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# Hospital Medicine

Evidence-Based Information for Hospitalists Intensivists, and Acute Care Physicians [ALERT]

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## ABSTRACT & COMMENTARY

# An Opportunity to Make a Difference

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Dr. Steinberg reports no financial relationships in this field of study.

**SYNOPSIS:** The majority of patients with advanced cancer have decisional capacity at the time of their terminal hospitalization but lose that capacity before having an end-of-life discussion. Surrogate decision-makers are then more likely to request mechanical ventilation and other aggressive measures than the patients who made their own decision. Hospitalists have a unique opportunity to make a difference in end-of-life care for these patients by engaging in these discussions before patients lose decisional capacity.

**SOURCE:** Zaros MC, Curtis JR, Silveira MJ, Elmore JG. Opportunity lost: End-of-life discussions in cancer patients who die in the hospital. *J Hosp Med* 2013;8:334-340.

The majority of patients with serious illness die in the hospital, but end-of-life discussions are known to be associated with a decrease in the use of aggressive life-sustaining treatments, improved quality of life, and reduced costs of care. Conducting these conversations in the hospital setting presents several challenges, including whether patients have decisional capacity due to their acute or progressive chronic disease. Once patients lose decisional capacity, discussions are instead held with surrogate decision makers. It was previously unknown what the association was between patient and surrogate participation in end-of-life discussions at the time of terminal hospitalization and end-of-life treatments received.

This was a retrospective cohort study of consecutive adult patients with advanced cancer who died in the hospital over a 4-year time period. Data were abstracted by review of the medical record using a comprehensive chart abstraction tool that was based on a previously

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Hospital Medicine
[ALERT]

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validated instrument. Decisional capacity assessment was determined from the first 24 hours of admission. End-of-life care discussions were also noted in the chart abstraction. The authors then compared those patients with and without decisional capacity on admission, and those with decisional capacity who did and did not participate in end-of-life discussions. They then looked to see if documentation of a decision about end-of-life care was associated with life-sustaining and palliative treatments received during that hospitalization.

The study consisted of 142 patients. Twenty-seven (19%) were considered not to have decisional capacity while 115 patients (79%) were considered to have decisional capacity. These groups were similar in age, gender, and types of cancer, as well as in the number of DNR orders established prior to admission. Of the 115 patients with decisional capacity, 56 (48.7%) participated in end-of-life discussions with the medical team during the terminal hospitalization. Forty-six of the remaining 59 lost decisional capacity prior to a conversation and the end-of-life discussions were held instead with a surrogate or were never held.

Life-prolonging treatments were more likely to be used for patients whose end-of-life discussions were held by a surrogate in contrast to those patients who participated in those discussions themselves. Patients who had conversations held by surrogates were more likely to receive ventilator support (56.5% vs. 23.2%, $P < 0.01$), chemotherapy (39.1% vs. 5.4%, $P < 0.01$), artificial nutrition or hydration (45.7% vs. 25.0%, $P = 0.03$), antibiotics (97.8% vs. 78.6%, $P < 0.01$), and ICU treatment (56.5% vs. 23.2%, $P < 0.01$) when compared to patients who participated in their own end-of-life care discussions. Patients who lost decisional capacity and required a surrogate decision-maker to participate in end-of-life discussions also had longer length of stay (15.8 vs. 10.3 days, $P = 0.03$) and length of time until end-of-life discussions (14.0 vs. 6.1 days, $P < 0.01$).

