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INSIDE THIS ISSUE

MINI-FOCUS ISSUE: RISK PREDICTION AND PRECISION MEDICINE

STATE-OF-THE-ART PAPER

Factors Influencing the Predictive Power of Models for Predicting Mortality and/or Heart Failure Hospitalization in Patients With Heart Failure

429

Wouter Ouwerkerk, Adriaan A. Voors, Aeilko H. Zwinderman

This paper systematically reviews and compares prediction models to find the strongest variables, models, and model characteristics in patients with heart failure. To identify similar models hierarchical cluster analysis was performed, and meta-analysis was used to estimate predictive value of variables and models. Meta-regression was used to find characteristics explaining variation in discriminating values between models. Strongest predictors were blood urea nitrogen and sodium. Mortality was most accurately predicted by prospective registry-type studies using large number of clinical variables. Mean C-statistic of all models was 0.66 ± 0.0005 , with 0.71 ± 0.001 , 0.68 ± 0.001 , and 0.63 ± 0.001 for models predicting mortality, heart failure hospitalization, or both.

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■ EDITORIAL COMMENT

Heart Failure Risk Prediction Models: What Have We Learned?

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Wayne C. Levy, Inder S. Anand

CLINICAL RESEARCH

Risk Prediction in Patients With Heart Failure: A Systematic Review and Analysis

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Kazem Rahimi, Derrick Bennett, Nathalie Conrad, Timothy M. Williams, Joyee Basu, Jeremy Dwight, Mark Woodward, Anushka Patel, John McMurray, Stephen MacMahon

Making decisions on the basis of individual patients' absolute risk of adverse clinical outcomes is believed to contribute to more efficient and consistent methods of care delivery in heart failure. The authors identified more than 60 multivariable risk prediction models for death, hospitalization, or both in patients with heart failure. These models collectively reported more than 100 unique risk predictors. Although the studies differed in many respects, a few strong predictors emerged for prediction of death.

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CME

JACC: Heart Failure CME is available online. Go to <http://heartfailure.onlinejacc.org> to participate.

**Heart Failure Risk Across the Spectrum of Ankle-Brachial Index:
The ARIC Study (Atherosclerosis Risk In Communities)****447**

Deepak K. Gupta, Hicham Skali, Brian Claggett, Rumen Kasabov, Susan Cheng, Amil M. Shah, Laura R. Loehr, Gerardo Heiss, Vijay Nambi, David Aguilar, Lisa Miller Wruck, Kunihiro Matsushita, Aaron R. Folsom, Wayne D. Rosamond, Scott D. Solomon

The association between ankle-brachial index (ABI) and the risk for heart failure (HF) is not well understood. In 13,150 middle-age participants of the ARIC (Atherosclerosis Risk In Communities) study followed over a mean of 17.7 years, a baseline ABI ≤ 1.00 , compared with 1.01 to 1.40, was significantly associated with an increased risk for HF, independent of traditional HF risk factors, prevalent coronary heart disease, subclinical carotid atherosclerosis, and interim myocardial infarction. Low ABI may therefore reflect pathologic processes in the development of HF beyond overt epicardial atherosclerotic disease and myocardial infarction and may be a simple, noninvasive risk marker for HF.

■ EDITORIAL COMMENT**Heart Failure and Peripheral Artery Disease: An Unappreciated Association****455**

William R. Hiatt

**Rationale and Design of the GUIDE-IT Study: Guiding Evidence Based Therapy Using
Biomarker Intensified Treatment in Heart Failure****457**

G. Michael Felker, Tariq Ahmad, Kevin J. Anstrom, Kirkwood F. Adams, Lawton S. Cooper, Justin A. Ezekowitz, Mona Fiuzat, Nancy Houston-Miller, James L. Januzzi, Eric S. Leifer, Daniel B. Mark, Patrice Desvigne-Nickens, Gayle Paynter, Ileana L. Piña, David J. Whellan, Christopher M. O'Connor

Elevations in natriuretic peptide levels have been shown to provide key prognostic information in patients with chronic systolic heart failure. Therapies proven to improve outcomes in patients with heart failure are generally associated with decreases in serial levels of natriuretic peptides. The GUIDE-IT (Guiding Evidence Based Therapy Using Biomarker Intensified Treatment in Heart Failure) study is a multicenter, randomized, controlled trial designed to determine the safety, efficacy, and cost-effectiveness of adjusting therapy with the goal of achieving and maintaining an N-terminal pro-B-type natriuretic peptide target level of $<1,000$ pg/ml compared with usual care in high-risk patients with systolic heart failure.

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