LIFESTYLE MEDICINE ROUNDS
FROM ORLANDO HEALTH

A 55-Year-Old Man Presenting With Loss of Consciousness

With this issue we are pleased to inaugurate a series of clinical presentations titled "Lifestyle Medicine Rounds From Orlando Health." The purpose of these rounds is to explore how the principles of lifestyle medicine can be applied to the care of hospitalized patients and to demonstrate how lifestyle medicine can be incorporated into traditional medical education venues. Orlando Health is the first hospital healthcare system to embrace lifestyle medicine as a core operating principle. Our participants are **Kwabena Ayesu, MD, MSc,** the director of clinical research, Internal Medicine, Orlando Health, Orlando, Florida; **Marie Downey, RN,** a diabetes educator and education coordinator II/specialist at Orlando Health, Orlando, Florida; **Dari Entsminger, MSW,** the team lead, case management, at Orlando Health, Orlando, Florida; **Hector Farela, MD,** a faculty member at Orlando Health; **Charles Hunley, MD,** a medical resident at Orlando Health; **Mario Madruga, MD, FACP,** the program director, Internal Medicine, Orlando Health, Orlando, Florida; **James M. Rippe, MD,** the director of the Lifestyle Medicine Initiative, Orlando Health, Orlando, Florida, and Editor in Chief of the *American Journal of Lifestyle Medicine*; and **Jill Ward,** a medical student at Florida State University College of Medicine, Orlando, Florida.

Ward: The patient is a 55-year-old man presenting with loss of consciousness. He is mainly Creole speaking; therefore, history was obtained through an interpreter. Although he is a homeless individual, he states that he has been very compliant with his insulin and other medications. The insulin was switched recently to a new form of insulin, which had started to make him dizzy. On the morning of admission, the patient took his insulin on an empty stomach and shortly thereafter became sweaty and lightheaded and then passed out. He hit his head on the ground when he fell and lost consciousness. The next thing he remembers is being awakened by emergency medical services (EMS) and taken to the emergency room. The patient's past medical history is remarkable for a cerebrovascular accident (CVA), diabetes mellitus, hypertension, and congestive heart failure. He reported that he had a pacemaker placed in the past but could not recall the indication. He denies alcohol, tobacco, or substance abuse.

Physical examination. On admission, he was alert and oriented. His height is 5 ft 8 in. and weight is 160 lb. Vital signs are as follows: temperature 98.2°F, heart rate 53, regular rhythm with a blood pressure of 130/64 mm Hg, respiratory rate of 17, and oxygen saturation 99% on room air. Extraocular movements were intact. Pupils were equal and reactive to light and accommodation. Neck was supple, and lungs were clear to percussion and auscultation. The cardiovascular examination revealed a regular rate and rhythm with an S4. Abdomen was soft and nontender, musculoskeletal examination revealed left-sided weakness, and neurologic examination was unremarkable.

Laboratory values. Blood glucose upon admission to the emergency room was 100 mg/dL; blood sugar levels obtained multiple times in the emergency room ranged between 100 and 150 mg/dL. HbA1c was elevated at 11.4%. The remainder of the laboratory data are found in Table 1.

Electrocardiogram. The electrocardiogram (EKG) showed sinus bradycardia, left axis deviation, and incomplete right bundle branch block with a heart rate of 53 and nonspecific ST and T wave changes and possible old inferior and anterolateral myocardial infarctions. Chest x-ray revealed cardiomegaly but no acute changes. A cardiac pacemaker with a right ventricular lead was present. Computed tomography scan of the head was obtained without contrast and revealed an old CVA involving the right parietal lobe.

DOI: 10.1177/1559827609360500

Table 1.

