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# Academic Physician Quarterly

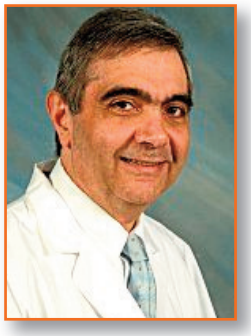
A DEPARTMENT OF MEDICINE BULLETIN


UF UNIVERSITY of FLORIDA
College of Medicine
Jacksonville



## CHAIRMAN'S MESSAGE

Dear Colleagues:



In this issue, we are highlighting one of the specialized services offered at UF Health Endocrinology - Emerson, namely continuous glucose monitoring (CGM). This tool monitors plasma glucose levels by continuous measurement of interstitial fluid glucose levels. Our diabetologists use the CGM technology as part of a multidisciplinary approach to the management of people with diabetes.

Also in this issue, there is a summary of the recent update in cholesterol treatment guidelines recommended by the American Heart Association/ American College of Cardiology (AHA/ACC). Accordingly, statin therapy is promoted as the best evidence-based choice for treatment of hypercholesterolemia. Titration to a specifically targeted LDL-C goal is not supported and non-statin therapies were disfavored, as they do not provide acceptable ASCVD risk reduction benefits compared to their potential for adverse effects.

We have put together an interesting and informative issue of the Academic Physician Quarterly. Please let me know if we can improve our future issues to make it a useful source of information for our readers.

Arshag D. Mooradian, MD
Professor of Medicine
Chairman, Department of Medicine

**By Joe Chehade, MD**

**Division of Endocrinology, Diabetes & Metabolism**

**Department of Medicine**

# Continuous Glucose Monitoring: An Important Tool in the Management of Diabetes

A blood glucose meter only provides a brief "snapshot" of our glucose level at a single moment in time. Continuous glucose monitoring (CGM) technology approximates the measurement of plasma glucose levels by continuous measurement of interstitial fluid glucose levels.

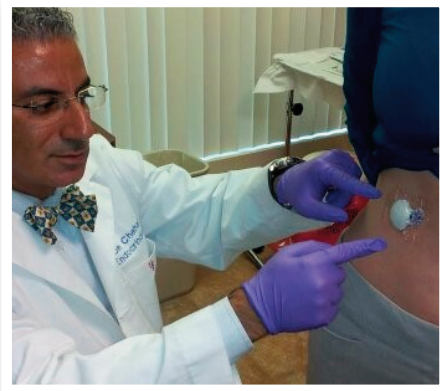
A CGM device gives you a greater view of the glucose trends. CGM measures and records interstitial glucose concentrations frequently (typically every five minutes) and for a prolonged time frame (three to seven days). Some CGM systems (CGMS) provide real-time display of glycemic information, whereas others require data download and retrospective review.

CGM can be used for diagnostic purpose by health care professionals in patients with type 1, type 2 or gestational diabetes who require better regulation of blood glucose levels, especially in presence of episodes of hypoglycemia, hypoglycemic unawareness, frequent or severe nocturnal hypoglycemic episodes and unstable blood glucose levels with large glycemic fluctuations.While wearing the device, the patient can record activities (food, physical activity, insulin), but the glucose values are not displayed. Information must be downloaded for retrospective review and to adjust the insulin regimen.

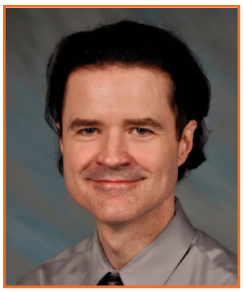
CGM is also used by carefully educated patients as their personal, automatic, real-time glucose monitors with digital display on a portable receiver. It can also be combined with the patient's personal insulin pump (where glucose readings are digitally displayed on the insulin pump screen).

