American Journal of Epidemiology

A. V. Baklan et al., Acute Air Pollution Exposure and Risk of Suicide Completion, Am J Epidemiol 181.5 (March 1, 2015): 295–303, doi: 10.1093/aje/kwu341 • Research into environmental factors associated with suicide has historically focused on meteorological variables. Recently, a heightened risk of suicide related to short-term exposure to airborne particulate matter was reported. Here, we examined the associations between short-term exposure to nitrogen dioxide, particulate matter, and sulfur dioxide and completed suicide in Salt Lake County, Utah (n = 1,546) from 2000 to 2010. We used a time-stratified case-crossover design to estimate adjusted odds ratios for the relationship between suicide and exposure to air pollutants on the day of the suicide and during the days preceding the suicide. We observed maximum heightened odds of suicide associated with interquartile-range increases in nitrogen dioxide during cumulative lag 3 (average of the 3 days preceding suicide; odds ratio (OR) = 1.20, 95% confidence interval (CI): 1.04, 1.39) and fine particulate matter (diameter <2.5 μm) on lag day 2 (day 2 before suicide; OR = 1.05, 95% CI: 1.01, 1.10). Following stratification by season, an increased suicide risk was associated with exposure to nitrogen dioxide during the spring/fall transition period (OR = 1.35, 95% CI: 1.09, 1.66) and fine particulate matter in the spring (OR = 1.28, 95% CI: 1.01, 1.61) during cumulative lag 3. Findings of positive associations between air pollution and suicide appear to be consistent across study locations with vastly different meteorological, geographical, and cultural characteristics.

Health Affairs

J. M. Austin et al., National Hospital Ratings Systems Share Few Common Scores and May Generate Confusion Instead of Clarity, Health Aff (Millwood) 34.3 (March 1, 2015): 423–430, doi: 10.1377/hlthaff.2014.0201 • Attempts to assess the quality and safety of hospitals have proliferated, including a growing number of consumer-directed hospital rating systems. However, relatively little is known about what these rating systems reveal. To better understand differences in hospital ratings, we compared four national rating systems. We designated “high” and “low” performers for each rating system and examined the overlap among rating systems and how hospital characteristics corresponded with performance on each. No hospital was rated as a high performer by all four national rating systems. Only 10 percent of the 844 hospitals rated as a high performer by one rating system were rated as a high performer by any of the other rating systems. The lack of agreement among the national hospital rating systems is likely explained by the fact that each system uses its own rating methods, has a different focus to its ratings, and stresses different measures of performance.

JAMA

G. D’Onofrio et al., Emergency Department-Initiated Buprenorphine/Naloxone Treatment for Opioid Dependence: A Randomized Clinical Trial, JAMA 313.16 (April 28, 2015): 1636–1644, doi: 10.1001/jama.2015.3474 • Importance: Opioid-dependent patients often use the emergency department (ED) for medical care. Objective: To test the efficacy of 3 interventions for opioid dependence: (1) screening and referral to treatment (referral); (2) screening, brief intervention, and facilitated referral to community-based treatment services (brief intervention); and (3) screening, brief intervention, ED-initiated treatment with buprenorphine/naloxone, and referral to primary care for 10-week follow-up (buprenorphine). Design, Setting, and
Participants: A randomized clinical trial involving 329 opioid-dependent patients who were treated at an urban teaching hospital ED from April 7, 2009, through June 25, 2013.

