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# Nebraska ACC

***SUPPORTING PHYSICIANS, TRAINEES, AND CARDIOVASCULAR TEAM MEMBERS WITH EDUCATION, ADVOCACY, & NETWORKING OPPORTUNITIES***

## Chapter News

*Roses are **red**.*
*Violets are **blue**.*
*Nebraska ACC Annual Meeting*
*Is October 19, 2022.*

**Andrew M. Goldsweig, MD, MS, FACC, FSCAI, FSVM, RPVI**
**Governor, Nebraska ACC**

- Registration NOW! The **Nebraska ACC 5th Annual Meeting** is Wednesday, October 19, 2022 at the Regency Marriott, Omaha. National ACC President Dr. Ed Fry will be the keynote speaker. All Nebraska cardiologists, trainees, and CVT members are invited, whether or not they are ACC members. Register now at www.nebraskacardiology.org/events/annual-meeting-2022.
- The **4th Annual FIT Abstract Competition** will take place at the Annual Meeting. Submit your abstracts NOW! Details and submission at https://www.nebraskacardiology.org/events/nebraska-acc-fit-abstract-competition-2022. Thanks to FIT Section chairs Drs. Waiel Abusnina, Navya Alugubelli, Robbie Garvin, and Kara Stout for organizing this event.
- The Nebraska ACC Advocacy Committee plans to **meet with State Senator Ben Hansen** (District 16) this fall to discuss telehealth coverage, prior authorization, and pharmacy benefit pricing regulation. E-mail executive director Carmen Chinchilla-Gutiérrez if you would like to participate.
- Planning has begun for the Nebraska ACC **3rd Annual Cardiovascular Team Meeting** on May 11, 2023 at the Happy Hollow Club. Contact CVT Representative Jessica Livingston, MSN, AAAC at jlivingston@nebraskamed.com to get involved in this and future CVT events.
- We want to hear from YOU! Contact Dr. Natraj Katta if you would like to **write for this Newsletter**. The Newsletter features four brief articles quarterly: Chapter News, Cardiology Update (by a cardiologist), FIT Corner (by a fellow in training), and CVT Corner (by a CV team member).
- Please **follow us** on Twitter and Facebook!

Nebraska CHAPTER

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# CARDIOLOGY UPDATE

**Toufik Haddad, MD, FACC, FSCAI**
**Interventional Cardiologist, CHI Health**

## PATENT FORAMEN OVALE! WHEN DO YOU CLOSE?

**Introduction**: We have always closed a Patent Foramen Ovale (PFO) for thrombus in transit (surgical closure), patients with proven paradoxical embolism (deep vein thrombosis, pulmonary embolism, or thrombophilia), and R-to-L shunt causing desaturation including platypnea-orthodeoxia syndrome. However, the big question is when you close a PFO when there is no evidence of the above. Foramen Ovale is a normal component of the fetal cardiovascular circulation that is necessary for the fetus. After birth, most of them close; however, in 10-25% of the population, it remains patent as a tunnel and converts into a "flap-like" valve that may open every time the right atrial pressure overcomes the left one. PFO is therefore a normal variant of the atrial septum rather than a congenital heart defect. PFO is detected on transesophageal echocardiography (TEE) in 1 out of 4–5 individuals, whereas among younger patients with cryptogenic ischemic stroke, PFOs are present in more than 50% of cases. We still do not know how a PFO sends emboli to the brain. In only rare instances is a patient with cryptogenic and potentially PFO-associated stroke found to suffer from concomitant Most of the time with cryptogenic stroke and concomitant PFO, there is no evidence of venous thrombosis. In the Paradoxical Emboli from Large Veins in Ischemic Stroke (PELVIS) study, a large multicenter prospective study from 2004, researchers found only a 20% prevalence of pelvic DVT in cryptogenic stroke cases. This suggests there could be patients with DVT missed by lower limb ultrasound or that the thrombus has already transitioned somewhere else such as to the brain.

