ALBERTA PRECISION LABORATORIES
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# Laboratory Bulletin

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| **DATE:** | 22 July 2024 |
| **TO:** | All Oncologists |
| **FROM:** | Molecular Pathology, Alberta Precision Laboratories |
| **RE:** | **Cell-Free DNA Testing for Metastatic and Castration-Resistant Prostate Cancer Patients** |

## PLEASE POST OR DISTRIBUTE AS WIDELY AS APPROPRIATE

### Key Message

- As of July 22nd, 2024, BRCA1, BRCA2 and ATM testing in cell-free DNA (cfDNA) from blood specimens will be available in APL for metastatic and castration-resistant prostate cancer patients but **only when tumor tissue testing has failed, or archival tumor tissue is not available**. The currently offered prostate tumor tissue testing (Cancer Biomarker Comprehensive DNA panel) remains the standard molecular test when archival tumor tissue is available.
- Testing will be referred to the OncoHelix/Hematology Translational Lab (HTL) in Calgary for their cfDNA panel as an interim solution until the in-house APL test can be launched. Results will be sent to the ordering providers by OncoHelix and will be uploaded to the medical record by APL on receipt.
- Samples collected without the appropriate OncoHelix/HTL requisition will not be processed.
- The test is **only available to genitourinary oncologists (GU) with PARP-inhibitor prescription privileges**. Patient can only be referred to the designated outpatient collection laboratories by authorized GU oncologists.
- Blood specimen collection will be accessible in the regional cancer centers of Grande Prairie, Edmonton, Red Deer, Calgary, Lethbridge, and Medicine Hat **only**. Detailed collection information on each site can be found below.
- Collections will **NOT** occur on statutory holidays.

### Background

- Olaparib therapy is approved in Alberta for the treatment of metastatic castration resistant prostate cancer (mCRPC) and deleterious or suspected deleterious germline and / or somatic mutations in the homologous recombination repair (HRR) genes BRCA1, BRCA/2 or ATM who have progressed following prior treatment with an androgen receptor – axis targeted therapy (ARAT). Olaparib may be offered to patients who are unable to tolerate an ARAT. Patients who have received prior taxane based chemotherapy are eligible.
- Current testing algorithm in Alberta is to order the molecular Cancer Biomarker Comprehensive DNA panel in archival prostate tumor tissue (formalin-fixed and paraffin-embedded) of mCRPC patients.
- A small minority of prostate tumor tissue specimens may not be located (old blocks), have insufficient tissue for testing, or fail the sequencing due to extensive degradation or deamination of the extracted tumor DNA material.
- Testing of circulating tumor DNA in cell-free DNA material isolated from the blood specimen (also known as liquid biopsy); is an alternative method to detect the presence of tumor mutations in BRCA1, BRCA2, or ATM genes when tumor tissue testing is not feasible; however, cell-free DNA testing is more expensive and may not be informative as the circulating tumor DNA may not always be detectable in the blood (ct-DNA is detectable in 60%-70% of the cases only).

- The cell-free DNA assay of the external reference laboratory does not distinguish somatic versus germline origin of the mutation or non-prostate cancer mutations attributed to clonal hematopoiesis of indeterminate potential (CHIP).

**How this will impact you**

- Cell-free DNA assay can be used as an alternative method for companion diagnostics to Olaparib when tumor tissue is not feasible guiding the treatment management of mCRPC patients.
- Cell-free DNA testing allows the detection of both somatic and germline mutations making it a preferred option than germline testing only; however, if the external cell-free DNA report is positive for deleterious or likely-deleterious mutation in the BRCA1, BRCA2, or ATM gene, referral of the prostate cancer patients to the medical genetics' consultation is necessary to determine the germline origin and counsel the patients on the cancer risk potential.
- The test is **only available to genitourinary oncologists (GU) with PARP-inhibitor prescription privileges**. Patient can only be referred to the designated outpatient collection laboratories by authorized GU oncologists.
- Designated outpatient collection laboratories include Grande Prairie Regional Hospital, Cancer Centre, Cross Cancer Institute, Red Deer Regional Hospital, Foothills Medical Centre, Chinook Regional Hospital, and Medicine Hat Regional Hospital.
- The target result turnaround time of this cell-free DNA assay is 15 working days.

**Action Required**

- Ordering clinicians are to complete the OncoHelix/HTL requisition and selecting the **OncoHelix-4 cfDNA panel** test and provide it to their patient.
- Ensure the patient consent section is completed.
- The requisition can be found at www.oncohelix.org/ and selecting "Sponsored Tests – Alberta Precision Laboratories". Alternatively, the testing requirements can be found in the APL Test Directory.
- Patients can present to one of the following APL collections sites for collection.

| Location | Address | Hours of Operation |
|---|---|---|
| Medicine Hat Regional Hospital - Outpatient Laboratory | 2nd Floor Laboratory<br>666 5th Street SW<br>Medicine Hat, AB<br>T1A 4H6 | M-F 0800-1600 |
| Chinook Regional Hospital – Outpatient Laboratory | 960 19 Street S<br>Lethbridge, AB<br>T1J 1W5 | M-F 0800-1600 (Last walk-in accepted is 1530) |
| Foothills Medical Centre – Special Services Building (SSB) | Ground Floor – room AGC72B<br>1357 29 Street NW<br>Calgary, AB<br>T2N 4N2 | M-F 0800-1600 (By appointment only) |
| Red Deer Regional Hospital Centre – Outpatient Laboratory | 3942 50A Avenue<br>Red Deer, AB<br>T4N 4E7 | M-F 0800-1600 |

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| Cross Cancer Institute (CCI) | 11560 University Avenue - Room 1451<br>Edmonton, AB<br>T6G 1Z2 | M-F 0800-1600 |
| Grande Prairie Regional Hospital – Outpatient Laboratory | 11205 – 110 Street<br>Grande Prairie, AB<br>T8V 4B1 | M-F 0800-1600 |

- The cfDNA reports will be sent to the requesting provider by OncoHelix and scanned into EPIC by APL. Reports will be available for review under “Molecular Pathology” in the Labs section.
- If individual case questions occur, please contact Molecular Pathology program (North lab: 780-407-6648; South lab: 403-220-4240).

**Effective July 22nd 2024**

**Questions/Concerns**

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- Dr. Adrian Box, Medical/Scientific Director, Molecular Pathology adrian.box@albertaprecisionlabs.ca
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**Approved by**

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