

# Internal Medicine

Evidence-based summaries of the  
latest research in internal medicine

## [ALERT]

### ABSTRACT & COMMENTARY

## Optimism Could Increase Odds of ‘Exceptional Longevity’

By *Ellen Feldman, MD*

*Altru Health System, Grand Forks, ND*

Dr. Feldman reports no financial relationships relevant to this field of study.

**SYNOPSIS:** An analysis of 10-year follow-up data from the Nurses' Health Study and 30-year follow-up data from the Veteran Affairs Normative Aging Study revealed a significant association between baseline levels of higher optimism and longevity, even when data were adjusted for health behaviors and psychosocial factors.

**SOURCE:** Lee LO, James P, Zevon ES, et al. Optimism is associated with exceptional longevity in 2 epidemiologic cohorts of men and women. *Proc Natl Acad Sci U S A* 2019;116:18357-18362.

In a landmark 1910 address to The College of Physicians and Surgeons, the reigning president, Dr. E.L. Trudeau, known for his innovative approach in treatment of tuberculosis, spoke about the importance of optimism in medicine.<sup>1</sup> He ended his speech with a quote from one of his own patients, literary giant Robert Louis Stevenson: “To travel hopefully is a better thing than to arrive, and the true success is in the labour.”<sup>2</sup>

Dr. Trudeau, experiencing illness from the perspective of both a physician and a tuberculosis patient himself, believed that an optimistic physician conveys this stance to patients, and that this interaction enhances both healing and recovery for the patient.<sup>1,3</sup> A review of

publications since that time shows bursts of interest in this relationship, with more rigorous studies appearing in more recent years.<sup>4</sup>

Lee et al noted the current research supports an association of optimism with a reduced risk of cardiovascular disease, lung function deterioration, and premature mortality, but that there are no studies regarding optimism and life span. Specifically, Lee et al were interested in a relationship between optimism and “exceptional longevity,” which they defined as survival to 85 years of age or older. To address this knowledge gap, the team examined data from two long-term, broad-based, prospective investigations: the Nurses' Health Study (NHS) and the Veterans Affairs

**Financial Disclosure:** *Internal Medicine Alert's* Physician Editor Stephen Brunton, MD, is a retained consultant for Abbott Diabetes, Acadia, AstraZeneca, and Boehringer Ingelheim; and he serves on the speakers bureau of AstraZeneca, Boehringer Ingelheim, Janssen, Lilly, and Novo Nordisk. Peer Reviewer Gerald Roberts, MD; Editor Jonathan Springston; Editor Jason Schneider; Editorial Group Manager Leslie Coplin; and Accreditations Manager Amy M. Johnson, MSN, RN, CPN, report no financial relationships relevant to this field of study.

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*Internal Medicine Alert* (ISSN 0195-315X) is published semimonthly by Relias LLC, 1010 Sync St., Ste. 100, Morrisville, NC 27560-5468. Periodicals postage paid at Morrisville, NC, and additional mailing offices. POSTMASTER: Send address changes to *Internal Medicine Alert*, Relias LLC, 1010 Sync St., Ste. 100, Morrisville, NC 27560-5468.

GST Registration Number: RI28870672.

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Normative Aging Study (NAS). The NHS, currently in its third generation, launched in 1976 with periodic questionnaires designed to collect information about the potential for long-term side effects from the use of oral contraceptives. Quickly, the researchers expanded the scope of the project to collect information on a variety of lifestyle factors, behaviors, and psychosocial factors influencing more than 30 chronic diseases. In 2004, an optimism assessment was included in the questionnaire. For the purposes of this study, mortality information was tracked until 2014.<sup>5</sup>

The NAS dates its birth to 1963. Devised as a longitudinal study on “non-pathological” aging, about 2,000 male veterans from diverse socioeconomic backgrounds agreed to periodic outpatient assessments during their lifetime. In 1989, the assessment included an optimism scale, and mortality in these subjects has been tracked until 2016.<sup>6</sup>

The tools used to assess optimism for these two groups were different. The NHS used the Life Orientation Test-Revised (LOT-R) while the NAS employed a subsection of the Minnesota Multiphasic Personality Inventory-2. (MMPI 2). Previous research regarding these tools allowed correlation of optimism scores, with results from the NHS divided into quartiles, and results from the more broadly based NAS placed into quintiles.