**Evidence:** Several seminal epidemiological studies in the 1990s showed a statistically significant association between PFO and cryptogenic ischemic stroke, especially in younger patients (<60). I was involved in a meta-analysis of five large randomized controlled trials (RESPECT, PC, REDUCE, CLOSE, and CLOSURE I) with 3440 patients. It was published in the *American Journal of Cardiology* in 2018 (Smer, et al). Our research showed benefit from transcatheter PFO (TC PFO) closure when compared with medical therapy for prevention of recurrent vascular events. PFO closure significantly reduced the risk of stroke compared with medical therapy (2.8% vs 5.8%; relative risk [RR] 0.48, confidence interval [CI] 0.27 to 0.87, p = 0.01, I2 = 56%). The number needed to treat for stroke prevention was 10.5. Risk reduction was more significant with aneurysmal septum and large PFO, but it was negligible for patients on anticoagulation. The trials included patients between 18 and 60; hence, guidelines currently include those younger than 60 as candidates for PFO closure in cryptogenic stroke.

**Patient Selection and Decision to Close:** Selection for PFO closure is key. Extensive diagnostic work-up is crucial to exclude other causes of stroke such as ruling out atherosclerotic stroke and atrial fibrillation (Afib). Up to 30% of patients with cryptogenic stroke have shown episodes of paroxysmal Afib detected with inserted loop recorders in the following three years after stroke. However, Afib is mostly a disease of older age, and rates of Afib detected in the PFO closure trials were low as patients were under 60. Current guidelines recommend monitoring for at least 2-4 weeks to exclude Afib before closing the PFO (four weeks for patients >40 or 1-2 weeks for patients <40 unless risk factors for Afib are present such as hypertension, hyperthyroidism, valvular heart disorders, or alcohol use). Causal relationship between PFO and stroke is typically high if a high ROPE score is reported (>7). If the score is less than four, there is a 0% chance that the stroke is due to PFO. Decision to close should be made in conjunction with neurology to weigh the risks and benefits for each patient (a heart-brain team approach).

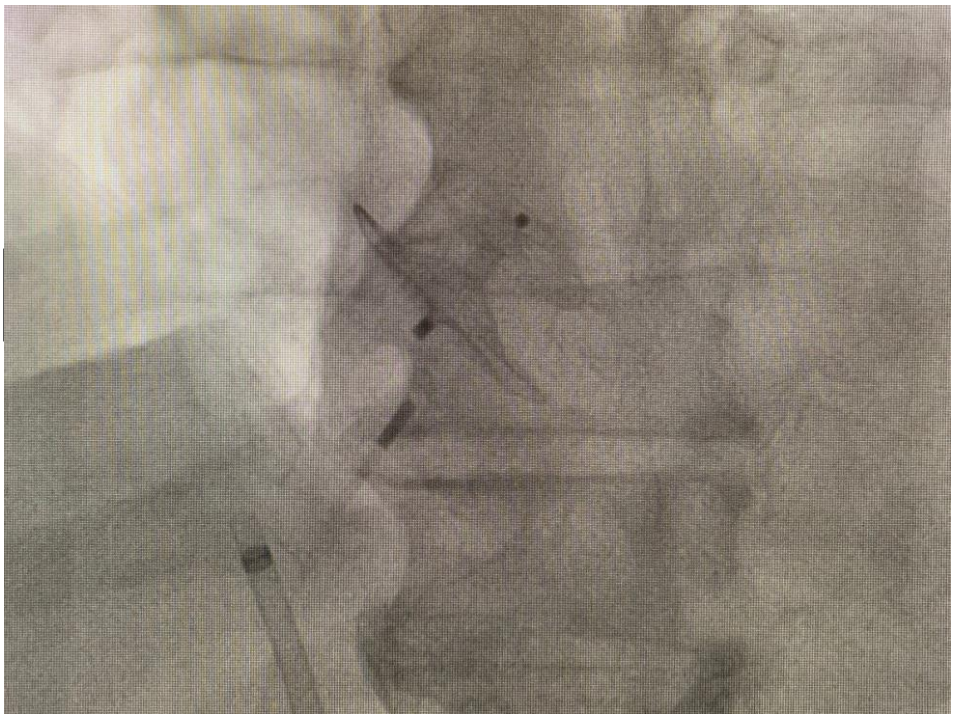
**Exceptions:** PFO is the cause for stroke in 38% of cryptogenic ischemic strokes in young and middle-aged adults, 10% of all ischemic strokes in young and middle-aged adults, and 5% of all ischemic strokes. As PFO closure has become routine for secondary prevention of cryptogenic stroke in the under-60 cohort, many over that cutoff are still being evaluated for the procedure with minimal data to support it. Recent discussion in TCT 2022 concluded that PFO closure in adults over 60 is safe, but patient selection is key. An ideal randomized trial in this space would include those with high risk PFO features like atrial septal aneurysm or large shunts. The risk of recurrent stroke due to PFO increases with age. PFO occlusion is considered in many guidelines for patients 60 and older with cryptogenic stroke and very limited amount of traditional vascular risk factors (hypertension, hyperlipidemia, diabetes, or smoking). PFO occlusion is also considered, but not routinely done, for scuba divers with prior decompression illness (DCI) or refractory migraines.
The selection criteria for PFO occlusion continues to expand, and high-risk patients should be selected in priority.