CGM devices are FDA-approved and have shown some benefit in reducing A1C and minimizing hypoglycemic episodes. In both adults and children with inadequately controlled type 1 diabetes, sensor-augmented pump therapy resulted in significant improvement in HbA1c levels, when compared with injection therapy. A significantly greater proportion of both adults and children in the pump-therapy group than in the injection-therapy group reached the target HbA1c level. In a study on insulin-treated adults with type 1 and type 2 diabetes, the professional CGM group achieved significant reductions in A1C after three months, while achieving a significantly shorter duration of hypoglycemia versus the SMBG (standard self-monitoring of blood glucose) group overall and at nighttime.

At UF Health Endocrinology - Emerson, we use the CGM technology as part of a multidisciplinary approach. Most of our type 1 and type 2 patients with large glycemic fluctuations or unexplained hypoglycemic episode are evaluated by a registered dietitian and certified diabetes educator. Medical nutrition therapy (MNT) is provided by a registered dietitian and involves in-depth individualized nutrition assessment and follow-up care using the nutrition care process to manage disease. Medicare covers MNT for the following diseases/conditions — diabetes mellitus type 1 and type 2, gestational diabetes, chronic renal insufficiency (non-dialysis), and kidney post-transplant care after discharge from the hospital. Our registered dietitian is also credentialed with the following commercial health care providers (Aetna, BCBS, CIGNA, Humana, Quality and UMR). In addition, we offer training for insulin pump and personal CGM start along with advanced insulin pump class for our large insulin pump population.



*The placement of the CGM device on the abdominal wall of a patient.*



**Carlos Palacio, MD, MPH**

**Associate Professor of Medicine**
**Division of General Internal Medicine**

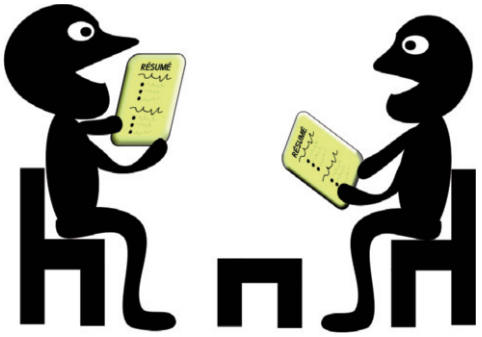
**Associate Program Director,**
**Internal Medicine Residency**

## A Successful Interview Season

Another interview season has ended successfully. This is due to, in no small part, the concerted efforts of the faculty, house staff, and GME staff to provide as positive an image of the program as possible. Between October and January, some 25 interview days were conducted, during which approximately eight candidates were interviewed by three or four faculty. Sometimes the chief residents participated in this interview process. Each evening before the interviews, two volunteers from among the residents and interns would take the candidates to dinner to help answer questions. Each morning, the candidates were given a tour of the facilities by another resident volunteer. This was followed by morning report, during which the on-call team presented a teaching case for discussion among faculty, house staff, students and candidates. Some of the applicants were familiar with the program as they had rotated on services as third- and fourth-year students. Some applicants were made aware of the residency program through their medical schools from where many of our current house staff graduated. Many were not familiar at all with the program but were interested in staying in the Southeast.

The candidate pool consisted of a promising group from LCME, DO and a number of overseas schools. Among the 167 categorical applicants, the average step I score was 212.6 and the average step II score was 218.7. Among the 41 preliminary applicants, the average step I score was 228.5 and the average step II score was 243. Each year, some 14 to 16 candidates match from the applicant pool. Twelve of these are categorical residents who will stay for the full three years. The remainder of the candidates who match are preliminary interns who will go on to disciplines that include radiology, neurology, dermatology, ophthalmology, sports medicine or any other field that requires a preliminary year.

The results of the effort that goes into this selection process are evident on several levels. At the interview stage, the applicants typically commented about the sense of high morale and collegiality the residents and interns conveyed. In most cases, their evening with the house staff resulted in many questions about work environment, service versus education balance, research and scholarly activity, resident engagement, faculty commitment and mentoring comprehensively answered. Sana Chaudhry (PGY-1) even "rescued" a lost applicant who arrived late one morning. She took it upon herself to tour the applicant and she got him to the GME office despite being on wards with patients to see. From the long-term perspective, the selection process and the efforts of the faculty throughout each resident's training have yielded results in the form of scholarship and research.




