Background
Pharmacists participate at all points of the health system and share responsibility for ensuring safe and effective drug therapy. To do this, pharmacists must collect and consider appropriate information to evaluate and respond to patients’ health needs, and particularly to determine whether patients have any actual or potential drug-related problems. Laboratory (lab) data is amongst the information that pharmacists may consider in determining the safety and effectiveness of patients’ treatment regimens. The Standards for Pharmacist Practice state that a pharmacist must consider whether a patient has or is likely to have a drug-related problem.

Consideration of lab data is identified as additional information that a reasonable pharmacist may require in adhering to these standards. Some purposes for which pharmacists may consider lab data include

- ensuring that the drug and the dose ordered are appropriate for the individual patient,
- monitoring patients’ response to therapy to ensure optimal outcomes,
- monitoring for adverse effects to ensure patients’ safety, and
- screening patients for untreated health conditions where there are preliminary indicators for such screening (e.g., dyslipidemia as a secondary condition in diabetes).

Pharmacists have been granted access to lab data through the Alberta electronic health record. Pharmacists have also been granted the opportunity to order lab tests. In addition to the requirements outlined in the Standards for Pharmacist Practice, the Alberta College of Pharmacy has established the following guidelines to direct pharmacists when using and ordering lab data.

Guidelines for Pharmacists
Using lab test data

1. Pharmacists must ensure personal competence in the ordering of lab tests and interpretation of lab data.

2. Pharmacists must consider and interpret lab data in the context of other patient-specific factors:
   - Understand that lab data can be influenced by many lab-specific and patient-specific factors including incorrectly timed tests, genetics, ethnicity, gender, drugs, pregnancy, organ function, diet, fluid status etc. and assess accordingly.
   - Abnormal lab data can be caused by disease, drugs, side effects or therapeutic effects; keep these in mind when considering treatment options.
   - Interpretation of lab data should include assessment of patient-specific factors including history and physical exam\(^2\) (where appropriate).

3. Pharmacists must use their professional judgment to appropriately review, interpret, and consider lab data:
   - It may not be practical or necessary to review lab data every time a pharmacist monitors patient care, or as a precursor to dispensing or prescribing; however,

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1 These guidelines are intended to accompany Standard 3 of the Standards of Practice for Pharmacists and Pharmacy Technicians to provide pharmacists with additional information and guidance in the interpretation and implementation of the Standards.

2 Reference to physical exam is not intended to imply that the pharmacists must conduct a physical exam; however, the pharmacist may need to gather information regarding the results of a physical exam from the patient or another health care provider.
pharmacists should review lab data when interaction with the patient or the consideration of patient-specific information indicates that
- the results of the lab tests would affect the drug therapy requirements of the patient; or
- the drug therapy would affect the results of applicable lab tests.

Examples\(^3\) where a review of lab data may be indicated include
a) ensuring that the drug and the dose ordered is appropriate for the individual patient,
   - review of culture and sensitivity results to determine an appropriate antibiotic for treatment,
   - review of INR for patients taking warfarin,
   - review of blood levels for drugs such as anticonvulsants, lithium, and theophylline, or
   - review of serum creatinine (and subsequent calculation of estimated creatinine clearance) for drugs that are cleared renally (e.g., metformin).

b) monitoring patients’ response to therapy to ensure optimal outcomes,
   - review of lipids for patients taking lipid lowering drugs,
   - review of HbA1C for patients taking insulin,
   - review of thyroid tests for patients taking levothyroxine or methimazole, and
   - review of CBC for patients taking iron supplements and/or cyanocobalamin.

c) monitoring for adverse effects to ensure patient safety, and
   - review of liver function for patients taking HMG-CoA reductase inhibitors,
   - review of INR for warfarin patients started on medications that are likely to effect INR results (i.e. amiodarone, metronidazole),
   - review of CBC and liver function tests of patients taking methotrexate,
   - review of electrolytes for patients taking diuretics,
   - review of white blood cell count and differential cell count for patients taking clozapine prior to dispensing the next refill.

d) screening patients for untreated health conditions.
   - review of lipids for patients who have diabetes or established cardiac disease, or
   - review of lipids and serum glucose together with measurement of blood pressure and measurement of waist circumference to initially screen for possible metabolic syndrome.

