Practice Changing Updates from the Medical Literature

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Use automated office blood pressure (patient seated alone, resting for a few minutes, than series of at least 3 automated blood pressures, with 1-2 minutes between) is as accurate as ambulatory blood pressure monitoring. It produces results significantly lower than routine office blood pressures, even those taken using research study standards.[1] SOR:(A)

Have patients take their once daily antihypertensives at bedtime. [2] SOR:(B)

Amphetamine is associated with a higher risk of psychosis than methylphenidate in people (13-25) treated for ADHD. [3]2019 SOR:(C)

Use of an inhaled corticosteroid (budesonide) and formoterol as a prn treatment works as well as a ICS and SABA prn, and better than a SABA prn alone.[4] SOR:(B)

Sodium-glucose cotransporter-2 inhibitors (SGLT-2 inhibitors) reduce mortality, cardiovascular outcomes and renal failure when compared to placebo and other diabetic agents. Glucagon-like peptide-1 receptor agonists also show beneficial effects, but not as large.[5] SOR:(A)

SGLT-2 inhibitors reduce death and CHF symptoms and hospitalizations in patients with heart failure with reduced EF <40%.[6] Kumar SOR:(A)

The USPSTF recommends screening for hepatitis C infection in adults aged 18 to 79.[7] Grade:B
Treatment algorithm: HCVguidelines.org

The USPSTF recommends screening by asking questions about unhealthy drug use in adults 18 years or older. Screening should be implemented when services for accurate diagnosis, effective treatment, and appropriate care can be offered or referred. Grade (B) Insufficient evidence for screening in adolescents.[8] Grade (I)
Screening tools: https://bit.ly/3mOymWJ

The USPSTF recommends annual screening for lung cancer with low-dose computed tomography (LDCT) in adults aged 50-80 who have a 20 pack-year smoking history and currently smoke or have quit within the last 15 years.[9] Grade: (B)

The American College of Rheumatology has an evidence-based guideline for osteoarthritis treatment, especially at the hand, knee and hip.[10] ACR SOR: (A)

Don't have emergency surgery on the surgeons birthday.[11] (NNH=63) SOR:C

Dog owners and their dogs are more likely to be concordant in the diagnosis of diabetes than cat owners and their pets.[12] SOR: B

Strength of recommendation (SOR)	Basis for recommendation
A	Consistent, good-quality patient-oriented evidence
B	Inconsistent or limited-quality patient-oriented evidence
C	Consensus, disease-oriented evidence, usual practice, expert opinion, or case series for studies of diagnosis, treatment, prevention, or screening

References

1. Roerecke M, Kaczorowski J, Myers MG. Comparing automated office blood pressure readings with other methods of blood pressure measurement for identifying patients with possible hypertension: a systematic review and meta-analysis. *JAMA internal medicine.* 2019;179(3):351-362.

   Importance: Automated office blood pressure (AOBP) measurement involves recording several blood pressure (BP) readings using a fully automated oscillometric sphygmomanometer with the patient resting alone in a quiet place. Although several studies have shown AOBP measurement to be more accurate than routine office BP measurement and not subject to a "white coat effect," the cumulative evidence has not yet been systematically reviewed. **Objective**: To perform a systematic review and meta-analysis to examine the association between AOBP and office BP readings measured in routine clinical practice and in research studies, and ambulatory BP recorded during awake hours, as the latter is a standard for predicting future cardiovascular events. **Data Sources:** The MEDLINE, Embase, and Cochrane Library were searched from 2003 to April 25, 2018. Study Selection: Studies on systolic and diastolic BP measurement by AOBP in comparison with awake ambulatory BP, routine office BP, and research BP measurements were included if they contained 30 patients or more. **Data Extraction and Synthesis:** Study characteristics were abstracted independently and random effects meta-analyses and meta-regressions were conducted. **Main Outcomes and Measures**: Pooled mean differences (95% CI) of systolic and diastolic BP between types of BP measurement. Results: Data were compiled from 31 articles comprising 9279 participants (4736 men and 4543 women). In samples with systolic AOBP of 130 mm Hg or more, routine office and research systolic BP readings were substantially higher than AOBP readings, with a pooled mean difference of 14.5 mm Hg (95% CI, 11.8-17.2 mm Hg; n = 9; I2 = 94.3%; P < .001) for routine office systolic BP readings and 7.0 mm Hg (95% CI, 4.9-9.1 mm Hg; n = 9; I2 = 85.7%; P < .001) for research systolic BP readings. Systolic awake ambulatory BP and AOBP readings were similar, with a pooled mean difference of 0.3 mm Hg (95% CI, -1.1 to 1.7 mm Hg; n = 19; I2 = 90%; P < .001). **Conclusions and Relevance**: Automated office blood pressure readings, only when recorded properly with the patient sitting alone in a quiet place, are more accurate than office BP readings in routine clinical practice and are similar to awake ambulatory BP readings, with mean AOBP being devoid of any white coat effect. There has been some reluctance among physicians to adopt this technique because of uncertainty about its advantages compared with more traditional methods of recording BP during an office visit. Based on the evidence, AOBP should now be the preferred method for recording BP in routine clinical practice.