Interventions: After screening, 104 patients were randomized to the referral group, 111 to the brief intervention group, and 114 to the buprenorphine treatment group. Main Outcomes and Measures: Enrollment in and receiving addiction treatment 30 days after randomization was the primary outcome. Self-reported days of illicit opioid use, urine testing for illicit opioids, human immunodeficiency virus (HIV) risk, and use of addiction treatment services were the secondary outcomes. Results: Seventy-eight percent of patients in the buprenorphine group (89 of 114 [95% CI, 70%-85%]) vs 37% in the referral group (38 of 102 [95% CI, 28%-47%]) and 45% in the brief intervention group (50 of 111 [95% CI, 36%-54%]) were engaged in addiction treatment on the 30th day after randomization (P < 0.001). The buprenorphine group reduced the number of days of illicit opioid use per week from 5.4 days (95% CI, 5.1–5.7) to 0.9 days (95% CI, 0.5–1.3) vs a reduction from 5.4 days (95% CI, 5.1–5.7) to 2.3 days (95% CI, 1.7–3.0) in the referral group and from 5.6 days (95% CI, 5.3–5.9) to 2.4 days (95% CI, 1.8–3.0) in the brief intervention group (P < 0.001 for both time and intervention effects; P=0.02 for the interaction effect). The rates of urine samples that tested negative for opioids did not differ statistically across groups, with 53.8% (95% CI, 42%-65%) in the referral group, 42.9% (95% CI, 31%-55%) in the brief intervention group, and 57.6% (95% CI, 47%-68%) in the buprenorphine group (P=0.17). There were no statistically significant differences in HIV risk across groups (P=0.66). Eleven percent of patients in the buprenorphine group (95% CI, 6%-19%) used inpatient addiction treatment services, whereas 37% in the referral group (95% CI, 27%-48%) and 35% in the brief intervention group (95% CI, 25%-37%) used inpatient addiction treatment services (P < 0.001). Conclusions and Relevance: Among opioid-dependent patients, ED-initiated buprenorphine treatment vs brief intervention and referral significantly increased engagement in addiction treatment, reduced self-reported illicit opioid use, and decreased use of inpatient addiction treatment services but did not significantly decrease the rates of urine samples that tested positive for opioids or of HIV risk. These findings require replication in other centers before widespread adoption.


• Importance: Safe and effective vaccines and drugs are needed for the prevention and treatment of Ebola virus disease, including following a potentially high-risk exposure such as a needlestick. Objective: To assess response to postexposure vaccination in a health care worker who was exposed to the Ebola virus. Design and Setting: Case report of a physician who experienced a needlestick while working in an Ebola treatment unit in Sierra Leone on September 26, 2014. Medical evacuation to the United States was rapidly initiated. Given the concern about potentially lethal Ebola virus disease, the patient was offered, and provided his consent for, postexposure vaccination with an experimental vaccine available through an emergency Investigational New Drug application. He was vaccinated on September 28, 2014. Interventions: The vaccine used was VSVAG-ZEBOV, a replicating, attenuated, recombinant vesicular stomatitis virus (serotype Indiana) whose surface glycoprotein gene was replaced by the Zaire Ebola virus glycoprotein gene. This vaccine has entered a clinical trial for the prevention of Ebola in West Africa. Results: The vaccine was administered 43 hours after the needlestick occurred. Fever and moderate to severe symptoms developed 12 hours after vaccination and diminished over 3 to 4 days. The real-time reverse transcription polymerase chain reaction results were transiently positive for vesicular stomatitis virus nucleoprotein gene and Ebola virus glycoprotein gene (both included in the vaccine) but consistently negative for Ebola virus nucleoprotein gene.
Early postvaccination cytokine secretion and T lymphocyte and plasmablast activation were detected. Subsequently, Ebola virus glycoprotein-specific antibodies and T cells became detectable, but antibodies against Ebola viral matrix protein 40 (not in the vaccine) were not detected.

**Conclusions and Relevance:** It is unknown if VSVΔG-ZEBOV is safe or effective for post-exposure vaccination in humans who have experienced a high-risk occupational exposure to the Ebola virus, such as a needlestick. In this patient, postexposure vaccination with VSVΔG-ZEBOV induced a self-limited febrile syndrome that was associated with transient detection of the recombinant vesicular stomatitis vaccine virus in blood. Strong innate and Ebola-specific adaptive immune responses were detected after vaccination. The clinical syndrome and laboratory evidence were consistent with vaccination response, and no evidence of Ebola virus infection was detected.

**JAMA Internal Medicine**


**Design, Setting, and Participants:** We performed semistructured in-depth qualitative interviews of 58 internal medicine physicians from 4 academic medical centers (3 in the United States and 1 in the United Kingdom) by years of experience and medical subspecialty from March 7, 2013, through January 8, 2014. Hospitals were selected based on expected differences in hospital culture and variations in hospital policies regarding prioritization of autonomy vs best interest.

