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PSLL MONTHLY NEWSLETTER

Patient Safety Learning Lab

Division of General Internal Medicine | Brigham and Women's Hospital



About Our Diagnostic Safety Interventions

The Patient Safety Learning Lab, or “PSLL,” at Brigham and Women’s Hospital seeks to reduce preventable harm and improve the safety of diagnosis and therapy in the hospital setting.

We are currently testing some of our interventions such as our Diagnostic Time-out card and Diagnostic Safety column integrated within our Quality & Safety Dashboard.

OVERVIEW

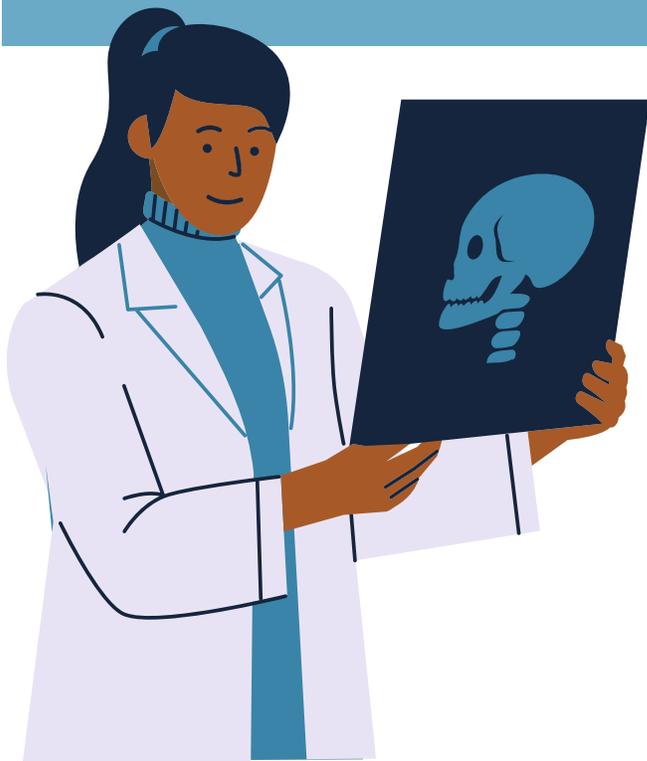
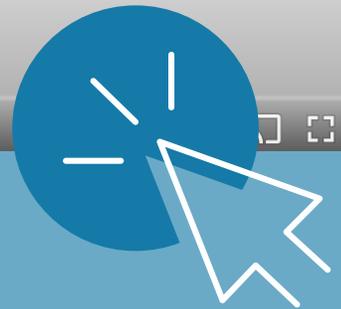
- About Diagnostic Safety
- Case of the Month
- Unpacking Cognitive Biases
- Improving Quality & Safety with the Diagnostic Safety Interventions

Video: Diagnostic Safety Overview

Diagnostic Errors

Missed, Incorrect, or Delayed Diagnoses

▶ ⏪ 🔊 0:05 / 3:10



Click to watch our video outlining diagnostic errors and what we're doing to improve diagnostic safety!

Case of the Month

Case summary:

A 78-year-old male with a history of recurrent gallstone pancreatitis complicated by pancreatic insufficiency and diabetes mellitus (type 3c or pancreatogenic diabetes), vitamin D deficiency (on chronic calcium/vitamin D supplementation), mesenteric fibrosis and biliary strictures, s/p biliary stent placement and cholecystectomy, CKD, anemia of chronic disease, and DVT/PE (on Eliquis), and a recent admission for recurrent primary choledocholithiasis and stent exchange, presented with confusion, worsening abdominal pain, and anorexia. Review of systems was notable for constipation and fatigue. Medications: daily iron, calcium+vitamin D, Creon, escitalopram, mirtazapine, tamsulosin, esomeprazole, and aspart+degludec insulin.

Upon admission, labs were significant for normocytic anemia, alkaline phosphatase 1,056; GGT 491; lipase 93; Cr 2.82; BUN 57; Calcium 16.8; IOCA 2.04; UA with >180 RBCs. PTH was 15 (borderline low). He was diagnosed with severe hypercalcemia of unclear etiology complicated by AKI on CKD. Initial diagnostic considerations for the primary working diagnosis of hypercalcemia included hypercalcemia of malignancy, multiple myeloma, and granulomatous disease. CT chest was unremarkable for malignancy or acute abnormalities. Heme-onc was consulted: SPEP/UPEP, flow cytometry, bone marrow biopsy, and skeletal survey were recommended and resulted normal. Calcium/Vitamin D supplementation was held.