2. Hermida RC, Crespo JJ, Domínguez-Sardiña M, et al. Bedtime hypertension treatment improves cardiovascular risk reduction: the Hygia Chronotherapy Trial. *Eur Heart J.* 2019.

   The Hygia Chronotherapy Trial, conducted within the clinical primary care setting, was designed to test whether bedtime in comparison to usual upon awakening hypertension therapy exerts better cardiovascular disease (CVD) risk reduction.In this multicentre, controlled, prospective endpoint trial, 19 084 hypertensive patients (10 614 men/8470 women, 60.5 ± 13.7 years of age) were assigned (1:1) to ingest the entire daily dose of ≥1 hypertension medications at bedtime (n = 9552) or all of them upon awakening (n = 9532). At inclusion and at every scheduled clinic visit (at least annually) throughout follow-up, ambulatory blood pressure (ABP) monitoring was performed for 48 h. During the 6.3-year median patient follow-up, 1752 participants experienced the primary CVD outcome (CVD death,

myocardial infarction, coronary revascularization, heart failure, or stroke). Patients of the bedtime, compared with the upon-waking, treatment-time regimen showed significantly lower hazard ratio—adjusted for significant influential characteristics of age, sex, type 2 diabetes, chronic kidney disease, smoking, HDL cholesterol, asleep systolic blood pressure (BP) mean, sleep-time relative systolic BP decline, and previous CVD event—of the primary CVD outcome [0.55 (95% CI 0.50–0.61), P < 0.001] and each of its single components (P < 0.001 in all cases), i.e. CVD death [0.44 (0.34–0.56)], myocardial infarction [0.66 (0.52–0.84)], coronary revascularization [0.60 (0.47–0.75)], heart failure [0.58 (0.49–0.70)], and stroke [0.51 (0.41–0.63)].Routine ingestion by hypertensive patients of ≥1 prescribed BP-lowering medications at bedtime, as opposed to upon waking, results in improved ABP control (significantly enhanced decrease in asleep BP and increased sleep-time relative BP decline, i.e. BP dipping) and, most importantly, markedly diminished occurrence of major CVD events.ClinicalTrials.gov, number NCT00741585.

3. Moran LV, Ongur D, Hsu J, Castro VM, Perlis RH, Schneeweiss S. Psychosis with methylphenidate or amphetamine in patients with ADHD. *N Engl J Med.* 2019;380(12):1128-1138.

