

Main Results Of 1740 eligible participants, 602 patients were able to fully extend their elbow; 17 of these patients had a fracture. Two adult patients with olecranon fractures needed a change in treatment. In the 1138 patients without full elbow extension, 521 fractures were identified. Overall, the test had sensitivity of 96.8% (95% confidence interval 95.0 to 98.2) and specificity of 48.5% (95% CI, 45.6 to 51.4). Full elbow extension had a negative predictive value for fracture of 98.4% (96.3 to 99.5) in adults and 95.8% (92.6 to 97.8) in children. Negative likelihood ratios were 0.03 (0.01 to 0.08) in adults and 0.11 (0.06 to 0.19) in children.

Conclusions The elbow extension test can be used in routine practice to inform clinical decision making. Patients who cannot fully extend their elbow after injury should be referred for radiography, because they have a nearly 50% chance of fracture. For those able to fully extend their elbow, radiography can be deferred if the practitioner is confident that an olecranon fracture (for adults) or a supracondylar fracture (for children) is not present. Patients who do not undergo radiography should return if symptoms have not resolved within 7 to 10 days.

Commentary Clinical decision rules may help physicians practice cost-effective medicine, but unless the rules perform to an acceptable standard, the best we can hope for as clinicians are validated diagnostic tests. This is exactly how the “elbow extension test” should be viewed. Using clinically sound methods, Appleboam et al evaluate the performance of the test in a large number of children across a wide age range, representative of the typical practice in which such a test might be useful. For most physicians, though, including the authors, the sensitivity of 94.6% in children is not high enough to feel comfortable that a fracture has been “ruled out,” especially when considering the potential adverse outcomes of a missed supracondylar humerus fracture; by comparison, the Ottawa Ankle rules carry a pooled sensitivity of 98.5% in children.¹ On the other hand, the clinician’s toolbox now contains a validated clinical test for the pediatric elbow exam. Once other tests are developed and validated, the combination of multiple tests might result in an acceptable sensitivity to feel comfortable forgoing imaging. Alternatively, the combination of validated clinical and radiographic findings, such as the posterior fat pad sign,² might be useful in determining the likelihood of an occult fracture, thus avoiding overtreatment and unnecessary advanced imaging. For now, the elbow extension test should be used as a tool, not a rule.

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Universal primer polymerase chain reaction can diagnose neonatal sepsis when performed before starting antibiotics

Dutta S, Narang A, Chakraborty A, Ray P. Diagnosis of neonatal sepsis using universal primer polymerase chain reaction before and after starting antibiotic drug therapy. *Arch Pediatr Adolesc Med* 2009;163:6-11.

Question Among neonates with suspected sepsis, how accurate is a universal primer 16S rRNA gene polymerase chain reaction (PCR) for diagnosis of blood culture–positive neonatal sepsis before and after starting antibiotic drug therapy?

Design Prospective study of diagnostic tests.

Setting Level III neonatal intensive care unit.

Participants Neonates with a fresh episode of clinically suspected sepsis were enrolled; those with major malformations, life expectancy less than 12 hours, or contaminated blood cultures were excluded.

Intervention Before starting antibiotic drug therapy, PCR (0 hour), blood culture, and sepsis screening (complete blood cell counts, micro-erythrocyte sedimentation rate, and C-reactive protein level) were performed. The PCR was repeated 12, 24, and 48 hours after starting antibiotic drug therapy.

Outcomes The primary outcomes were the sensitivity and specificity of 0-hour PCR for diagnosing blood culture-positive sepsis, and the secondary outcome was the proportion of 0-hour PCR-positive patients who remained positive after antibiotic drug therapy.

Main Results Of 306 patients evaluated, 242 were included (mean [SD] gestation, 32.2 [3.1] weeks; and mean [SD] birth weight, 1529.2 [597.2] g). Blood culture was positive in 52 patients and 0-hour PCR in 57. The sensitivity, specificity, positive and negative predictive values, and positive and negative likelihood ratios of PCR were 96.2%, 96.3%, 87.7%, 98.8%, 26.1, and 0.04, respectively. Two patients were blood culture positive but 0-hour PCR negative, whereas 7 were 0-hour PCR positive but blood culture negative. Of the patients in the 0-hour PCR-positive group, 7 remained positive at 12 hours and none at 24 and 48 hours after starting antibiotic drug therapy. In patients in the 0-hour PCR-positive group, no predictors of positive 12-hour PCR were identified.

