

## LO24

**The checklist for head injury management evaluation study (CHIMES): a cQI initiative to reduce imaging utilization for head injuries in the emergency department**

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**Introduction:** Over 1 million patients with head injuries (HIs) are seen every year at emergency departments (EDs) in North America, with over 90% being minor HIs. Over-utilization of computed tomography (CT) scans in these patients results in unnecessary exposure to radiation and increases health-care resource utilization. Using recommendations from the Choosing Wisely Campaign (CWC) and quality improvement (QI) methodology, we developed a local initiative targeting this issue. Our aim was to reduce the CT scan rate for patients presenting with HIs by 10% over a 6-month period at two academic EDs. This was considered both achievable and meaningful by our stakeholders. **Methods:** Baseline CT scan rates for patients with HIs were determined through a 10-month retrospective cohort review. We used stakeholder engagement and provider surveys to develop our driver diagram and PDSA cycles, which included: 1) Assessing and improving provider knowledge about the CWC recommendations; 2) Testing, refining and implementing a modified Canadian CT Head Rule checklist in the ED; 3) Developing and giving patients CWC-themed handouts pertaining to HI best practice; 4) Bimonthly reporting of CT scan rates to providers. Our primary outcome measure was the number of CT scans performed for patients with HIs. Process measures included the number of checklists completed and ED length of stay (LOS). Our balance measure was return ED visits within 72 hours. **Results:** Baseline rate of CT scans prior to our interventions was 47.9%. Our QI initiative resulted in a significant shift in the run chart of the weekly CT scan rates, associated with the second PDSA cycle cluster. We observed a 16% relative decrease in CT scans at 3 months (47.9% to 40.5%,  $P=0.005$ ) and 10.4% at 8 months (47.9% to 43.1%,  $P=0.02$ ). Non-sustained trends and shifts were seen in the run chart of median ED LOS for HI patients, but overall before-and-after median times were not significantly different (237min to 225min,  $P=0.18$ ). 33% of total checklists were completed. 72-hr return visits did not change during the 8-month study period (4.0% to 4.16%,  $P=0.85$ ). **Conclusion:** Our local QI initiative was successful in decreasing CT rates for patients presenting with a HI. The decrease in effect at 8 months suggests the need for continued feedback and reminders to ensure long-term sustainability. Other centres could use similar QI methods, as well as the materials we developed, to achieve similar results of improved evidence-based utilization of diagnostic tests.

**Keywords:** quality improvement and patient safety, Choosing Wisely campaign, emergency department

## LO25

**The development and implementation of a standardized emergency department handover tool**

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**Introduction:** There is a high risk for communication breakdown, discontinuity of clinical care, and medical errors during ED physician handover. Locally, there is no standardized handover process to ensure adequate communication of critical information. Our aim was to use a

locally developed handover tool to increase frequency of adequate physician handover during overnight shift change by 50% in 4 months. **Methods:** Using published best practices, local observational data, and stakeholder input, we determined critical components of ED handovers. We developed a structured communication tool for two unique populations in our ED: ED-VITAL for patients receiving active ED care; ED-VSA for patients who are admitted/referred. Strategies used to implement the tool included: engagement of staff physicians to introduce & modify the tool; formal education and training to ED residents; and provision of cognitive aids. A QI coordinator conducted direct observations of handovers using convenience sampling. We provided feedback to staff and resident physicians, and used their input to continuously modify the tool. The main outcome measure was adequate patient handover, defined as verbal communication of 50% of critical handover components, or documentation of key information on an electronic note. Process measures included tool utilization characteristics. Balance measures included time metrics such as handover duration. We present run charts and qualitative statistics. **Results:** We assessed 368 individual patient handovers (93 pre- & 275 post-implementation). The median proportion of patients in active ED care who were verbally handed over increased from 75% to 100%. The median proportion of adequate handovers improved from 50% to 72%. The time to deliver handover increased by 13 seconds per patient. Qualitative feedback from end users was positive overall, particularly for communication quality and resident educational value. **Conclusion:** Use of a standardized handover tool improved both verbal and documented communication during shift change. A customized approach, sensitive to local context, was important to successful implementation. Residents play a large role in handovers; strategies to improve handover processes that emphasize medical education appear to enhance success. Future PDSA cycles will focus on interventions to further enhance the utilization of the tool, and to measure direct impact on clinical outcomes.

**Keywords:** quality improvement and patient safety, handovers

## LO26

**Reduction of CT scan use in emergency department patients with recurrent renal colic**

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**Introduction:** CT scan is the most common imaging modality for suspected renal colic and is used for about 80% of presentations. Cumulative ionizing radiation exposure from repeat CT scans increases long-term cancer risk. Despite a 10-fold increase in CT use to detect kidney stones in the ED in just over a decade, there has been no increase in the proportion of kidney stones diagnosed, number of significant alternate diagnoses or admissions to hospital. Choosing Wisely recommends to avoid ordering CT of the abdomen/pelvis in otherwise healthy patients < age 50 presenting to the ED with known history of kidney stones and with symptoms consistent with uncomplicated renal colic. The aim is that >90% of patients < age 50 with a history of renal stones arriving in Sunnybrook ED with symptoms consistent with renal colic will be managed without a CT abdomen/pelvis. **Methods:** Emergency physicians were engaged in the process at various stages, including a brainstorming session to perform a root cause analysis. A Driver diagram was created to generate change ideas. Outcome Measure Number of CT scans ordered for target population (Results: Results to date indicate that there is a non-sustained decrease in the number of CT scans performed on ED patients < age 50 with recurrent renal colic. The STONE score was infrequently used, thus making it