BACKGROUND: The prescription use of the stimulants methylphenidate and amphetamine for the treatment of attention deficit-hyperactivity disorder (ADHD) has been increasing. In 2007, the Food and Drug Administration mandated changes to drug labels for stimulants on the basis of findings of new-onset psychosis. Whether the risk of psychosis in adolescents and young adults with ADHD differs among various stimulants has not been extensively studied. **METHODS**: We used data from two commercial insurance claims databases to assess patients 13 to 25 years of age who had received a diagnosis of ADHD and who started taking methylphenidate or amphetamine between January 1, 2004, and September 30, 2015. The outcome was a new diagnosis of psychosis for which an antipsychotic medication was prescribed during the first 60 days after the date of the onset of psychosis. To estimate hazard ratios for psychosis, we used propensity scores to match patients who received methylphenidate with patients who received amphetamine in each database, compared the incidence of psychosis between the two stimulant groups, and then pooled the results across the two databases. **RESULTS**: We assessed 337,919 adolescents and young adults who received a prescription for a stimulant for ADHD. The study population consisted of 221,846 patients with 143,286 person-years of follow up; 110,923 patients taking methylphenidate were matched with 110,923 patients taking amphetamines. There were 343 episodes of psychosis (with an episode defined as a new diagnosis code for psychosis and a prescription for an antipsychotic medication) in the matched populations (2.4 per 1000 person-years): 106 episodes (0.10%) in the methylphenidate group and 237 episodes (0.21%) in the amphetamine group (hazard ratio with amphetamine use, 1.65; 95% confidence interval, 1.31 to 2.09). **CONCLUSIONS**: Among adolescents and young adults with ADHD who were receiving prescription stimulants, new-onset psychosis occurred in approximately 1 in 660 patients. Amphetamine use was associated with a greater risk of psychosis than methylphenidate. (Funded by the National Institute of Mental Health and others.).

4. Beasley R, Holliday M, Reddel HK, et al. Controlled trial of budesonide-formoterol as needed for mild asthma. *N Engl J Med.* 2019;380(21):2020-2030.

BACKGROUND: In double-blind, placebo-controlled trials, budesonide-formoterol used on an as-needed basis resulted in a lower risk of severe exacerbation of asthma than as-needed use of a short-acting beta2-agonist (SABA); the risk was similar to that of budesonide maintenance therapy plus as-needed SABA. The availability of data from clinical trials designed to better reflect clinical practice would be beneficial. **METHODS**: We conducted a 52-week, randomized, open-label, parallel-group, controlled trial involving adults with mild asthma. Patients were randomly assigned to one of three treatment groups: albuterol (100 mug, two inhalations from a pressurized metered-dose inhaler as needed for asthma symptoms) (albuterol group); budesonide (200 mug, one inhalation through a Turbuhaler twice daily) plus as-needed albuterol (budesonide maintenance group); or budesonide-formoterol (200 mug of budesonide and 6 mug of formoterol, one inhalation through a Turbuhaler as needed) (budesonide-formoterol group). Electronic monitoring of inhalers was used to measure medication use. The primary

outcome was the annualized rate of asthma exacerbations. **RESULTS**: The analysis included 668 of 675 patients who underwent randomization. The annualized exacerbation rate in the budesonide-formoterol group was lower than that in the albuterol group (absolute rate, 0.195 vs. 0.400; relative rate, 0.49; 95% confidence interval [CI], 0.33 to 0.72; P<0.001) and did not differ significantly from the rate in the budesonide maintenance group (absolute rate, 0.195 in the budesonide-formoterol group vs. 0.175 in the budesonide maintenance group; relative rate, 1.12; 95% CI, 0.70 to 1.79; P = 0.65). The number of severe exacerbations was lower in the budesonide-formoterol group than in both the albuterol group (9 vs. 23; relative risk, 0.40; 95% CI, 0.18 to 0.86) and the budesonide maintenance group (9 vs. 21; relative risk, 0.44; 95% CI, 0.20 to 0.96). The mean (+/-SD) dose of inhaled budesonide was 107+/-109 mug per day in the budesonide-formoterol group and 222+/-113 mug per day in the budesonide maintenance group. The incidence and type of adverse events reported were consistent with those in previous trials and with reports in clinical use. **CONCLUSIONS**: In an open-label trial involving adults with mild asthma, budesonide-formoterol used as needed was superior to albuterol used as needed for the prevention of asthma exacerbations. (Funded by AstraZeneca and the Health Research Council of New Zealand; Novel START Australian New Zealand Clinical Trials Registry number, ACTRN12615000999538.).

