
Medical Laboratory Science

Fourteen Things Clinicians and Patients Should Question

by

Canadian Society for Medical Laboratory Science

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1 **Don't collect more blood than what is needed. Use short draw tubes, consider add-on testing, and reduce or combine duplicate orders.**

Phlebotomy is not a risk-free event for the patient or the healthcare worker. While rare, injury from needlestick and/or pathogen exposure can occur. Cumulative blood loss due to multiple phlebotomy episodes can result in iatrogenic anemia, particularly in the elderly, children, or those with medical conditions. This anemia can lead to worsened patient outcomes. Employing mechanisms that limit the amount of blood taken has been shown to lessen the severity of iatrogenic anemia. This can range from using smaller-volume collection tubes, consulting about the possibility of add-on testing to previously drawn samples, or adopting a maximum blood volume policy. Addressing duplicate requisitions can limit a patient from being phlebotomized twice.

2 **Don't proceed with testing or reporting when sample quality or identification is suspect.**

The quality of specimens received in the laboratory is paramount to obtaining accurate results. Proceeding with testing in the presence of poor sample quality may give misleading results. This contributes to delays and unnecessary repeat examinations. Any level of error should be avoided to decrease negative impact on clinical decisions and patient care. Laboratory professionals should be proactive in ensuring that all types of specimens are collected in a high quality manner with correct identification, regardless of which health professional group is performing the act.

3 **Don't collect extra blood tubes in anticipation of test orders.**

Frequently called 'just-in-case', 'rainbow draws' or simply 'extra tubes', blood collected before tests are ordered is frequently unused and ultimately discarded. This represents a waste of laboratory resources and a challenge for specimen management. Excessive phlebotomy is a recognized contributor to iatrogenic anemia, which is linked to worsened patient outcomes.

4 **Don't support repeat test ordering (re-testing) at a frequency that is not backed by evidence.**

Many analytes have known stability profiles or minimum retesting intervals. In most cases, values will not change during this time. These intervals may be longer than traditional or historical test repeat ordering frequency. Ordering tests more frequently is unlikely to provide clinically meaningful results, and may contribute to iatrogenic anemia. Iatrogenic anemia can worsen patient outcomes. Laboratorians can play an active role in drawing awareness to and/or acting to reduce these types of orders.

5 **Don't routinely repeat critical results for most common analytes before reporting.**

With modern instrumentation, analytical precision is very high when the result is within the reportable range and no delta checks have failed. Providing that sample integrity and performance validity has been confirmed, repeating critical values rarely changes the result. However, turnaround time is significantly increased. This can delay clinical action, negatively impact patient care, and increase the likelihood of unnecessary investigations.

6

Don't support ordering system mechanisms that contribute to over-testing. Encourage the development of an evidence-based utilization management program that may include interventions such as unbundling order sets, reflex testing algorithms, and decision-support technology.

Over-testing is a recognized problem, and evidence supports multi-faceted interventions that capitalize on advances in computer-based ordering technology. Bundling of tests may provide results that are not necessary for the ordering professional and may lead to duplication of testing or unnecessary follow-up. Order sets should be regularly reviewed. Research supports increased collaboration of all healthcare providers, including laboratory personnel, in combating over-testing. Laboratory professionals can be involved at all stages of interventions from problem recognition, feedback provision, to participation in the creation of supportive education materials and ordering guidelines.

7

Don't allow standing orders for repeat testing without a stop or review date.

Standing orders without an expiry or review date allow testing to be performed repetitively for extended periods of time. This type of testing is rarely clinically necessary without regularly reviewing the validity of the order. This contributes to overutilization of laboratory tests, and may exacerbate the development of iatrogenic anemia.

8

Don't recommend tests that are not in response to a specific clinical question.

Inappropriate laboratory testing wastes time, effort, and energy, and may result in patient harm. Research demonstrates that focused testing strategies in response to clear clinical questions improves the utility of laboratory results. Laboratory professionals can play an important role in clinical conversations with the ordering professional to ensure testing addresses a specific clinical indication.

9

Don't collect specimens from patients approaching end-of-life if the results do not serve the patient's indicated therapy goals.

Preserving and respecting patient dignity and autonomy is the responsibility of all health care professionals. While there have been positive advancements, futile tests and interventions at the end of life are not uncommon. Phlebotomy can cause discomfort and significant imposition, and the tests may not be in line with the patient's wishes. In these cases, medical laboratory professionals should be willing to advocate for the patient and question whether the diagnostic tests are essential.