# CARDIOLOGY UPDATE (CONTINUED)

**Transcatheter PFO Closure Procedure:** This is a minimally invasive procedure that is usually done through the femoral veins. After crossing the PFO, a special stiff wire is used to deliver a sheath with a closure device to the heart, where the device is then deployed to close the flap between the two atriums. The Amplatzer® PFO Occluder consists of two expandable discs with a connecting waist, all made of a nickel-titanium metal alloy. The discs have a polyester mesh inside to enhance elimination of flow across the hole. This is a slightly bulkier device but easier to deploy than the GORE® CARDIOFORM Septal Occluder, which consists of a circular wire frame covered with thin ePTFE material. The TC PFO closure procedure is usually done with moderate sedation and the help of intra-cardiac echocardiogram (ICE) that is advanced through the femoral vein. ICE eliminates the need for general anesthesia and esophageal intubation with the TEE probe, which mitigates the risk of associated adverse events and significantly reduces the procedure time. Patients are usually able to discharge home on the same day after getting an echocardiogram to ensure device stability and rule out any complications including pericardial effusion. Non periprocedural Afib is reported to be less than 1% in most of the devices. Data from practice advisory showed no difference in the rate of new onset non periprocedural Afib between participants receiving closure and those receiving medical treatment at a median of 5.9 year follow up.

**RoPE SCORE CALCULATOR**

| CHARACTERISTIC | POINTS | SCORE |
|---|---|---|
| No history of hypertension | 1 | |
| No history of diabetes | 1 | |
| No history of stroke or TIA | 1 | |
| Non-smoker | 1 | |
| Cortical infarct on imaging | 1 | |
| **AGE (YEARS)** | | |
| 18-29 | 5 | |
| 30-39 | 4 | |
| 40-49 | 3 | |
| 50-59 | 2 | |
| 60-69 | 1 | |
| ≥ 70 | 0 | |
| **TOTAL SCORE (sum of individual points)** | | |
| Maximum score (patient < 30 yo without vascular risk factors, no history of stroke or TIA, and cortical infarct) | | 10 |
| Minimum score (patient ≥ 70 yo with vascular risk factors, prior stroke, and no cortical infarct) | | 0 |



**Surveillance Post TC PFO Closure:** Echocardiogram is recommended at one month and six months post PFO closure. Infective endocarditis prophylaxis is warranted for six months, at which time the PFO device is usually endothelialized and the shunt should be completely closed. Patients should stay on dual antiplatelet therapy for six months unless they are on anticoagulation for another reason. In these cases, a single antiplatelet would only be necessary.

**References**

1- Di Tullio M, Sacco RL, Gopal A, et al. Patent foramen ovale as a risk factor for cryptogenic stroke. Ann Intern Med. (1992) 117:461–5. 10.7326/0003-4819-117-6-461.

