

Early Detection for Pancreatic Ductal Adenocarcinoma (PDAC)



Pancreatic ductal adenocarcinoma (PDAC) is the most common form of pancreatic cancer and kills over 4,000 Canadians each year. The majority of patients with PDAC do not survive a year after diagnosis, due in part to the fact that diagnosis often comes when the disease has already reached an advanced stage.

Drs. Daniel Renouf, David Schaeffer and Ryan Morin believe it is possible to develop an effective, blood-based screening test for the early detection of PDAC. Early detection of PDAC will enable surgical intervention to happen sooner and clinicians believe this strategy could have a significant impact on PDAC patient outcomes and save more lives.

DNA as a Diagnostic Tool

Currently, PDAC is diagnosed on the basis of a patient's physical signs and symptoms, with imaging techniques and evaluation of a tissue biopsy. Because pancreatic cancer has few initial symptoms, this diagnostic approach can miss early-stage disease or result in misdiagnosis, allowing a potentially treatable cancer to progress or a healthy individual to receive unnecessary treatment.

Tumour cells have specific genetic mutations that are different from healthy cells. Early pre-cancerous lesions, often not detected using other tests, can also contain some of these tell-tale mutations. Recent research suggests that DNA from tumours is present at detectable levels in blood plasma. Thanks to recent technological advances, an accurate, non-invasive blood test may now be feasible. Dr. Renouf and his colleagues are proposing to develop a complementary test to detect PDAC that can be used in combination with current diagnostic criteria.

Next Steps

The research team is now ready to assess the diversity of mutations of PDAC and its pre-cancerous lesions and determine if the mutations they share can also be detected in plasma cell-free DNA. This research will lay the groundwork for larger studies to validate the use of cell-free DNA assessment for:

- screening and early detection in high-risk individuals,
- monitoring for cancer recurrence in patients with surgically removed tumours, and
- assessment of treatment response in patients with advanced PDAC.

Dr. Renouf's research accomplishments to date demonstrate that the BC Cancer Agency not only has the technical and scientific expertise to do this innovative work, but is also a frontrunner in the advancement of diagnostic solutions for pancreatic cancer.