

## SELECTED ABSTRACTS FROM PUBMED

1. *Pevnick JM, Birkeland K, Zimmer R, Elad Y, Kedan I. Wearable technology for cardiology: An update and framework for the future. Trends Cardiovasc Med. 2018 Feb;28(2):144-50.*

### ABSTRACT

The field of cardiology has long used wearable medical devices to monitor heart rate and rhythm. The past decade has seen the emergence of many new wearable devices, including several that have been widely adopted by both physicians and consumers. In this review, we discuss existing and forthcoming devices designed to measure activity, heart rate, heart rhythm, and thoracic fluid. We also offer several frameworks to classify and better understand wearable devices, such that we may weigh their potential benefit in improving healthcare with the many challenges that must be addressed to reap these benefits.

**Keywords:** Biosensors; Cardiology; Clinical decision support; Patient-generated data; Wearables.

2. *Afilalo J, Lauck S, Kim DH, Lefèvre T, Piazza N, Lachapelle K, et al. Frailty in Older Adults Undergoing Aortic Valve Replacement: The FRAILTY-AVR Study. J Am Coll Cardiol. 2017 Aug 8;70(6):689-700.*

### ABSTRACT

**Background:** Frailty is a geriatric syndrome that diminishes the potential for functional recovery after a transcatheter aortic valve replacement (TAVR) or surgical aortic valve replacement (SAVR) procedure; however, its integration in clinical practice has been limited by a lack of consensus on how to measure it.

**Objectives:** This study sought to compare the incremental predictive value of 7 different frailty scales to predict poor outcomes following TAVR or SAVR.

**Methods:** A prospective cohort of older adults undergoing TAVR or SAVR was assembled at 14 centers in 3 countries from 2012 to 2016. The following frailty scales were compared: Fried, Fried+, Rockwood, Short Physical Performance Battery, Bern, Columbia, and the Essential Frailty Toolset (EFT). Outcomes of interest were all-cause mortality and disability 1 year after the procedure.

**Results:** The cohort was composed of 1,020 patients with a median age of 82 years. Depending on the scale used, the prevalence of frailty ranged from 26% to 68%. Frailty as measured by the EFT was the strongest predictor of death at 1 year (adjusted odds ratio [OR]: 3.72; 95% confidence interval [CI]: 2.54 to 5.45) with a C-statistic improvement of 0.071 ( $p < 0.001$ ) and integrated discrimination improvement of 0.067 ( $p < 0.001$ ). Moreover, the EFT was the strongest predictor of worsening disability at 1 year (adjusted OR: 2.13; 95% CI: 1.57

to 2.87) and death at 30 days (adjusted OR: 3.29; 95% CI: 1.73 to 6.26).

**Conclusions:** Frailty is a risk factor for death and disability following TAVR and SAVR. A brief 4-item scale encompassing lower-extremity weakness, cognitive impairment, anemia, and hypoalbuminemia outperformed other frailty scales and is recommended for use in this setting.

**Keywords:** aortic stenosis; disability; frailty; outcomes; surgical aortic valve replacement; survival; transcatheter aortic valve replacement.

3. *Hsu JJ, Ziaeian B, Fonarow GC. Heart Failure with Mid-Range (Borderline) Ejection Fraction: Clinical Implications and Future Directions. JACC Heart Fail. 2017 Nov;5(11):763-71.*