## ■ COMMENTARY

While this is an observational cohort study, and thus is unable to determine causality, it seems quite clear that the ability of patients with advanced cancer to participate in their own discussions about end-of-life care during their terminal hospitalization is associated with lower rates of aggressive life-sustaining treatments and longer lengths of stay. Strengths of the study include the use of a standardized, validated chart abstraction tool, and the statistical methodology was sound. Weaknesses of the study include that it relies inherently on retrospective chart review and the quality of the documentation by healthcare providers in the medical record. Thus discussions could have been held and not documented, and inferences of decisional capacity based on notes may or may not have been accurate. Nevertheless, the study is consistent with much of the literature in this area. It thus seems to me that it is important to engage our terminally ill patients in a compassionate and supportive manner regarding their end-of-life care wishes. This study identifies a group of hospitalized patients with advanced cancer who could benefit from improved end-of-life communication before they lose the ability to make their own healthcare decisions, forcing the burden of these decisions on surrogate decision makers. The prospect for improvement comes from an important window of opportunity to increase the concordance between patients' wishes for care at the end-of-life and the care that we actually deliver. As hospitalists, we can do this. We should not let this be an opportunity lost. ■

ABSTRACT & COMMENTARY

# Value of Cardiology Follow-up of Acute Chest Pain Patients

*By Michael H. Crawford, MD*

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*This article originally appeared in the June 2013 issue of* Clinical Cardiology Alert. *It was peer reviewed by Ethan Weiss, MD, Assistant Professor of Medicine, Division of Cardiology and CVRI, University of California, San Francisco. Dr. Crawford reports no financial relationships relevant to this field of study, and Dr. Weiss is a scientific advisory board member for Bionovo.*

**SOURCE:** Czarnecki A, et al. Association between physician follow-up and outcomes of care after chest pain assessment in high risk patients. *Circulation* 2013;127:1386-1394.

Patients seen in emergency departments (ED) for acute chest pain who are deemed low risk for acute coronary syndrome (ACS) and relatively safe for discharge are often referred to their primary care physician (PCP) for follow-up. However, little is known about the effectiveness of follow-up care. Thus, Czarnecki and colleagues performed a retrospective database review of patients seen in the ED for chest pain who were evaluated, discharged, and survived at least 30 days. They focused on those at higher risk because of diabetes or known cardiovascular disease. They specifically evaluated whether there was a follow-up visit within 30 days and whether it was by a PCP or cardiologist. The primary outcome was all-cause mortality and hospitalization for acute myocardial infarction (MI) at 1 year. After excluding ineligible patients, 56,767 were included in the study and the duration of follow-up averaged 4 years. Follow-up visits were with a cardiologist in 17%, a PCP in 58%, and no visit in 25%. Median time to follow-up was 7 days for a PCP and 12 days for a cardiologist. Patients seeing a cardiologist had the highest rates of previous cardiac conditions and more tests, procedures, and medications than the other groups. The primary endpoint occurred in 5.5% of those seen by a cardiologist, 7.7% seen by a PCP, and 8.6% in the no follow-up group. After adjustment for confounders, the cardiology follow-up group had the lowest hazard ratio (0.85, 95% CI, 0.78-0.92) as compared to PCP and 0.79 as compared to no visit. The authors concluded that patients referred to a cardiologist after an ED visit for chest pain had a decreased risk of mortality or hospitalization for an MI at 1 year.

## ■ COMMENTARY

This large database study from a Canadian health system raises several important issues. First, what should be the follow-up of patients seen in the ED for chest pain who are deemed low risk for ACS, but at higher risk of having underlying coronary artery disease? The results suggest that a visit with a cardiologist as opposed to no visit or a visit with a PCP improves the primary endpoint of all-cause death and hospitalization for acute MI at 1 year. Even after adjustments for many confounders, these data remain robust. It doesn't suggest that all patients with chest pain seen in the ED need a cardiology follow-up, only the higher risk subset.

Second, cardiologists used more tests, medications, and procedures than the PCPs, and better followed evidence-based guidelines. Whether this is what made the difference is unclear since this is a database study and there are no details on the appropriateness of the tests and procedures used. So this study cannot be used to support routine testing in all patients. However, this is the practice of most cardiologists who see such referrals and the study does not refute this practice.