5. Palmer SC, Tendal B, Mustafa RA, et al. Sodium-glucose cotransporter protein-2 (SGLT-2) inhibitors and glucagon-like peptide-1 (GLP-1) receptor agonists for type 2 diabetes: systematic review and network meta-analysis of randomised controlled trials. *BMJ.* 2021;372:m4573.

OBJECTIVE: To evaluate sodium-glucose cotransporter-2 (SGLT-2) inhibitors and glucagon-like peptide-1 (GLP-1) receptor agonists in patients with type 2 diabetes at varying cardiovascular and renal risk. DESIGN: Network meta-analysis. **DATA SOURCES:** Medline, Embase, and Cochrane CENTRAL up to 11 August 2020. **ELIGIBILITY CRITERIA FOR SELECTING STUDIES:** Randomised controlled trials comparing SGLT-2 inhibitors or GLP-1 receptor agonists with placebo, standard care, or other glucose lowering treatment in adults with type 2 diabetes with follow up of 24 weeks or longer. Studies were screened independently by two reviewers for eligibility, extracted data, and assessed risk of bias. **MAIN OUTCOME MEASURES:** Frequentist random effects network meta-analysis was carried out and GRADE (grading of recommendations assessment, development, and evaluation) used to assess evidence certainty. Results included estimated absolute effects of treatment per 1000 patients treated for five years for patients at very low risk (no cardiovascular risk factors), low risk (three or more cardiovascular risk factors), moderate risk (cardiovascular disease), high risk (chronic kidney disease), and very high risk (cardiovascular disease and kidney disease). A guideline panel provided oversight of the systematic review. **RESULTS**: 764 trials including 421 346 patients proved eligible. All results refer to the addition of SGLT-2 inhibitors and GLP-1 receptor agonists to existing diabetes treatment. Both classes of drugs lowered all cause mortality, cardiovascular mortality, non-fatal myocardial infarction, and kidney failure (high certainty evidence). Notable differences were found between the two agents: SGLT-2 inhibitors reduced mortality and admission to hospital for heart failure more than GLP-1 receptor agonists, and GLP-1 receptor agonists reduced non-fatal stroke more than SGLT-2 inhibitors (which appeared to have no effect). SGLT-2 inhibitors caused genital infection (high certainty), whereas GLP-1 receptor agonists might cause severe gastrointestinal events (low certainty). Low certainty evidence suggested that SGLT-2 inhibitors and GLP-1 receptor agonists might lower body weight. Little or no evidence was found for the effect of SGLT-2 inhibitors or GLP-1 receptor agonists on limb amputation, blindness, eye disease, neuropathic pain, or health related quality of life. The absolute benefits of these drugs vary substantially across patients from low to very high risk of cardiovascular and renal outcomes (eg, SGLT-2 inhibitors resulted in 5 to 48 fewer deaths in 1000 patients over five years; see interactive decision support tool (https://magicevidence.org/match-it/200820dist/#!/) for all outcomes. **CONCLUSIONS**: In patients with type 2 diabetes, SGLT-2 inhibitors and GLP-1 receptor agonists reduced cardiovascular and renal outcomes, with notable differences in benefits and harms. Absolute benefits are determined by individual risk profiles of patients, with clear implications for clinical practice, as reflected in the BMJ Rapid Recommendations directly informed by this systematic review. SYSTEMATIC REVIEW REGISTRATION: PROSPERO CRD42019153180.

6. Kumar K, Kheiri B, Simpson TF, Osman M, Rahmouni H. Sodium-Glucose Cotransporter-2 Inhibitors in Heart Failure: A Meta-Analysis of Randomized Clinical Trials. *Am J Med.* 2020;133(11):e625-e630.

