LAB TEST:

ASPARTATE AMINOTRANSFERASE (AST)/ ALANINE AMINOTRANSFERASE (ALT)

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Test Description	
Test Name	AST/ALT uncoupling
Rationale for Reducing Overuse	Aspartate aminotransferase (AST) is frequently ordered along with alanine aminotransferase (ALT) as a part of standard liver function test (LFT) panels to assess liver health. ALT is more specific than AST for hepatocellular injury.[1] However, AST is still often ordered inappropriately in situations where it provides little or no value.[2,3] AST is present in high levels in skeletal muscle, cardiac muscle, red blood cells, kidneys and the brain.[1] The activity of AST and ALT are often correlated meaning a low ALT will often accompany a low AST.[4] Additionally, isolated elevations of AST are not suggestive of liver damage but are often from the release of AST from red blood cells.[5]

Scope of the Issue		
☒ Inpatient Setting	☒ Outpatient Setting	☒ Emergency Department

Additional Details	**Emergency Medicine** **Family Medicine** **Internal Medicine** - General Internal Medicine - Gastroenterology - Rheumatology

Recommendations	
Summary of Recommendations • Canadian recommendations • International recommendations	No Canadian Recommendations Many international guidelines include using AST OR ALT, which can lead to confusion and defensive testing
Additional Information	A large prospective cohort study illustrated that under 5% of patients with abnormal LFTs in primary care have a specific disease of the liver.[6] This cohort study also illustrated that serious liver disease can be detected with ALT and alkaline phosphatase (ALP) with AST adding little when ALT has been measured. Guidelines and recommendations have moved towards ALT testing alone or ALT with other markers.[7]
Summary of existing metrics/indicators for appropriate use (further details below) (e.g., PT/PTT, % time test conducted, if applicable)	Canadian initiatives achieved 41-57% reductions in tests post-intervention below, with international reductions as high as 72-83%[3,8-9,10-13]

Success Stories		
Highlights	**Summary of Implementation Strategy**	**Barriers to Change and Facilitators of Success**
Ontario Provincial Initiative, 54% reduction[4] years post-intervention[3]	• Community setting • AST was replaced with ALT on the provincial requisition form	N/A
Eastern Health Region, NL, 41% reduction in tests post-intervention saving $31,028 annually10,11	• Community setting • Provided new requisition form omitting AST, audit and feedback was sent to family physicians, in person education to family physicians around needs for ordering AST	**Identified Barriers:** 1. Small number of high utilizing physicians **Facilitators of Success:** 1. Emailed family physicians individual ordering patterns 2. Visited family physicians in person to discuss inappropriate testing
Sunnybrook Hospital, ON, 57% reduction in monthly AST tests 1 month post-intervention completion12	• Academic tertiary care institution inpatient and outpatient • Three component intervention including: locally generated clinical practice recommendations for appropriate AST testing with targeted education to high volume providers. Removing AST from outpatient laboratory requisition, computerised provider order entry system and order sets. Finally, audit and feedback provided to the top 20 ordering healthcare professionals and leaders in top ordering locations.	**Identified Barriers:** 1. lack of knowledge of appropriate indications 2. outdated ordering processes **Facilitators of Success:** 1. Local creation of clinical practice guidelines 2. Involved multiple stakeholders (physicians, patient care managers, nurses, nurse practitioners, department chiefs, clerical staff, information technology staff, phlebotomists and laboratory technologists) 3. Direct education with audit and feedback 4. Education tailored to a specific context 5. System level changes to remove AST from different ordering processes
St. Michael's Hospital, ON, 50.8% reduction, saving $300.80 per month13	• Family Medicine Department • Formed a steering committee to review and modify the laboratory requisition form, AST was removed from this requisition form	**Identified Barriers:** 1. Outdated lab requisition **Facilitators of Success:** 1. Interdisciplinary steering committee to review and modify lab requisition 2. Input from entire department gathered during departmental rounds before changes made

Tips on Implementation	
Feasible tips or suggestions for [initiating] implementation (Per recommendation type, e.g., uncoupling, test reduction, etc.) - Most common effective strategy	Common effective strategies include: • Removal of AST from requisitions • Targeted education and feedback • Generate local guidelines around the indications for AST testing
Choosing Wisely Canada Toolkits	Give the Test a Rest Pause the Draws

References:

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