Minimizing Unnecessary Coagulation Testing in the ED

Quality and Safety Summit
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Conflict of Interest

- I have no conflicts of interest

- Team members: Eddy Lang, Tom Rich, Heather Hair, Chris Naugler, Kathy Yiu and IT team

Objectives

Describe a *simple*, *sustainable* intervention to **reduce unnecessary coagulation (PTT/INR) in ED patients**

Step 1: Scope of the problem

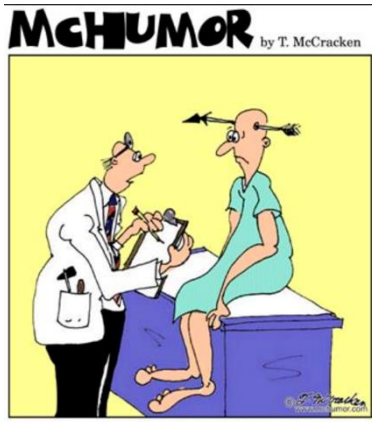
Over 300,000 ED Visits in YYC

Over 175,000 PTT or PT's Performed on ED pts

30,000 PTT or PT's in ?cardiac chest pain pts

Step 2: What is the evidence?

Choosing Wisely Canada



"Off hand, I'd say you're suffering from an arrow through your head, but just to play it safe, I'm ordering a bunch of tests."

COMMON ROUTINE COAG TESTING SCENARIOS

- ED Chest pain patients
- "Bundling of PTT/PT"
- Pre-op testing for low risk patients/procedures

JAMA Int Med; Schuur et al. 174(4): 505-515.

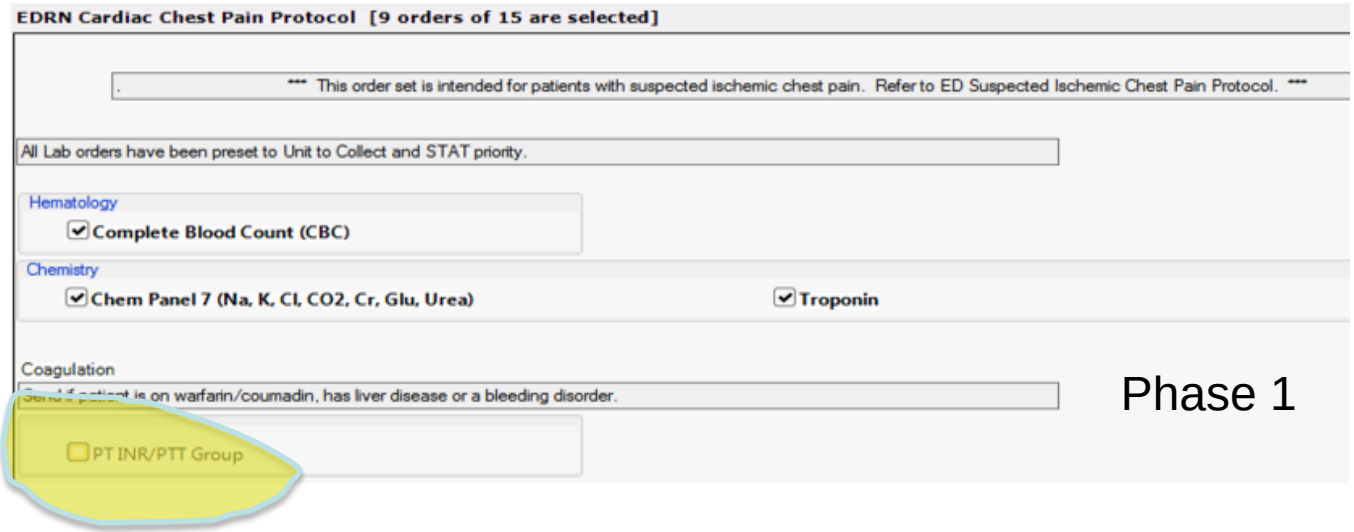
Step 3: Identify facilitators and barriers