Third, provision of rapid outpatient follow-up for these patients is a challenge in many health systems. One-quarter of their patients had no visits within 30 days despite the fact that 95% had an identified PCP they had seen in the last 3 years. They used the 30-day time frame because most patients were seen between 14-30 days, but 15% were excluded who had a visit in 30-90 days. The ideal post-ED follow-up time is unknown, but many believe within 14 days is ideal. I doubt we are doing much better than the Canadians in this regard, but it appears that we need to for the patient's sake. ■

ABSTRACT & COMMENTARY

# Uncomplicated Pure Cellulitis: No Need to Cover for MRSA?

*By Richard R. Watkins, MD, MS, FACP*

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**Dr. Watkins reports no financial relationships in this field of study.**

*This article originally appeared in the June 2013 issue of* Infectious Disease Alert. *It was edited by Stan Deresinski, MD, FACP, FIDSA, and peer reviewed by Timothy Jenkins, MD. Dr. Deresinki is Clinical Professor of Medicine, Stanford University, Associate Chief of Infectious Diseases, Santa Clara Valley Medical Center, and Dr. Jenkins is Assistant Professor of Medicine, University of Colorado, Denver Health Medical Center. Dr. Deresinski does research for the National Institutes of Health, and is an advisory board member and consultant for Merck, and Dr. Jenkins reports no financial relationships relevant to this field of study.*

**SOURCE:** Pallin DJ, et al. Clinical Trial: Comparative Effectiveness of Cephalexin Plus Trimethoprim-Sulfamethoxazole Versus Cephalexin Alone for Treatment of Uncomplicated Cellulitis: A Randomized Controlled Trial. *Clin Infect Dis* 2013 Apr 1. [Epub ahead of print]

Uncomplicated cellulitis, defined as cellulitis without abscess, is most often caused by streptococci. The widespread dissemination of community-associated methicillin-resistant *Staphylococcus aureus* (CA-MRSA) has led to increased prescribing of antibiotics for cellulitis with activity against the organism (e.g. trimethoprim-sulfamethoxazole, doxycycline, clindamycin, and linezolid). This is despite the fact that CA-MRSA is associated with purulent cellulitis and abscesses, and optimal management is incision and drainage, not antibiotic therapy.[1] Pallin and colleagues sought to determine if treating uncomplicated cellulitis with antibiotics targeting CA-MRSA and streptococci would lead to better outcomes compared to therapy against streptococci alone.

The study was a double-blind, randomized, multicenter, placebo-controlled trial conducted between June 2007 and December 2011. Participants were enrolled from one of three emergency departments in an area considered endemic for CA-MRSA. The diagnosis of cellulitis was made during routine clinical care by attending physicians. Most of the participants were generally healthy and were enrolled if they had uncomplicated cellulitis or if <1 cc of pus was observed or reported by the patient. A total of 146 subjects were included in the intent-to-treat analysis. All received cephalexin, while 73 also received trimethoprim-sulfamethoxazole (intervention group) and 73 were given placebo (control group). Participants were told to stop taking the antibiotics 3 days after they believed the infection to be cured, for a minimum of 7 days and a maximum of 14. Compliance was monitored by a log filled out by the participants. The primary outcome was the risk difference for cure, which was determined by an in-person exam at 2 weeks and a follow-up telephone interview and review of medical records at 1 month. Failure was defined as subsequent hospitalization, altering of antibiotics, drainage of an abscess, or recurrence of infection within 30 days. The secondary outcome was the association of nasal MRSA carriage at enrollment with clinical response.

The investigators found no significant benefit from the addition of trimethoprim-sulfamethoxazole, including those participants with purulence. Clinical cure was obtained in 62 of the 73 (85%) in the intervention group vs. 60 of 73 (82%) in the control group (P = 0.66). Five participants in each group had progression to abscess (P = 1.0). Seven of 142 (4.9%) for whom data were available were colonized with MRSA, and this was not associated with response to therapy (P = 0.67). There was a high rate of adverse events among the participants (51%) which was similar in intervention group (49%) vs. control group (53%) (P = 0.62). Most of the adverse events were minor (e.g. diarrhea, nausea, vomiting) but one participant in the control group developed *C. difficile* infection.