Over the course of 3 days, he received IV hydration with 7L of normal saline as well as three doses of calcitonin. His calcium normalized and symptoms resolved. Given consistent calcium control without further intervention and an unrevealing workup for other potential etiologies, he was discharged. Notably, on hospital day #2, the patient's wife reported to pharmacy upon medical reconciliation that the Vitamin D dose was increased to 2 tablets daily as an outpatient, however unclear if primary team was aware of pharmacist med rec report.

Additionally, the patient had an elevated 25-OH Vit D level of 195 (ref range 20-80) which was ordered during a PCP visit for hypertension one month prior to current admission. This level was not commented in the admission H&P or any subsequent progress notes during this hospitalization. 25-OH reported during this admission was also elevated at 177, though this not was acknowledged either. A 1,25OH Vit D level was pending at the time of discharge.

Description of diagnostic error: Sub-optimal weighing of hypervitaminosis D as an etiology of hypercalcemia

Outcomes & Events:

- The patient underwent an extensive workup that required prolonged hospitalization.
- Calcium normalized after discontinuing vitamin D + calcium supplementation and administering IVF/calcitonin.

Most significant failures in the diagnostic process:

Suboptimal weighing of a piece of history data (grossly elevated 25OH vitamin D while on vitamin D + calcium supplementation which was recently increased per medication reconciliation obtained by a pharmacist).

Harm: Moderate (increased LOS and extensive workup)

Lessons learned:

- Exogenous Vitamin D Toxicity is diagnosed by markedly elevated 25(OH)D concentrations (>150 ng/ml) accompanied by severe hypercalcemia and hypercalciuria and low or undetectable parathyroid hormone (PTH) activity while on vitamin D supplementation.
- Medication reconciliation findings are important to review, especially when completed by trained pharmacists.
- Failure to follow-up abnormal test result in the ambulatory setting is a common cause of diagnostic delay, and may lead due subsequent hospitalization. In this case the hospital team was unaware of the abnormal vitamin D level in the ambulatory setting ordered weeks prior to the index hospitalization.
- Chart review at the time of admission provides collateral information about baseline and carryover effects of previously diagnosed conditions and treatments.

"All things are poisons, for there is nothing without poisonous qualities. It is only the dose which makes a thing poison."

Paracelsus, eminent Swiss physician, alchemist, lay theologian, and philosopher of the German Renaissance, founder of modern pharmacotherapy and toxicology

What are cognitive biases and why are they important?

Cognitive biases — systematic errors in thinking that influence decision making and judgment — may ultimately lead to missed or inaccurate diagnoses and patient harm. It is important for prevention of diagnostic errors to be aware when these occur.

Cognitive biases present in the February Case-of-the-Month:

Confirmation bias: The team extensively looked for evidence of malignancy and granulomatous disease to confirm their hypothesis and did not consider available historical data suggestive of exogenous Vitamin D Toxicity, as well as lab data ordered during the hospitalization.

Featured Column: Diagnostic Safety



As a part of our diagnostic safety study, we have developed and refined a Diagnostic Safety column within the Quality & Safety Dashboard that enables you to:

- Identify patients at risk for diagnostic error
- Take a **Diagnostic Time-Out**
- Update the hospital Principal Problem
- View the patient's Deterioration Risk (EDI)
- View responses of patients who completed a Diagnostic Questionnaire (a 10-item survey that assesses patient's understanding and related concerns of their diagnosis, administered by our research team)

How can YOU improve quality and safety?

- Review the Quality and Safety Dashboard from the patient's chart when writing your notes.
- All items in the "Safety Bundle" at the end of H&P's and progress notes are mirrored in the Dashboard, making this an optimal time for review.
- Review the Dashboard with your residents, interns and/or APPs when running the list at the end of the day.
- Conduct Diagnostic Time-Outs to address diagnostic uncertainty.

Download our
Diagnostic Time-Out here:



Attend our
Diagnostic Safety Workshops
to learn more!

Keep an eye out for our weekly emails as you are coming onto your rotation or service! Users are also featured in our weekly usage reports! Thanks!

Contact Us!

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