Stakeholders

Understand your local process

Leverage local resources

Step 4: Implementation

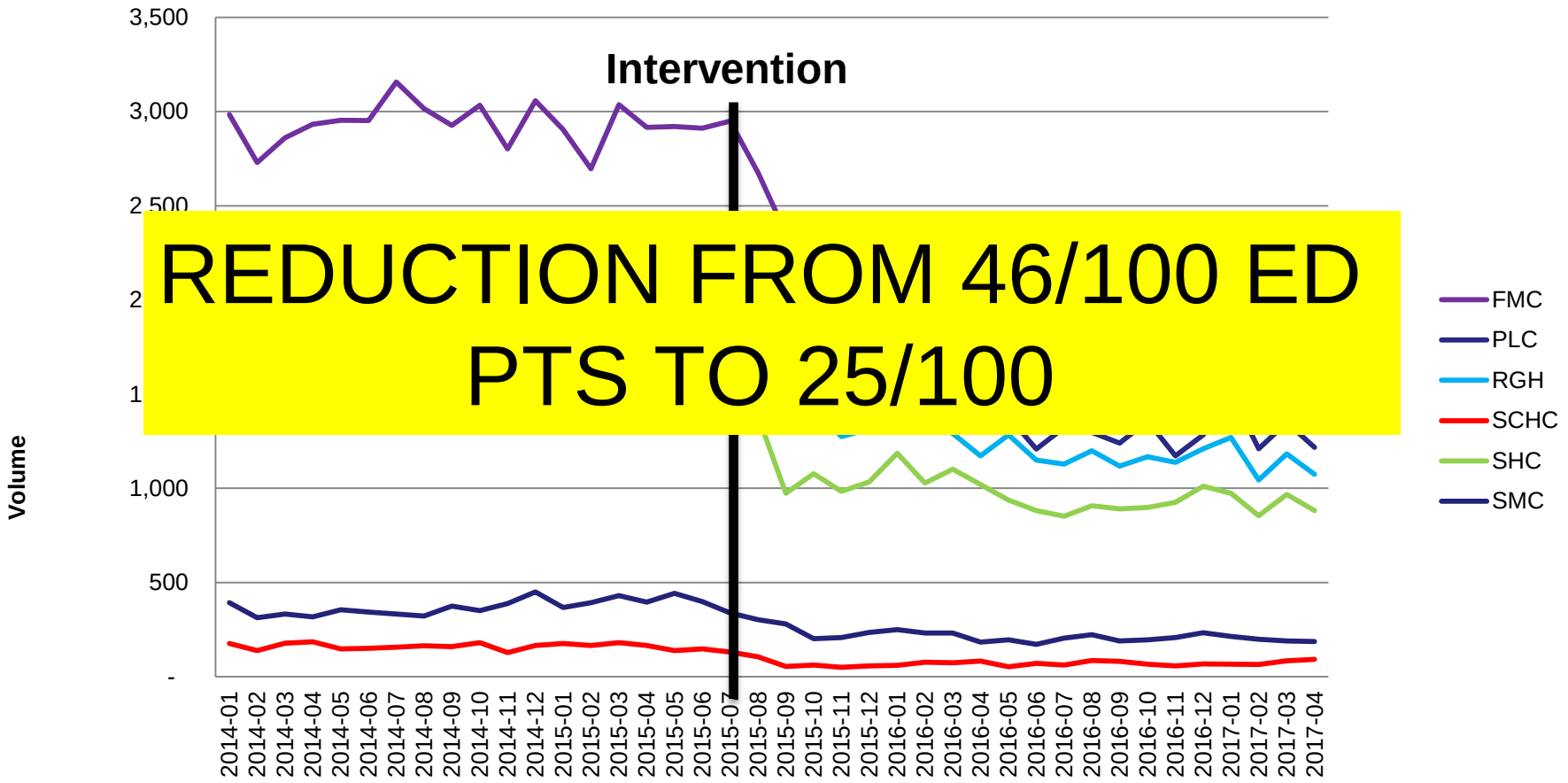


Phase 1

Phase 2

Created by IYIKON from Noun Project

RESULTS: ED PATIENTS



Summary

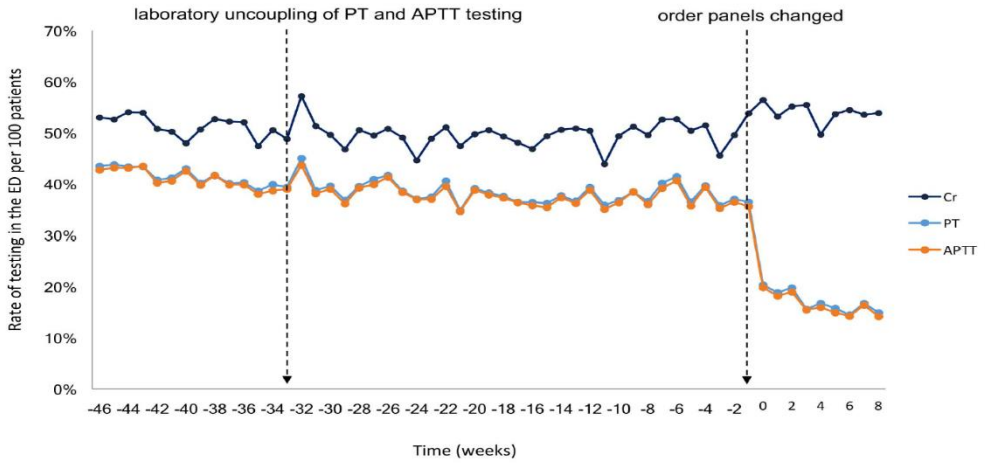
- This multi-faceted intervention
  - Reduction of 157, 278 PTT or PT's (decrease of 49.8%)
  - Bundling of tests decreased from 90% to 57%
  - Changes have persisted over time

Alberta Health Services

Questions?

Limitations

- Unable to determine appropriateness of PTT/INR
- PT/PTT now underutilized?
- Generalizability



Legend: Cr = creatinine, PT = prothrombin time, APTT = activated partial thromboplastin time

Step 6: Why this project succeeded?

- Low Hanging Fruit
- Passive Intervention (from a Clinician's perspective)
- Physician/RN Engagement/Departmental support
- Intervention aligned with evidence and clinicians experience
- Focused on appropriateness, not costs (editorial)

STEP 5: MEASURE

	ED visits	% Admitted (range)	UC visits
Pre-OS changes (19 months)	506,679	16.8% (12-23%)	168,141
Post-OS changes (19 months)	479,347	17.7% (12-24%)	154,600

Secondary Outcomes – Phase 1

- **No change in MD ordering rates**
  - 219 PTT and INR 90 d pre
  - 218 PTT and INR 90 d post
- **Total Number of coags**
  - Pre – 18,327
  - Post - 12,769 (an additional 1352 fewer coags)
- **% INR abnormal**
  - Pre- 24.6%
  - Post – 29.7%

Step 1: What is the evidence?

- Common Scenarios in which *Routine* coagulation studies are unnecessary:
  - ED Chest pain patients
  - “Bundling of PTT/PT”
  - Pre-op testing for low risk patients/procedures

Original Investigation | April 2014

LESS IS MORE

A Top-Five List for Emergency Medicine

