 |
| Dizziness | 6 | 5 |
| Renal failure/acute renal failure | 5 | 5 |

In the PARADIGM-HF trial, the incidence of angioedema was 0.1% in both the enalapril and ENTRESTO run-in periods. In the double-blind period, the incidence of angioedema was higher in patients treated with ENTRESTO than enalapril (0.5% and 0.2%, respectively). The incidence of angioedema in Black patients was 2.4% with ENTRESTO and 0.5% with enalapril *[see Warnings and Precautions (5.2)]*.

Orthostasis was reported in 2.1% of patients treated with ENTRESTO compared to 1.1% of patients treated with enalapril during the double-blind period of PARADIGM-HF. Falls were reported in 1.9% of patients treated with ENTRESTO compared to 1.3% of patients treated with enalapril.

Laboratory Abnormalities

*Hemoglobin and Hematocrit*

Decreases in hemoglobin/hematocrit of >20% were observed in approximately 5% of both ENTRESTO- and enalapril-treated patients in the double-blind period in PARADIGM-HF.

*Serum Creatinine*

Increases in serum creatinine of >50% were observed in 1.4% of patients in the enalapril run-in period and 2.2% of patients in the ENTRESTO run-in period. During the double-blind period, approximately 16% of both ENTRESTO- and enalapril-treated patients had increases in serum creatinine of >50%.

*Serum Potassium*

Potassium concentrations >5.5 mEq/L were observed in approximately 4% of patients in both the enalapril and ENTRESTO run-in periods. During the double-blind period, approximately 16% of both ENTRESTO- and enalapril-treated patients had potassium concentrations >5.5 mEq/L.

## 7 DRUG INTERACTIONS

### 7.1 Dual Blockade of the Renin-Angiotensin-Aldosterone System

Concomitant use of ENTRESTO with an ACE inhibitor is contraindicated because of the increased risk of angioedema *[see Contraindications (4)]*.

Avoid use of ENTRESTO with an ARB, because ENTRESTO contains the angiotensin II receptor blocker valsartan.

The concomitant use of ENTRESTO with aliskiren is contraindicated in patients with diabetes *[see Contraindications (4)]*. Avoid use with aliskiren in patients with renal impairment (eGFR <60 mL/min/1.73 $m^2$).

### 7.2 Potassium-Sparing Diuretics

As with other drugs that block angiotensin II or its effects, concomitant use of potassium-sparing diuretics (e.g., spironolactone, triamterene, amiloride), potassium supplements, or salt substitutes containing potassium may lead to increases in serum potassium *[see Warnings and Precautions (5.5)]*.

### 7.3 Nonsteroidal Anti-Inflammatory Drugs (NSAIDs) Including Selective Cyclooxygenase-2 Inhibitors (COX-2 Inhibitors)

In patients who are elderly, volume-depleted (including those on diuretic therapy), or with compromised renal function, concomitant use of NSAIDs, including COX-2 inhibitors, with ENTRESTO may result in worsening of renal function, including possible acute renal failure. These effects are usually reversible. Monitor renal function periodically.

### 7.4 Lithium

Increases in serum lithium concentrations and lithium toxicity have been reported during concomitant administration of lithium with angiotensin II receptor antagonists. Monitor serum lithium levels during concomitant use with ENTRESTO.

## 8 USE IN SPECIFIC POPULATIONS

### 8.1 Pregnancy

Risk Summary

ENTRESTO can cause fetal harm when administered to a pregnant woman. Use of drugs that act on the renin-angiotensin system during the second and third trimesters of pregnancy reduces fetal renal function and increases fetal and neonatal morbidity and death. Most epidemiologic studies examining fetal abnormalities after exposure to antihypertensive use in the first trimester have not distinguished drugs affecting the renin-angiotensin system from other antihypertensive agents. In animal reproduction studies, ENTRESTO treatment during organogenesis resulted in increased embryo-fetal lethality in rats and rabbits and teratogenicity in rabbits. When pregnancy is detected, consider alternative drug treatment and discontinue ENTRESTO. However, if there is no appropriate alternative to therapy with drugs affecting the renin-angiotensin system, and if the drug is considered lifesaving for the mother, advise a pregnant woman of the potential risk to the fetus.

The estimated background risk of major birth defects and miscarriage for the indicated population is unknown. In the U.S. general population, the estimated background risk of major birth defects and miscarriage in clinically recognized pregnancies is 2-4% and 15-20%, respectively.

Clinical Considerations

*Fetal/Neonatal Adverse Reactions*

Oligohydramnios in pregnant women who use drugs affecting the renin-angiotensin system in the second and third trimesters of pregnancy can result in the following: reduced fetal renal function leading to anuria and renal failure, fetal lung hypoplasia, skeletal deformations, including skull hypoplasia, hypotension, and death.

Perform serial ultrasound examinations to assess the intra-amniotic environment. Fetal testing may be appropriate, based on the week of gestation. Patients and physicians should be aware, however, that oligohydramnios may not appear until after the fetus has sustained irreversible injury. If oligohydramnios is observed, consider alternative drug treatment. Closely observe neonates with histories of *in utero* exposure to ENTRESTO for hypotension, oliguria, and hyperkalemia. In neonates with a history of *in utero* exposure to ENTRESTO, if oliguria or hypotension occurs, support blood pressure and renal perfusion. Exchange transfusions or dialysis may be required as a means of reversing hypotension and replacing renal function.

# Intensive Explores Lifestyle Factors Affecting Heart Health

In response to a new focus on population health and prevention in cardiology, ACC.16 will feature a brand-new intensive on lifestyle medicine, co-chaired by **Pamela B. Morris, MD, FACC**, who also serves as chair of ACC's Prevention of Cardiovascular Disease Section Leadership Council, and **Andrew M. Freeman, MD, FACC**, chair of the Prevention Council's Nutrition Work Group. With the headline "a Little Less Drugs, a Little More Sex, and a Lot More Rock and Roll," the Intensive promises to put a new spin on the prevention conversation and draw in a wide range of subspecialties. The presentations will tackle key factors affecting cardiovascular health and discuss the best way to talk to patients about prevention.

According to Morris, the sessions "will focus on effective implementation of nutrition counseling and 'deep-dives' into important issues in exercise counseling and prescription, controversial and misunderstood issues in heart-healthy nutrition, and updates on smoking cessation counseling and use of e-cigarettes."

Highlights include a presentation from **Valentin Fuster, MD, PhD, MACC**, editor-in-chief of the *Journal of the American College of Cardiology*, on "The Global Burden of Tobacco Use: The Changing Faces of Smokers," shortly followed by a moderated debate on e-cigarettes.

The Intensive will also explore the heart healthy diet landscape – featuring ACC President **Kim Allan Williams Sr., MD, FACC**, as a panelist speaking about vegan diets – and what qualifies as "enough" exercise with a joint presentation from ACC's Sports and Exercise Section and the American College of Sports Medicine. The Intensive concludes with a presentation on "Comprehensive Care of the 'Heart': Love, Loneliness, and Connection" from **Dean Ornish, MD**, and time for final questions from attendees.

"[The Intensive] will focus on **effective implementation of nutrition counseling** and 'deep-dives' into important issues in exercise **counseling and prescription, controversial and misunderstood issues in heart-healthy nutrition**, and updates on smoking cessation counseling and use of e-cigarettes."

*Pamela B. Morris, MD, FACC*

"All of the latest science on nutrition, smoking, exercise, and mindfulness/connection will be shared and discussed in lively interactive formats," explains Freeman. "The Intensive will feature all of the key thought leaders in lifestyle and nutrition. We'll even have an in-depth ACC-Talk from **K. Michael Cummings, PhD, MPH**, on tobacco regulation efforts along with a session devoted to showing clinicians how to motivate their patients to make changes!"

"All of the latest science on nutrition, smoking, exercise, and mindfulness/connection will be **shared and discussed in lively interactive formats.**"

*Andrew M. Freeman, MD, FACC*

Unique to the session format this year, the Lifestyle Medicine Intensive will utilize an audience response system tool through the ACC.16 App. Attendees can browse to the Intensive sessions 51 – 53 or search for "Lifestyle Medicine" in the mobile app to access the tool and join the conversation. Attendees will have the ability to respond to polls in real-time, submit their own questions to the co-chairs, and see questions that others in the session have asked.