The LOT-R is a self-administered questionnaire asking for relative agreement or disagreement with 12 statements regarding general expectations. For example: “In uncertain times, I usually expect the best.”<sup>7</sup> The perhaps more widely known MMPI includes an optimism and pessimism scale. This test approaches measurement of optimism in a slightly different manner, considering responses on the broader MMPI and analyzing the style of responses as more pessimistic or optimistic in general.<sup>8</sup>

Analysis included results for three different models based on 69,744 women respondents from NHS and 1,429 men from NAS. The first model was adjusted for social demographics such as race, age, education, and marital status. The second was adjusted for demographics and health conditions such as high cholesterol,

depression, cancer, and stroke at baseline. The third was adjusted for demographics, health conditions, and health behaviors such as smoking, alcohol use, physical activity, and diet.

Results for each model in each cohort showed association of higher levels of optimism with a longer life span ( $P$  trend  $< 0.0001$  for NHS and  $P$  trend = 0.002 for NAS). In both groups, results were attenuated for the third model (adding adjustment for health behaviors). In other words, when adjusting results for health behaviors such as smoking, alcohol use, or diet in addition to demographics and health conditions, working from a baseline high level of optimism still was significant, but less of a factor toward a longer life span.

Lee et al also studied the likelihood of survival to at least 85 years of age (exceptional longevity) by shrinking the pool of respondents to only those born early enough to reach this age by the end of the follow-up period. This approach allowed analysis of results from 13,045 women in the NHS and 1,117 men from the NAS. A pattern similar to the original analysis emerged, with higher optimism associated with greater odds of reaching exceptional longevity, and attenuation of these results with adjustment for health behaviors. The  $P$  trend was  $< 0.01$  for both cohorts before adjustment for health behaviors.

## ■ COMMENTARY

Headlines reveal that the press was interested in this study.<sup>9-11</sup> It was clear that this research struck a chord. While longevity is of general interest to the public, the implications of achieving exceptional longevity for public health policy and population health are of particular significance to the medical world. Yet, a close look at the study reveals some strengths but also some glaring gaps, making hard and fast conclusions difficult to support.

Perhaps the greatest strength of the study resides in numbers: the exceptionally large group of respondents (1,429 in NAS and 69,744 in NHS) and the 10-30 years of follow-up. While these robust data lend credibility to the results, replication of the study faces significant hurdles. Additionally, the participants by definition are drawn

from relatively homogenous pools (especially in the NHS cohort), and the overwhelming majority of the participants were women, limiting the ability to generalize the findings.

Another concerning factor is that in both the NHS and NAS cohorts, optimism was measured only once — at baseline. There is no way to know if these measures were stable over time. The results from both studies attenuated when health behaviors, such as smoking and alcohol use, were considered. This certainly may be due to a link between optimism and healthy behaviors, but clear evidence that optimism scores remained stable would be helpful to advance knowledge regarding these relationships. All patients enrolled in the NHS and NAS were adults by the time of the initial optimism assessment. Future studies are needed to understand how optimism develops over time, the relative stability of this trait, and any relationship to health benefits and longevity.

For now, we know only that a higher level of optimism during middle-age years was associated with greater longevity and greater odds of reaching exceptional longevity in two long-term, prospective studies. Notably, this study tells us nothing about whether we can affect or change optimism in adults or help develop optimism in children. Furthermore, it does not tell us if changing optimism at any stage of life is associated with health benefits.

As referenced earlier, the concept of optimism as a healing force in medicine is not new. When Dr. Trudeau spoke about optimism in medicine in the early 1900s, he was explicitly referring to the optimism of physicians. He believed an optimistic physician conveyed this attitude to patients, and thus, promoted healing.<sup>1,2</sup> More than 100 years later, this work by Lee et al demonstrates how far we have come in our understanding of optimism in medicine and suggests a path to further our understanding.