BACKGROUND: We aimed to conduct this study with the goal of further clarifying the role of sodium-glucose cotransporter-2 inhibitors (SGLT2i) in patients with preexisting heart failure with reduced ejection fraction with or without diabetes and to leverage increased sample size and power to evaluate clinically important secondary safety and efficacy outcomes. **METHODS**: This meta-analysis was completed according to Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. The primary outcome was a composite of cardiovascular death or heart failure hospitalization. Secondary outcomes included the individual components of the primary outcome; major adverse cardiovascular events (defined as a composite of cardiovascular death, myocardial infarction, stroke), any death, myocardial infarction, or stroke, along with adverse events such as volume depletion, acute kidney injury, adverse events leading to drug discontinuation, amputation, and severe hypoglycemia. Other outcomes included the Kansas City Cardiomyopathy Questionnaire (KCCQ) total symptom score and changes in N-terminal pro-hormone BNP (NT-proBNP). Pooled hazard ratios (HRs) and 95% confidence intervals (CIs) for dichotomous variables and weighted difference (MD) and 95% CI for continuous variables. **RESULTS**: Compared with placebo, SGLT2i use was associated with a significant reduction of cardiovascular death or heart failure hospitalization (HR = 0.74; 95% CI = 0.66-0.82; P <0.01), heart failure hospitalization (HR = 0.69; 95% CI = 0.57-0.84; P <0.01), cardiovascular death (HR = 0.79; 95% CI = 0.68-0.92; P <0.01), and any death (HR = 0.80; 95% CI = 0.70-0.92; P <0.01). **CONCLUSIONS**: SGLT2i was associated with a decreased risk of clinically relevant cardiovascular death, heart failure hospitalization, and heart failure symptoms with similar rates of adverse events.

7. U. S. Preventive Services Task Force. Screening for Hepatitis C Virus Infection in Adolescents and Adults: US Preventive Services Task Force Recommendation Statement. *JAMA.* 2020;323(10):970-975.

Hepatitis C virus (HCV) is the most common chronic blood-borne pathogen in the US and a leading cause of complications from chronic liver disease. HCV is associated with more deaths than the top 60 other reportable infectious diseases combined, including HIV. Cases of acute HCV infection have increased approximately 3.8-fold over the last decade because of increasing injection drug use and improved surveillance.To update its 2013 recommendation, the USPSTF commissioned a review of the evidence on screening for HCV infection in adolescents and adults.This recommendation applies to all asymptomatic adults aged 18 to 79 years without known liver disease.The USPSTF concludes with moderate certainty that screening for HCV infection in adults aged 18 to 79 years has substantial net benefit.The USPSTF recommends screening for HCV infection in adults aged 18 to 79 years. (B recommendation)

8. U. S. Preventive Services Task Force. Screening for Unhealthy Drug Use: US Preventive Services Task Force Recommendation Statement. *JAMA.* 2020;323(22):2301-2309.

An estimated 12% of adults 18 years or older and 8% of adolescents aged 12 to 17 years report unhealthy use of prescription or illegal drugs in the US.To update its 2008 recommendation, the USPSTF commissioned reviews of the evidence on screening by asking questions about drug use and interventions for unhealthy drug use in adults and adolescents.This recommendation statement applies to adults 18 years or older, including pregnant and postpartum persons, and adolescents aged 12 to 17 years in primary care settings. This statement does not apply to adolescents or adults who have a currently diagnosed drug use disorder or are currently undergoing or have been referred for drug use treatment. This statement applies to settings and populations for which services for accurate diagnosis, effective treatment, and appropriate care can be offered or referred.In adults, the USPSTF concludes with moderate certainty that screening by asking questions about unhealthy drug use has moderate net benefit when services for accurate diagnosis of unhealthy drug use or drug use disorders, effective treatment, and appropriate care can be offered or referred. In adolescents, because of the lack of evidence, the USPSTF concludes that the benefits and harms of screening for unhealthy drug use are uncertain and that the balance of benefits and harms cannot be determined.The USPSTF recommends screening by asking questions about unhealthy drug use in adults 18 years or older. Screening should be

implemented when services for accurate diagnosis, effective treatment, and appropriate care can be offered or referred. (Screening refers to asking questions about unhealthy drug use, not testing biological specimens.) (B recommendation) The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of screening for unhealthy drug use in adolescents. (I statement)

9. U. S. Preventive Services Task Force. Screening for Lung Cancer: US Preventive Services Task Force Recommendation Statement. *JAMA.* 2021;325(10):962-970.

