

## Atrial Fibrillation Management Pathway in the ED May Lower Hospital Admissions

TED BOSWORTH  
FRONTLINE MEDICAL NEWS

**A**n atrial fibrillation (AF) treatment pathway designed specifically to reduce the proportion of patients with this complaint who are admitted to the hospital from the ED was remarkably effective, according to a pilot study presented at the annual International AF Symposium.

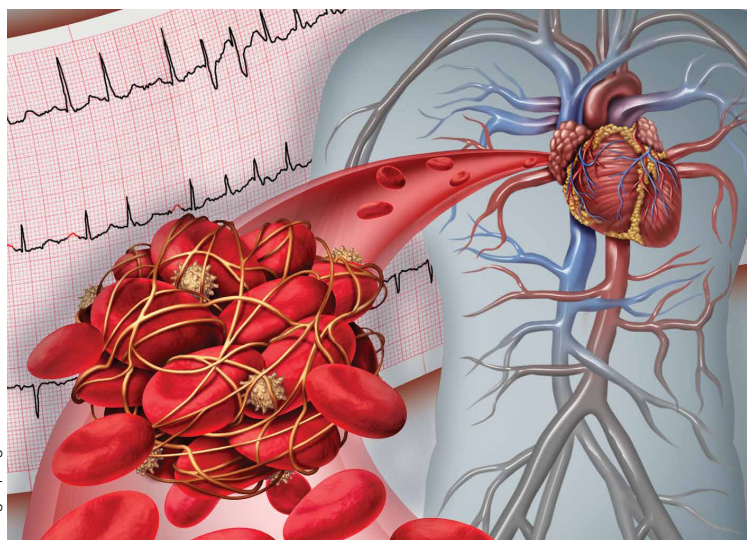
“In this single-center observational study, a multidisciplinary AF pathway was associated with 5-fold reduction in admission rate and 2.5-fold reduction in length-of-stay [LOS] for those who were admitted,” reported Jeremy N. Ruskin, MD.

Relative to many other countries, admission rates for AF in the United States are “extremely high,” according to Dr Ruskin, director of the cardiac arrhythmia service at Massachusetts General Hospital, Boston. Citing 2013 figures from the Nationwide Emergency Department Sample (NEDS) database, rates ranged between 60% and 80% by geographic region, with an average of about 66%. In contrast, and as an example of lower rates elsewhere, fewer than 40% of AF patients with similar characteristics presenting at EDs in Ontario, Canada were admitted. Similarly low admission rates have been reported in Europe.

The AF pathway tested in the study at Massachusetts General was developed through collaboration between electrophysiologists and emergency physicians (EPs). It is suitable for patients presenting with a primary complaint of AF without concomitant diseases, such as sepsis or myocardial infarction. Patients were entered into this study after it was shown that AF was the chief complaint. The first step was to determine whether participants were best suited to a rhythm-control or rate-control strategy.

“The rhythm-control group was anticoagulated and then underwent expedited cardioversion with TEE [transesophageal echocardiogram] if necessary. The rate-control group was anticoagulated and then given appropriate pharmacologic therapy,” Dr Ruskin explained. Once patients were on treatment, an electrophysiologist and an EP evaluated the patients’ response. For both groups, stable patients were discharged and unstable patients were admitted.

In this nonrandomized observational study conducted over a 1-year period, 94 patients were managed with the AF pathway. Admissions and outcomes in this group were compared with 265 patients who received usual care.



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Only 16% of those managed through the AF pathway were admitted versus 80% ( $P < .001$ ) in the usual care group. Among those admitted, LOS was shorter in patients managed along the AF pathway relative to usual care (32 vs 85 hours;  $P = .002$ ). Dr Ruskin reported that both the cardioversion rate and the proportion of patients discharged on novel oral anticoagulation drugs were higher in the AF pathway group.

The reductions in hospital admissions would be expected to translate into large reductions in costs, particularly as follow-up showed no difference in return visits to the hospital between those entered into the AF pathway relative to those who received routine care, according to Dr Ruskin. Emphasizing the cost burden of AF admissions, he noted that the estimated charges for the more than 300,000 AF admissions in US hospitals in 2013 exceeded \$7 billion.

Currently, there are no uniform guidelines for managing AF in the ED, and there is wide variation in practice among centers, according to Dr Ruskin. He provided data from the NEDS database demonstrating highly significant variations in rates of admission by geographic region (eg, rates were >10% higher in the northeast vs the west) and hospital type (eg, rates were twice as high in metropolitan than nonmetropolitan hospitals).