2- Smer A, Salih M, Mahfood Haddad T, et al. Meta-analysis of Randomized Controlled Trials on Patent Foramen Ovale Closure Versus Medical Therapy for Secondary Prevention of Cryptogenic Stroke. Am J Cardiol. 2018 Jun 1;121(11):1393-1399. doi: 10.1016/j.amjcard.2018.02.021. Epub 2018 Mar 2.
3- Cramer SC, Rordorf G, Maki JH, et al. Increased pelvic vein thrombi in cryptogenic stroke: results of the Paradoxical Emboli from large veins in ischemic stroke. (PELVIS) study. Stroke. (2004) 35:46–50.
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5- Alperi A, Guedeney P, Horlick E, et al. Transcatheter closure of patent foramen ovale in older patients with cryptogenic thromboembolic events. Circ Cardiovasc Interv. 2022;15:e011652.
6- Messé SR, Gronseth GS, Kent DM, et al, Practice advisory update summary: Patent foramen ovale and secondary stroke prevention. Report of the Guideline Subcommittee of the American Academy of Neurology, Neurology, 2020;94:1-10.
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# FIT CORNER

**Waiel Abusnina, MD**
**Cardiovascular Fellow**
**Creighton University School of Medicine**

## CHOOSING WISELY: WHAT TO CHOOSE AFTER YOUR CARDIOLOGY FELLOWSHIP

Each year, on the first of July, hundreds of fellows in the U.S. start their cardiovascular disease fellowship. As soon as you start your training, you start asking yourself, "what will I do next after the fellowship?" It is a question that we pondered upon since childhood and we continue to ruminate on in our medical training. At the start, some fellows know what they will do after three years of fellowship. However, most fellows require more time and guidance about the career path that's right for them. From day one in the fellowship, we start exploring the different branches of cardiology through different rotations. At the end of the fellowship, most of the initial thoughts go through various changes or reconsiderations of the initial plans until finally they are able to decide on their future career.

Once you feel more comfortable in your fellowship and start participating in daily rounds, early morning or noon educational conferences, research projects, and journal clubs, you will start finding answers to your question of what next. Before you feel ready for a big decision, you must go through subspecialty rotations in electrophysiology, cath lab, nuclear medicine, heart failure, and advanced cardiac imaging. Exposure to different subspecialty rotations will help you to guide your career path.

Additionally, the senior fellows and your faculty mentors can provide inputs about their experiences and process of choosing right career path. When you are in your second year, you will have to start working on making a decision as application process starts in the mid second year for certain subspecialty.

A myriad of factors contribute to the post-fellowship career choice: job opportunities, family circumstances, geographical preferences, professional satisfaction, economic implications, and perhaps above all, lifestyle. Yes, money can be one of the factors that significantly impact the decision, whether we would like to admit it or not. All factors mentioned above are essential to guide making a decision. It would help if you also always considered the lifestyle that you want to live. The lifestyle of interventional cardiology can be significantly different from that of a cardiac imager professional. After you choose your path, the next question is, 'Academic or private position?" This is a critical question because the preparation you will need may be different in terms of how you spend your elective time. In particular, academic settings require additional qualifications such as research skills and teaching talents whereas there is a growing demand in the private cardiology community for higher-level training in cardiac imaging (echocardiography, cardiac computed tomography, or cardiac magnetic resonance or vascular interpretation). Furthermore, some employers may expect you to perform certain procedures warranting specific training before leaving fellowship.

One of the aspects of choosing the right specialty is to know what choices exist. Many advanced fellowships like advanced cardiac imaging (CT/CMR), structural intervention, etc. are not recognized by the American Board of Internal Medicine (ABIM) [table-1][1] ABIM-

recognized fellowships are adult congenital heart disease, advanced heart failure and transplant cardiology, clinical cardiac electrophysiology, and interventional cardiology. When we look at the data provided by ABIM [table-2]2, of 994 fellows who started general cardiology fellowship in 2017/2018, 129 fellows (13%) continued their training in cardiac electrophysiology, 353 (36%) continued in interventional cardiology, and 99 (10%) continued in advanced heart failure and transplant fellowship.