Conclusions Universal primer PCR can accurately diagnose neonatal sepsis before, but not after, antibiotic drugs are given.

Commentary Blood culture remains an imperfect test for prompt and accurate diagnosis of neonatal sepsis. Universal PCR does not depend on bacterial viability, so the authors hypothesized it could identify sepsis in patients exposed to antibiotics with killed bacterial fragments present, but in whom blood culture results could be false negative. The study

reports a positive likelihood ratio of 26.1 and a negative likelihood ratio of 0.04 for predicting and excluding sepsis, respectively, with universal PCR used in initial evaluation for sepsis in neonates not exposed to antibiotics. Both values are well beyond the commonly identified thresholds of 10 for ruling in and 0.1 for ruling out disease. Accuracy of universal PCR is greater than that of the commonly used diagnostic adjunct, C-reactive protein.^{1,2} Still, the test did not identify all cases of culture-positive sepsis. Additionally, universal PCR was negative after antibiotic administration in nearly all neonates with sepsis. With the results of this study, universal PCR offers some clinical benefit over currently available tests that guide decision-making during initial sepsis evaluation in the neonatal intensive care unit. However, universal PCR cannot inform decision-making when sepsis evaluation is compromised by antibiotic exposure, arguably the clinical situation for which a discriminating test would be more useful.

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E-mail intervention decreases online health risk references among adolescents

Moreno MA, VanderStoep A, Parks MR, Zimmerman FJ, Kurth A, Christakis DA. Reducing at-risk adolescents' display of risk behavior on a social networking web site: A randomized controlled pilot intervention trial. *Arch Pediatr Adolesc Med* 2009;163:35-41.

Question Among at-risk adolescents who display references to sex and substance abuse on internet social networking sites (SNSs), will an online intervention reduce these references?

Design Randomized controlled intervention trial.

Setting www.MySpace.com

Participants A total of 190 self-described 18- to 20-year-olds with public MySpace profiles who met predefined criteria for being at-risk.

Intervention Single e-mail from self-identified physician.

Outcomes Web profiles were evaluated for references to sex and substance use and for security settings before and 3 months after the intervention.

Main Results Of 190 subjects, 58.4% were male. At baseline, 54.2% of subjects referenced sex and 85.3% referenced substance use on their social networking site profiles. The proportion of profiles in which references decreased to 0 was 13.7% in the intervention group versus 5.3% in the control

group for sex ($P < .05$, number needed to treat = 12) and 26.0% versus 22% for substance use ($P < .61$). The proportion of profiles set to "private" at follow-up was 10.5% in the intervention group and 7.4% in the control group ($P < .45$). The proportion of profiles in which any of these 3 protective changes were made was 42.1% in the intervention group and 29.5% in the control group ($P < .07$).

Conclusions A brief e-mail intervention shows promise in reducing sexual references in the online SNS profiles of at-risk adolescents.

Commentary Although media exposure has long been investigated as a health influence, interactive media present opportunities to measure and intervene on risk behaviors. Internet SNSs have become an increasingly important venue for identity exploration and self-presentation among youth. This study investigated effects of online warning from a physician on public displays of sex or substance use among high-risk 18- to 20-year-olds. Of 1340 profiles, 109 displayed ≥ 3 references to sex or substances, including ≥ 1 reference each to tobacco and alcohol use. Half were randomly selected to receive a single cautionary e-mail from a physician. After 3 months, compared with control subjects, adjusted odds of having removed all references to risk behaviors in the e-mail group were 4.2 times higher for sex and 1.9 times higher for either removing risk references or making the profile private. For youth, individualized concerned communication from an online health authority appears to encourage reduction in online displays of health risks.

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Pulse oximetry before discharge from the nursery can increase detection of serious congenital heart disease

de-Wahl Granelli A, Wennergren M, Sandberg K, Mellander M, Bejlum C, Inganas L, et al. Impact of pulse oximetry screening on the detection of duct dependent congenital heart disease: A Swedish prospective screening study in 39 821 newborns. *BMJ* 2009;338:a3037.

Question Among newborns, what is the accuracy of pulse oximetry in screening for early detection of life-threatening congenital heart disease?

Design Prospective screening study.

Setting All 5 maternity units in West Götaland, Sweden, and the supraregional referral center for neonatal heart surgery.

Participants A total of 39 821 screened babies born between July 2004 and March 2007. Total duct-dependent circulation cohorts: West Götaland $n = 60$, other regions $n = 100$.

Intervention Pulse oximetry before discharge from newborn nurseries in West Götaland.