were interviewed via a think aloud protocol study. Six cases were constructed and video recorded as prompts to spur the clinicians to think aloud and describe their approach to the cases. Cases were designed to be slightly suggestive for pulmonary embolism or deep vein thrombosis, since these conditions are associated with CDRs. Using a constructivist grounded theory analysis, three investigators independently reviewed the transcripts from the interviews, meeting regularly to discuss emergent themes and subthemes until sufficiency was reached. Disagreements about themes were resolved by discussion and consensus. **Results:** Our analysis suggests that physicians engage in an iterative process when they are faced with undifferentiated chest pain and leg pain cases. After generating an original differential diagnosis, EPs engage in an iterative diagnostic process. They flip between hypothesis-driven data collection (e.g. history, physical exam, tests) and analysis of this data, and use this process to weigh probabilities of various diagnoses. EPs only apply CDRs once they are sufficiently suspicious of a diagnosis requiring guidance from a CDR and when they experience diagnostic uncertainty or wish to bolster their decision with evidence. **Conclusion:** EP cognition around diagnosis is a dynamic and iterative process, and may only peripherally integrate relevant CDRs if a threshold level of suspicion is met. Our findings may be useful for improving knowledge translation of CDRs and prevent diagnostic error.
Keywords: clinical decision making, clinical decision rules, clinical reasoning

P018

Blocked practice outperforms random practice for learning resuscitative transesophageal echocardiography: a randomized controlled trial

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Introduction: Resuscitative clinician-performed transesophageal echocardiography (TEE) is a relatively new ultrasound application, however the optimal teaching methods have not been determined. Previous studies have demonstrated that random practice (RP), which increases the variability of training, may improve learning of procedural skills compared with blocked practice (BP). We compared RP and BP for teaching a resuscitative TEE protocol to emergency medicine residents using a simulator. **Methods:** We recruited emergency medicine residents with no prior TEE experience from a university-affiliated hospital. Participants completed a questionnaire and baseline skill assessment on a simulator, then were randomized to one of two groups. The BP group completed 10 repetitions of a fixed 5-view TEE sequence with instructor feedback, while the RP group completed 10 different random 5-view TEE sequences with feedback. Participants completed a simulation-based performance assessment immediately, and a transfer test consisting of a simulated patient encounter 1-2 weeks after training. Ultrasound images and transducer motion metrics were captured by the simulator for blinded analysis. Our primary outcome was the percentage of successful views on the transfer test, and secondary outcomes included participants confidence level, image quality, percentage of correct diagnoses, and efficiency of movement. We compared all scores using two-tailed, independent samples t-tests. **Results:** 22 participants completed the study (11 in the RP group, 11 in the BP group). There were no significant baseline differences between the groups. The BP group had a higher rate of successful views compared with the RP group on the transfer test (92.7% vs. 80.9%, $p = 0.02$). While not statistically significant, the BP group had higher image quality on a 5-point scale (3.2 vs. 2.9, $p = 0.09$), and fewer probe accelerations (297 vs. 403, $p = 0.09$). The groups did not differ in rate of correct diagnoses (77.3% vs. 72.7%, $p = 0.73$), confidence level on a 10-point scale (6.2 vs. 6.2, $p = 1.0$), or scan time (173 vs. 199 seconds, $p = 0.28$). **Conclusion:** Emergency medicine residents randomized to BP had a higher success rate on a transfer test, compared to RP when learning resuscitative TEE using a simulator. We consider this pilot work that can inform future studies in both simulation and real clinical settings.
Keywords: transesophageal echocardiography, emergency ultrasound, medical education

P019

The path of least resistance: how computerized provider order entry can lead to (and reduce) wasteful practices

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Introduction: Background Computerized provider order entry (CPOE) is rapidly becoming the mainstay in clinical care and has the potential to improve provider efficiency and accuracy. However, this hinges on careful planning and implementation. Poorly planned CPOE order sets can lead to undetected errors and waste. In our emergency department (ED), lactate dehydrogenase (LDH) was bundled into various blood work panels, but had little clinical value. Aim Statement This quality improvement initiative aimed to reduce unnecessary LDH testing in the ED. **Methods:** Methods A group of ED physicians reviewed CPOE blood work panels and uncoupled LDH in conditions where it was deemed not to provide any clinically useful information. We measured the daily number of LDH tests performed before and after its removal. We tracked the frequency of other serum tests as controls. We also analyzed the number of add-on LDH (i.e. to add LDH to samples already sent to the lab) as a balancing measure, since this can disrupt work flow and delay care. **Results:** Results Through this intervention, we reduced the number of LDH tests performed by 69%, from an average of 75.1 tests per day to 23.2 ($p < 0.0005$). The baseline controls did not differ after the intervention (e.g. a complete blood count was performed 197.7 and 196.1 times per day pre- and post-intervention, respectively [$p = 0.7663$]). There was less than 1 add-on LDH per day on average. This translates to a cost savings of $33,340.65 at our institution. **Conclusion:** Conclusions CPOE care templates can be powerful in shaping behaviours and reducing variability. However, close oversight of these panels is necessary to prevent errors and waste.
Keywords: quality improvement and patient safety, computerized provider order entry, order sets

P020

Post-return of spontaneous circulation care and outcomes a single centre experience

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Introduction: Out of hospital cardiac arrest (OHCA) continues to carry a very high mortality rate, with approximately 10% surviving to hospital discharge. In 2015, the American Heart Association release updated guidelines dictating best practices in post-return of spontaneous circulation (ROSC) care, advocating for more liberal utilization of emergent coronary angiography. We sought to determine if the post-ROSC care at our centre during our study period adhered to the previously published (2010) guidelines. **Methods:** We performed a retrospective analysis (Sept. 2011 - June 2015) of the Resuscitation Outcomes Consortium (ROC) database, which contains pre-hospital, hospital and outcomes data on adult, EMS-treated, non-traumatic OHCA. Patients under 18 years, with missing age data or with obvious non-cardiac causes of arrest were

https://doi.org/10.1017/cem.2018.216 Published online by Cambridge University Press