In the NEDS database, various patient characteristics

were associated with increased odds ratios (ORs) for admission. These included hypertension (OR, 2.3), valvular disease (OR, 3.6), and congestive heart failure (OR, 3.7). However, Dr Ruskin indicated that patients with these or other characteristics associated with increased likelihood of admission, such as older age, have better outcomes with hospitalization.

The data from this initial observational study were recently published, and a larger prospective study of this AF pathway is already underway at both Massachusetts General and at Brigham and Women's Hospital, Boston. If the data confirm that AF admissions can be safely reduced through this pathway, Dr Ruskin anticipates that implementation will be adopted at other hospitals in the Harvard system.

Ptaszek LM, White B, Lubitz SA, et al. Effect of a multidisciplinary approach for the management of patients with atrial fibrillation in the emergency department on hospital admission rate and length of stay. *Am J Cardiol.* 2016;118(1):64-71. doi:10.1016/j.amjcard.2016.04.014.

## Understanding SSTI Admission, Treatment Crucial to Reducing Disease Burden

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FRONTLINE MEDICAL NEWS

**D**ecreasing the burden of treating skin and soft tissue infections (SSTIs) is critical to improving care and reducing the costs that SSTIs place on health care facilities, according to a study published in *Hospital Practice*.

"Despite expert panel recommendations and treatment guidelines, there is no widely accepted classification system for grading SSTIs to outcomes," wrote the study's lead author, Kristin E. Linder, PharmD, of Hartford (Connecticut) Hospital. "This leads to a considerable variation in treatment approach on initial presentation when deciding which patients should be admitted to receive intravenous antibiotic therapy or treated as outpatients."

Dr Linder and her coinvestigators conducted a single-center retrospective cohort study with the primary objective of determining rates of admission and re-presentation, along with average LOS and cost of care for both inpatients and outpatients with SSTIs. Patients aged 18 years and older who received a primary diagnosis of an SSTI during May and June 2015 at Hartford Hospital were screened; 446 were deemed eligible, with 357 ultimately selected for inclusion.

"Patients were categorized into two groups based on disposition of care, inpatient or outpatient, on index presentation," the authors explained. "Economic data were collected using reports from hospital finance databases and included reports of total billed costs."

Of the 357 patients included for analysis, 106 (29.7%) were admitted as inpatients while the remaining 251 (70.3%) were treated as outpatients. However, there were no significant differences found in re-presentation rates, either overall (22.6% for inpatients and 28.3% for outpatients;  $P > .05$ ) or for SSTI-related re-presentation (10.4% for inpatients and 15.1% for outpatients;  $P > .05$ ). For those patients who were admitted, the mean LOS was 7.3 days.

Patients who presented with a Charlson Comorbidity Index (CCI) score of 0 were admitted at a rate of 14.1%, compared to 30.1% of those with a CCI score of 1, and 60.9% of those with a CCI score of 2 or higher. The biggest disparity, however, was in terms of cost of care; while outpatient care cost an average of \$413 per patient, inpatient care cost an average of \$13,313 per patient.

Wound and abscess cultures that were tested found methicillin-susceptible *Staphylococcus aureus* to be the most prevalent gram-positive organism (37.1%) found in inpatients, while for outpatients, methicillin-resistant *S aureus* (MRSA) was the most common (66.7%). According to the investigators, gram-negative bacteria were not isolated in every case, so "prevalent use of combination therapy in this setting may not be warranted.

"Understanding how and where patients with SSTI are treated and their re-presentation rate is important to understand to direct resources for this high-frequency disease," the authors concluded. "This study demonstrated that approximately 70% of patients presenting to the ED with SSTI were treated as outpatients [and] while 30-day re-presentation was similar for inpatient and outpatients, readmission was more likely in those previously admitted."

Linder KE, Nicolau DP, Nailor MD. Epidemiology, treatment, and economics of patients presenting to the emergency department for skin and soft tissue infections. *Hosp Pract (1995).* 2017;16:1-7. doi:10.1080/21548331.2017.1279519.

## Adolescents, Boys, Black Children Most Likely To Be Hospitalized for SJS and TEN

WHITNEY MCKNIGHT

FRONTLINE MEDICAL NEWS

**A**nnual hospitalization rates in the United States for Stevens-Johnson syndrome (SJS) and toxic epidermal necrolysis (TEN) were shown to be higher in adolescents, boys, and black children, in a cross-sectional analysis of discharge records from more than 4,100 hospitals.

Using relevant ICD-9 codes, researchers at Harvard University identified 1,571 patients hospitalized for SJS, TEN, or both in 2009 and 2012, as listed in the Kids Inpatient Database from the Agency for Healthcare Research and

Quality. The highest hospitalization rates per 100,000 in each year were for adolescents between ages 15 and 19 years ( $P = .01$ ), boys ( $P = .03$ ), and black children ( $P = .82$ ). The overall risk of death from these conditions was 1.5% in 2009 and 0.3% in 2012. The data were published online in a brief report.