These include grant proposals, poster presentations, publications, and a board pass rate of more than 90 percent (the second highest in the state). Approximately 77 percent of the residency program's graduates go on to do fellowships. This reflects a 93 percent success rate for fellowship matching among those seeking specialty training. About half do fellowships at other institutions. The remainder of graduates go on to do hospitalist or general internal medicine. Some of the graduates remain as faculty. These facts speak strongly to the prospective candidates who apply for residency. They convey a sense of a productive program that can provide well-rounded preparation for a career in internal medicine. In conclusion, thanks to the hard work and positive efforts of the residents, faculty and staff, we can remain hopeful about the continuing success of the program and its graduates.

**Stanley Giddings, MD, Internal Medicine Resident**
**Department of Medicine, UFCOM-Jacksonville**

# An Uncommon Case of Reversible Cardiomyopathy

## Case Presentation

A 27-year-old Caucasian male without a significant past medical history presented with a three-week history of worsening lower extremity edema, orthopnea and dyspnea on exertion. He denied any chest pain or palpitations. The rest of the review of the systems was normal. He had no significant past medical or surgical history. He did not have a family history of premature coronary artery disease (CAD) or heart failure. He never smoked or used alcohol or illicit drugs.

Physical examination revealed the following: BP 110/80 mmHg, HR 220/min, RR 18/min, T 98.7, O2 95 percent on room air. He appeared cachectic with bilateral exophthalmos. The heart was irregularly irregular with normal sounds. He had basal crackles on lung auscultation and the extremities showed bilateral pitting edema up to thighs. There was no thyromegaly.

The EKG was consistent with atrial fibrillation with a ventricular rate of 220 bpm. The chest radiograph findings were consistent with pulmonary edema and no cardiomegaly. The laboratory tests were remarkable for ALK phos=251; Total bilirubin=4.3; TSH=0.01; free T4=1.9; free T3=2.68. Transthoracic echocardiogram showed global hypokinesis and ejection fraction of five to ten percent. There was no evidence of valvular heart disease or pericardial effusion.

The patient was diagnosed to have cardiomyopathy and atrial fibrillation secondary to thyroid storm. The atrial fibrillation was refractory to medications (Adenosine, Diltiazem, Esmolol drip). He experienced cardiopulmonary arrest but regained consciousness after two rounds of cardiopulmonary resuscitation. Medical treatment for thyroid storm was implemented with methimazole, propranolol, potassium iodide and steroids. His hospital course was complicated by nosocomial pneumonia with septic shock. A repeat transthoracic echocardiogram one week later showed EF of 45 to 50 percent.

## Discussion

Rapidly reversible cardiomyopathy is a heterogeneous group of diseases of the myocardium. It is the result of either mechanical and/or electrical dysfunction. It usually exhibits inappropriate ventricular hypertrophy or dilatation due to a variety of causes that are frequently genetic.

Primary cardiomyopathies are: a) genetic (e.g., hypertrophic cardiomyopathy or abnormal right ventricular structure), ion channel disorders, storage diseases, mitochondrial myopathies and conduction defects; b) mixed: DCM, restrictive cardiomyopathies and c) acquired: inflammatory (myocarditis), "stress" provoked, peripartum and tachycardia induced.

Secondary cardiomyopathies include: a) infiltrative, b) storage, c) toxicity (drugs, heavy metals, chemical agents), d) inflammatory, e) endocrine, f) neuromuscular, g) electrolyte imbalance, h) consequence of cancer therapy, i) autoimmune, j) nutritional deficiencies and k) endomyocardial disease. Some causes of reversible cardiomyopathy are: a) alcohol use, b) pregnancy, c) selenium deficiency, d) hypophosphatemia, e) hypocalcemia, f) thyroid disease, g) cocaine use and h) chronic uncontrolled tachycardia.

