

Greetings, I am Dr Karl Nath, the Editor-in-Chief of *Mayo Clinic Proceedings*, and I am pleased to welcome you to the multimedia summary for the journal's April 2018 issue. There are 4 articles this month that have been selected as our Editor's Choice or Highlights articles.

Our Editor's Choice is an Original Article that investigated whether a reduced incidence of hypercholesterolemia exists in men who participate in resistance exercise, both paired with aerobic exercise, and as a stand-alone exercise. It is authored by Ms Esmée Bakker from Iowa State University in Ames, and colleagues from numerous national and international universities and centers.

Resistance exercise involves repeated bouts of exercising isolated muscle groups. Whether resistance exercise exerts different effects on hypercholesterolemia as compared with aerobic exercise has significant implications for cardiovascular health since hypercholesterolemia is major risk factor for cardiovascular disease.

The authors used data from the Aerobics Center Longitudinal Study, which examined associations of clinical and lifestyle factors with subsequent morbidity and mortality. Participants received preventive medical examinations at the Cooper Clinic in Dallas, Texas, between 1987 and 2006. Men were included in this study if they had baseline measurements of self-reported resistance exercise and other covariates, underwent medical examinations and measurement of fasting total cholesterol in blood at baseline, and participated in at least one follow-up examination. Women were excluded due to low enrollment and a relatively low prevalence of hypercholesterolemia. The analysis involved 7317 men, aged 18 to 83 years, who were predominantly non-Hispanic whites, well educated, and employed in, or retired from, professional or executive positions. Medical examinations were performed at baseline, and information was obtained on age, smoking status, alcohol consumption, a personal and parental history of hypercholesterolemia, cardiovascular disease, and cancer.

After a median follow-up of 4 years, Bakker and colleagues found that 20%, of the men developed hypercholesterolemia. Among participants in resistance exercise, 64% performed resistance exercise for less than 2 hours per week. Compared with those not performing resistance exercise, men with higher levels of resistance exercise were younger, had a lower body mass index, and were more aerobically active. Resistance exercise performers had a slightly higher prevalence of paternal history of hypercholesterolemia and lower baseline values for total cholesterol. The major findings in this study are: First, men performing any resistance exercise had a 14% lower risk of hypercholesterolemia after adjustment for potential confounders, including aerobic exercise; second, less than 1 hour per week of resistance exercise—a

level easily achieved by most men—was associated with a 32% reduced risk of hypercholesterolemia; and, third, resistance exercise, twice per week, reduced the risk of hypercholesterolemia by 31% compared with no resistance exercise. These results suggest that resistance exercise, combined with aerobic exercise, should be encouraged to reduce the risk for hypercholesterolemia and cardiovascular disease in men.

Our first Highlight article is a Special Article that describes a new, de-medicalized model of care for women with low-risk pregnancies, termed the “OB Nest Model.” It is authored by Ms Marnie de Mooij and colleagues from Mayo Clinic in Rochester, Minnesota.

To more fully engage patients in their care, and to address the rising costs of prenatal care and delivery in the United States, the authors modified the traditional approach, which is designed to detect complications of pregnancy, to a model of care for low-risk pregnancies which is less reliant on high intensity contact. Moreover, more than 30% of American women give birth by cesarean section or are induced with drugs, a percentage higher than that which occurs in other developed countries, and what is considered as necessary and reasonable by the American College of Obstetricians and Gynecologists. The overmedicalization of low-risk pregnancies utilizes, as it were, a “sickness” model for such pregnancies, entails higher health care costs, and incurs the risk of complications to both the mother and child.

In collaboration the Mayo Clinic Center for Innovation, de Mooij et al established a customizable model of care. This article focuses on the first 2 phases of the human-centered design method. The first phase began with semistructured interviews with patients and partners and observations in the outpatient and inpatient settings. Input was obtained from members of the obstetric and midwife care teams. The second phase began with an analysis of the data collected through the first phase, and this led to a final integrated design concept underpinning the OB nest model for women with low-risk prenatal care.

Design validation was largely based on patient and care team acceptance. Patients were selected if they did not exhibit factors suggesting a high-risk pregnancy, and were proficient in English, older than 18 years, less than 5 months in gestation, and receiving Mayo Clinic prenatal care.