The **Lifestyle Medicine Intensive** will take place today from **12:15 – 6:00 p.m.** in the **Grand Ballroom S100a**.

Data

*Animal Data*

ENTRESTO treatment during organogenesis resulted in increased embryo-fetal lethality in rats at doses ≥ 49 mg sacubitril/51 mg valsartan/kg/day (≤ 0.14 [LBQ657, the active metabolite] and 1.5 [valsartan]-fold the maximum recommended human dose [MRHD] of 97/103 mg twice-daily on the basis of the area under the plasma drug concentration-time curve [AUC]) and rabbits at doses ≥ 5 mg sacubitril/5 mg valsartan/kg/day (4-fold and 0.06-fold the MRHD on the basis of valsartan and LBQ657 AUC, respectively). ENTRESTO is teratogenic based on a low incidence of fetal hydrocephaly, associated with maternally toxic doses, which was observed in rabbits at an ENTRESTO dose of ≥ 5 mg sacubitril/5 mg valsartan/kg/day. The adverse embryo-fetal effects of ENTRESTO are attributed to the angiotensin receptor antagonist activity.

Pre- and postnatal development studies in rats at sacubitril doses up to 750 mg/kg/day (4.5-fold the MRHD on the basis of LBQ657 AUC) and valsartan at doses up to 600 mg/kg/day (0.86-fold the MRHD on the basis of AUC) indicate that treatment with ENTRESTO during organogenesis, gestation and lactation may affect pup development and survival.

**8.2 Lactation**

Risk Summary

There is no information regarding the presence of sacubitril/valsartan in human milk, the effects on the breastfed infant, or the effects on milk production. Sacubitril/valsartan is present in rat milk. Because of the potential for serious adverse reactions in breastfed infants from exposure to sacubitril/valsartan, advise a nursing woman that breastfeeding is not recommended during treatment with ENTRESTO.

Data

Following an oral dose (15 mg sacubitril/15 mg valsartan/kg) of [$^{14}$C] ENTRESTO to lactating rats, transfer of LBQ657 into milk was observed. After a single oral administration of 3 mg/kg [$^{14}$C] valsartan to lactating rats, transfer of valsartan into milk was observed.

**8.4 Pediatric Use**

Safety and effectiveness in pediatric patients have not been established.

**8.5 Geriatric Use**

No relevant pharmacokinetic differences have been observed in elderly (≥65 years) or very elderly (≥75 years) patients compared to the overall population *[see Clinical Pharmacology (12.3) in the full prescribing information]*.

**8.6 Hepatic Impairment**

No dose adjustment is required when administering ENTRESTO to patients with mild hepatic impairment (Child-Pugh A classification). The recommended starting dose in patients with moderate hepatic impairment (Child-Pugh B classification) is 24/26 mg twice daily. The use of ENTRESTO in patients with severe hepatic impairment (Child-Pugh C classification) is not recommended, as no studies have been conducted in these patients *[see Dosage and Administration (2.4) in the full prescribing information, Clinical Pharmacology (12.3) in the full prescribing information]*.

**8.7 Renal Impairment**

No dose adjustment is required in patients with mild (eGFR 60 to 90 mL/min/1.73 m$^2$) to moderate (eGFR 30 to 60 mL/min/1.73 m$^2$) renal impairment. The recommended starting dose in patients with severe renal impairment (eGFR <30 mL/min/1.73 m$^2$) is 24/26 mg twice daily *[see Dosage and Administration (2.3) in the full prescribing information, Warnings and Precautions (5.4) and Clinical Pharmacology (12.3) in the full prescribing information]*.

**10 OVERDOSAGE**

Limited data are available with regard to overdosage in human subjects with ENTRESTO. In healthy volunteers, a single dose of ENTRESTO 583 mg sacubitril/617 mg valsartan, and multiple doses of 437 mg sacubitril/463 mg valsartan (14 days) have been studied and were well tolerated.

Hypotension is the most likely result of overdosage due to the blood pressure lowering effects of ENTRESTO. Symptomatic treatment should be provided.

ENTRESTO is unlikely to be removed by hemodialysis because of high protein binding.

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Issued: July/2015

# *JACC* Journals Continue to Grow and Innovate

> "The Editors and I have actively chosen **content that will have relevance to the global clinical community.**"
>
> *Valentin Fuster, MD, PhD, MACC*


The *Journal of the American College of Cardiology (JACC)* continues to rank as the top cardiovascular journal when it comes to scientific impact. According to the 2014 Impact Factors for Journals, *JACC* holds the top position among all 123 cardiovascular journals worldwide.

Since assuming the role of *JACC* editor in chief, **Valentin Fuster, MD, PhD, MACC**, has spent the last nearly two years working to further broaden this global reach. In the past year alone, state-of-the-art research in *JACC,* as well as editorial commentary from global cardiovascular leaders, has been featured in major media outlets around the world. At ACC.16, a record number of abstracts presented over the course of the next three days will be simultaneously published in *JACC* or in one of the *JACC* journals.

"The Editors and I have actively chosen content that will have relevance to the global clinical community," said Fuster. "Sixty percent of *JACC's* submissions already come from outside the U.S., and we expect this percentage to continue to rise."

Several key additions to the journal also make it easier for cardiovascular professionals to make use of the science presented within its pages. To date, the downloads for the audio summaries, which are linked to every *JACC* article – and more recently *JACC: Clinical Electrophysiology* – now exceed two million.

The central illustrations have also proven useful in visually summarizing research highlights in a manner that is easy to share with the more than 47,000 followers of *JACC* journals on social media platforms like Facebook and Twitter, or use in slide presentations summarizing the latest research on major cardiovascular topics.

Access to *JACC* and the other *JACC* journals continues to rank among the top ACC member benefits, particularly among the growing numbers of International Fellows and Associates. Regular Early Career and Fellow in Training features, focused issues on topics like population health promotion, special state-of-the-art review series on topics like statistical principles, and perspectives authored by ACC's sections, councils and more recently international chapters are only serving to increase this value.

Looking to the future, Fuster notes that the *JACC* family of journals are only going to continue to grow in stature and presence. *JACC: Cardiovascular Imaging* and *JACC: Cardiovascular Interventions* also rank among the top 10 cardiovascular journals worldwide, while newer journals like *JACC: Heart Failure* and *JACC: Clinical Electrophysiology* are building solid reputations of their own.

*JACC's* newest journal, *JACC: Basic to Translational Science*, made its debut last month under the leadership of **Douglas L. Mann, MD, FACC**. As ACC's first open-access journal, it will serve as a forum for advancing the field of translational cardiovascular medicine, and as a platform for accelerating the translation of novel scientific discoveries into new therapies that improve clinical outcomes for patients affected with or at risk for cardiovascular disease.

"As the time from translating science to the clinical setting continues to quicken, it seemed an opportune time to launch a journal in the *JACC* family specifically dedicated to this field," said Fuster.

ACC.16 participants can learn more about *JACC* journals, during two scientific sessions on Monday. The Eugene Braunwald Lecture on "Future Directions in Cardiovascular Medicine," will feature all six *JACC* journal editors presenting the best research from their respective journals, followed by a keynote lecture from U.S. Food and Drug Administration Commissioner **Robert Califf, MD, MACC**. A second session, "Behind the Curtain: Insights Into *JACC* and Submitting Acceptable Papers," will provide the inside-scoop on how to get published. Additionally, ACC Central on the Expo floor features all of the journals and attendees are encouraged to stop by and learn more. A special *JACC*-sponsored break, featuring *JACC: Basic to Translational Science*, will take place immediately following today's Opening Showcase Session.

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**References: 1.** Lewis S. Value of the Terumo RUNTHROUGH® NS Coronary Guidewire. *Diagnostic & Invasive Cardiology*. March/April 2008.
**2.** RUNTHROUGH® NS Hypercoat™ Bench Testing Report, March 20, 2015.