For now, we can tell patients that attitude and a positive outlook may help with lengthening life span and achieving exceptional longevity. Working toward a more optimistic approach to life may not come easily

to many of our patients and may not feel natural for a provider. In speaking with patients, listen for echoes of self-blame. For example, “I have caused my own health problems because of my pessimism.” When a provider acknowledges the difficulties inherent in such a change, it can be reassuring and affirming for patients. Remind patients that optimism occurs on a gradient, and that looking for incremental movement may be achievable and more palatable for many.

In addition, this study also may serve as a reminder of the added value of understanding and addressing psychological factors while interviewing patients, and the intrinsic value of appreciating such traits when developing comprehensive wellness and treatment plans. ■

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## ABSTRACT & COMMENTARY

# Treating Depression in Epilepsy: To Medicate or Not?

By Padmaja Kandula, MD

Assistant Professor of Neurology and Neuroscience, Comprehensive Epilepsy Center, Weill Cornell Medical College

Dr. Kandula reports no financial relationships relevant to this field of study.

**SYNOPSIS:** Epileptic patients with major depression were randomized to either cognitive behavioral therapy (CBT) or sertraline. Depression and related secondary health outcomes were analyzed in both groups. Sertraline and CBT were found to be equally efficacious with improvement in mood in more than half of patients.

**SOURCE:** Gilliam F, Black KJ, Carter J, et al. A trial of sertraline or cognitive behavioral therapy for depression in epilepsy. *Ann Neurol* 2019;86:552-560.

Depression has been a long-standing comorbidity for patients with many neurologic conditions, including epilepsy. The risk of suicidality is 30 times greater in those with combined epilepsy and depression vs. the general population. In recent years, the prevalence and global use of healthcare resources to treat both conditions continues to increase, yet optimal treatment is not clearly defined in this subpopulation. In addition, there are potential safety concerns regarding selective serotonin reuptake inhibitors (SSRIs), including the risk of lowering of seizure threshold or induction of suicidal ideation.

Gilliam et al randomized epileptic patients with major depression to either sertraline treatment or cognitive behavioral treatment (CBT). Primary outcome measures included depression severity. Secondary outcomes included seizure counts, side effects, quality of life, and suicidality. Subjects were recruited from either general neurology or epilepsy clinics at two major institutions. Patients were included in the study if they were between 21 and 75 years of age; carried a diagnosis of epilepsy as confirmed by an epileptologist; experienced a clinically recognized seizure within the last 12 months on approved anticonvulsant; scored > 14 on the Centers for Epidemiological Studies Depression Scale (CES-D); were diagnosed with major depressive episode on the Mini International Neuropsychiatric Interview (MINI); and could read and understand the study protocol and documents. A computer-generated code randomized patients to either CBT or sertraline therapy. Subjects were re-evaluated with the Beck Depression Inventory (BDI), CES-D, seizure counts, and side effects between office visits and monthly at scheduled follow-up. Sertraline was titrated by 50 mg increments every two weeks as needed for a CES-D score > 14, up to a maximum daily dose of 200 mg per day. Standardized CBT was performed by a licensed therapist for one-hour increments weekly during the 16-week study period. Primary outcome measures included the proportion of patients achieving depression remission as gauged by the MINI. Secondary endpoints included depression severity using BDI and

CES-D, suicidality (suicide subsections of MINI), quality of life (QOLIE, or Quality of Life in Epilepsy Inventory), medication side effects (adverse events profile), and seizure severity and rate via standardized seizure calendars and based on International League Against Epilepsy classification.