**Main Outcomes and Measures:** This study identified the key influences of institutional culture and policies on physicians’ attitudes toward patient autonomy in DNR decision making at the end of life.

**Results:** A hospital’s prioritization of autonomy vs best interest as reflected in institutional culture and policy appeared to influence the way that physician trainees conceptualized patient autonomy. This finding may have influenced the degree of choice and recommendations physician trainees were willing to offer regarding DNR decision making. Trainees at hospitals where policies and culture prioritized autonomy-focused approaches appeared to have an unreflective deference to autonomy and felt compelled to offer the choice of resuscitation neutrally in all situations regardless of whether they believed resuscitation to be clinically appropriate. In contrast, trainees at hospitals where policies and culture prioritized best-interest-focused approaches appeared to be more comfortable recommending against resuscitation in situations where survival was unlikely. Experienced physicians at all sites similarly did not exclusively allow their actions to be defined by policies and institutional culture and were willing to make recommendations against resuscitation if they believed it would be futile.

**Conclusions and Relevance:** Institutional cultures and policies might influence how physician trainees develop their professional attitudes toward autonomy and their willingness to make recommendations regarding the decision to implement a DNR order. A singular focus on autonomy might inadvertently undermine patient care by depriving patients and surrogates of the professional guidance needed to make critical end of life decisions.


**Objective:** To systematically review all studies that have quantitatively assessed patients’ expectations of the benefits and/or harms of any treatment, test, or screening test.

**Evidence Review:** A comprehensive search
strategy was used in 4 databases (MEDLINE, Embase, Cumulative Index to Nursing and Allied Health Literature, PsycINFO) up to June 2013, with no language or study type restriction. We also ran cited reference searches of included studies and contacted experts and study authors. Two researchers independently evaluated methodological quality and extracted participants’ estimates of benefit and harms and authors’ contemporaneous estimates. Findings: Of the 15,343 records screened, 36 articles (from 35 studies) involving a total of 27,323 patients were eligible. Fourteen studies focused on a screen, 15 on treatment, 3 a test, and 3 on treatment and screening. More studies assessed only benefit expectations (22 [63%]) than benefit and harm expectations (10 [29%]) or only harm (3 [8%]). Fifty-four outcomes (across 32 studies) assessed benefit expectations: of the 34 outcomes with overestimation data available, the majority of participants overestimated benefit for 22 (65%) of them. For 17 benefit expectation outcomes, we could not calculate the proportion of participants who overestimated or underestimated, although for 15 (88%) of these, study authors concluded that participants overestimated benefits. Expectations of harm were assessed by 27 outcomes (across 13 studies): underestimation data were available for 15 outcomes and the majority of participants underestimated harm for 10 (67%) of these. A correct estimation by at least 50% of participants only occurred for 2 outcomes about benefit expectations and 2 outcomes about harm expectations. Conclusions and Relevance: The majority of participants overestimated intervention benefit and underestimated harm. Clinicians should discuss accurate and balanced information about intervention benefits and harms with patients, providing the opportunity to develop realistic expectations and make informed decisions.