10

Don't perform a manual differential on a complete blood count (CBC) if a recent valid automated differential result remains unchanged.

Automated differentials consider thousands of cells, compared to a standard of 100 on a manual differential. On a properly validated modern instrument, auto-diffs are highly reliable. Manual differentials are laborious, time-consuming, and prone to variation. A complete-blood-count with differential (CBC w/diff) is a common test, often ordered repeatedly on in-patients. In most cases, a repeated white blood cell differential within 24 hours does not add clinical value.

11

Don't process transfusion orders that do not adhere to best practices without discussing with the ordering clinician.

Blood products are finite, valuable resources. They need careful inventory management to prevent shortages, and a strained national supply adds stress to the system. Restrictive transfusion approaches are evidence-based, and vitally important to patient safety. Inappropriate transfusions put patients at additional risks that can cause poor outcomes. Medical laboratory professionals have an important role to play in screening transfusion orders carefully to minimize potential harms and healthcare costs, and advocating for programs that decrease inappropriate transfusion practices such as Using Blood Wisely (Choosing Wisely Canada).

12

Don't report results on tests with low specificity without alerting clinicians to the possibility of false positives.

Many individuals, including healthcare professionals, can have trouble applying probabilistic diagnostic information into evidence-based decisions. This also includes those ordering the diagnostic tests. This is becoming increasingly important as more testing is promoted for low-risk patients, such as genetic tests. Performance capabilities of every laboratory test varies and is highly influenced by population prevalence. Laboratorians can advocate for practices that enhance interpretation of test results to improve clinical decision-making.

13 Don't process urine culture orders for asymptomatic patients that lack appropriate indications from the ordering clinician..

Asymptomatic bacteriuria is a common, yet insignificant, finding that can lead to inappropriate treatment, including provision of unnecessary antimicrobials. This can exacerbate the development and spread of antimicrobial resistant organisms, which has significant healthcare cost and patient safety ramifications. Medical laboratory professionals can support antimicrobial stewardship by ensuring that urinalysis with culture only be performed on patients with appropriate symptoms by consulting with the ordering clinician or providing clear decision support systems.

14 Don't wake patients at night for phlebotomy for testing deemed safe by clinical teams to proceed in the morning.

Impaired sleep is associated with increased patient discomfort and harm. The laboratory may contribute to sleep disturbances by waking patients for phlebotomy. Research in several institutions shows that scheduling changes, or actions to reduce inappropriate testing, can positively impact the issue of impaired sleep. Medical laboratory professionals should collaborate with clinical colleagues to redesign workflow or implement other measures to promote sleep.

How the list was created

The Canadian Society for Medical Laboratory Science (CSMLS) formed a committee of medical laboratory professional (MLP) subject matter experts. They met in early 2023 to develop a strategy to create new recommendations. Subcommittees were formed to explore multiple sources of potential list items, including the list of deprioritized items from the first iteration to identify MLP recommendations in 2018-2019, laboratory-related items published by other societies in Choosing Wisely Canada and several other countries, and through leading discussions at their local sites. A long list of items was discussed at a meeting in June 2023, and forty-two were deemed potential candidates for further consideration. The committee then went through an asynchronous prioritization exercise to identify the most important recommendations with respect to frequency, potential for waste, potential for harm, and professional barriers to future action. The prioritization exercise identified the most important recommendations, which were subjected to analysis of the quality of published evidence supporting each recommendation. The draft recommendations were approved by the Board of Directors of the CSMLS in December 2023.

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About the Canadian Society for Medical Laboratory Science

The Canadian Society for Medical Laboratory Science (CSMLS) is the national certifying body for medical laboratory technologists and medical laboratory assistants, and the national professional society for Canada's medical laboratory professionals. Our purpose is to: 1) promote and maintain a nationally accepted standard of medical laboratory technology by which other health professionals and the public are assured of effective and economical laboratory services, and 2) promote, maintain and protect the professional identity and interests of the medical laboratory professional and of the profession.

Our members practice in hospital laboratories, private medical laboratories, public health laboratories, government laboratories, research and educational institutions. Incorporated in 1937 as the Canadian Society of Laboratory Technologists, the society has over 14,500 members in Canada and in countries around the world.



About Choosing Wisely Canada

Choosing Wisely Canada is the national voice for reducing unnecessary tests and treatments in health care. One of its important functions is to help clinicians and patients engage in conversations that lead to smart and effective care choices.

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