Despite the growing number of areas of subspecialty in cardiology, general cardiologists are at the front line of cardiology as they provide most patient care. As we see, most of the fellows (42%) choose to practice general cardiology as subspecialty training requires an additional 1-2 years of our valuable time. As well, employment opportunities can be limiting in certain subspecialties. There likely openings for an adult congenital heart disease specialist are at a tertiary referral center in contrast with the widespread demand for general cardiologists in various clinical settings. Most subspecialty fellowship programs participate in the Match (cardiovascular disease fellowship and subspecialties: adult congenital heart disease, advanced heart failure and transplant cardiology, and clinical cardiac electrophysiology). At this time, Interventional cardiology, advanced cardiac imaging, and preventive cardiology do not participate in the Match. Data from National Resident Matching Program (NRMP)3 shows that Interventional cardiology is the most competitive subspecialist fellowship, followed by electrophysiology, advanced heart failure, and adult congenital [table-3]. At present, there are 176 accredited interventional cardiology fellowship programs and around 360 positions4. All interventional cardiology positions offered were filled on positions starting in July 2021 cycle.

Whether you choose to be a general cardiologist or subspecialize further, to be in academia or private practice, the choice is up to you. All subspecialties are essential in catering to the growing demands of the population. My advice will always be to follow your passion and do what you think you will enjoy in the long term. A bad or exciting day in a certain rotation should not dictate your career path, it should be something that is deliberated and discussed thoroughly with your family and mentors. As for me, I made my decision to subspecialize in interventional cardiology in the initial years of medical school. I was beyond thrilled to garner a spot for interventional training at a leading academic center, and I'm excited to look for a job in academia in the future.

**References**:


1- Bevan G, Hejjaji V, Khetan A, et al. Novel Fellowships in Cardiology. J Am Coll Cardiol. 2022 Jul, 80 (2) 176–180.https://doi.org/10.1016/j.jacc.2022.02.055
2- https://www.abim.org/about/statistics-data/resident-fellow-workforce-data/number-first-year-fellows-by-subspecialty
3- https://www.nrmp.org/
4- https://freida.ama-assn.org/


| Table 1 Non-ABIM Cardiovascular Disease Fellowships (2022) | |
|---|---|
| Advanced imaging | Structural echocardiography<br>Cardiovascular imaging (cardiac CT/MRI) |
| Clinical cardiology | Cardio-oncology<br>Cardiac critical care<br>Preventative<br>Sports cardiology<br>Cardiometabolic<br>Cardio-obstetrics<br>Cardio-rheumatology |
| Interventional cardiology | Peripheral intervention<br>Vascular and endovascular fellowship<br>Interventional heart failure fellowship<br>Structural and congenital intervention<br>Complex and high-risk coronary intervention |

# FIT CORNER (CONTINUED)

| Table-2 Number of First-Year Fellows By Subspecialty | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 11/12 | 12/13 | 13/14 | 14/15 | 15/16 | 16/17 | 17/18 | 18/19 | 19/20 | 20/21 |
| Advanced Heart Failure and Transplant | 49 | 47 | 61 | 73 | 82 | 90 | 100 | 101 | 105 | 99 |
| Cardiology | 859 | 882 | 859 | 861 | 902 | 944 | 994 | 1005 | 1060 | 1073 |
| Clinical Cardiac Electrophysiology | 138 | 123 | 116 | 133 | 134 | 125 | 133 | 130 | 131 | 129 |
| Interventional Cardiology | 260 | 279 | 269 | 296 | 286 | 308 | 302 | 333 | 343 | 353 |

| Table-3 Fellowship Match Summary, 2022 Appointments | | | | |
|---|---|---|---|---|
| Program | No. of applicants | No. of positions | Positions filled | Unfilled programs |
| Adult Congenital Heart Disease | 14 | 22 | 13 (63%) | 8 |
| Advanced Heart Failure & Transplant | 72 | 121 | 69 (60%) | 40 |
| Clinical Cardiac Electrophysiology | 135 | 130 | 123 (95%) | 6 |
| Interventional cardiology (2021) | 382 | 353 | N/A | N/A |

**Heidi Brink, PharmD, BCPS, BCCP**
**Clinical Pharmacy Coordinator-Cardiology/Cardiothoracic Transplant**
**Nebraska Medicine**