Lung cancer is the second most common cancer and the leading cause of cancer death in the US. In 2020, an estimated 228 820 persons were diagnosed with lung cancer, and 135 720 persons died of the disease. The most important risk factor for lung cancer is smoking. Increasing age is also a risk factor for lung cancer. Lung cancer has a generally poor prognosis, with an overall 5-year survival rate of 20.5%. However, early-stage lung cancer has a better prognosis and is more amenable to treatment.To update its 2013 recommendation, the US Preventive Services Task Force (USPSTF) commissioned a systematic review on the accuracy of screening for lung cancer with low-dose computed tomography (LDCT) and on the benefits and harms of screening for lung cancer and commissioned a collaborative modeling study to provide information about the optimum age at which to begin and end screening, the optimal screening interval, and the relative benefits and harms of different screening strategies compared with modified versions of multivariate risk prediction models.This recommendation statement applies to adults aged 50 to 80 years who have a 20 pack-year smoking history and currently smoke or have quit within the past 15 years.The USPSTF concludes with moderate certainty that annual screening for lung cancer with LDCT has a moderate net benefit in persons at high risk of lung cancer based on age, total cumulative exposure to tobacco smoke, and years since quitting smoking.The USPSTF recommends annual screening for lung cancer with LDCT in adults aged 50 to 80 years who have a 20 pack-year smoking history and currently smoke or have quit within the past 15 years. Screening should be discontinued once a person has not smoked for 15 years or develops a health problem that substantially limits life expectancy or the ability or willingness to have curative lung surgery. (B recommendation) This recommendation replaces the 2013 USPSTF statement that recommended annual screening for lung cancer with LDCT in adults aged 55 to 80 years who have a 30 pack-year smoking history and currently smoke or have quit within the past 15 years.

10. Kolasinski SL, Neogi T, Hochberg MC, et al. 2019 American College of Rheumatology/Arthritis Foundation Guideline for the Management of Osteoarthritis of the Hand, Hip, and Knee. *Arthritis Rheumatol.* 2020;72(2):220-233.

OBJECTIVE: To develop an evidence-based guideline for the comprehensive management of osteoarthritis (OA) as a collaboration between the American College of Rheumatology (ACR) and the Arthritis Foundation, updating the 2012 ACR recommendations for the management of hand, hip, and knee OA. **METHODS**: We identified clinically relevant population, intervention, comparator, outcomes questions and critical outcomes in OA. A Literature Review Team performed a systematic literature review to summarize evidence supporting the benefits and harms of available educational, behavioral, psychosocial, physical, mind-body, and pharmacologic therapies for OA. Grading of Recommendations Assessment, Development and Evaluation methodology was used to rate the quality of the evidence. A Voting Panel, including rheumatologists, an internist, physical and occupational therapists, and patients, achieved consensus on the recommendations. **RESULTS**: Based on the available evidence, either strong or conditional recommendations were made for or against the approaches evaluated. Strong recommendations were made for exercise, weight loss in patients with knee and/or hip OA who are overweight or obese, self-efficacy and self-management programs, tai chi, cane use, hand orthoses for first carpometacarpal (CMC) joint OA, tibiofemoral bracing for tibiofemoral knee OA, topical nonsteroidal antiinflammatory drugs (NSAIDs) for knee OA, oral NSAIDs, and intraarticular glucocorticoid injections for knee OA. Conditional recommendations were made for balance exercises, yoga, cognitive behavioral therapy, kinesiotaping for first CMC OA, orthoses for hand joints other than the first CMC

joint, patellofemoral bracing for patellofemoral knee OA, acupuncture, thermal modalities, radiofrequency ablation for knee OA, topical NSAIDs, intraarticular steroid injections and chondroitin sulfate for hand OA, topical capsaicin for knee OA, acetaminophen, duloxetine, and tramadol. **CONCLUSION**: This guideline provides direction for clinicians and patients making treatment decisions for the management of OA. Clinicians and patients should engage in shared decision-making that accounts for patients' values, preferences, and comorbidities. These recommendations should not be used to limit or deny access to therapies.