## ■ COMMENTARY

This study is timely and has important clinical implications. Given the current epidemic of CA-MRSA, it seems biologically plausible that targeting this organism when treating cellulitis would be advantageous. Indeed, the investigators noted they expected to find a benefit in the intervention group. That no benefit was found with the addition of trimethoprim-sulfamethoxazole seems to support the current MRSA treatment guidelines from the Infectious Disease Society of America (IDSA), which recommend not targeting CA-MRSA in nonpurulent cellulitis.[2] The study included 19 subjects (13% of the total) with purulence, of whom 8 received anti-MRSA therapy and 11 did not. It was somewhat surprising that no difference was found between their outcomes. However, it is possible that the small number of patients prevented the detection of a significant difference.

The study had a few limitations. The researchers chose to exclude diabetics, and whether the findings can be extrapolated to these patients (most likely they can) requires further investigation. The diagnosis of cellulitis itself is subjective and open to interpretation. Also, since not all patients colonized with MRSA have positive nasal swabs, perhaps if axilla and groins had been collected a correlation between colonization and treatment response would have been observed. Should we abandon empiric coverage for CA-MRSA in uncomplicated cellulitis? The IDSA guidelines say yes and now there is evidence-based data to support this recommendation. However, I still recommend caution in patients with a previous history of MRSA or who are colonized, especially if purulence is present. A larger study that addresses these two scenarios would be beneficial. ■


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## ABSTRACT & COMMENTARY

# Healthy Physicians Equal Healthy Patients


***By Rahul Gupta, MD, MPH, FACP***

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

*This article originally appeared in the May 29, 2013, issue of* Internal Medicine Alert. *It was edited by Stephen Brunton, MD, and peer reviewed by Gerald Roberts, MD. Dr. Brunton is Adjunct Clinical Professor, University of North Carolina, Chapel Hill, and Dr. Roberts is Senior Attending Physician, Long Island Jewish Medical Center, NS/LIJ Health Care System, New Hyde Park, NY. Dr. Brunton serves on the advisory board for Abbott, Amarin, Boehringer Ingelheim, Duchesnay, Janssen, Lilly, Novo Nordisk, Sunovion, and Teva; he serves on the speakers bureau of Boehringer Ingelheim, Janssen, Lilly, Novo Nordisk, and Teva. Dr. Roberts reports no financial relationship to this field of study.*



**SYNOPSIS:** More patients who received a preventive medicine intervention also had their physician receive the corresponding preventive intervention.

**SOURCE:** Frank E, et al. The association between physicians' and patients' preventive health practices. *CMAJ* 2013; Apr 8. [Epub ahead of print.]


It is well established that physician recommendations can have a significant impact on the lifestyle behavior of their patients. Whether it is diet and exercise, immunizations, or cancer screenings, a physician recommendation for such preventive measures is a good predictor for outcomes. However, increasingly our patients are evaluating not just the advice but also the ability of their own physician to "walk the talk." In a British study, researchers found that only one in five physicians get the recommended 30 minutes of moderate exercise at least 5 days a week.[1] Although these physicians blamed lack of time, lack of motivation, or lack of workout

facilities, those with an on-site gym at their hospital did not fare any better than those without, and one-third of them were not even aware of the existence of such a facility. Existing research, mostly based on self-reported data, also demonstrates that physicians who practice healthy lifestyle habits themselves are more likely to play a significant role in helping their patients adopt healthy lifestyles for primary prevention of chronic diseases.[2]

In their research, Frank et al used data from Israel's largest health maintenance organization (HMO) to assess various indicators of quality health care for primary care physicians and their adult patients. Since this particular HMO covers more than 50% of Israel's population, including physicians, the study included accessing data on almost 2 million adults and 1500 primary care physicians. Eight prevention-related health quality indicators were examined. These included age-based screenings for breast cancer, colorectal cancer, cholesterol, pneumococcal, and influenza vaccines, as well as three different age-based screenings for hypertension.