# CVT CORNER

## THE DOBUTAMINE CRISIS- CLINICAL PEARLS FOR SURVIVING THE SHORTAGE

The term "drug shortages" has quickly become one of the most hated phrases in medicine. For cardiologists, this has become particularly painful in the context of dobutamine. This February, Pfizer released a statement notifying customers to expect intermittent stock outs of the vials and premix bags, citing "a complex combination of manufacturing challenges". As one of only two suppliers of dobutamine in the United States, Pfizer's sock outs have created a significant supply/demand imbalance. Currently, Baxter continues to distribute dobutamine premix bags on a limited allocation while Pfizer anticipates full recovery by early 2023.this initiative.
To help provide guidance, an ACC joint taskforce released a comprehensive document that offers strategies to mitigate the clinical impact of the dobutamine shortage1. Opportunities from this document and others include:

- When possible, use alternative inotropes/vasopressors[1] (especially for postoperative management in patients with normal or mildly reduced CO)
- Consider milrinone as an alternative for low CO conditions[1]
- Utilize alternative diagnostic modalities[1]
    - Evaluation of ischemia: adenosine nuclear stress test or stress CMR
    - Myocardial viability: MRI, PET, or SPECT with thallium or technetium
- When dobutamine is required, supply a smaller volume (ex. 50mL syringes compounded from 250mL dobutamine bags for DSE)
- Restrict inpatient dobutamine orders to appropriate providers
- Ensure broad communication with key stakeholders

Drug shortages will remain pervasive for the foreseeable future. Clinicians and pharmacists should continue to monitor drug availability and take early and immediate steps when an upcoming shortage is forecasted. To stay current on drug shortages/management, visit ASHP.org.

**References**:

1. Guglin M, Campbell K, Fox E, et al. What you need to know: guidance for clinicians on dobutamine shortages. ACC.org. Published August 2, 2022

# ACC CV TEAM NEWSLETTER

Did you know? The ACC has a monthly newsletter for CV Team Members. Click on the link below to learn more about what is happening on the national stage!

Read the ACC CV Team Newsletter here!

# SAVE THE DATE! - CV TEAM MEMBERS SPRING MEETING 2023


Join the Nebraska ACC CV Team members at the third Annual Spring Meeting 2023. The event will take place at Happy Hollow Club in Omaha the evening of Thursday, May 11, 2023. Additional details and registration will be available at a later date on our website at www.nebraskacardiology.org.

# ACC'S LEGISLATIVE CONFERENCE TAKING PLACE OCTOBER 16-18!


We are looking forward to welcoming everyone back to DC for the first in-person Legislative Conference since 2019. The meeting will offer cardiovascular clinicians spanning the entire care team a chance to hear from ACC leaders, staff and other experts on health policy issues affecting patients and the profession, while also providing an important opportunity to speak directly with members of Congress and their staff.

Learn more about the upcoming ACC legislative conference here!

# NEBRASKA MEDICAL ASSOCIATION: FUNDRAISING EVENT!

Please join hosts Nebraska Medical Association, Steven Krueger, MD, Dale Michels, MD, and Les Spry, MD for a political fundraiser with drinks & hors d'oeuvres for physician candidate Patrick Hotovy, MD. Dr. Hotovy, candidate for Legislative District 24, is a family medicine physician and the only physician running for Nebraska state legislature. The event will take place on Tuesday, October 4th, from 5:00 to 7:00 pm CDT at Hopcat, located on 601 P Street in Lincoln.

Click here to learn more about Dr. Hotovy!

Can't make it to the event? Contribute to Dr. Hotovy's campaign by mailing your donations to:
Patrick Hotovy for Nebraska,
220 Ash Avenue, York, Nebraska 684767.


The Nebraska Chapter of the American College of Cardiology invites you to join us for its Annual Meeting 2022!
We are happy to host Dr. Edward Fry as our speaker. We will also be hosting our annual Fellows Abstract Competition.

Wednesday, October 19, 2022 • 5:00pm-8:30pm CDT • Omaha Marriott 20220 Regency Circle, Omaha, Nebraska

***Agenda***

| | |
|---|---|
| 5:00-7:00pm | Fellows Abstract Competition |
| 5:00-7:00pm | Reception with Sponsors |
| 7:00-8:00pm | Dinner & Keynote |
| 8:00-8:30pm | Chapter Business Meeting |

To register, please visit our event website.
We look forward to seeing you there!

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