TERUMO INTERVENTIONAL SYSTEMS

# ACC Presidential Year in Review: Kim Allan Williams Sr., MD, FACC

Reflecting upon his year as ACC President, **Kim Allan Williams Sr., MD, FACC**, considers his top presidential priorities and contemplates what the future holds for the practice of cardiovascular medicine and care.

## What were the top priorities during your presidency?

During my tenure as ACC President, the top priorities for the College have been advocacy for payment reform, transformation of care and population health. These three focus points have been intimately intercalated throughout the past year. Four weeks into my presidential year, the College's long-term advocacy for payment reform bore fruit. The flawed sustainable growth rate (SGR) formula was removed legislatively, resulting in a 21 percent cut in Medicare fees being averted and the scheduling of Medicare payments to reward quality rather than volume of care. This meant that the focus on transformation of care from volume to value was upon us, and we needed to galvanize College resources to craft the value proposition facing our members and their patients. It logically followed that we would take a deeper dive into population health – adopting the principles laid out in our array of prevention guidelines, and committing to promulgating, updating and refining them.

## What do you describe as the College's greatest strengths over the past year?

One of the greatest strengths of the College is its unrelenting focus on quality – in practice, education and research. We have registries, training guidelines, appropriate use criteria and practice guidelines. We are now moving further into accreditation and quality assurance, leveraging the organizational skills of ACC staff with the expertise of our members and leadership. Equally acute for the ACC is the focus on population health and prevention, both in the U.S. and internationally.


Kim Allan Williams Sr., MD, FACC

## What is the biggest challenge currently being faced by the College?

Currently, the greatest challenge facing the College is the implementation of the new governance model. The ACC Board of Trustees, with the intent of becoming more nimble and responsive and improving governance of the College, voted to reorganize College leadership. The new model will focus on maintaining centralized authority, while decentralizing decision-making by increasing the involvement of the talented experts on our committees and councils. The most visible change will be the reduction from 31 board members presently sitting, to 11 by 2018. It takes courage, selflessness, vision and true belief in the mission of the College to vote oneself out of office, but that is exactly what has taken place with our luminary leadership. The implementation of this new model will be challenging, but we will roll it out carefully and meticulously, aiming to avoid any disruption in College functions, innovations or impact.

## What advice do you have for future ACC leaders?

Love what you do, do what you love, and prepare for a rapidly changing cardiovascular disease landscape and treatment environment in which you will be asked to lead from the front. The College does not exist for its own sake, but rather as a convener of medical science, technology and humanity, all aimed at improving heart health and transforming cardiovascular care.

## What would you like your legacy as ACC President to be?

Folks have expressed that my legacy will be defined by being the first African American ACC President (or the first vegan/former tennis professional), but I hope I will be remembered as the "president who wanted to be number two." I frequently talk about how heart disease has been the number one killer of Americans since the Spanish Flu epidemic of 1918-1920, and it is now number one throughout the world. I want to see heart disease move to number two on that list before my career is complete. So much of our cardiovascular disease is preventable, and once these preventative measures are put into place, death from cardiovascular disease is avoidable. The ACC has the structure in place to promote prevention and treatment strategies, and we have developed key partnerships with global and domestic medical societies that can turn this epidemic around. We can turn attention to health care outcomes and disparities, which often costs lives, productivity and resources far too early. We have the science, we have the will and we have the implementation strategies. Let's do this!

# SUDDEN CARDIAC DEATH

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**BOTTOM LINE**

**1 in 10** high-risk post-PCI patients **die in the first 3 months,**

with about

**60%** of this mortality due to

**SUDDEN CARDIAC DEATH.**[1,2]

SOURCES: 1. Halkin A et al. Prediction of Mortality After Primary Percutaneous Coronary Intervention for Acute Myocardial Infarction: CADILLAC Risk Score. JACC 2005;45:1397–1405. 2. Stone G et al. Prevention of Sudden Cardiac Arrest Post PTCA in High-Risk Patients. http://www.theheart.org/article/1202823.do (April 2011).

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# Lifelong Learning Competencies:
## Putting the 'Purpose' in Purposeful Education

One of ACC's primary missions is to provide means and opportunities for cardiovascular professionals to continually refine their clinical performance and keep abreast of the latest developments in the field. Over the last several years the College has made significant progress in developing a competency-based learning framework that guides all ACC education activities, including ACC.16 programming, and serves as a mechanism for the development of needs assessment and focused education.

"This hasn't been an easy task given the substantial and seemingly constant changes in the health care landscape, including rapid expansion and use of digital and mobile technologies, major modifications to maintenance of certification (MOC) requirements, and the transition away from a fee-for-service system to one that is focused on quality of care and outcomes," according to **Eric S. Williams, MD, MACC**, and **Jonathan L. Halperin, MD, FACC**, who lead the ACC Competency Management Committee. "However, the College has risen to the challenge."

> "This hasn't been an easy task given the substantial and seemingly constant changes in the health care landscape, including rapid expansion and use of digital and mobile technologies, **major modifications to maintenance of certification (MOC) requirements**, and the transition away from a fee-for-service system to one that is focused on quality of care and outcomes."
>
> *Eric S. Williams, MD, MACC*

Two of the biggest, most recent ACC achievements were the 2015 release of the latest iteration of the Core Cardiovascular Training Statement (COCATS4) and the more recent release of the 2016 ACC Lifelong Learning Competencies for General Cardiologists.

COCATS4 updated the training recommendations for cardiovascular fellows and defined the full array of competencies expected of clinical cardiologists upon completion of fellowship training. Specifically, it marked a transition away from training focused solely on standard medical knowledge and clinical skills, to training based on defined outcomes under the six domains developed by the Accreditation Council for Graduate Medical Education and the American Board of Medical Specialties (ABMS), and endorsed by the American Board of Internal Medicine (ABIM).

> "What makes this document truly unique is that it **attempts to define those competencies that every cardiologist should maintain no matter what their career focus**, while identifying those skills or activities that reflect a more specific practice focus."
>
> *Jonathan L. Halperin, MD, FACC*

While the COCATS4 recommendations are aimed at training program directors, faculty and trainees in cardiovascular fellowship programs, the Lifelong Learning Competencies defined the skills that practicing cardiologists can be reasonably be expected to maintain and enhance throughout the span of their careers.

The competencies not only identify the required medical knowledge, patient care and procedural skills, they also address additional professional behavior competencies relevant to all clinical areas, as well as leadership and administrative competencies.

"What makes this document truly unique is that it attempts to define those competencies that every cardiologist should maintain no matter what their career focus, while identifying those skills or activities that reflect a more specific practice focus," say Williams and Halperin.

Looking ahead, the ACC is developing Advanced Training Statements that complement COCATS4 by defining the additional requisite skills necessary to practice in a narrowly-defined field for which advanced certification exists. The first Advanced Training Statement on clinical cardiac electrophysiology was released last fall with the American Heart Association and the Heart Rhythm Society. Future statements will focus initially on those subspecialties recognized by ABIM and ABMS, including advanced heart failure, interventional cardiology and adult congenital heart disease, but similar statements applicable to other fields may evolve in the future.

Halperin and Williams note that these training statements will be followed by specialized lifelong learning statements of competencies that allow for continued growth over the course of a career. "Working with specialty organizations and other cardiovascular care team members will be key to ensuring that appropriate evaluation tools are developed for these focused specialists," they say.

Visit *ACC.org/Education* for more information on ACC's purposeful education efforts.



**New this year, ACC.16 is offering six sessions that are certified for dual continuing medical education (CME)/MOC credit.** Attendees must be active participants who respond to questions with the audience response system provided for the session. While only U.S. physicians who are registered as ABIM diplomates can earn MOC, the sessions are open to anyone who desires a case-based and active learning experience. Each session offers 1.5 CME Credits and 1.5 ABIM MOC Part II Points.