Researchers randomized 140 patients to either treatment arm. Nearly 90% of patients had not received depression treatment. There was a similar treatment cessation drop-out rate (5.6% vs. 7.3%) for both the sertraline and CBT groups, respectively. However, both groups completed outcome assessments. In the final analysis, 52.8% of patients assigned to sertraline achieved depression remission as defined by the MINI. Thirty-seven percent of patients achieved remission with an average sertraline dosage of 100 mg per day; 60.3% of patients achieved depression remission with CBT. The difference in time to remission between both groups was 2.8 days. Overall, there was an improvement in quality of life scores of 28% in the sertraline group vs. 27% in the CBT group. The principal seizure outcome assessment was similar between both arms as well. The occurrence of a convulsion (in those who experienced convulsion six months prior to enrollment) was low, at 7.8% and 7.5% in the sertraline vs. CBT group. No significant difference in mean adverse events was noted between groups. Depression remission was associated with lower adverse event profile scores compared to those with continued depression for both groups.

### ■ COMMENTARY

This randomized, naturalistic study carries several important implications. Depression can remit in 50% of epilepsy patients with major depression by using effective medical or behavioral therapy. Surprisingly, modest doses of SSRIs (100 mg) or one-hour weekly CBT sessions efficiently and effectively treated depression. The difference in time to remission was less than three days between both treatment modalities. The convulsion rate between both groups was similarly low. Remission

of depression resulted in improved quality of life scores. Adverse events were similar between both groups, and decreased over time in both groups as depression remitted. Lastly, the persistence of depression was the only statistically significant predictor of suicidality. Why are clinicians not treating depression aggressively? As

the global health burden of chronic disease continues to rise and access to mental health resources declines, early identification and treatment of comorbidities will become inevitable. This study shows how simple therapeutic techniques can significantly affect various psychosocial aspects of epilepsy. ■

## ABSTRACT & COMMENTARY

# Anticoagulation Decisions in Atrial Fibrillation

By Michael H. Crawford, MD

*Professor of Medicine, Associate Chief for Education, Division of Cardiology, University of California, San Francisco*

Dr. Crawford reports no financial relationships relevant to this field of study.

**SYNOPSIS:** Using the Delphi method of arriving at a consensus among clinicians concerning for which patients with atrial fibrillation should oral anticoagulants be recommended, the risk of stroke, the risk of hemorrhage, and patient-specific factors emerged. Many of these factors are not included in the guidelines and should be studied further.

**SOURCE:** King PK, Fosnight SM, Bishop JR. Consensus clinical decision-making factors driving anticoagulation in atrial fibrillation. *Am J Cardiol* 2019;124:1038-1043.

Surveys have shown that up to 38% of high-risk-for-systemic-emboli patients with atrial fibrillation (AF) are not treated with anticoagulants. To explore the reasons for this, 27 practicing cardiologists, neurologists, internists, and clinical pharmacologists used the modified Delphi method to rate factors important in oral anticoagulation (OAC) decisions. The Delphi method employed three rounds of surveys conducted blindly through electronic means. A list of potential factors for initial evaluation was derived from published literature and submitted to the participants in round 1. Each participant then rated their level of agreement of each factor's importance for decisions regarding OAC in AF. In round 2, factors with partial consensus (60-75% agreement) and full consensus (more than 75% agreement) were reconsidered and assigned a score of importance from 0-50 points. All factors with a score above the median were reconsidered in round 3 and arranged in rank order.

Sixty-six factors were identified from the literature review. In round 1, 41 failed to meet consensus, and seven new factors were added. Thus, 32 factors were considered in round 2, and 16 did not meet consensus. The 16 factors in round 3 were arranged in rank order: CHA<sub>2</sub>DS<sub>2</sub>-VASc score, ischemic stroke history, transient ischemic attack (TIA) history, any major GI bleed less than 12 weeks ago, platelets < 50,000, nontraumatic intracranial hemorrhage > 12 weeks ago, any major bleed < 12 months ago, CHADS<sub>2</sub> score, adherence concerns, HAS-BLED score, GI bleed from a peptic ulcer < 12 weeks ago, goals of care, liver disease with international normalized ratio (INR) > 1.4, age, patient values/preferences, and overall prognosis. The authors concluded that several of these factors are not addressed in current guidelines, including hematologic indicators of bleeding

risk, previous bleeding episodes by specific type, other risk factors for bleeding, and adherence concerns. Thus, more research needs to be conducted on the clinical implications of these emerging factors and the lack of consensus on other factors found in the literature.