The OB Nest model relies on three main components: First, self-monitoring which includes, in addition to assessing weight, fundal height, and blood pressure, the ability of and opportunity for pregnant women to monitor fetal heart rate by a handheld Doppler device; second, text-based communication that uses a smartphone application,

allowing women to communicate directly with their care team outside of their face-to-face appointments; and, third, online communities in which expectant parents may share information among themselves and discuss issues unrelated to medical care. This model of care ensures that the pregnant woman is an engaged partner and not a passive recipient of care; provides home-based, instead of clinic-based, care; places the nurse as the primary point person early in pregnancy; and is equally as effective in detecting complications as on-site care. The authors conclude that the OB Nest model may benefit pregnant women with low risk pregnancies and clinical practice by promoting the following: patient engagement and satisfaction; greater connections and relationships between patients and their care team; continuity of care; decreased loss of productivity for pregnant women; lower health care cost; increased access for higher-acuity patients; and increased provider engagement and satisfaction.

The second Highlight article is an Original Article which compares outcomes of routine invasive strategy with selective invasive strategy in patients older than 75 years with non-ST-segment elevation acute coronary syndrome. It is authored by Dr Aakash Garg from Newark Beth Israel Medical Center in New Jersey, and colleagues from several universities and medical centers in the US.

Non-ST-segment elevation acute coronary syndrome now accounts for approximately 70% of presentations of this syndrome. Although current evidence supports a routine invasive strategy in most patients, elderly patients, 75 years or older, still present a clinical challenge in the real world.

Using a literature search between January 1, 1990, and October 1, 2016, the authors identified 588 publications. After full-text review, they selected 4 studies, with 1887 patients for final analysis. Mean patient age was 79 years, and 58% were men. 63% and 30% of patients underwent revascularization (percutaneous coronary intervention or coronary artery bypass grafting) in the routine invasive strategy and selective invasive strategy groups, respectively. All studies were low- to intermediate-bias risk studies as assessed by the Cochrane metrics for quality assessment risk.

This study demonstrated that patients undergoing routine invasive strategy have a reduced risk of the composite end point of death or myocardial infarction, primarily driven by a reduction in myocardial infarction, as compared with selective invasive strategy. This study has important implications. First, despite being a higher risk group, elderly patients were less likely to undergo invasive care in a registry data. There is thus a need for implementing evidence-based strategies into clinical practice intended to reduce ischemic burden in elderly patients. Second, the data also suggest that routine invasive strategy is safe and effective for stable non-ST-segment elevation

acute coronary syndrome, even among very elderly patients. This would be expected to lead to fewer cardiac rehospitalizations and less need for urgent revascularization.

The third Highlight is an Original Article that evaluated the long-term survival of patients at similar risk for hospital-acquired acute respiratory distress syndrome (ARDS) who did and did not develop ARDS. It is authored by Dr Michelle Biehl from Mayo Clinic in Rochester, Minnesota, and colleagues from other centers in the US.

Acute respiratory distress syndrome imposes a worldwide burden of disease and a poor prognosis. There are multiple sequelae in ARDS survivors, including reduced functionality and quality of life, neurocognitive impairment, and psychiatric morbidities. It is often difficult to distinguish between the long-term effects of ARDS complications per se and those of underlying conditions, leading to the question, “Do the patients die *from* ARDS or *with* ARDS?”

The authors compared survival in patients who developed ARDS during hospitalization and a matched similar-risk group of patients who did not develop ARDS from a previously described nested case-control population-based study. Eligible patients included adult residents of Olmsted County admitted to a tertiary care center from January 1, 2001, through December 31, 2010. Controls were identified from the remaining cohort of consecutive adult Olmsted County residents admitted to the hospital from January 1, 2003, through December 31, 2010, and did not have ARDS, but had at least 1 risk factor for it. Of 508 incident cases of hospital-acquired ARDS, 400 were successfully matched, and 252 matched pairs survived hospitalization. The authors found that patients with ARDS who survived the first 3 and 6 months after hospitalization continued to have worse long-term survival compared with matched controls, suggesting that the impact of ARDS on survival is beyond hospitalization and even more than 6 months after hospitalization. This study provides important information for future quality improvement projects and clinical trials aimed at improving outcomes for this major respiratory disease.

As always, you can access these Highlights and Editor’s Choice articles free of charge during the entire month of April. When you visit our *Mayo Clinic Proceedings* website at www.mayoclinicproceedings.org, you will find other free content and articles published online ahead of print. You can also find links to our social media by clicking the buttons at the top of the home page to follow us on Facebook, Twitter, and YouTube. Our website lists many news stories that are based on articles published in *Mayo Clinic Proceedings*. You can also check out our

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