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This series is coordinated by Sumi Sexton, MD, Associate Deputy Editor.

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Getting an Infant to Sleep: Graduated Extinction and Sleep Fading Are Effective

Clinical Question

Which method of getting an infant to sleep causes less stress in infants and parents?

Bottom Line

This study found that graduated extinction (increasing intervals between comforting the infant) and sleep fading (putting the child to bed progressively later until the parent finds the sweet spot) are both effective at decreasing sleep latency and the number of awakenings and decreasing maternal and infant stress. Neither approach affected the likelihood of secure child-parent attachment. (Level of Evidence = 1b-)

Synopsis

This study included 43 infants six to 16 months of age (63% girls) and their parents who were initially assigned to one of three methods to get the infant to sleep. After a one-week observation period to collect baseline data, the families were then randomized, using concealed allocation, into one of three groups: (1) graduated extinction, in which the parent puts the child in bed while still awake and waits before checking on the child, initially for two minutes, then four minutes, and then six minutes (in the same night); (2) sleep fading, in which the children were

put to bed 15 minutes later than normal; if still awake 15 minutes later, they were put to bed 30 minutes later the following night; and (3) control, in which parents received only general information about infant sleep. Both interventions, compared with the control group, resulted in decreased time to sleep and number of awakenings. Maternal stress, measured by a survey questionnaire, moderately decreased over the first month of the intervention. Infant stress, measured by salivary cortisol levels, was slightly lower in the infants in the treatment groups. The security of child-parent attachment was not different among the treatment groups.

Study design: Randomized controlled trial (single-blinded)

Funding source: Foundation

Allocation: Concealed

Setting: Outpatient (primary care)

Reference: Gradisar M, Jackson K, Spurrer NJ, et al. Behavioral interventions for infant sleep problems: a randomized controlled trial. *Pediatrics*. 2016;137(6):e20151486.

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Hypertensive Urgency Not Really an Urgent Problem

Clinical Question

How urgently should we aim to control hypertensive urgency?

Bottom Line

It seems that rapid treatment of patients with hypertensive urgency is unsuccessful and unnecessary. In this study of almost 60,000 patients, 80% did not have controlled blood pressure (less than 140/90 mm Hg) after one month of treatment, including patients who were hospitalized. On the other hand, the risk of a major cardiovascular event was also low: one in 1,000 over the next seven days. (Level of Evidence = 2b) ▶

Synopsis

These authors identified all patients in a single health care system (N = 58,535) who presented to an office or emergency department with a blood pressure of at least 180 mm Hg systolic and/or 110 mm Hg diastolic. Most of the patients in the analysis just met these minimums; only 10.2% had a systolic pressure of 200 mm Hg or higher and 5.7% had a diastolic pressure of 120 mm Hg or higher. The mean age of the patients was 63.1 years, 57.7% were women, and 76% were white. A small proportion (0.7%) were hospitalized for blood pressure management; however, one-half of these patients had pressures of at least 200 mm Hg systolic or at least 120 mm Hg diastolic.

Regardless of treatment or place of treatment, the likelihood of blood pressure control and the likelihood of adverse effects were low. At one month, less than 15% of patients had controlled blood pressure; at six months, less than 40% had controlled blood pressure. Even so, the likelihood of a major adverse cardiovascular event was low in the next seven days (0.1%), at eight to 30 days (0.2%), or within six months (0.9%). Hospitalization was not associated with a decrease in the risk of adverse outcomes.

Study design: Cohort (retrospective)

Funding source: Self-funded or unfunded

Setting: Outpatient (any)

Reference: Patel KK, Young L, Howell EH, et al. *Characteristics and outcomes of patients presenting with hypertensive urgency in the office setting.* JAMA Intern Med. 2016;176(7):981-988.

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Opioid Analgesia Hard to Tolerate and Not Effective for Chronic Low Back Pain

Clinical Question

Is opioid analgesic treatment effective in patients with low back pain?