Admission Laboratory Values

CO2 Content	26		[22-32 mmol/L]	Final
Blood Urea Nitrogen	12		[8-20 mg/dL]	Final
Creatinine/Plasma	1.1		[0.7-1.2 mg/dL]	Final
Blood Urea Nitrogen/Creatinine ratio	10.9		[7.3-21.7]	Final
Glucose/Plasma	111	H	[65-100 mg/dL]	Final
Anion Gap	9		[2-12 mmol/L]	Final
Calcium/Plasma	9.0		[8.9-10.3 mg/dL]	Final
Aspartate Aminotransferase (AST)	27		[15-41 IU/L]	Final
ALT/SGPT	17		[17-63 IU/L]	Final
Alkaline Phosphatase	77		[38-126 IU/L]	Final
Bilirubin, Total	0.8		[0.4-2.0 mg/dL]	Final
PLEASE NOTE:IT HAS RECENTLY BEEN DETERMINED THAT PATIENTS WHO ARE TAKING NAPROXEN MAY HAVE FALSE ELEVATIONS OF TOTAL BILIRUBIN				
Protein Total	6.8		[6.1-7.9 g/dL]	Final
Albumin	3.7		[3.5-4.8 g/dL]	Final
Osmolality Calculated	290		[280-300 mOs/kg]	Final

			Requested by:	
21-Aug-2009 11:26 CK Fraction (MB)			**Emergency, Orange Dept**	**Results Received**
CK-MB	5.3	H	[0.1-4.0 ng/mL]	Final
Creatine Kinase	261		[49-397 IU/L]	Final
MB Index	2.0		[0.0-6.0 %]	Final

			Requested by:	
21-Aug-2009 11:26 Troponin I Quant			**Emergency, Orange Dept**	**Corrected Results**
Troponin I Quant	0.05		[0.00-0.05 ng/ml]	
The reference range for Troponin incorporates guidelines from the American College of Cardiology				

			Requested by:	
21-Aug-2009 11:49 Glucose (Bedside Meter)			**Emergency, Orange Dept**	**Results Received**
Glucose (Bedside Meter)	100		[65-100 mg/dL]	Final

Ayesu: Basically, at this juncture, we have a gentleman with a history of diabetes who is homeless and presents with loss of consciousness. Unfortunately, we do not have any recording of the blood sugar level at the point of time when he fell. We encounter many patients who have difficult and challenging living situations such as this individual. They pose enormous challenges to us in the medical profession because they often present to the emergency room multiple times. When we discharge them on the appropriate medicines they are supposed to be on, we have no system for making sure that they are compliant. This, of course, creates great challenges to apply the principles of lifestyle medicine, which would be so important for helping him to control his diabetes.

Rippe: I would like our diabetes nurse educator to comment on the fact that his HbA1c was greater than 11%: clearly, he is not taking very good care of his diabetes.

Downey: We try very hard with patients like this to give them a community resource list and provide them with access to multiple organizations to help with insulin management. We also try to provide them with glucose-monitoring strips to help them monitor their blood sugar. Nonetheless, the fact that this gentleman is homeless creates very significant challenges to keeping his blood sugar under control.

Hunley: The fact that he is homeless creates enormous, perhaps insurmountable, challenges for storing his insulin.

Downey: The best we can hope for with these individuals is to get them on an insulin regimen that is as simple as possible and teach them how to try to manage their medicines and eating patterns. Being homeless makes this a very significant challenge.

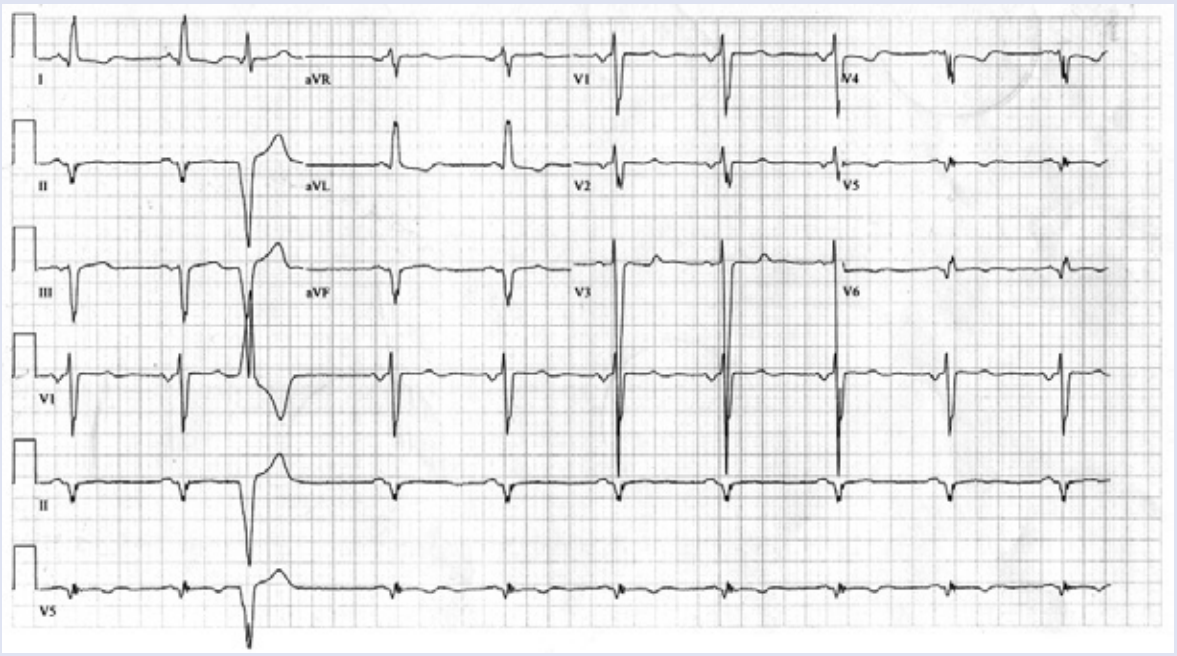
Ayesu: The biggest challenge is how the hospital can help a homeless individual like this manage his diabetes without serious medical complications or the need to return to the emergency room on multiple occasions. Clearly, we need to involve case management in this setting.