Researchers found that for all eight indicators, patients whose physicians were compliant with the preventive practices were more likely ($P < 0.05$) to also have undergone these preventive screenings themselves as compared to patients with noncompliant physicians. For example, patients of those physicians who themselves received the annual influenza vaccine were 13.7% relatively more likely to receive the vaccine than those whose physicians did not receive the vaccine. The study demonstrated a statistically significant difference for all eight preventive interventions. There was some overlap between closely related preventive practices. For example, among patients whose physicians received the influenza vaccine, 60.9% of eligible patients also received the pneumococcal vaccine, compared with 56.8% of patients whose physicians did not receive the influenza vaccine (7.2% relative difference, $P < 0.001$). However, a similar benefit was not found across the category of preventive service. For example, mammography rates for patients were not influenced by whether their physicians had received the influenza vaccine.

## ■ COMMENTARY

As a profession, we have not always taken good care of ourselves. Beyond a handful of health care systems, a systematic support system for physician health does not exist across our nation since most policy makers already believe that "we are the docs so we must know how to take care of ourselves." On the other hand, it seems like common sense that physicians who believe in preventive practices enough to undergo those services themselves are more likely to effectively counsel their patients about them. The study by Frank et al reinforces that "healthy physician-healthy patient" relationships are more closely related than we once thought. Probably applicable to primary care physicians in United States, this study demonstrates that there is room for improvement in our own preventive practices. Adhering to preventive medicine guidelines personally will not only facilitate counseling our patients better and become more effective in obtaining compliance, but it may help improve our health and wellness as well. Almost three-quarters of the $2.7 trillion U.S. health care spending (about 18% of our gross domestic product) is spent largely on preventable chronic illnesses such as obesity, diabetes, and heart disease. Perhaps with the current national focus on prevention, we can take advantage of the opportunity by individually adhering to the screening recommendations by the United States Preventive Task Force, which may further aid and reinforce a strong physician-patient relationship.[3] While I am not entirely convinced that preventive care only will significantly reduce these high costs, especially since some of the measures actually do not contribute to improved health status, I do believe in the observation once made by Thomas Jefferson "the ground of liberty is won by inches." Gradually, we will get there! ■

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ECG REVIEW

# WCT in a Renal Patient

***By Ken Grauer, MD***

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**Dr. Grauer is the sole proprietor of KG-EKG Press, and publisher of an ECG pocket brain book.**

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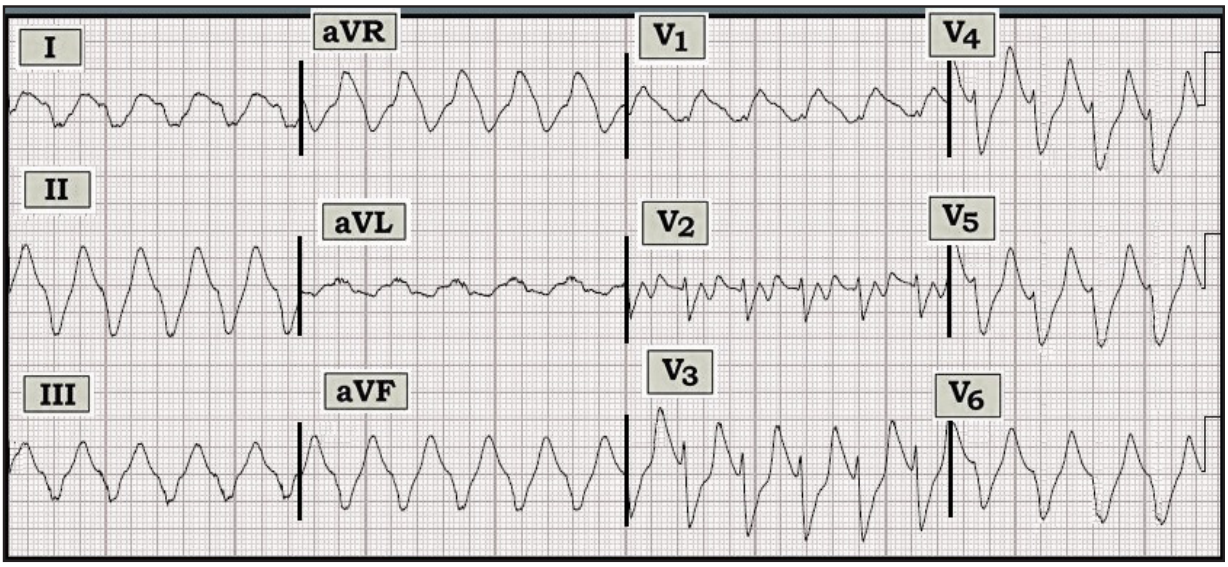