Prognosis of the reversible cardiomyopathies is better than other nonreversible cardiomyopathies. Thyrotoxicosis is a rare but important cause of reversible cardiomyopathy. Older individuals are more likely to be affected. Recognizable features of hyperthyroidism are due to the effects of T3 on the heart and cardiovascular system, decreased systemic vascular resistance, increased resting heart rate, increased left ventricular contractility, increased blood volume and increased cardiac output.

The effects of thyroid hormones on the cardiac myocyte include: a) genomic effects, e.g., changes in myosin heavy chain genes encoding contractile protein isoforms and sarcoplasmic reticulum Ca-ATPase and its inhibitor phospholamban that

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Clinical Case continued from Page 4

regulate intracellular Ca cycling and b) non-genomic effects, e.g., changes in membrane ion channels for Na, K, Ca, variety of intracellular signaling pathways and thyroid hormone effects on the cardiac pacemaker activity.

Thyroid hormone affects the vasculature and body metabolism. T3 directly affects vascular smooth muscle leading to vasodilatation. Decreased systemic vascular resistance activates renin angiotensin system leading to sodium and fluid retention. In addition, thyroid hormones increase erythropoeisis (increased red cell mass), culminating in increased blood volume and preload and high-output cardiac state. However, it is noteworthy that the current case report describes a patient with a combination of hyperthyroidism, low cardiac output, impaired LV function and atrial fibrillation.

Congestive heart failure may be secondary to tachycardia-induced systolic left ventricular dysfunction and prolonged exposure of excess thyroid hormones stresses the myocytes to their limits and may cause myocardial necrosis. These patients may experience palpitations, exercise intolerance, systolic hypertension, resting tachycardia, sinus tachycardia, atrial fibrillation secondary to genomic and non-genomic actions on the atrial ion channels and enlargement of the atrium as a result of expanded blood volume.

The mainstay of treatment in thyrotoxicosis-related cardiomyopathy is beta blockers or calcium channel blockers in patients unable to tolerate beta blockers. Atrial fibrillation is often resistant to digoxin possibly because the drug levels are low due to increased volume of distribution and metabolism and decreased sensitivity of the hyperthyroid heart to this drug.

Left ventricular systolic function improves when hyperthyroidism is treated and when the tachycardia / atrial fibrillation are treated. Whether there is improvement beyond the first few weeks or months is unknown. Hyperthyroidism can cause severe systolic dysfunction in young patients but this can be rapidly reversed with treatment of hyperthyroidism.

## RX UPDATES

# New Cholesterol Guidelines Replace ATP-3

*Reprinted from Drug Update Volume 30, Number 4 Nov – Dec 2013*

In November 2013, the American Heart Association/ American College of Cardiology (AHA/ACC) Guideline on the Treatment of Blood Cholesterol to Reduce Atherosclerotic Cardiovascular Risk in Adults was published. This guideline replaces previous recommendations made in the ATP-3 guidelines.

Highlights include:

- Lifestyle modification remains critical (i.e., heart healthy diet, regular exercise habits, avoidance of tobacco and maintenance of healthy weight).
- Statin therapy is promoted as the best evidence-based choice for treatment of hypercholesterolemia.
- Four groups of patients likely to benefit from statin therapy were defined to include:
  1. Clinical atherosclerotic cardiovascular disease (ASCVD) - e.g., history of acute coronary syndromes, MI, stable or unstable angina, coronary or other arterial revascularization, stroke, TIA, or peripheral arterial disease presumed to be of atherosclerotic origin (secondary prevention group)
  2. Patients with primary elevations of LDL–C >190 mg/dL
  3. Diabetics aged 40 to 75 years with LDL–C 70 to 189 mg/dL and without clinical ASCVD
  4. Patients without clinical ASCVD or diabetes with LDL–C 70 to 189 mg/dL and estimated 10-year ASCVD risk >7.5 percent (based on a calculator found at: static.heart.org/ahamah/risk/Om-