**Core Curriculum: Decisions on Shocking and ICDs as well as ACLS**
Today from 12:15 – 1:45 p.m.
**Room N426**

**Core Curriculum: Healthcare vs 'Sick-Care': Focusing on the Ounce of Prevention**
Today from 2:00 – 3:30 p.m.
**Room N426**

**Core Curriculum: Optimizing Care of the Valvular Heart Disease Patient**
Sunday from 8:00 – 9:30 a.m.
**Room N426**

**Core Curriculum: I Can See Clearly Now- Fundamentals of CV Imaging**
Sunday from 2:00 – 3:30 p.m.
**Room N426**

**Core Curriculum: A Broken Heart Crushes the Spirit — Proverbial Wisdom in the Management of Heart Failure**
Monday from 8:00 – 9:30 a.m.
**Room N426**

**Core Curriculum: The Faces of Ischemia**
Monday from 10:45 a.m. – 12:15 p.m.
**Room N426**

Search the **ACC.16 App** for additional MOC Sessions. Learn more about ACC's MOC offerings, as well as ongoing efforts to work with the ABIM on the MOC process, in the online MOC hub at *ACC.org/MOC*.

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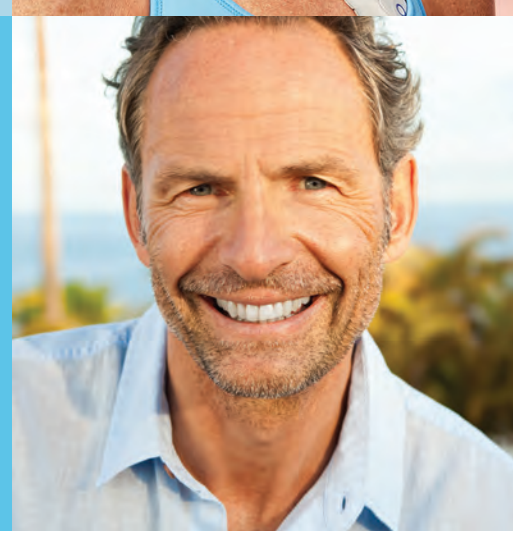

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Further, Together

# A Spotlight on NCDR's Newest Registries: The LAAO Registry and AFib Ablation Registry

The ACC has launched two new registries for tracking real-world outcomes for the treatment and stroke prevention of patients with atrial fibrillation (AFib): the LAAO Registry, focused on left atrial appendage occlusion (LAAO) procedures, and the AFib Ablation Registry, with a focus on AFib ablation. With the addition of these registries, the total number of registries under ACC's NCDR umbrella is now 10. **Paul D. Varosy, MD, FACC**, the lead physician for the data set development work groups for both registries, explains the plans for these registries moving forward, and how clinicians and their patients will benefit.


Varosy

## Why is the LAAO Registry important?

The LAAO Registry is important because devices to occlude the left atrial appendage with the goal of stroke risk reduction are an entirely new class of devices; the registry will help us understand how these devices are used in real-world practice and their outcomes of care. In addition, the partnership between NCDR in conjunction with professional society partners, the U.S. Food and Drug Administration (FDA), and Boston Scientific has created the opportunity to leverage the LAAO Registry infrastructure as the formal FDA-mandated post-approval study for the WATCHMAN device.

## How will clinicians and patients benefit from the registry?

I think we will all benefit from a clear understanding of how these devices are being used. A registry will help to ensure that we are providing FDA-labeling concordant care, and I firmly believe that a registry such as this one will ensure that the quality of care is as high as it can be for patients receiving these devices. The fact that this registry was launched from the very beginning of the implementation of this transformative therapy is very exciting, indeed!

## What are the plans for the registry moving forward?

For the long-term, beyond the post-approval WATCHMAN device study, the registry will serve as a sustainable clinical registry for all patients undergoing occlusion of the left atrial appendage, regardless of the device manufacturer. Over time, the registry will also be well poised to understand how real-world practice evolves beyond the clinical trials.

## Why is it particularly important to have a registry focused on AFib ablation?

We currently have relatively little understanding of how catheter ablation of AFib is being performed in the real world, beyond the fact that its use is growing, nor do we have a good understanding of the outcomes associated with this procedure in real-world practice. The AFib Ablation Registry could address both of these issues effectively.

## Since the prevalence of AFib is growing, how will clinicians, practices and patients benefit from this registry?

A better understanding of our practices and outcomes will be an important step toward measuring and improving the quality of AFib ablation care, and a clinical registry, such as the AFib Ablation Registry, will provide a standardized process for collecting these data.

## What is your ultimate goal for the registry?

Patients, clinicians, hospitals and payers are all interested in understanding and improving safety and efficacy of AFib ablation in the community setting. The AFib Ablation Registry is well poised to help achieve these goals.

Check out the following **Arrhythmias and Clinical Electrophysiology Sessions** taking place today:

**Methods for Evaluation for Atrial Fibrillation Ablation and LAA**
9:30 a.m. – 12:30 p.m.
**Poster Area, South Hall A1**

**Anticoagulation and Stroke Prevention in AF: The Good, the Bad, and the Ugly**
10:00 a.m. – noon
**Poster Area, South Hall A1**

**Update on the Management of Atrial Fibrillation: Joint Symposium of the Heart Rhythm Society and the American College of Cardiology II**
2:00 – 3:30 p.m.
**Room S501**

Search the **ACC.16 App** for additional Arrhythmias and Clinical Electrophysiology Learning Pathway Sessions.

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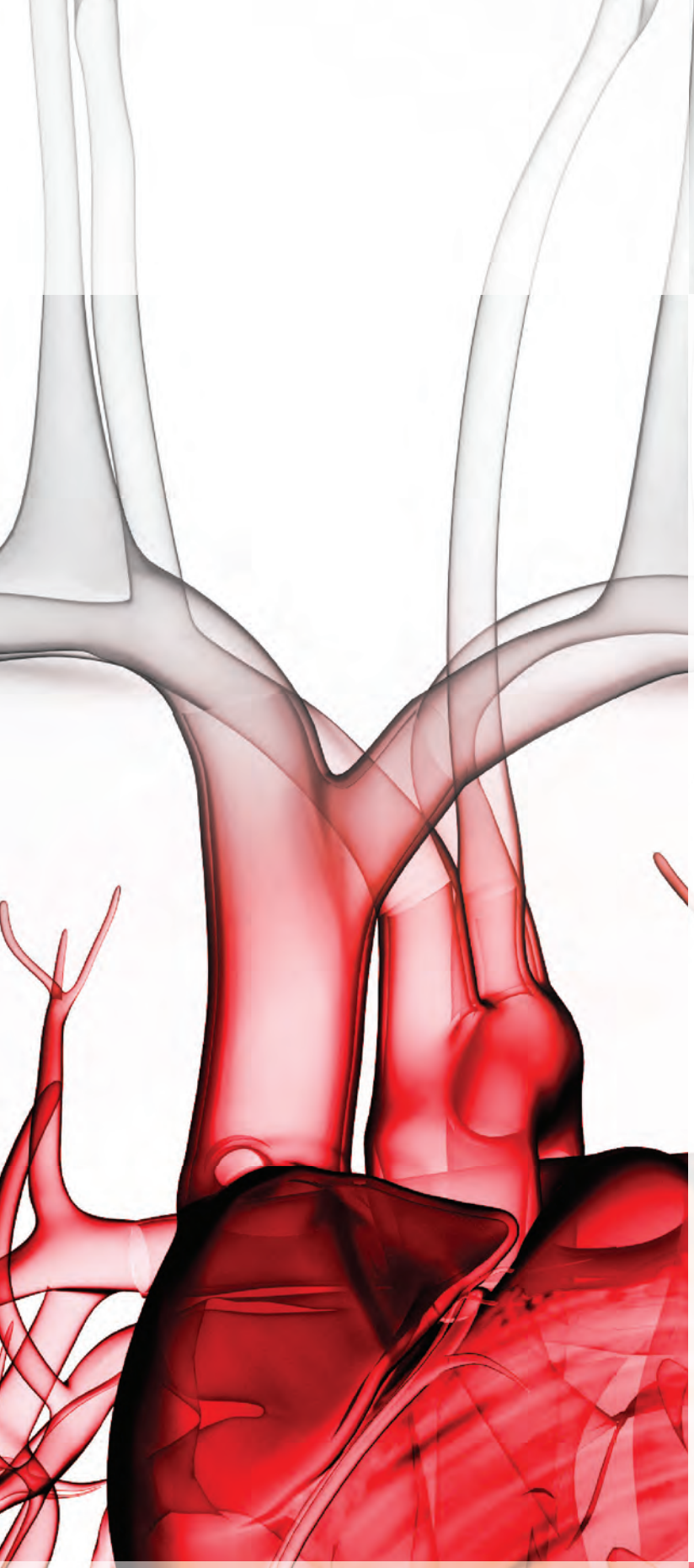