Although the difference in the number of hospitalizations for black children was not significant when compared with other ethnic and racial groups, at 1.03 hospitalizations per 100,000 children (95% confidence interval [CI], 0.80-1.31) in 2009 and 1.06 hospitalizations per 100,000 children (95% CI, 0.86-1.30) in 2012, the rate was greatest in this group. The next highest ratio was in white children at 0.82 hospitalizations per 100,000 (95% CI, 0.74-0.91) in 2009, and 0.95 hospitalizations per 100,000 (95% CI, 0.86-1.05) in 2012.

With the number of SJS- and TEN-related hospitalizations between 0.1 and 1.0 per 100,000, lead author Yusuke Okubo, MD, MPH, and colleagues wrote that their data aligned with previous studies; however, regarding the emphasis on demographic differences, theirs was, to the best of their knowledge, “the first study to reveal these disparities.” Compared with adults, they added, mortality was “remarkably lower” in children.

Okubo Y, Nochioka K, Testa MA. Nationwide survey of Stevens-Johnson syndrome and toxic epidermal necrolysis in children in the United States. *Pediatr Dermatol*. 2016 Dec 19. doi:10.1111/pde.13050. [Epub ahead of print]

## Guidelines Released for Diagnosing TB in Adults, Children

MARY ANN MOON

FRONTLINE MEDICAL NEWS

A clinical practice guideline for diagnosing pulmonary, extrapulmonary, and latent tuberculosis (TB) in adults and children has been released jointly by the American Thoracic Society, the Centers for Disease Control and Prevention, and the Infectious Diseases Society of America.

The American Academy of Pediatrics also provided input to the guideline, which includes 23 evidence-based recommendations. The document is intended to assist clinicians in high-resource countries with a low incidence of TB disease and latent TB infection, such as the United States, said David M. Lewinsohn, MD, PhD, and his associates on the joint task force that wrote the guideline.

There were 9,412 cases of TB disease reported in the United States in 2014, the most recent year for which data are available. This translates to a rate of 3.0 cases per 100,000 persons. Two-thirds of the cases in the United States developed in foreign-born persons. “The rate of

disease was 13.4 times higher in foreign-born persons than in US-born individuals [15.3 vs 1.1 per 100,000, respectively],” wrote Dr Lewinsohn of pulmonary and critical care medicine, Oregon Health & Science University, Portland, and colleagues.

Even though the case rate is relatively low in the United States and has declined in recent years, “an estimated 11 million persons are infected with *Mycobacterium tuberculosis*. Thus...there remains a large reservoir of individuals who are infected. Without the application of improved diagnosis and effective treatment for latent [disease], new cases of TB will develop from within this group,” they noted.

Among the guideline’s strongest recommendations are the following:

- Acid-fast bacilli smear microscopy should be performed in all patients suspected of having pulmonary TB, using at least three sputum samples. A sputum volume of at least 3 mL is needed, but 5 to 10 mL would be better.
- Both liquid and solid mycobacterial cultures should be performed on every specimen from patients suspected of having TB disease, rather than either type alone.
- A diagnostic nucleic acid amplification test should be performed on the initial specimen from patients suspected of having pulmonary TB.
- Rapid molecular drug-susceptibility testing of respiratory specimens is advised for certain patients, with a focus on testing for rifampin susceptibility with or without isoniazid.
- Patients suspected of having extrapulmonary TB also should have mycobacterial cultures performed on all specimens.
- For all mycobacterial cultures that are positive for TB, a culture isolate should be submitted for genotyping to a regional genotyping laboratory.
- For patients aged 5 and older who are suspected of having latent TB infection, an interferon-gamma release assay (IGRA) is advised rather than a tuberculin skin test, especially if the patient is not likely to return to have the test result read. A tuberculin skin test is an acceptable alternative if IGRA is not available, is too expensive, or is too burdensome.

The guideline also addresses bronchoscopic sampling, cell counts and chemistries from fluid specimens collected from sites suspected of harboring extrapulmonary TB (such as pleural, cerebrospinal, ascetic, or joint fluids), and measurement of adenosine deaminase levels.

Lewinsohn DM, Leonard MK, LoBue PA, et al. Official American Thoracic Society/Infectious Diseases Society of America/Centers for Disease Control and Prevention Clinical Practice Guidelines: Diagnosis of tuberculosis in adults and children. *Clin Infect Dis*. 2017;64(2):e1-e33. doi:10.1093/cid/ciw694.