4. When interaction with the patient or the consideration of patient-specific information indicates that a pharmacist should review lab data to ensure appropriate drug therapy and the lab data is not available, the pharmacist should order the appropriate lab tests or contact an appropriate health care provider and request that the lab test be ordered.
   - Pharmacists must only order those lab tests that they are personally competent to order, interpret and use to achieve appropriate drug therapy outcomes.
   - The pharmacist should contact an appropriate health care provider and request that the necessary lab tests be ordered if
     i. the pharmacist determines that he/she is not competent to order and interpret the necessary lab tests,
     ii. it is inappropriate for him/her to order the necessary tests, or
     iii. the pharmacist is unable to order the necessary tests for any other reason.

\(^3\) This is not a comprehensive list, but simply examples for illustrative purposes.
5. To avoid duplication, Pharmacists must review all alternative sources of current lab data available to them about a patient prior to ordering a test for the patient (e.g., electronic health record).

6. Pharmacists must only order lab tests if indicated to assist in the management of drug therapy for a patient:
   - Lab tests should only be ordered for patients with whom the pharmacist has developed a professional relationship.
   - Pharmacists should not order lab tests for the screening of populations where there is not a pharmacist-patient relationship or where there are not preliminary indicators for such screening.

7. Pharmacists who order lab tests must have a system in place to ensure appropriate follow-up of ordered lab tests:
   - Pharmacists should indicate to patients when and if the pharmacist will contact the patient about the results of the lab test.
   - In circumstances where the lab test is necessary to ensure appropriate drug therapy and the results of a lab test are not received within a reasonable period of time, pharmacists should follow-up with the laboratory and/or the patient, as appropriate, to determine the status of the order.

8. Pharmacists must take appropriate action if the results of a lab test that they order are outside the expected or normal range. Appropriate action may include but is not limited to:
   - discussing the results with the patient and/or other members of the patient’s health care team;
   - developing and implement a plan for ongoing monitoring;
   - changing drug therapy, if authorized to do so or recommending changes to drug therapy to another member of the patient’s health care team;
     i. As per Standard 14.7(b) of the Standards for Pharmacist Practice, pharmacists who prescribe based on their own assessment of the patient must: in the case of a condition that was not previously diagnosed, refer the patient to another regulated health professional if diagnosis or further treatment by another regulated health professional is necessary.
   - consulting with clinical/medical laboratory staff regarding unexpected or unusual results; and
   - repeating the lab test if there is an indication that a repeat test will yield different results.

9. Pharmacists must have a system in place to ensure the appropriate follow-up of critical results for ordered lab tests:
   - Pharmacists must be available and accessible 24/7 or have alternate arrangements in place to respond to and act upon any critical lab results that are reported.
     i. Pharmacists are encouraged to consider developing agreements, partnerships, or arrangements, such as on-call groups, with other pharmacist or physician colleagues to meet this requirement.
   - After hours emergency contact information must be made available with the pharmacist’s regular contact information or must be available via a messaging service at the regular contact number.

10. Pharmacists who make decisions as a result of interpreting lab data must
    - document the decision and the rationale for the decision in the record of care;
• explain the interpretation of the data, the decision and the rationale for the decision to the patient if the patient is able to understand the information and it is appropriate to do so; and
• include a reference to the lab data, and the decision in any communications with other members of the patient’s health care team.

11. Pharmacists must respect the patient’s right to confidentiality by ensuring that they collect, use, and disclose lab data only when it is pertinent to the care they are providing and that the collection, use and disclosure is only done in accordance with applicable privacy legislation, and other legislation and standards governing pharmacy practice.

12. Pharmacists who provide patients with results from lab tests they did not order must do so as per the Information Exchange Protocol of the electronic health record (EHR).
• As outlined in the protocol, the pharmacist should only provide information if
  - the pharmacist has a current care relationship with the patient,
  - the information can be provided using normal technology available to the pharmacist,
  - the provision of the information will not unreasonably interfere with the pharmacist’s normal day-to-day operations, and
  - the pharmacist is not prevented from releasing the information by Section 11 of the Health Information Act (i.e., the information is not detrimental to the well-being of the patient or others).

13. Pharmacists must not provide an interpretation of the results of lab tests ordered by other health care providers to the patient unless it is pertinent to the care being provided by the pharmacist.
• In all other instances the patient must be referred to the health care provider who requested the test or created the data in the EHR for interpretation of the data.