11. Kato H, Jena AB, Tsugawa Y. Patient mortality after surgery on the surgeon's birthday: observational study. *BMJ.* 2020;371:m4381.

Objective To determine whether patient mortality after surgery differs between surgeries performed on surgeons' birthdays compared with other days of the year.**Design** Retrospective observational study.Setting US acute care and critical access hospitals.**Participants** 100% fee-for-service Medicare beneficiaries aged 65 to 99 years who underwent one of 17 common emergency surgical procedures in 2011-14.**Main outcome measure**s Patient postoperative 30 day mortality, defined as death within 30 days after surgery, with adjustment for patient characteristics and surgeon fixed effects.**Results** 980 876 procedures performed by 47 489 surgeons were analyzed. 2064 (0.2%) of the procedures were performed on surgeons' birthdays. Patient characteristics, including severity of illness, were similar between patients who underwent surgery on a surgeon's birthday and those who underwent surgery on other days. The overall unadjusted 30 day mortality on the operating surgeon's birthday was 7.0% (145/2064) and that on other days was 5.6% (54 824/978 812). After adjusting for patient characteristics and surgeon fixed effects (effectively comparing outcomes of patients treated by the same surgeon on different days), patients who underwent surgery on a surgeon's birthday exhibited higher mortality compared with patients who underwent surgery on other days (adjusted mortality rate, 6.9% v 5.6%; adjusted difference 1.3%, 95% confidence interval 0.1% to 2.5%; P=0.03). Event study analysis of patient mortality by day of surgery relative to a surgeon's birthday found similar results.**Conclusions** Among Medicare beneficiaries who underwent common emergency surgeries, those who received surgery on the surgeon's birthday experienced higher mortality compared with patients who underwent surgery on other days. These findings suggest that surgeons might be distracted by life events that are not directly related to work.

12. Delicano RA, Hammar U, Egenvall A, et al. The shared risk of diabetes between dog and cat owners and their pets: register based cohort study. *BMJ.* 2020;371:m4337.

Objective To investigate whether dog and cat owners and their pets share a risk of developing diabetes.**Design** Cohort study.Setting Register based longitudinal study, Sweden.**Participants** 208 980 owner-dog pairs and 123 566 owner-cat pairs identified during a baseline assessment period (1 January 2004 to 31 December 2006).**Main outcome measures** Type 2 diabetes events in dog and cat owners and diabetes events in their pets, including date of diagnosis during the follow-up period (1 January 2007 to 31 December 2012). Owners with type 2 diabetes were identified by combining information from the National Patient Register, the Cause of Death Register, and the Swedish Prescribed Drug Register. Information on diabetes in the pets was extracted from veterinary care insurance data. Multi-state models were used to assess the hazard ratios with 95% confidence intervals and to adjust for possible shared risk factors, including personal and socioeconomic circumstances.**Results** The incidence of type 2 diabetes during follow-up was 7.7 cases per 1000 person years at risk in dog owners and 7.9 cases per 1000 person years at risk in cat owners. The incidence of diabetes in the pets was 1.3 cases per 1000 dog years at risk and 2.2 cases per 1000 cat years at risk. The crude hazard ratio for type 2 diabetes in owners of a dog with diabetes compared with owners of a dog without diabetes was 1.38 (95% confidence interval 1.10 to 1.74), with a multivariable adjusted hazard ratio of 1.32 (1.04 to 1.68). Having an owner with type 2 diabetes was associated with an increased hazard of diabetes in the dog (crude hazard ratio 1.28, 1.01 to 1.63), which was attenuated after adjusting for owner's age, with the confidence interval crossing the null (1.11, 0.87 to 1.42). No association was found between type 2

diabetes in cat owners and diabetes in their cats (crude hazard ratio 0.99, 0.74 to 1.34, and 1.00, 0.78 to 1.28, respectively).**Conclusions** Data indicated that owners of a dog with diabetes were more likely to develop type 2 diabetes during follow-up than owners of a dog without diabetes. It is possible that dogs with diabetes could serve as a sentinel for shared diabetogenic health behaviours and environmental exposures.