### ■ COMMENTARY

In patients with AF, the decision on whom to prescribe OACs is difficult because the risk of major bleeding is real. Not surprisingly, many AF patients end up on no OAC or on aspirin alone, which is no longer recommended in guidelines because the risk of bleeding outweighs the small potential benefit. Also, many patients are treated with OAC doses that are below those recommended. This study uncovered another issue: the lack of consensus about which factors are important in making the decision to anticoagulate.

Out of 73 factors identified, there was consensus only on 16. Of these 16, the three highest-ranked factors all concerned protection from systemic emboli: CHA<sub>2</sub>DS<sub>2</sub>-VASc score, ischemic stroke, and TIA history. CHADS<sub>2</sub> score was number 8 on the list, so it has clearly fallen out of favor. Six of the next 13 factors involved avoiding hemorrhage: major GI bleed within 12 weeks, platelet count < 50,000 nontraumatic intracranial hemorrhage more than 12 weeks ago, HAS-BLED score, bleeding peptic ulcer < 12 weeks ago, and liver disease with an INR higher than 1.4. The final factors involved patient-specific issues: adherence concerns, age, goals of care, patient values/preferences, and overall prognosis. For several factors that would seem important, consensus could not be reached: dual antiplatelet therapy need, cognitive impairment, frailty, systolic heart failure, anemia, and transient postoperative AF. Why there was

no agreement on these factors could not be determined in this study, but as the authors concluded, these could be good research targets. Of special importance is the patient who requires dual antiplatelet therapy and has AF. Currently, several different approaches to this problem have been studied or research is ongoing. Thus, the lack of consensus here is not surprising. There are strengths to the Delphi method as applied in this study. Since all the grading was conducted online, there was no peer-to-peer influence. Also, there was a broad group of practitioners, all of whom were knowledgeable about AF and OACs. In addition, the Delphi method studies thought processes, not prescribing patterns. Still, there were weaknesses in this investigation. Participants were limited to physicians and clinical pharmacists. No nurse practitioners or physician assistants were included, yet such individuals often are involved in the decision to prescribe OACs. Also, all practitioners were in the United States, so the

results may not apply internationally. Finally, with the Delphi method, the more participants included, the better the analysis, but more than 50 is considered impractical. These investigators recruited 103 clinicians: 49 did not respond, 24 declined, and 30 agreed to participate. Three dropped out during round 1, leaving 27. This probably is enough for a robust analysis, as less than 10 is considered inadequate. This study interested me because it pointed out that an emphasis on protecting patients from emboli is the most important concern. However, factors addressing bleeding risk are important, too, and many of these are not things I normally ask about. Patient-specific factors seem to be the least important to clinicians, but perhaps not to patients. In the final analysis, patients may opt out of OAC therapy because of these reasons. There is no grand formula for deciding to prescribe OACs in AF, and many clinical characteristics need to be considered beyond the simple scores. ■

## PHARMACOLOGY UPDATE

# Minocycline Topical Foam (Amzeeq)

By William Elliott, MD, FACP, and James Chan, PharmD, PhD

Dr. Elliott is Assistant Clinical Professor of Medicine, University of California, San Francisco.

Dr. Chan is Associate Clinical Professor, School of Pharmacy, University of California, San Francisco.

Drs. Elliott and Chan report no financial relationships relevant to this field of study.

The FDA has approved the first topical minocycline to treat moderate-to-severe acne vulgaris. The tetracycline class of antibiotics, and oral minocycline in particular, is considered first-line therapy in moderate-to-severe acne. Topical minocycline foam provides a therapeutic option without the systemic side effects of oral administration. The foam is distributed as Amzeeq.