### ABSTRACT

Heart failure (HF) with borderline ejection fraction was first defined in 2013 in the American College of Cardiology/American Heart Association guidelines as the presence of the typical symptoms of HF and a left ventricular ejection fraction (LVEF) of 41% to 49%. In 2016, the European Society of Cardiology specified HF with mid-range ejection fraction (HFmrEF) as LVEF of 40% to 49%. This range of LVEF is less well studied compared with HF with preserved ejection fraction (HFpEF) and HF with reduced ejection fraction (HFrEF). Although there are effective, guideline-directed medical therapies for patients with HFrEF, no therapies thus far show measurable benefit in HFpEF. Patients with HFmrEF have a clinical profile and prognosis that are closer to those of patients with HFpEF than those of HFrEF, with certain distinctions. Whether these patients represent a unique and dynamic HF group that may benefit from targeted therapies known to be beneficial in patients with HFrEF, such as neurohormonal blockade, requires further study. This review summarizes what is known about the clinical epidemiology, pathophysiology, and prognosis for patients with HFmrEF and how these features compare with the more well-studied HF groups. Although recommended treatments currently focus on aggressive management of comorbidities, we summarize the studies that identify a potential signal for beneficial therapies. Future studies are needed to not only better characterize the HFmrEF population but to also determine effective management strategies to reduce the high cardiovascular morbidity and mortality burden on this phenotype of patients with HF.

**Keywords:** HFbEF; HFmrEF; HFpEF; epidemiology; heart failure with borderline ejection fraction; heart failure with mid-range ejection fraction; heart failure with preserved ejection fraction; outcomes.

4. **Nowak JK, Lubarski K, Kowalik LM, Walkowiak J. H-index in medicine is driven by original research. Croat Med J. 2018 Feb 28;59(1):25-32.**

#### ABSTRACT

**Aim:** To investigate the contribution of selected types of articles to h-indices of medical researchers.

**Methods:** We used the Web of Science to export the publication records of various members from 26 scientific medical societies (13 European, 13 North American) associated with 13 medical specialties. Those included were presidents (n=26), heads of randomly chosen committees (n=52), and randomly selected members of those committees (n=52). Publications contributing to h-index were categorized as research articles, reviews, guidelines, meta-analyses, or other published work.

**Results:** Overall, 3259 items authored by 129 scholars were analyzed. The median h-index was 19.5. The median contribution of research articles to h-index was 84.4%. Researchers in the upper h-index tercile ( $\geq 28.5$ ) had a larger share of research articles that contributed to h-index in comparison with those in the lower h-index tercile ( $\leq 12.5$ ) (median 87.3% [1st-3rd quartile: 80.0%-93.1%] vs 80.0% [50.0%-88.9%],  $P=0.015$ ). We observed an analogous difference with regard to guidelines (1.1% [0%-3.7%] vs 0% [0%-0%],  $P=0.007$ ).

**Conclusions:** Original research drives h-indices in medicine. Although guidelines contribute to h-indices in medicine, their influence is low. The specific role of randomized controlled trials in building h-index in medicine remains to be assessed.

5. **Venkatesh AK, Savage D, Sandefur B, Bernard KR, Rothenberg C, Schuur JD. Systematic review of emergency medicine clinical practice guidelines: Implications for research and policy. PLoS One. 2017 Jun;12(6):e0178456.**

#### ABSTRACT

**Introduction:** Over 25 years, emergency medicine in the United States has amassed a large evidence base that has been systematically assessed and interpreted through ACEP Clinical Policies. While not previously studied in emergency medicine, prior work has shown that nearly half of all recommendations in medical specialty practice guidelines may be based on limited or inconclusive evidence. We sought to describe the proportion of clinical practice guideline recommendations in Emergency Medicine that are based upon expert opinion and low level evidence.

**Methods:** Systematic review of clinical practice guidelines (Clinical Policies) published by the American College of Emergency Physicians from January 1990 to January 2016. Standardized data were abstracted from each Clinical Policy including the number and level of recommendations as well as the reported class of evidence. Primary outcomes were the

proportion of Level C equivalent recommendations and Class III equivalent evidence. The primary analysis was limited to current Clinical Policies, while secondary analysis included all Clinical Policies.

**Results:** A total of 54 Clinical Policies including 421 recommendations and 2801 cited references, with an average of 7.8 recommendations and 52 references per guideline were included. Of 19 current Clinical Policies, 13 of 141 (9.2%) recommendations were Level A, 57 (40.4%) Level B, and 71 (50.4%) Level C. Of 845 references in current Clinical Policies, 67 (7.9%) were Class I, 272 (32.3%) Class II, and 506 (59.9%) Class III equivalent. Among all Clinical Policies, 200 (47.5%) recommendations were Level C equivalent, and 1371 (48.9%) of references were Class III equivalent.