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RX Updates continued from Page 5

nibus_Risk_Estimator.xls

- Titration to a specific targeted LDL-C or non-HDL-C goal is NOT supported. Additionally, only triglyceride levels ≥500 mg/dL should be treated. Non-statin therapies do not provide acceptable ASCVD risk-reduction benefits compared to their potential for adverse effects in the routine prevention of ASCVD.
- Secondary causes of LDL ≥190 or TG ≥500 mg/dL should be identified and treated.
- For individuals not in one of the four treatment groups, other factors including family history of premature ASCVD, LDL-C >160 mg/dL, high-sensitivity C-reactive protein ≥2 mg/dL, coronary calcium score ≥300 Agatston units or ≥75th percentile for age, sex, ethnicity, ankle-brachial index <0.9, or elevated lifetime risk of ASCVD, physician judgment, statin safety profile and patient preference are important considerations.
- No recommendations are made for initiation/discontinuation of statins in patients with NYHA class II-IV ischemic systolic heart failure or in patients on hemodialysis.

**Table 1: Medication Strategies in New Cholesterol/ASCVD Prevention Guideline**

| | Patient Population | Formulary Options (daily dose) |
|---|---|---|
| High Intensity (50% reduction in LDL-C) | • Patients <75 yrs w/ASCVD (secondary prevention)<br>• Adults ≥21 years of age with primary LDL–C ≥190 mg/dL *<br>• Diabetics aged 40 to 75 years with 10-year ASCVD risk >7.5% (moderate intensity acceptable) | • Atorvastatin 40 or 80 mg<br>OR<br>• Rosuvastatin 20 or 40 mg |
| | | |
| Moderate Intensity (30-50% reduction in LDL-C) | • Elderly patients >75 years of age with existing ASCVD (high intensity only if tolerated)<br>• Diabetics aged 40 to 75 years with LDL–C 70 to 189 mg/dL and without ASCVD and with 10-year risk of ASCVD ≤7.5%<br>• Patients without clinical ASCVD or diabetes with LDL–C 70 to 189 mg/dL and estimated 10-year ASCVD risk >7.5% (high intensity acceptable)<br>• Patients listed above with contraindications/intolerance to high intensity statins (second-line option) | • Atorvastatin 10-20 mg<br>• Rosuvastatin 5-10 mg<br>• Simvastatin 20-40 mg<br>• Pravastatin 40-80 mg |

** Addition of other cholesterol-lowering agents can be considered second-line, if needed.*

## NEWS & NOTES

### Outstanding Resident Teacher Award

Dr. Gary McCulloch, a third-year resident in internal medicine, was recognized as an Outstanding Resident Teacher at the Celebration of Excellence in Medical Education that was held in Gainesville on February 19th.

Congratulations to Gary.

### Excemplary Teachers' Award

Eighteen faculty members in the Department of Medicine were chosen to receive the 2014 University of Florida-College of Medicine's Exemplary Teachers Award.

The awardees include (arranged alphabetically): Drs. Dominick Angiolillo, Abubakr Bajwa, Doug Chapman, Joe Chehade, James Cury, Linda Edwards, Ashwani Gupta, Nilmarie Guzman, Lisa Jones, Jeffrey House, Cristian Landa, Alan Miller, Fauzia Rana, Pramod Reddy, Michael Sands, Elisa Sottile, Kent Wehmeier and Robert Zaiden.

This award is given in recognition of outstanding teaching contributions of an individual faculty member. The awardees will receive a lapel pin and a financial award determined by the compensation plan's incentive for outstanding teaching.

The awardees will be recognized during the proceedings of Advances in Medical Education held in the LRC Auditorium/Atrium on April 10th from noon to 2:30 p.m.

Please join me in congratulating the awardees.