A Pilot Project to Improve the Value of Emergency Care FREE

Jeremiah D. Schuur, MD, MHS[1,2]; Dylan P. Carney, MS[3]; Everett T. Lyn, MD[4]; Ali S. Raja, MD, MBA, MPH[1,2,5]; John A. Michael, MD, FRCPC[4]; Nicholas G. Ross, MD, MS[4]; Arjun K. Venkatesh, MD, MBA[6]

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JAMA Intern Med. 2014;174(4):509-515. doi:10.1001/jamainternmed.2013.12688.

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Scope of the problem

- Over 175,000 PTT or INR studies done in Calgary Zone ED's in 2014
  - >99% were bundled.

- Nearly 30,000 of these coags are ordered for ? Cardiac Chest Pain by RN OS
  - Compelling evidence that the yield of ordering routine PTT in CP patients is VERY LOW (<2%, Campbell)

Results – 90 days pre/post

	# of INR or PTT's from EDRN SCCP Order Set
Pre-Intervention	4982
Post-Intervention	776
Reduction in INR and PTT's	-4206 (84% reduction)

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Summary of evidence– PTT/INR in CP

- Campbell S. et al CAEP abstract 2014) – 78.7% of CP (?cardiac) had INR's done (patients on Coumadin were excluded). Only 13 (1.8%) had abnormal INR – 12 of which were on a/c but not recorded in chart
- Martin et al. Emerg Med J 2012, vol 29 pg 184. 640 pts with CP had coag studies – 79 were abnormal. All of these could be predicted on Hx (anticoagulant use or liver disease) OR were trivial (4 patients, INR <1.5)
- Schwartz et al. 23 patients (13%) of patients admitted with ACS had INR >1.25. 20 Of these patients had hx of anticoag usage or liver disease or daily. In the remaining 8 patients (mean INR was 1.44) no change in therapy was initiated based on these abnormalities.

References

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