**Conclusions:** Emergency medicine clinical practice guidelines are largely based on lower classes of evidence and a majority of recommendations are expert opinion based. Emergency medicine appears to suffer from an evidence gap that should be prioritized in the national research agenda and considered by policymakers prior to developing future quality standards.

6. **Lilley EJ, Zara Cooper Z, Schwarze ML, Mosenthal AC. Palliative Care in Surgery: Defining the Research Priorities. Ann Surg. 2018 Jan;267(1):66-72.**

#### ABSTRACT

**Objective:** To describe the existing science of palliative care in surgery within three priority areas and expose specific gaps within the field.

**Background:** Given the acute and often life-limiting nature of surgical illness, as well as the potential for treatment to induce further suffering, surgical patients have considerable palliative care needs. Yet these patients are less likely to receive palliative care than their medical counterparts and palliative care consultations often occur when death is imminent, reflecting poor quality end-of-life care.

**Methods:** The National Institutes of Health and the National Palliative Care Research Center convened researchers from several medical subspecialties to develop a national agenda for palliative care research. The surgeon work group reviewed the existing surgical literature to identify critical knowledge gaps.

**Results:** To date, evidence to support the role of palliative care in surgical practice is sparse and palliative care research in surgery is encumbered by methodological challenges and entrenched cultural norms that impede appropriate provision of palliative care. Priorities for future research on palliative care in surgery include: 1) measuring outcomes that matter to patients, 2) communication and decision making, and 3) delivery of palliative care to surgical patients.

**Conclusions:** Surgical patients would likely benefit from early palliative care delivered alongside surgical treatment to promote goal-concordant decision making and to improve

patients' physical, emotional, social and spiritual well-being and quality of life. We propose a research agenda to address major gaps in the literature and provide a road map for future investigation.

7. *Phillips KA, Patricia A Deverka PA, Sox HC, Khoury MJ, Sandy LG, Ginsburg GS, et al. Making genomic medicine evidence-based and patient-centered: a structured review and landscape analysis of comparative effectiveness research. Genet Med. 2017 Oct;19(10):1081-91.*

#### ABSTRACT

Comparative effectiveness research (CER) in genomic medicine (GM) measures the clinical utility of using genomic information to guide clinical care in comparison to appropriate alternatives. We summarized findings of high-quality systematic reviews that compared the analytic and clinical validity and clinical utility of GM tests. We focused on clinical utility findings to summarize CER-derived evidence about GM and identify evidence gaps and future research needs. We abstracted key elements of study design, GM interventions, results, and study quality ratings from 21 systematic reviews published in 2010 through 2015. More than half (N = 13) of the reviews were of cancer-related tests. All reviews identified potentially important clinical applications of the GM interventions, but most had significant methodological weaknesses that largely precluded any conclusions about clinical utility. Twelve reviews discussed the importance of patient-centered outcomes, although few described evidence about the impact of genomic medicine on these outcomes. In summary, we found a very limited body of evidence about the effect of using genomic tests on health outcomes and many evidence gaps for CER to address.

8. *Sterling M, Leung P, Wright D, Bishop TF. The Use of Social Media in Graduate Medical Education: A Systematic Review. Acad Med. 2017 Jul;92(7):1043-56.*

#### ABSTRACT

**Purpose:** Despite the growing presence of social media in graduate medical education (GME), few studies have attempted to characterize their effect on residents and their training. The authors conducted a systematic review of the peer-reviewed literature to understand the effect of social media on resident (1) education, (2) recruitment, and (3) professionalism.