# Patient-Centered Medical Home

The National Committee for Quality Assurance (NCQA) describes the Patient-Centered Medical Home as a model for care provided by physician practices that seek to strengthen the physician-patient relationship. NCQA designated UF Health primary care centers in Northeast Florida as Patient-Centered Medical Homes. UF Health is the first health care organization in the region and the first academic medical group in the state to receive this designation.

## UF HEALTH PRIMARY CARE

The UF Health primary care network has more than 25 centers in convenient locations throughout Jacksonville and surrounding areas.

Services include:

- General medical care for patients of all ages, from pediatrics to geriatrics
- Annual checkups
- Health and wellness checkups
- Sports physicals and school physicals
- Immunizations and flu shots
- Screenings for cancer, heart disease, cholesterol, high blood pressure and diabetes
- Management of chronic conditions, such as high blood pressure, high cholesterol and diabetes
- General gynecology, including pelvic exams, breast exams and Pap smears
- General prenatal and obstetric care, including family planning and pregnancy testing
- General dermatology, including skin care, minor surgery and cryotherapy
- Lab work and other tests, including EKG
- Counseling for preventive health care, stress management, anxiety and depression
- Smoking cessation support

As your medical home, we:

- Help coordinate your care across multiple settings, including your primary care office, hospital, specialist's office, lab, x-ray facilities and other health care service locations.
- Facilitate the relationship between you, your physician and, when appropriate, your family.
- Provide a way to obtain care and clinical advice during and after office hours.
- Maintain your medical records, including care provided at other facilities.
- Provide you and your family access to evidence-based care and self-management support.

## LOCATIONS

Most of our practices are open Monday through Friday from 8 a.m. to 5 p.m.
Patients can request an appointment by calling the numbers below.

| | |
|---|---|
| BAKER COUNTY | |
| UF Health Family Medicine – Crossroads | 904.383.1777 |
| | |
| DOWNTOWN | |
| UF Health Community and Family Medicine – Jacksonville | 904.383.1002 |
| UF Health Family Medicine – Brentwood | 904.633.0500 |
| UF Health Family Medicine – Elizabeth G. Means Center | 904.633.0500 |
| UF Health General Medicine – Jacksonville | 904.383.1003 |
| | |
| GEORGIA | |
| UF Health Family Medicine – St. Marys | 912.576.2344 |

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Department of Medicine, L20
653-1 West 8th Street
Jacksonville, FL 32209-6511
904.244.8846; fax: 904.244.8844



UF Health Jacksonville continued from Page 7

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|---|---|
| NASSAU COUNTY | |
| UF Health Family Medicine – Callahan | 904.633.0560 |
| UF Health Family Medicine – Yulee | 904.633.0670 |
| | |
| SOUTHSIDE | |
| UF Health Family Medicine – Augustine Oaks | 904.633.0210 |
| UF Health Family Medicine and Pediatrics – Baymeadows | 904.633.0800 |
| UF Health General Medicine – Emerson | 904.383.1003 |
| UF Health Family Medicine – Kernan Square | 904.633.0585 |
| UF Health Family Medicine – Merrill Road | 904.633.0285 |
| UF Health Family Medicine – Monument Landing | 904.383.1026 |
| UF Health Family Medicine – San Jose | 904.633.0475 |
| UF Health Pediatrics – San Jose | 904.633.0460 |
| | |
| NORTHSIDE | |
| UF Health Family Medicine – Commonwealth | 904.633.0500 |
| UF Health Family Medicine – Dunn Avenue | 904.633.0700 |
| UF Health Family Medicine – Lem Turner | 904.383.1001 |
| UF Health Family Medicine and Pediatrics – New Berlin | 904.633.0340 |
| UF Health Family Medicine and Pediatrics – Soutel Plaza | 904.633.0500 |
| | |
| WESTSIDE | |
| UF Health Family Medicine – Murray Hill | 904.633.0500 |
| UF Health Family Medicine – Normandy | 904.633.0640 |
| UF Health Family Medicine – Plantation Oaks | 904.633.0820 |
| UF Health Family Medicine and Pediatrics – Blanding | 904.633.0610 |