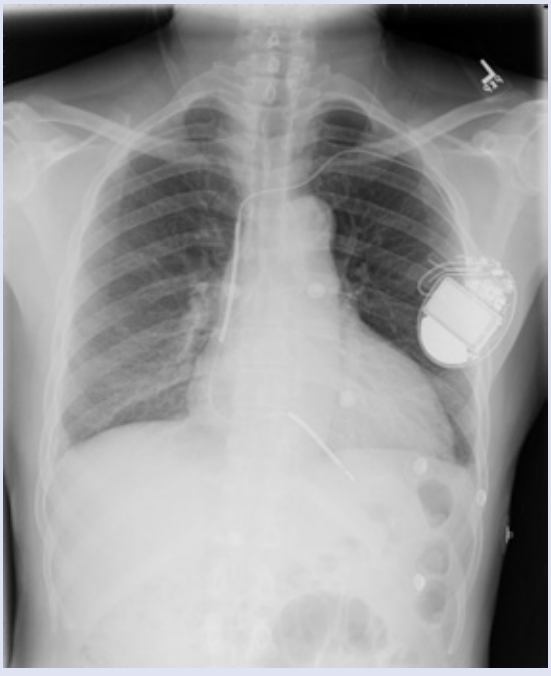
Entsminger: We try very hard to provide resources for this type of individual. For example, there is a facility called Pathways to Care, which is an assisted-living facility that we would try to get them in. We also have a health navigator at Orlando Health who visits all of the homeless people who are admitted to the hospital and sets them up with appointments before they leave the hospital. We also try to connect them with clinical resources and shelters. We call these resources to see if they would be able to store insulin for these individuals. Obviously, these are not perfect solutions, but the key is to make sure that the patient follows through once he or she has left the hospital.

Rippe: I'd like to ask Dr Ayesu how secure he feels with the diagnosis of hypoglycemia as the underlying event.

Ayesu: Parts of the obtained medical history create some uncertainty. We do not know, for example, exactly what treatment was administered by EMS. Nonetheless, I can convince myself with some certainty that this was a hypoglycemic episode leading to a syncopal episode from the statement given by the patient (ie, taking his insulin on an empty stomach).

Farela: Would it be safe to change this gentleman to an oral medication such as metformin, which would put him at a decreased risk of hypoglycemia since he's already had a couple of episodes?





Downey: Metformin may have some effect. It may bring his HbA1c down 1% or 2%; however, it will certainly not be as effective. Insulin management is required in this gentleman who already has a very elevated HbA1c. Optimally, he still needs to be on insulin management.

Ayesu: One important question that has not yet been addressed relates to the cost of insulin. On regular occasions, when we encounter a patient like this and recommend a once-a-day regimen of Lantus or Levemir, patients will state that they cannot afford to take those medicines. I believe this is the underlying issue that Dr Farela was trying to raise. While it is true that an oral hypoglycemic may not be optimal, a patient can get a whole month's supply for $4.00, but a vial of insulin may cost them $50, and they simply will not buy it because they cannot afford it.