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BEST HOSPITALS U.S.News & WORLD REPORT NATIONAL CARDIOLOGY & HEART SURGERY 2015-16

# ACC Continues to Grow as a Global Health Leader

While significant strides have been made in treating cardiovascular diseases and reducing morbidity and mortality, they still remain the number one cause of death globally. Over the last several years, the international community has come together to reverse this trend, with the World Health Organization setting a global goal of reducing premature deaths from non-communicable diseases (NCDs), including cardiovascular diseases, by 25 percent by 2025.

"We are living in a new world and global health becomes central in a sustainable development paradigm," says **Daniel José Piñeiro, MD, FACC,** chair of ACC's Assembly of International Governors. "Cardiovascular disease is the number one cause of death in the world and we must fight it in a smarter, more effective way," he adds.

> "If we can work together to **increase international participation in educational activities**, encourage global use and exchange of data, and raise public awareness about cardiovascular disease and its risk factors, **progress is well within our grasp.**"
>
> *Kim Allan Williams Sr., MD, FACC*

The ACC is responding to this need for more effective global action by positioning the College as the professional home for cardiovascular professionals around the world. International membership is one of the fastest growing member segments at the College, currently exceeding more than 15,000. In addition, the College has established International Chapters in 35 countries – with this number expected to increase in coming years. This growth has allowed for greater collaborative efforts around education and population health.

On the education front, College faculty participated in more than 60 congresses in more than 35 countries in 2015.

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At ACC.16 alone, more than 18 sessions with representatives from 36 countries will offer insights into the latest research, as well as best practices and challenges associated with treating cardiovascular patients around the world. Additionally, yesterday's "8th Annual Cardiovascular Conference on the Middle East" and sessions focused on "Emerging World Healthcare Systems" continued to serve as unique forums for convening cardiovascular leaders to discuss region-specific challenges associated with treating patients with diseases ranging from congenital heart disease to aortic stenosis. The economic burden of cardiovascular disease, the impact on some of the world's fastest growing nations and ways to maximize resources and improve patient care, were also hot topics of discussion.

Looking ahead, the ACC will be hosting two novel international conferences, the ACC Latin America Conference and the ACC Middle East Conference. These will be the first-ever regional ACC conferences in partnership with ACC International Chapters. They present a unique opportunity to reach a targeted group of cardiovascular professionals from multiple countries around Latin America and the Middle East. The two and a half day conferences will feature locally relevant, interactive education designed to best meet the needs of practicing cardiologists in the region. There will be a special emphasis on educating fellows in training and early career doctors in the latest cardiovascular science and practical techniques for improving cardiovascular patient care. Both conferences will be held this October.

Population health is another area of strategic focus. The ACC has been recognized for its partnership in helping to catalyze efforts in global health by leveraging its vast global membership to drive efforts on the ground and close the gaps in health care across populations. In particular, the College's hospital and outpatient NCDR registries are increasingly being used internationally to help identify gaps in care and track quality improvement efforts. Pilot programs in countries like China, Brazil and India are also underway. These programs are intended to help cardiovascular professionals and health systems stay up-to-date on the latest evidence-based guidelines, as well as offer tips on cardiovascular disease prevention.

"If we can work together to increase international participation in educational activities, encourage global use and exchange of data, and raise public awareness about cardiovascular disease and its risk factors, progress is well within our grasp," says ACC President **Kim Allan Williams Sr., MD, FACC.**

Check out the following **International Sessions** taking place today:

**Tuberculous and Tropical Heart Disease: International Perspectives From the Venezuelan Society of Cardiology, Pan-African Society of Cardiology, and American College of Cardiology**
8:00 – 9:30 a.m.
**Room N427cd**

**Aortic and Mitral Valves – Pathology and Intervention: International Perspectives From the Spanish Society of Cardiology, Colombian Society of Cardiology, and American College of Cardiology**
12:15 – 1:45 p.m.
**Room N427ab**

**New Insights Into Pulmonary Hypertension: International Perspectives From the Canadian Cardiovascular Society, Singapore Cardiac Society, and American College of Cardiology**
4:45 – 6:00 p.m.
**Room N427ab**

Search the **ACC.16 App** for additional International Sessions.

AMAZING THINGS ARE HAPPENING HERE

# WE'RE SORRY WE CAN'T ALL BE HERE.

## BUT WITH THE HIGHEST VOLUME OF CARDIOVASCULAR PATIENTS IN THE NATION*, SOME OF US NEEDED TO STAY HOME.

BEST HOSPITALS U.S.News & WORLD REPORT CARDIOLOGY & HEART SURGERY 2015-16

Home for us is NewYork-Presbyterian, where over 250 cardiologists from two top academic centers combine to create one of the leading comprehensive heart programs in the country. We're proud that our program has a mortality rate that's second to none, but we know there's much more to learn, and that's why we're happy to be here.

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*Source: 2015–2016 US News & World Report Ranking of Top 50 Adult Cardiology & Heart Surgery Hospitals.

# Multi-Specialty Collaboration
## Key to Managing Treatment of Diabetes Patients

According to the World Health Organization, roughly 347 million people worldwide have diabetes, with deaths from diabetes expected to increase by more than 50 percent in the next decade. In the U.S. alone, and estimated one in three American adults will have diabetes by 2050 unless additional steps are taken to prevent and treat the disease

"These numbers are alarming, but we can all play a role in the fight against diabetes," says **Martha Gulati, MD, MS, FACC**, editor-in-chief of ACC's CardioSmart. "The first place to start is by educating patients about diabetes and helping them better manage their condition(s). As cardiovascular professionals, in particular, it is our job to ensure our patients understand that diabetes is a leading cause of premature illness and death, mainly through the increased risk of cardiovascular disease."

Diabetes significantly increases the risk for heart attack, stroke, heart failure and cardiovascular death. Over the last several years the ACC has partnered on several efforts to raise awareness about the links between diabetes and heart disease, given the strong association between the two. The College has developed a robust clinical topic collection on *ACC.org* that features the latest news and expert commentary about diabetes and cardiometabolic disease for the clinician audience. In addition, ACC's CardioSmart patient portal includes information designed to educate patients about lifestyle choices that can prevent or help mitigate the disease.

The Diabetes Collaborative Registry, a collaboration between the ACC, the American Diabetes Association, American College of Physicians, American Association of Clinical Endocrinologists and the Joslin Diabetes Center, is also seeking to change the way diabetes is understood and treated by bringing together primary care physicians, endocrinologists, cardiologists and other diabetes care providers around the shared goal of improving diabetes care and patient outcomes.

> "These numbers are alarming, but we **can all play a role in the fight against diabetes.**"
>
> *Martha Gulati, MD, MS, FACC*

"We feel strongly that by uniting primary care physicians, endocrinologists, cardiologists and other diabetes care providers we can make significant improvements in diabetes care and patient outcomes," says **Kim Allan Williams, MD, FACC**, president of the ACC.

This multi-specialty collaboration is increasingly important as new research is suggesting new ways to treat and manage hyperglycemia associated with diabetes in patients with cardiovascular disease. For example, results from the EMPA-REG OUTCOME trial presented this past fall at the 2015 European Association for the Study of Diabetes Annual Meeting in Stockholm, Sweden, showed that empagliflozin (an SGLT-2 inhibitor) plus standard care lowered the rate of the primary composite outcome of time to the first occurrence of death from cardiovascular causes, nonfatal myocardial infarction, or nonfatal stroke, in patients with type 2 diabetes and prevalent atherosclerotic cardiovascular disease at trial entry. These results, as well as the results of future trials, will affect future treatment options.