### INDICATIONS

Minocycline topical foam is indicated to treat inflammatory lesions of non-nodular moderate-to-severe acne vulgaris in patients  $\geq 9$  years of age.<sup>1</sup>

### DOSAGE

The recommended dose is application to affected areas once daily.<sup>1</sup> The foam should be applied at least one hour before bedtime, with instructions not to bathe, shower, or swim at least one hour after application. Minocycline is available as a 4% foam, with each gram containing 40 mg of micronized minocycline. It is available as a 30-g canister.

### POTENTIAL ADVANTAGES

Following topical administration for 21 days, there was very low plasma minocycline concentration (maximum concentration of 1.1-1.5 ng/mL), more than 700 times lower than with oral administration.<sup>2</sup> This could be associated with less development of bacterial resistance and disruption of gut microbiota.

### POTENTIAL DISADVANTAGES

Minocycline foam is flammable.<sup>1</sup> Flames and smoking should be avoided when applying and right after application. Exposure to natural and artificial sunlight should be limited.

### COMMENTS

The safety and efficacy was assessed in three, 12-week, randomized, double-blind, vehicle-controlled studies involving 2,418 subjects with mainly moderate acne vulgaris (83-91%) and fewer with severe acne.<sup>1,3,4</sup> At baseline, subjects scored 3 (moderate) or 4 (severe) on the Investigator Global Assessment (IGA). Also, mean inflammatory lesion counts were 31.2 and mean noninflammatory lesion counts were 49.1. The coprimary efficacy endpoints were the absolute change from baseline in inflammatory lesion counts and the proportion of subjects with treatment success at week 12. Treatment success was defined as an IGA score of 0 (clear) or 1 (almost clear) and at least a two-grade improvement (decrease).

The absolute changes in inflammatory lesion counts for minocycline foam were -14.0, -13.7, and -16.4 compared to -11.2, -10.5, and -12.7 for the vehicle. This represented decreases of 44%, 43%, and 54% compared to decreases of 34%, 34%, and 42%, respectively, for the vehicle. A significant reduction of inflammatory lesion counts was observed at week 3 and maintained throughout the 12-week study. Treatment successes

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(compared to vehicle) for the three studies were (8.1% vs. 4.8%; 15.8% vs. 8.4%; and 30.8% vs. 19.6%). Study 1 did not achieve statistical significance for treatment success, and study 2 barely achieved statistical significance ( $P = 0.042$ ).<sup>3</sup> Minocycline foam also reduced noninflammatory lesion count compared to the vehicle.<sup>3,4</sup> Generally, local adverse reactions were associated with the vehicle, including erythema, hyperpigmentation, dryness, and itching. The drug's manufacturer recently reported on a different investigation that included subjects who completed a 12-week course in studies 1 and 2 as well as an additional 40 weeks of open-label treatment with minocycline foam ( $n = 291$ ).<sup>5</sup> The manufacturer reported that in this additional investigation, the treatment was well-tolerated, and effectiveness was maintained.

**CLINICAL IMPLICATIONS**

Guidelines from the American Academy of Dermatology recommend systemic antibiotics (e.g., doxycycline or minocycline) for the management of moderate-to-severe acne.<sup>6</sup> Topical antibiotics in combination with benzoyl peroxide are recommended for mild acne, with clindamycin the preferred agent. Monotherapy is not recommended due to the risk of bacterial resistance. Minocycline foam is an appealing approach that significantly limits systemic exposure and its associated adverse reactions. While the drug is approved for moderate-to-

severe acne, due to the relatively small number of study participants with severe acne, the effectiveness in this population needs to be established. In addition, long-term safety (e.g., bacterial resistance) and head-to-head comparison studies will be welcome. Minocycline foam is expected to be available this month at a cost of \$582 per 30-g can. ■