**Figure** — 12-lead ECG from a young adult with renal disease and diabetes.

**Scenario:** The ECG shown above was obtained from an acutely ill but alert and hemodynamically stable patient. How certain are you that the rhythm is ventricular tachycardia (VT)? Might there be another explanation if the patient in question was a young adult with renal disease and diabetes?

**Interpretation:** The rhythm in the figure is a regular wide complex tachycardia (WCT) at a rate of about 135/minute. No *P* waves are seen. One should clearly assume VT until proven otherwise.

VT is by far the most common cause of a regular WCT when normal sinus *P* waves are not seen. This is especially true when the patient is an older adult and has underlying heart disease. In addition to statistical likelihood, there are a number of morphologic features on this tracing that would seem to overwhelmingly favor the diagnosis of VT: 1) the QRS complex is markedly widened and amorphous (it does not resemble any pattern of bundle branch block); 2) the axis during the tachycardia shows extreme deviation (totally negative complexes in leads I and aVF that define an indeterminate axis); 3) the QRS complex in lead V6 is entirely negative; and 4) the QRS in lead aVR is entirely positive.

The above said, clinical circumstances in this case differ from the usual setting for VT. This is the key to recognizing the correct diagnosis. This young adult with renal disease presented to the hospital in diabetic ketoacidosis. Serum potassium at the time this tracing was done was 9.8 mEq/L. Thus, the reason for QRS widening is marked hyperkalemia! This case underscores the importance of clinical context in ECG interpretation. Rather than antiarrhythmic medication or emergency cardioversion, this patient was treated with intravenous calcium gluconate, glucose plus insulin, and emergency dialysis. ECG abnormalities promptly resolved. ■

## CME INSTRUCTIONS

To earn credit for this activity, please follow these instructions:

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## CME QUESTIONS

**1. Based on the observational study of patients with advanced cancer by Zaros and colleagues, patients who were admitted and died during that hospitalization were more likely than not to have decisional capacity at the time of admission. What percent of these patients with decisional capacity participated in end-of-life care discussions with their medical team during that terminal hospitalization?**

a. 23.2%
b. 48.7%
c. 78.6%
d. 100%

**2. What outcomes were observed in the randomized, controlled, double-blind study by Pallin, et al., comparing treatment of uncomplicated community-acquired cellulitis with either cephalexin plus trimethoprim-sulfamethoxazole or cephalexin plus placebo?**

a. The addition of trimethoprim-sulfamethoxazole resulted in a higher clinical cure rate.
b. The addition of trimethoprim-sulfamethoxazole did not result in a higher clinical cure rate.
c. Cephalexin was efficacious even in cases of cellulitis due to MRSA.
d. The addition of trimethoprim-sulfamethoxazole resulted in a higher rate of *C. difficile* infection.

**3. Czarnecki and co-authors demonstrated that a follow-up visit with a cardiologist within 30 days of an ED visit for chest pain is associated with:**

a. Decreased risk of all-cause mortality at 1 year.
b. Decreased risk of hospitalization for acute myocardial infarction at 1 year.
c. Increased risk of more testing and more medication use.
d. All of the above.

## CME OBJECTIVES

**Upon completion of this educational activity, participants should be able to:**

- discuss pertinent safety, infection control and quality improvement practices;
- explain diagnosis and treatment of acute illness in the hospital setting; and;
- discuss current data on diagnostic and therapeutic modalities for common inpatient problems.

## [IN FUTURE ISSUES]

Fecal transplants promising for *Clostridium difficile*

More original content from hospitalist authors