"As we continue to progress into this somewhat unchartered territory of treating and managing hyperglycemia associated with diabetes to impact cardiovascular disease risk, it is imperative that professional organizations continue to consider how results such as those from the EMPA-REG OUTCOME trial, as well as the results of future trials, will affect future treatment guidelines for type 2 diabetes," said **Darren K. McGuire, MD, MHSC, FACC**, in an *ACC in Touch Blog* post. McGuire is a member of the Diabetes Collaborative Registry Steering Committee and a panelist on today's session focused on "Diabetes in 2016 – Coming to Consensus for Cardiovascular Health."



Check out the following **Diabetes Sessions** taking place today:

**Diabetes in 2016 – Coming to Consensus For Cardiovascular Health**
8:00 – 9:30 a.m.
**Room S404**

**Lipids, Diabetes Mellitus and Inflammation in Stable Ischemic Heart Disease**
10:00 – noon
**Poster Area, South Hall A1**

**Cardiomyopathies, Diabetes, and Heart Failure: International Perspectives From the British Cardiovascular Society, Japanese College of Cardiology, and American College of Cardiology**
12:15 – 1:45 p.m.
**Room N427cd**

Search the **ACC.16 App** for additional Diabetes Sessions.

American College of Cardiology's

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# Perspective


Whisenant

## Imaging: Winning the Game

*By Brian K. Whisenant, MD, FACC*

Cardiology has been described as a video game for doctors. Teenagers navigate the virtual city of a game knowing from visual memory where every demon resides. The contemporary structural cardiologist integrates 3-D imaging to understand, navigate and experience the heart with visual familiarity.

Contemporary cardiac imaging is an essential tool that directly translates to enhanced procedural safety and efficacy with improved quality of life for our patients. Like a shotgun in the hands of an expert hunter, puncturing the interatrial septum with fluoroscopic landmarks usually hits the target. However, visualizing the septum and crossing with the optimal trajectory to the mitral valve or left atrial appendage is precise with contemporary echo. Advancing a Mitraclip to the P2 segment of the mitral valve and knowing when to add M knob versus pulling the system medial becomes obvious as we watch the Mitraclip engage the mitral valve with a coaxial trajectory and perpendicular arms. We see the leaflets cinched within the clip and mitral regurgitation disappear in procedures that are routinely less than an hour. While the annulus was sized in initial transcatheter aortic valve replacement trials with two-dimensional echo, using contemporary 3-D computed tomography (CT) and echo imaging for transcatheter heart valve selection and valve sizing, recent studies have demonstrated mild or less paravalvular regurgitation in over 95 percent of implanted transcatheter aortic valves while minimizing annulus rupture to less than 0.5 percent. Left atrial appendages are closed in over 95 percent of appropriately selected patients, often in less than 30 minutes. Coronary interventions are tailored to coronary perfusion based on CT derived fractional flow reserve, and patients are selected for fully resorbable coronary stents according to lesion characteristics.

With new devices, images and therapeutic interventions, cardiology has never offered more to our patients or our professional development.

Whisenant will join faculty from multiple disciplines, including cardiology, nursing, radiology, research and surgery to discuss imaging in transcatheter heart valve therapy, left atrial appendage, peripheral vascular disease and coronary disease in today's **"Great Minds Think ... Differently: Multidisciplinary Approach to Imaging"** session from **2:00 – 3:30 p.m.** in **room S103ab**. The session will feature case-based discussions and is designed to encourage dialogue around when to utilize imaging modalities to streamline assessment, inform patient and therapy selection, guide interventions, and/or optimize patient outcomes.


Clarke

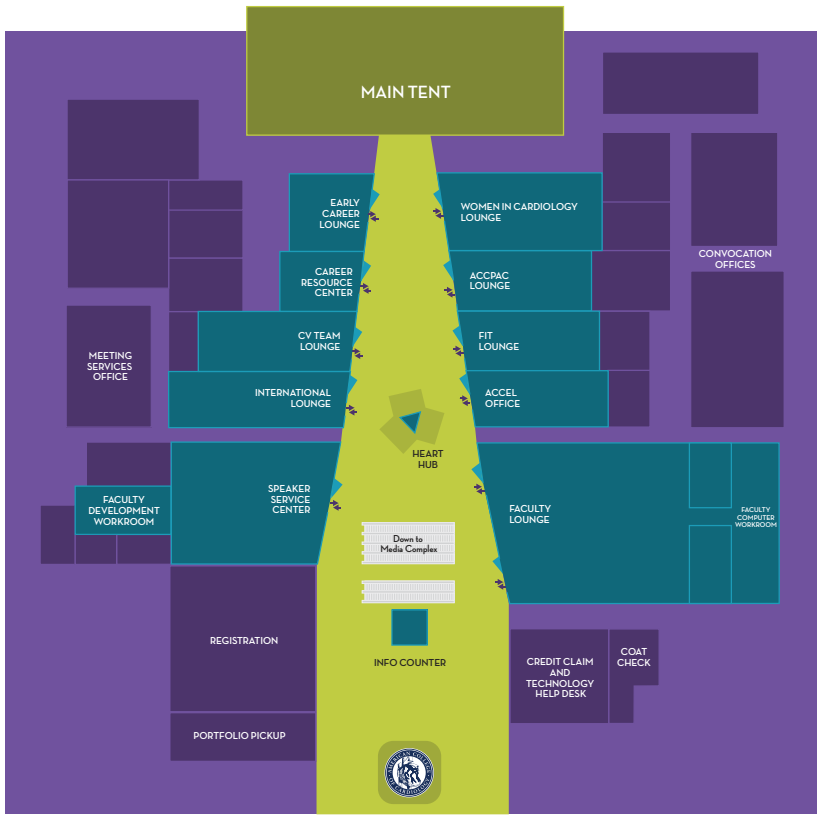
**Sarah Clarke, MSN, ACNP-BC**, co-chair of the session, will discuss the benefits of a multidisciplinary approach to imaging in the "transcatheter valve therapy era" as part of the session. She notes that "synergistically" a multidisciplinary team is advantageous on a number of levels, including when it comes to assessing the operable risk of a patient. "Complex case planning demands a multidisciplinary approach," she says.

Search the **ACC.16 App** for additional ACC.i2 Interventional Cardiology Learning Pathway Sessions.

# Don't Miss Special
## Lounge & Learn Pavilion Programming

Check out the **Fellows in Training, Early Career, Women in Cardiology, Cardiovascular Team and International lounges** at ACC.16 located in the **Lounge & Learn Pavilion, in North Hall B1**. The lounges each feature mini-educational sessions, networking opportunities and career advancement opportunities. Don't miss your chance to meet some of the biggest names in cardiology and learn about what the College is doing in your career focus area. Plus stop by the **ACC Career Resource Center** today from 9 a.m. until 5 p.m. for resume reviews, interview tips and professional head shots.

Lounge & Learn PAVILION



CONCOURSE

## POPULATION HEALTH
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addition, ACC's CardioSmart initiative has also grown exponentially over the last several years, providing guideline-based patient education that can be used in clinical practice, at the point of care, in communities and/or at home to improve health outcomes.

Last July, the College hosted a group of ACC members and external stakeholders at its Heart House headquarters in Washington, DC, for a population health retreat designed to take these efforts to the next level and identify key population health strategies to guide the College into the future.

The retreat brought together a diverse array of experts from government agencies, universities, medical specialty societies and private sector partners to discuss primary prevention, health equity and social determinants of health, the changing health care landscape, and the role of primary care professionals in advancing cardiovascular health. The lineup of speakers included experts from the Centers for Disease Control and Prevention, Centers for Medicare and Medicaid Services, U.S. Food and Drug Administration, U.S. Department of Health and Human Services, the White House and more.

