

LAB TEST:

UNCOUPLING PT/INR AND aPTT TESTS

| Test Description | |
|--|---|
| Test Name | Uncoupling PT/INR and aPTT tests |
| Rationale for Reducing Overuse | <p>PT/INR and aPTT were tests developed in the early 20th century for specific and unique indications. Despite this, they are often ordered together routinely in emergency departments.¹⁻⁴</p> <p>PT/INR and aPTT are often unknowingly ordered together because most bloodwork in the ED is based on lab order panels that are outdated and frequently couple PT/INR and aPTT tests as a bundle even though they are rarely required together. In some hospitals, laboratory software may also automatically run both tests even if only one was ordered.^{2, 4}</p> <p>PT/INR and aPTT were designed for use in the diagnosis of heritable coagulopathies and/or monitoring of anticoagulant therapy. An important limitation in their use in assessment of coagulopathy of trauma is their slow turnaround time.⁵</p> <p>Furthermore, in some hospitals, PT and aPTT tests may be used routinely as screening tests, although no rationale exists to conclude that these tests are anything but diagnostic.^{1, 3}</p> |
| Scope of the Issue | |
| <input checked="" type="checkbox"/> Inpatient Setting <input type="checkbox"/> Outpatient Setting <input checked="" type="checkbox"/> Emergency Department | |
| Additional Details | Internal Medicine Surgery |
| Recommendations | |
| Summary of Recommendations | <p>Choosing Wisely Canada</p> <p>Unbundle PT/INR and aPTT tests in the emergency department. PT/INR and aPTT were developed for specific and unique indications and are often unknowingly ordered together due to outdated order panels or automatic laboratory software coupling.⁴</p> <p>Which societies endorse this recommendation: NONE</p> |
| Additional Information | Uncoupling PT/INR and aPTT testing resulted in meaningful reduction in coagulation testing without obvious adverse effects. Studies have found decrease or no change in the level of patient transfusions, nor signs of increased downstream testing. ^{2, 6} |
| Summary of existing metrics/indicators for appropriate use (further details below) (e.g., PT/PTT, % time test conducted, if applicable) | Studies show 45-55% reductions in PT/INR testing. ^{2, 6} |

Success Stories

Highlights

Summary of Implementation Strategy

Barriers to Change and Facilitators of Success

**St. Michael's Hospital:
PT/INR and aPTT
testing decreased
55% per week per 100
patients and resulted
in \$56k USD in savings
per year²**

- Conducted at an academic emergency department
- This intervention consisted of 3 PDSA cycles
- PDSA1: meeting with relevant stakeholders (ED physicians, nurses and laboratory staff) and collecting baseline data (lab, patient volume and blood transfusion data)
- PDSA2: uncoupled PT/INR and aPTT testing by modifying back-end laboratory software
- PDSA3: revised ED order panels at the front-end
- Throughout PDSA cycles presented at ED rounds and distributed educational materials (paper and electronic pocket cards including the top 5 reasons for and not to order these tests)²

Identified Barriers:

1. PT/INR and aPTT were linked at the back-end via laboratory software which automatically ran both tests even if one was ordered
2. PT/INR and aPTT tests were automatically ordered together at the front-end via physician order panels

Facilitators of Success:

1. Sustainable results due to implementing process which change laboratory test orders
2. No negative feedback following panel revisions likely because of lack of impact on physician workload

**London Health
Sciences Centre:
combined INR and
aPTT ordering
decreased by 45% per
100 patients per day
resulting in \$445 CAD
daily and an estimated
\$163k CAD saved per
year⁶**

- Conducted in 2 academic emergency departments
- Gathered baseline data when ED ordering system only had INR-aPTT coupled together on "quick ordering," selective INR and aPTT were listed in a searchable database
- Uncoupling PT/INR and aPTT resulted in quick selection of selective INR and aPTT testing independently
- Disseminating educational module provided to all physicians, nursing and house staff via email as part of an orientation package
- Implementing a clinical decision support system into the EMR which would remind providers of indications and costs with choice to discontinue order or sign off (Figure 1)

Identified Barriers:

Not stated

Facilitators of Success:

Not stated

Tips on Implementation

Feasible tips or suggestions for [initiating] implementation

(per recommendation type, e.g. uncoupling, test reduction, etc.)

-Most common effective strategy

- Revision to ED order panels and laboratory software
- Uncoupling PT/INR and aPTT testing
- Stakeholder engagement
- Teaching and education
- Implementing a clinical decision-making support system

Choosing Wisely Canada Applicable Toolkits

N/A

Figure 1: Decision Support Tool on EMR at LHSC

Figures

Decision Support

INR & aPTT

Reference

INR & aPTT

Literature advises **against** the routine use of ED coagulation studies (i.e., INR, aPTT) in the **absence of hemorrhage or suspected coagulopathy**.

INR/PT (\$6.20) Indications:

1. Evaluation of unexplained bleeding
2. Diagnosing disseminated intravascular coagulation
3. Prior to initiating anticoagulation
4. Monitoring warfarin therapy
5. Assessing liver synthetic function

aPTT (\$7.24) Indications:

1. Evaluation of unexplained bleeding
2. Diagnosing disseminated intravascular coagulation
3. Prior to initiating anticoagulation
4. Monitoring unfractionated heparin therapy
5. Monitoring therapy with parenteral direct thrombin inhibitors

References:

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