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**CME QUESTIONS**

1. What did Lee et al find regarding optimism and life span?
  - a. Even though levels of optimism may change over time, their study provided suggestive evidence of a link between higher level of optimism in men and women and longevity.
  - b. A level of optimism is difficult to access, may change over time, and cannot be accurately measured; thus, a more accurate measure must be developed before further studies of any associated health benefits are conducted.
  - c. Optimism in medicine is an old, outdated concept, developed in response to lack of broad-based medical information and investigative techniques.
  - d. Even though levels of optimism may change over time, their study provided suggestive evidence of a link between higher level of optimism in women and longevity; the findings among men were less impressive and need further investigation before making even preliminary conclusions.
2. In the study by Gilliam et al, major depression remitted in what percentage of patients assigned to sertraline?
  - a. 18%
  - b. 26%
  - c. 52%
  - d. 72%
3. Which factor for deciding which patients with atrial fibrillation to anticoagulate long term is considered most important?
  - a. CHA<sub>2</sub>DS<sub>2</sub>-VASc score
  - b. Recent major bleed
  - c. Patient adherence concerns
  - d. HAS-BLED score

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*Professor Emeritus in Family Medicine, College of Medicine, University of Florida*

Dr. Grauer reports no financial relationships relevant to this field of study.

## Can You Interpret This Rhythm?

The long lead II rhythm strip in the figure below was obtained from a middle-aged woman with syncope and hypotension. What can you say about the rhythm?



This is not an easy rhythm to interpret. That said, several statements can be made about this rhythm, and these should allow one to narrow the differential diagnosis. The five key parameters to assess when interpreting any arrhythmia can be easily remembered with the saying, “Watch your Ps, Qs, and the three Rs.” This saying serves to remind one to always look for P waves (determine if the QRS complex is wide or narrow) and assess the “three Rs” — rate of the rhythm, regularity of the rhythm, and if P waves are present, whether these P waves are related to neighboring QRS complexes. Although it may not always be possible to be certain about the interpretation of some complex arrhythmias, by addressing these five key parameters, one usually will arrive at the most likely possibilities.

Using calipers is the easiest way to measure intervals between successive P waves (i.e., the P-P interval), between successive QRS complexes (i.e., the R-R interval), and between P waves and neighboring QRS complexes (i.e., the PR interval). This instantly allows one to determine whether atrial and ventricular rates are regular and to quickly tell if at least some P waves are conducted (in which case, a similar PR interval will be seen).

Applying these five parameters to the rhythm in the figure, one could say:

- Many P waves are present. These P waves are upright in lead II, as they should be with sinus rhythm. There are R-R intervals within which we see two P waves in succession (i.e., within the R-R intervals of beats 1-2; 2-3; 3-4; and 8-9);
- The P-P interval for each noted place where we see two P waves in succession is fairly constant. Setting calipers to this P-P interval distance suggests that regular P waves occur throughout this tracing;
- The QRS complex is narrow. This reveals this rhythm is

supraventricular. The QRS rhythm is irregular; the heart rate varies. In places, the rhythm is quite slow (i.e., the R-R interval between beats 2 and 3 is more than six large boxes in duration, corresponding to a heart rate of less than 50 beats per minute);

- Many P waves do not conduct because they either are not followed by a QRS complex or the PR interval preceding the next QRS complex is too short to conduct (i.e., as it is preceding beat 2);
- One may strongly suspect that at least some P waves are conducting because the PR intervals preceding beats 1, 4, 6, and 9 are equal.

Although complete interpretation of this complex arrhythmia is exceedingly difficult, consider this:

- There is bradycardia with some degree of AV block because many P waves are not conducted. But the fact that the PR interval preceding beats 1, 4, 6, and 9 is constant and the finding of definite irregularity of the ventricular response suggests this is not complete AV block. The rhythm is some form of high-grade, second-degree AV block;
- It appears there is significant ST segment elevation in this lead II rhythm strip, which suggests the reason for this patient’s syncope and her rhythm disturbance may be acute inferior infarction. This must be verified with a complete 12-lead ECG;
- Statistically, the finding of second-degree AV block, in association with a narrow QRS complex and acute inferior infarction, almost always is the result of Mobitz Type I (AV Wenckebach). In contrast, Mobitz Type II AV block is most often associated with QRS widening in a patient with acute anterior infarction.

For further discussion on and more information about this case, please visit: <http://bit.ly/35fMyhL>.