**David B. Nash, MD, MBA,** the founding dean of the Jefferson College of Population Health, also spoke at the retreat. Nash, who will be giving today's 2016 Simon Dack Lecture titled "Population Health: Is it the Secret Sauce?" has noted in the past that the U.S. spends under 2 percent of its health dollars on population heath. In addition, chronic diseases, which comprise 80 percent of total disease burden, have no dedicated federal funding stream.

Currently, the College's Population Health Policy and Health Promotion Committee is hard at work building a population health agenda for the College that encompasses a holistic view of health promotion. Among the items on the agenda: decreasing tobacco use, improved management of hypertension and helping to reach the global goal of reducing premature mortality from NCDs by 25 percent by 2015.

"If we are to successfully contribute to alleviating the cardiovascular disease burden, we must work with our partners to address critical risk factors and design and support policies that generate the greatest health benefit by improving cardiovascular health outcomes," says **Gerard R. Martin, MD, FACC,** chair of the committee. "We have only just begun to dip our toes in the population health waters, and there is tremendous enthusiasm by members and partners and numerous opportunities on the horizon for the College."

**INDICATIONS** The Medtronic CoreValve and CoreValve Evolut R systems are indicated for use in patients with symptomatic heart disease due to either severe native calcific aortic stenosis or failure (stenosed, insufficient, or combined) of a surgical bioprosthetic aortic valve who are judged by a heart team, including a cardiac surgeon, to be at high or greater risk for open surgical therapy (ie, Society of Thoracic Surgeons predicted risk of operative mortality score ≥8% or at a ≥15% risk of mortality at 30 days).

**CONTRAINDICATIONS** The CoreValve and CoreValve Evolut R systems are contraindicated for patients presenting with any of the following conditions: known hypersensitivity or contraindication to aspirin, heparin (HIT/HITTS) and bivalirudin, ticlopidine, clopidogrel, Nitinol (Titanium or Nickel), or sensitivity to contrast media, which cannot be adequately premedicated; ongoing sepsis, including active endocarditis; preexisting mechanical heart valve in aortic position.

**WARNINGS** *General* Implantation of the CoreValve and CoreValve Evolut R systems should be performed only by physicians who have received Medtronic CoreValve training. This procedure should only be performed where emergency aortic valve surgery can be performed promptly. Mechanical failure of the delivery catheter system and/or accessories may result in patient complications. Transcatheter Aortic Valve (Bioprosthesis) Accelerated deterioration of the bioprosthesis may occur in patients presenting with an altered calcium metabolism.

**PRECAUTIONS** *General* The safety and effectiveness of the CoreValve and CoreValve Evolut R systems have not been evaluated in the pediatric population. The safety and effectiveness of the bioprosthesis for aortic valve replacement have not been evaluated in the following patient populations: patients who do not meet the criteria for symptomatic sever native aortic stenosis as defined: (1) symptomatic severe high gradient aortic stenosis – aortic valve area ≤1.0cm$^2$ or aortic valve area index ≤0.6 cm$^2$/m$^2$, a mean aortic valve gradient ≥40 mmHg; or a peak aortic-jet velocity ≥4.0 m/s, (2) symptomatic severe low-flow/low-gradient aortic stenosis – aortic valve area ≤1.0cm$^2$ or aortic valve area index ≤0.6 cm$^2$/m$^2$, a mean aortic valve gradient <40 mmHg; and a peak aortic-jet velocity <4.0 m/s ; who are at moderate or low surgical risk (predicted perioperative mortality risk of <15%); with untreated, clinically significant coronary artery disease requiring revascularization; with a preexisting prosthetic heart valve with a rigid support structure in either the mitral or pulmonic position if either the preexisting prosthetic heart valve could affect the implantation or function of the bioprosthesis or the implantation of the bioprosthesis could affect the function of the preexisting prosthetic heart valve; with cardiogenic shock manifested by low cardiac output, vasopressor dependence, or mechanical hemodynamic support. The safety and effectiveness of a CoreValve or CoreValve Evolut R bioprosthesis implanted within a failed preexisting transcatheter bioprosthesis has not been demonstrated. Implanting a CoreValve or CoreValve Evolut R bioprosthesis in a degenerated surgical bioprosthesis [transcatheter aortic valve in surgical aortic valve (TAV in SAV)] should be avoided in the following conditions. The degenerated surgical bioprosthesis presents with a: significant concomitant perivalvular leak (between the prosthesis and the native annulus), is not securely fixed in the native annulus, or is not structurally intact (eg, wireform frame fracture); partially detached leaflet that in the aortic position may obstruct a coronary ostium; stent frame with a manufacturer's labeled inner diameter <17 mm. The safety and effectiveness of the bioprosthesis for aortic valve replacement have not been evaluated in patient populations presenting with the following: blood dyscrasias as defined: leukopenia (WBC <1000 cells/mm$^3$), thrombocytopenia (platelet count <50,000 cells/mm$^3$), history of bleeding diathesis or coagulopathy, or hypercoagulable states; congenital bicuspid or unicuspid valve; mixed aortic valve disease (aortic stenosis and aortic regurgitation with predominant aortic regurgitation [3-4+]); moderate to severe (3-4+) or severe (4+) mitral or severe (4+) tricuspid regurgitation; hypertrophic obstructive cardiomyopathy; new or untreated echocardiographic evidence of intracardiac mass, thrombus, or vegetation; native aortic annulus size <18 mm or >29 mm for CoreValve and <18 mm or >26 mm for CoreValve Evolut R per the baseline diagnostic imaging or surgical bioprosthetic aortic annulus size <17 mm or >29 mm for CoreVavle and <17 mm or >26 mm for CoreValve Evolut R; transarterial access not able to accommodate an 18-Fr sheath or the 14-Fr equivalent EnVeo R InLine sheath; sinus of valsalva anatomy that would prevent adequate coronary perfusion; moderate to severe mitral stenosis;; severe ventricular dysfunction with left ventricular ejection fraction (LVEF) <20%;; symptomatic carotid or vertebral artery disease; severe basal septal hypertrophy with an outflow gradient.

*Prior to Use* Exposure to glutaraldehyde may cause irritation of the skin, eyes, nose, and throat. Avoid prolonged or repeated exposure to the vapors. Damage may result from forceful handling of the catheter. Prevent kinking of the catheter when removing it from the packaging.This device was designed for single patient use only. Do not reuse, reprocess, or resterilize this product. Reuse, reprocessing, or resterilization may compromise the structural integrity of the device and/or create a risk of contamination of the device, which could result in patient injury, illness, or death.The bioprosthesis size must be appropriate to fit the patient's anatomy. Proper sizing of the device is the responsibility of the physician. Refer to Instructions for Use for available sizes. Failure to implant a device within the sizing matrix could lead to adverse effects such as those listed below. Patients must present with access vessel diameters of ≥6 mm for the CoreValve system and ≥5 mm for the CoreValve Evolut R system or an ascending aortic (direct aortic) access site ≥60 mm from the basal plane for both systems. Implantation of the bioprosthesis should be avoided in patients with aortic root angulation (angle between plane of aortic valve annulus and horizontal plane/vertebrae) of >30° for right subclavian/axillary access or >70° for femoral and left subclavian/axillary access. Use caution when using the subclavian/axillary approach in patients with a patent LIMA graft or patent RIMA graft. For direct aortic access, ensure the access site and trajectory are free of patent RIMA or a preexisting patent RIMA graft.