**Method:** The authors identified English-language peer-reviewed articles published through November 2015 using Medline, Embase, Cochrane, PubMed, Scopus, and ERIC. They extracted and synthesized data from articles that met inclusion criteria. They assessed study quality for quantitative and qualitative studies through, respectively, the Medical Education Research Study Quality Instrument and the Consolidated Criteria for Reporting Qualitative Studies.

**Results:** Twenty-nine studies met inclusion criteria. Thirteen (44.8%) pertained to residency education. Twitter, podcasts, and blogs were frequently used to engage learners and enhance education. YouTube and wikis were more commonly used to teach technical skills and promote self-efficacy. Six studies (20.7%) pertained to the recruitment process; these suggest that GME programs are transitioning information to social media to attract applicants. Ten studies (34.5%) pertained to resident professionalism. Most were exploratory, highlighting patient and resident privacy, particularly with respect to Facebook. Four of these studies surveyed residents about their social network behavior with respect to their patients, while the rest explored how program directors use it to monitor residents' unprofessional online behavior.

**Conclusions:** The effect of social media platforms on residency education, recruitment, and professionalism is mixed, and the quality of existing studies is modest at best.

9. *Danek RL, Berlin KL, Waite GN, Geib RW. Perceptions of Nutrition Education in the Current Medical School Curriculum. Fam Med. 2017 Nov;49(10):803-6.*

#### ABSTRACT

**Background and objectives:** Although the National Academy of Sciences has recommended a minimum of 25 hours of nutrition education, the majority of medical schools offer very little to no training or education in nutrition to medical students during their tenure in medical school. In order to assess the relevance and efficacy of current levels of nutrition training as viewed by students, residents, and physicians, as well as possible areas for further improvement, the authors conducted a qualitative study exploring students' experiences.

**Methods:** Medical students, residents, and physicians at a Midwestern medical school were interviewed during a series of eight focus groups and one-on-one interviews. Results were coded and analyzed using NVivo qualitative software for emerging themes.

**Results:** Medical students felt nutrition was poorly integrated into the curriculum. They witnessed little nutrition counseling during shadowing experiences, and the nutrition information that was imparted was often outdated or incorrect. Residents stated they felt ill-prepared to offer nutrition counseling and desired further education in this area.

**Conclusions:** Overall, medical students and physicians agreed that the nutrition education currently provided in medical school is inadequate. Residents stated they would benefit from further training in behavioral counseling in order to increase their confidence in educating patients about nutrition. Increasing training in these areas could translate into improved health outcomes.

11. *Ford Winkel AF, Yingling S, Jones AA, Nicholson J. Reflection as a Learning Tool in Graduate Medical Education: A Systematic Review. J Grad Med Educ. 2017 Aug;9(4):430-439.*

**ABSTRACT**

**Background:** Graduate medical education programs employ reflection to advance a range of outcomes for physicians in training. However, the most effective applications of this tool have not been fully explored.

**Objective:** A systematic review of the literature examined interventions reporting the use of reflection in graduate medical education.

**Methods:** The authors searched Medline/PubMed, Embase, Cochrane CENTRAL, and ERIC for studies of reflection as a teaching tool to develop medical trainees' capacities. Key words and subject headings included reflection, narrative, residents/GME, and education/teaching/learning. No language or date limits were applied. The search yielded 1308 citations

between inception for each database and June 15, 2015. A total of 16 studies, encompassing 477 residents and fellows, met eligibility criteria. Study quality was assessed using the Critical Appraisal Skills Programme Qualitative Checklist. The authors conducted a thematic analysis of the 16 articles.

**Results:** Outcomes studied encompassed the impact of reflection on empathy, comfort with learning in complex situations, and engagement in the learning process. Reflection increased learning of complex subjects and deepened professional values. It appears to be an effective tool for improving attitudes and comfort when exploring difficult material. Limitations include that most studies had small samples, used volunteers, and did not measure behavioral outcomes.

**Conclusions:** Critical reflection is a tool that can amplify learning in residents and fellows. Added research is needed to understand how reflection can influence growth in professional capacities and patient-level outcomes in ways that can be measured.