Hunley: In this type of situation, it is particularly beneficial to have direct communication with the patient and learn about his capability of managing whatever therapies we feel might be best for him. In addition to the expense of insulin, syringes are very expensive—often $4 a piece. You also have to ask about his compliance and his eating habits. How is he managing to get food while he is homeless? Then you have to make a plan with him. No matter what we think is optimal outpatient treatment for diabetes, we have to deal with the reality of this man's difficult and chaotic life.

Rippe: I agree with your comments. We don't practice in a vacuum. This does raise the other critical issue about health care insurance, which, of course, is part of the national debate on health care reform. While that is beyond the confines of our discussion today, these broader social and economic issues inevitably affect how we practice medicine.

In addition, I would like to make several clinical comments. First of all, this person's blood pressure when he came in was 130/60 mm Hg, which is reasonable control for a diabetic according to JNCVII Guidelines. Unfortunately, his lipids were not under good control. As an individual with diabetes, he already has multiple risk factors for heart disease and stoke, and he has already suffered a stroke and possibly 1 or more myocardial infarctions. In an ideal world, we would pay a lot of attention to both his lipid profile and his blood pressure after discharge. Do we have any reasonable likelihood of getting these issues addressed after he leaves the hospital?

Entsminger: Our goal with an individual like this is to get him into an assisted-living facility such as Pathways to Care. The average length of stay at this type of facility is 45 days, and Orlando Health pays for this. We will do our best to get this patient into an appropriate living situation, but if he refuses, then we are stuck. We can only hope that he will follow up with the Healthcare Center for the Homeless.

Rippe: I would like to ask several broader questions of Dr Ayesu and Dr Madruga. Could you describe the blood glucose teaching protocols that you are initiating at the Residents' Clinic at Orlando Health?

Ayesu: Yes, we are implementing a project in our clinic, organized by the residents. It is meant to deal with real issues of patient adherence to core measures for managing their diabetes. We try to teach our patients to better monitor their blood sugar, diet, and exercise and engage them more in their own disease management. We are trying to incorporate ideas from the American College of Physicians and are very excited about our progress to date.

Rippe: Dr Madruga, what about the issue of hospital protocols to help control blood sugar for inpatients?

Madruga: We have an initiative at Orlando Health, the Inpatient Glycemic Control Initiative, which is a collaboration between physicians, nurses, and pharmacists. We are introducing an algorithm-based initiative for better inpatient glycemic control in the hope that individuals with diabetes who are discharged receive better glucose control during their hospitalization.

Rippe: Dr Ayesu, could you comment on this patient's hospital course?

Ayesu: He had an uneventful hospital course. EKGs did not show any ischemic events. Cardiac enzymes were equivocal. His pacemaker was interrogated by Guidant and was functioning normally. His discharge diagnosis was syncope, most likely secondary to autonomic dysfunction related to his diabetes mellitus. He was discharged in stable condition on the following medications: Lantus 35 U once a day, pravastatin 40 mg 1 tab orally daily, Lasix 20 mg twice daily, K-Dur 20 mg once daily, Norvasc 10 mg once daily, hydralazine 25 mg 3 times daily, Imdur 60 mg once daily, carvedilol 25 mg twice daily, and lisinopril 40 mg once daily.

Rippe: Dr Ayesu, any final comments?

Ayesu: The fact that this gentleman was homeless raises very special concerns. On a larger scale, the management of diabetic patients in this country is gaining a renewed scrutiny because of the epidemic of obesity and hyperglycemia. A recent article in the American Journal of Medicine[1] concluded that in the United States, we have received a failing grade when it comes to improving our healthy lifestyle habits, particularly in the area of weight management and diabetes. According to this article, it is possible that the improvements of the past years in such areas as improved cholesterol control, reduction of cigarette smoking, and better control of blood pressure could all be negated if we don't do a better job on other lifestyle issues such as weight control and diabetes. Certainly, these issues for this particular patient are going to be incredibly difficult, but we need to remain committed to better long-term follow-up care for people with diabetes if we are going to improve outcomes for this chronic disease. AJLM

Reference

1. King DE, Mainous AG III, Carnemolla M, Everett CJ. Adherence to healthy lifestyle habits in US adults, 1988-2006. *Am J Med.* 2009;122(6):528-534.