S. Jackson, A. Steptoe, and J. Wardle, The Influence of Partner’s Behavior on Health Behavior Change: The English Longitudinal Study of Ageing. *JAMA Intern Med* 175.3 (March 2015): 385–392, doi: 10.1001/jamainternmed.2014.7554 • Importance: Couples are highly concordant for unhealthy behaviors, and a change in one partner’s health behavior is often associated with a change in the other partner’s behavior. However, no studies have explicitly compared the influence of having a partner who takes up healthy behavior (e.g., quits smoking) with one whose behavior is consistently healthy (e.g., never smokes). Objective: To examine the influence of partner’s behavior on making positive health behavior changes. Design, Setting, and Participants: We used prospective data from married and cohabiting couples (n, 3722) participating in the English Longitudinal Study of Ageing, a large population-based cohort of older adults (≥50 years). Studying men and women who had unhealthy behaviors in 3 domains at baseline (i.e., smoking, physically inactive, or overweight/obese), we used logistic regression analysis to examine the influence of the partner’s behavior in the same domain on the odds of positive health behavior change over time. Main Outcomes and Measures: Smoking cessation, increased physical activity, and 5% weight loss or greater. Results: Across all domains, we found that when one partner changed to a healthier behavior (newly healthy), the other partner was more likely to make a positive health behavior change than if their partner remained unhealthy (smoking: men 48% vs 8%, adjusted odds ratio [OR], 11.82 [95% CI, 4.84–28.90]; women 50% vs 8%, OR, 11.23 [4.58–27.52]) (physical activity: men 67% vs 26%, OR, 5.28 [3.70–7.54]; women 66% vs 24%, OR, 5.36 [3.74–7.68]) (weight loss: men 26% vs 10%, OR, 3.05 [1.96–4.74]; women 36% vs 15%, OR, 3.08 [1.98–4.80]). For smoking and physical activity, having a consistently healthy partner also predicted positive change, but for each domain, the odds were significantly higher in individuals with a newly healthy partner than those with a consistently healthy partner (smoking: men OR, 3.08 [1.43–6.62]; women OR, 5.45 [2.44–12.16]) (physical activity: men OR, 1.92 [1.37–2.70]; women OR, 1.84 [1.33–2.53]) (weight loss: men OR, 2.28 [1.36–3.84]; women OR, 2.86 [1.55–5.26]). Conclusions and Relevance: Men and women are more likely to make a positive health behavior
change if their partner does too, and with a stronger effect than if the partner had been consistently healthy in that domain. Involving partners in behavior change interventions may therefore help improve outcomes.

J. S. Kutner et al., Safety and Benefit of Discontinuing Statin Therapy in the Setting of Advanced, Life-Limiting Illness: A Randomized Clinical Trial, JAMA Intern Med 175.5 (May 2015): 691–700, doi: 10.1001/jamainternmed.2015.0289 • Importance: For patients with limited prognosis, some medication risks may outweigh the benefits, particularly when benefits take years to accrue; statins are one example. Data are lacking regarding the risks and benefits of discontinuing statin therapy for patients with limited life expectancy. Objective: To evaluate the safety, clinical, and cost impact of discontinuing statin medications for patients in the palliative care setting. Design, Setting, and Participants: This was a multicenter, parallel-group, unblinded, pragmatic clinical trial. Eligibility included adults with an estimated life expectancy of between 1 month and 1 year, statin therapy for 3 months or more for primary or secondary prevention of cardiovascular disease, recent deterioration in functional status, and no recent active cardiovascular disease. Participants were randomized to either discontinue or continue statin therapy and were monitored monthly for up to 1 year. The study was conducted from June 3, 2011, to May 2, 2013. All analyses were performed using an intent-to-treat approach. Interventions: Statin therapy was withdrawn from eligible patients who were randomized to the discontinuation group. Patients in the continuation group continued to receive statins. Main Outcomes and Measures: Outcomes included death within 60 days (primary outcome), survival, cardiovascular events, performance status, quality of life (QOL), symptoms, number of nonstatin medications, and cost savings. Results: A total of 381 patients were enrolled; 189 of these were randomized to discontinue statins, and 192 were randomized to continue therapy. Mean (SD) age was 74.1 (11.6) years, 22.0% of the participants were cognitively impaired, and 48.8% had cancer. The proportion of participants in the discontinuation vs continuation groups who died within 60 days was not significantly different (23.8% vs 20.3%; 90% CI, -3.5% to 10.5%; P=0.36) and did not meet the noninferiority end point. Total QOL was better for the group discontinuing statin therapy (mean McGill QOL score, 7.11 vs 6.85; P=0.04). Few participants experienced cardiovascular events (13 in the discontinuation group vs 11 in the continuation group). Mean cost savings were $3.37 per day and $716 per patient. Conclusions and Relevance: This pragmatic trial suggests that stopping statin medication therapy is safe and may be associated with benefits including improved QOL, use of fewer nonstatin medications, and a corresponding reduction in medication costs. Thoughtful patient-provider discussions regarding the uncertain benefit and potential decrement in QOL associated with statin continuation in this setting are warranted.