Bottom Line

Effective pain control in patients with low back pain is still elusive. Approximately one-

half of all patients with low back pain who take an opioid analgesic will stop treatment because of ineffectiveness or adverse effects. Patients staying the course will experience, on average, a small decrease in pain relative to patients who take placebo (similar to the benefit from nonsteroidal anti-inflammatory drugs) and will not have improved function. (Level of Evidence = 1a)

Synopsis

To identify randomized controlled trials that enrolled patients with nonspecific low back pain, published in any language, and evaluated an opioid analgesic, these researchers searched five databases including Cochrane Central, as well as reference lists of identified studies. Two reviewers independently selected studies for inclusion, and two reviewers independently extracted the data and evaluated study quality. They retrieved 20 studies with an enrollment of 7,295 patients; all but one study enrolled patients with chronic low back pain. The length of studies was 12 weeks or less. Most of the studies were of moderate to high quality.

Based on 13 studies with moderate-quality evidence, opioids reduced pain in the short term, although the mean difference in pain scores was minimal (mean difference = 10.1 on a scale of 0 to 100). This effect size is similar to that for nonsteroidal anti-inflammatory drugs vs. placebo for low back pain in a prior Cochrane review. Overall, opioid treatment did not produce clinically important pain relief compared with placebo (i.e., a mean difference in pain scores of at least 20), even with doses up to 240 mg of morphine per day. One-half of the studies had more than 50% of the enrolled patients drop out because of adverse effects or lack of effectiveness. The patients who dropped out were not considered in the estimates of treatment benefit, meaning that the actual overall likelihood of benefit is even smaller in clinical practice. Low-quality studies of disability did not show a reduction in disability using the Oswestry Disability Index or the Roland Morris Disability Questionnaire. Study results were homogeneous, but there was some evidence of publication bias.

Study design: Meta-analysis (randomized controlled trial) ▶

Funding source: Government

Setting: Various (meta-analysis)

Reference: Abdel Shaheed C, Maher CG, Williams KA, Day R, McLachlan AJ. Efficacy, tolerability, and dose-dependent effects of opioid analgesics for low back pain: a systematic review and meta-analysis. *JAMA Intern Med.* 2016;176(7):958-968.

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Venous Samples Are a Less-Painful Starting Point for the Evaluation of Patients with Acute Exacerbation of COPD

Clinical Question

In patients with an acute exacerbation of chronic obstructive pulmonary disease (COPD), is a venous blood sample as useful as an arterial sample?

Bottom Line

There is very good agreement between arterial and venous measurements of pH and bicarbonate, and fairly good agreement at higher levels between arterial and peripheral measures of oxygen saturation. These authors suggest an algorithm for patients with acute exacerbation of COPD that includes an arterial blood gas analysis only if the patient's initial pulse oximetry is less than 80% or if the venous pH is less than 7.35, which would obviate the need for two-thirds of arterial blood gasses. A more conservative approach would also include an arterial blood gas analysis for patients with oxygen saturation between 80% and 84%, where there was also some misclassification. (Level of Evidence = 1b)

Synopsis

Arterial blood draws are painful. These British researchers asked, sensibly, whether

we could get the same information from a venous blood sample. Specifically, can it identify patients with hypercapnia and respiratory acidosis who are at risk of respiratory failure and worse outcomes? This study included 234 patients (mean age of 71 years) hospitalized for an acute exacerbation of COPD. Patients had arterial and venous samples drawn, and the pain of each procedure was measured using a 10-point visual analog scale. The authors then evaluated the agreement between arterial and venous samples for pH, bicarbonate, and CO₂, and between arterial oxygen saturation and oxygen saturation by pulse oximetry.

Overall, agreement was very good between arterial and venous measures of pH (mean difference = 0.03; 95% confidence interval [CI], 0.02 to 0.04) and bicarbonate (mean difference = -0.04 mEq per L; 95% CI, -0.22 to 0.15). The venous CO₂ consistently overestimated pCO₂ (mean difference of arterial minus venous = -0.75 kPa; 95% CI, -0.89 to -0.61; -5.6 torr; 95% CI, -6.7 to -4.6). Agreement regarding oxygen saturation was good for patients with a pulse oximetry greater than 80%, but not if it was lower. Overall, the venous pH was 90% sensitive and 96% specific compared with arterial pH, correctly classifying 87% of patients. The median pain score was significantly higher for arterial samples (a score of 4 vs. 1 on a scale of 10; *P* < .001), and arterial samples were more likely to require a second stick.

Study design: Cross-sectional

Funding source: Government

Setting: Inpatient (any location)

Reference: McKeever TM, Hearson G, Housley G, et al. Using venous blood gas analysis in the assessment of COPD exacerbations: a prospective cohort study. *Thorax.* 2016;71(3):210-215.

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