*During Use* For direct aortic and subclavian access procedures, care must be exercised when using the tip-retrieval mechanism to ensure adequate clearance to avoid advancement of the catheter tip through the bioprosthesis leaflets during device closure. For direct aortic access procedures, use a separate introducer sheath; do not use the EnVeo R InLine sheath. Adequate rinsing of the bioprosthesis with sterile saline, as described in the Instructions for Use, is mandatory before implantation. During rinsing, do not touch the leaflets or squeeze the bioprosthesis. If a capsule becomes damaged during loading or the capsule fails to close, replace the entire system (bioprosthesis, catheter, and CLS). Do not use a catheter with a damaged capsule. After a bioprosthesis has been inserted into a patient, do not attempt to reload that bioprosthesis on the same or any other catheter. AccuTrak DCS Only: During implantation, if resistance to deployment is encountered (e.g., the micro knob starts clicking or is tight or stuck), apply upward pressure to the macro slider while turning the micro knob. If the bioprosthesis still does not deploy, remove it from the patient and use another system. AccuTrak DCS Only: Once deployment is initiated, retrieval of the bioprosthesis from the patient (e.g., use of the catheter) is not recommended. Retrieval of a partially deployed valve using the catheter may cause mechanical failure of the delivery catheter system, aortic root damage, coronary artery damage, myocardial damage, vascular complications, prosthetic valve dysfunction (including device malposition), embolization, stroke, and/or emergent surgery. AccuTrak DCS Only: During deployment, the bioprosthesis can be advanced or withdrawn as long as annular contact has not been made. Once annular contact is made, the bioprosthesis cannot be advanced in the retrograde direction; if necessary, and the frame has only been deployed ≤2/3 of its length, the bioprosthesis can be withdrawn (repositioned) in the antegrade direction. However, use caution when moving the bioprosthesis in the antegrade direction. EnVeo R DCS Only: If a misload is detected, unsheath the bioprosthesis and examine the bioprosthesis for damage (for example, permanent frame deformation, frayed sutures, or valve damage). Do not attempt to reload a damaged bioprosthesis. Do not load the bioprosthesis onto the catheter more than 2 times or after it has been inserted into a patient. EnVeo R DCS Only: Use the deployment knob to deploy and recapture the bioprosthesis. Do not use the trigger for deploying or recapturing because it could cause inaccurate placement of the bioprosthesis. EnVeo R DCS Only: Once the radiopaque capsule marker band reaches the distal end of the radiopaque paddle attachment (point of no recapture), retrieval of the bioprosthesis from the patient is not recommended. Retrieval after the point of no recapture may cause mechanical failure of the delivery catheter system, aortic root damage, coronary artery damage, myocardial damage, vascular complications, prosthetic valve dysfunction (including device malposition), embolization, stroke, and/or emergent surgery. EnVeo R DCS Only: During deployment, the bioprosthesis can be advanced or withdrawn as long as annular contact has not been made. Once annular contact is made, the bioprosthesis cannot be advanced in the retrograde direction; recapture until the bioprosthesis is free from annular contact, and then reposition in the retrograde direction. If necessary, and the radiopaque capsule marker band has not yet reached the distal end of the radiopaque paddle attachment, the bioprosthesis can be withdrawn (repositioned) in the antegrade direction. However, use caution when moving the bioprosthesis in the antegrade direction. While the catheter is in the patient, ensure the guidewire is extending from the tip. Do not remove the guidewire from the catheter while the catheter is inserted in the patient. Use the handle of the delivery system to reposition the bioprosthesis. Do not use the outer catheter sheath. Once deployment is complete, repositioning of the bioprosthesis (e.g., use of a snare and/or forceps) is not recommended. Repositioning of a deployed valve may cause aortic root damage, coronary artery damage, myocardial damage, vascular complications, prosthetic valve dysfunction (including device malposition), embolization, stroke, and/or emergent surgery. Do not attempt to retrieve or to recapture (EnVeo DCS only) a bioprosthesis if any one of the outflow struts is protruding from the capsule. If any one of the outflow struts has deployed from the capsule, the bioprosthesis must be released from the catheter before the catheter can be withdrawn. Ensure the capsule is closed before catheter removal. When using a separate introducer sheath, if increased resistance is encountered when removing the catheter through the introducer sheath, do not force passage. Increased resistance may indicate a problem and forced passage may result in damage to the device and/or harm to the patient. If the cause of resistance cannot be determined or corrected, remove the catheter and introducer sheath as a single unit over the guidewire, and inspect the catheter and confirm that it is complete. Clinical long-term durability has not been established for the bioprosthesis. Evaluate bioprosthesis performance as needed during patient follow-up. Postprocedure, administer appropriate antibiotic prophylaxis as needed for patients at risk for prosthetic valve infection and endocarditis. Postprocedure, administer anticoagulation and/or antiplatelet therapy per physician/clinical judgment. Excessive contrast media may cause renal failure. Preprocedure, measure the patient's creatinine level. During the procedure, monitor contrast media usage. Conduct the procedure under fluoroscopy. The safety and efficacy of a CoreValve or CoreValve Evolut R bioprosthesis implanted within the initial transcatheter bioprosthesis have not been demonstrated. However, in the event that a CoreValve or CoreValve Evolut R bioprosthesis must be implanted within the initial transcatheter bioprosthesis to improve valve function, valve size and patient anatomy must be considered before implantation of the bioprosthesis to ensure patient safety (for example, to avoid coronary obstruction). In the event that valve function or sealing is impaired due to excessive calcification or incomplete expansion, a postimplant balloon dilatation of the bioprosthesis may improve valve function and sealing. To ensure patient safety, valve size and patient anatomy must be considered when selecting the size of the balloon used for dilatation. The balloon size chosen for dilatation should not exceed the diameter of the native aortic annulus or, for surgical bioprosthetic valves, the manufacturer's labeled inner diameter. Refer to the specific balloon catheter manufacturer's labeling for proper instruction on the use of balloon catheter devices. Note: Bench testing has only been conducted to confirm compatibility with NuMED Z-MED IITM Balloon Aortic Valvuloplasty catheters where CoreValve or CoreValve Evolut R bioprosthesis device performance was maintained after dilation. Data on File.

**POTENTIAL ADVERSE EVENTS** Potential risks associated with the implantation of the CoreValve or CoreValve Evolut R transcatheter aortic valve may include, but are not limited to, the following: • death • myocardial infarction, cardiac arrest, cardiogenic shock, cardiac tamponade • coronary occlusion, obstruction, or vessel spasm (including acute coronary closure) • cardiovascular injury (including rupture, perforation, tissue erosion, or dissection of vessels, ascending aorta trauma, ventricle, myocardium, or valvular structures that may require intervention) • emergent surgical or transcatheter intervention (for example, coronary artery bypass, heart valve replacement, valve explant, percutaneous coronary intervention [PCI], balloon valvuloplasty) • prosthetic valve dysfunction (regurgitation or stenosis) due to fracture; bending (out-of-round configuration) of the valve frame; underexpansion of the valve frame; calcification; pannus; leaflet wear, tear, prolapse, or retraction; poor valve coaptation; suture breaks or disruption; leaks; mal-sizing (prosthesis-patient mismatch); malposition (either too high or too low)/malplacement • prosthetic valve migration/embolization • prosthetic valve endocarditis • prosthetic valve thrombosis • delivery catheter system malfunction resulting in the need for additional re-crossing of the aortic valve and prolonged procedural time • delivery catheter system component migration/embolization • stroke (ischemic or hemorrhagic), transient ischemic attack (TIA), or other neurological deficits • heart failure • cardiac failure or low cardiac output • ancillary device embolization • individual organ (for example, cardiac, respiratory, renal [including acute kidney failure]) or multi-organ insufficiency or failure • major or minor bleeding that may require transfusion or intervention (including life-threatening or disabling bleeding) • vascular access-related complications (eg, dissection, perforation, pain, bleeding, hematoma, pseudoaneurysm, irreversible nerve injury, compartment syndrome, arteriovenous fistula, stenosis) • mitral valve regurgitation or injury • conduction system disturbances (for example, atrioventricular node block, left-bundle branch block, asystole), which may require a permanent pacemaker • infection (including septicemia) • hypotension or hypertension • hemolysis • peripheral ischemia • bowel ischemia • abnormal lab values (including electrolyte imbalance) • allergic reaction to antiplatelet agents, contrast medium, or anesthesia • exposure to radiation through fluoroscopy and angiography • permanent disability.

**Please reference the CoreValve and CoreValve Evolut R Instructions for Use for more information regarding indications, warnings, precautions and potential adverse events.**

**CAUTION Federal law (USA) restricts this device to sale by or on the order of a physician.**

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