JAMA Surgery

H. B. Moore et al., Effect of Pregnancy on Adverse Outcomes after General Surgery, JAMA Surg, e-pub May 13, 2015, doi: 10.1001/jamasurg.2015.91 • Importance: The literature regarding the occurrence of adverse outcomes following nonobstetric surgery in pregnant compared with nonpregnant women has conflicting findings. Those differing conclusions may be the result of inadequate adjustment for differences between pregnant and nonpregnant women. It remains unclear whether pregnancy is a risk factor for postoperative morbidity and mortality of the woman after general surgery. Objective: To compare the risk of postoperative complications in pregnant vs nonpregnant women undergoing similar general surgical procedures. Design, Setting, and Participants: In this retrospective cohort study, data were obtained from the American College of Surgeons’ National Surgical Quality Improvement Program participant user file from January 1, 2006, to December 31, 2011. Propensity-matched females based on 63 preoperative characteristics were matched 1:1 with nonpregnant women undergoing
the same operations by general surgeons. Operations performed between January 1, 2006, and December 31, 2011, were analyzed for postoperative adverse events occurring within 30 days of surgery. **Main Outcomes and Measures:** Rates of 30-day postoperative mortality, overall morbidity, and 21 individual postoperative complications were compared. **Results:** The unmatched cohorts included 2,764 pregnant women (50.5% underwent emergency surgery) and 516,705 nonpregnant women (13.2% underwent emergency surgery) undergoing general surgery. After propensity matching, there were no meaningful differences in all 63 preoperative characteristics between 2539 pregnant and 2539 nonpregnant patients (all standardized differences, <0.1). The 30-day mortality rates were similar (0.4% in pregnant women vs 0.3% in nonpregnant women; P=0.82), and the rate of overall morbidity was also not significantly different between pregnant vs nonpregnant patients (6.6% vs 7.4%; P=0.30). **Conclusions and Relevance:** There was no significant difference in overall morbidity or 30-day mortality rates in pregnant and nonpregnant propensity-matched women undergoing similar general surgical operations. General surgery appears to be as safe for pregnant women as it is for nonpregnant women.

**Lancet**

S. Dalsgaard et al., *Mortality in Children, Adolescents, and Adults with Attention Deficit Hyperactivity Disorder: A Nationwide Cohort Study*, Lancet 385.9983 (May 30, 2015): 2190–2196, doi: 10.1016/S0140-6736(14)61684-6 • **Background:** Attention deficit hyperactivity disorder (ADHD) is a common mental disorder associated with factors that are likely to increase mortality, such as oppositional defiant disorder or conduct disorder, criminality, accidents, and substance misuse. However, whether ADHD itself is associated with increased mortality remains unknown. We aimed to assess ADHD-related mortality in a large cohort of Danish individuals. **Methods:** By use of the Danish national registers, we followed up 1-92 million individuals, including 32,061 with ADHD, from their first birthday through to 2013. We estimated mortality rate ratios (MRRs), adjusted for calendar year, age, sex, family history of psychiatric disorders, maternal and paternal age, and parental educational and employment status, by Poisson regression, to compare individuals with and without ADHD. **Findings:** During follow-up (24-9 million person-years), 5,580 cohort members died. The mortality rate per 10,000 person-years was 5-85 among individuals with ADHD compared with 2-21 in those without (corresponding to a fully adjusted MRR of 2-07, 95% CI 1-70–2-50; p<0.0001). Accidents were the most common cause of death. Compared with individuals without ADHD, the fully adjusted MRR for individuals diagnosed with ADHD at ages younger than 6 years was 1-86 (95% CI 0-93–3-27), and it was 1-58 (1-21–2-03) for those aged 6–17 years, and 4-25 (3-05–5-78) for those aged 18 years or older. After exclusion of individuals with oppositional defiant disorder, conduct disorder, and substance use disorder, ADHD remained associated with increased mortality (fully adjusted MRR 1-50, 1-11–1-98), and was higher in girls and women (2-85, 1-56–4-71) than in boys and men (1-27, 0-89–1-76). **Interpretation:** ADHD was associated with significantly increased mortality rates. People diagnosed with ADHD in adulthood had a higher MRR than did those diagnosed in childhood and adolescence. Comorbid oppositional defiant disorder, conduct disorder, and substance use disorder increased the MRR even further. However, when adjusted for these comorbidities, ADHD remained associated with excess mortality, with higher MRRs in girls and women with ADHD than in boys and men with ADHD. The excess mortality in ADHD was mainly driven by deaths from unnatural causes, especially accidents.

**Mayo Clinic Proceedings**

on the professional satisfaction and burn-out of individual physicians working for a large health care organization. Participants and Methods: We surveyed physicians and scientists working for a large health care organization in October 2013. Validated tools were used to assess burnout. Physicians also rated the leadership qualities of their immediate supervisor in 12 specific dimensions on a 5-point Likert scale. All supervisors were themselves physicians/scientists. A composite leadership score was calculated by summing scores for the 12 individual items (range, 12–60; higher scores indicate more effective leadership). Results: Of the 3896 physicians surveyed, 2813 (72.2%) responded. Supervisor scores in each of the 12 leadership dimensions and composite leadership score strongly correlated with the burnout and satisfaction scores of individual physicians (all P<0.001). On multivariate analysis adjusting for age, sex, duration of employment at Mayo Clinic, and specialty, each 1-point increase in composite leadership score was associated with a 3.3% decrease in the likelihood of burnout (P<0.001) and a 9.0% increase in the likelihood of satisfaction (P<0.001) of the physicians supervised. The mean composite leadership rating of each division/department chair (n=128) also correlated with the prevalence of burnout (correlation=-0.330; r(2)=0.11; P<0.001) and satisfaction (correlation=0.684; r(2)=0.47; P<0.001) at the division/department level. Conclusion: The leadership qualities of physician supervisors appear to impact the well-being and satisfaction of individual physicians working in health care organizations. These findings have important implications for the selection and training of physician leaders and provide new insights into organizational factors that affect physician well-being.

New England Journal of Medicine

Y.M. Arabi et al., Permissive Underfeeding or Standard Enteral Feeding in Critically Ill Adults, N Engl J Med 372.25 (June 18, 2015): 2398–2408, doi: 10.1056/NEJ-Moa1502826 • Background: The appropriate caloric goal for critically ill adults is unclear. We evaluated the effect of restriction of non-protein calories (permissive underfeeding), as compared with standard enteral feeding, on 90-day mortality among critically ill adults, with maintenance of the full recommended amount of protein in both groups. Methods: At seven centers, we randomly assigned 894 critically ill adults with a medical, surgical, or trauma admission category to permissive underfeeding (40 to 60% of calculated caloric requirements) or standard enteral feeding (70 to 100%) for up to 14 days while maintaining a similar protein intake in the two groups. The primary outcome was 90-day mortality. Results: Baseline characteristics were similar in the two groups; 96.8% of the patients were receiving mechanical ventilation. During the intervention period, the permissive-underfeeding group received fewer mean (±SD) calories than did the standard-feeding group (835±297 kcal per day vs. 1299±467 kcal per day, P<0.001; 46±14% vs. 71±22% of caloric requirements, P<0.001). Protein intake was similar in the two groups (57±24 g per day and 59±25 g per day, respectively; P=0.29). The 90-day mortality was similar: 121 of 445 patients (27.2%) in the permissive-underfeeding group and 127 of 440 patients (28.9%) in the standard-feeding group died (relative risk with permissive underfeeding, 0.94; 95% confidence interval [CI], 0.76 to 1.16; P=0.58). No serious adverse events were reported; there were no significant between-group differences with respect to feeding intolerance, diarrhea, infections acquired in the intensive care unit (ICU), or ICU or hospital length of stay. Conclusions: Enteral feeding to deliver a moderate amount of nonprotein calories to critically ill adults was not associated with lower mortality than that associated with planned delivery of a full amount of nonprotein calories.