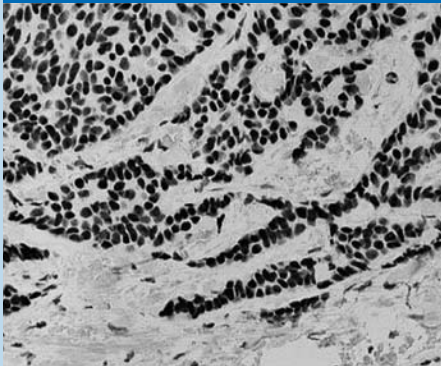


Hormone Receptor Analysis in Breast Cancer The System in Nova Scotia

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Estrogen receptor immunohistochemistry



As many are aware, there has been considerable attention drawn to the importance of pathologic evaluation of malignant tissues due to the situation in Newfoundland involving a large number of false negative test results for estrogen and progesterone receptors (ER/PR) in breast cancer specimens. The evaluation of these markers is critical for therapeutic decision making and plays an essential role in the judgement as to whether a patient may benefit from hormonal therapy (e.g. tamoxifen, aromatase inhibitors) in both the curative and palliative settings.

This testing is performed by a process called immunohistochemistry (IHC) which involves the application of labelled antibodies to ER and PR to a section of breast cancer tissue. The slides are subsequently examined under a microscope to assess the presence of 'staining' for these receptors. The technical methods and thresholds for determination of an ER or PR positive tumour have changed over the years as our understanding of hormone-sensitive breast cancer has evolved. For the past number of years it has been recognized that even if 1% of cells in a tumour section stains for one or both of the hormone receptors, this denotes a potentially hormonally-sensitive tumour. A patient with such a tumour may benefit from

therapies targeted towards blocking or reducing circulating estrogen levels.

IHC involves a complex, multi-step process during which errors are possible at multiple points, including pre-test handling of the specimen, the technical methodology employed and the interpretation of the findings. Hence, quality control related to the process as a whole is essential. The major issue in regard to the interpretation of the test is to eliminate/minimize false negative results (reporting of a 'negative' test when, in fact, the tumour is ER/PR positive). This has become increasingly important as the threshold for what constitutes a positive test result has changed.

Currently, evaluation of the ER/PR status in breast cancers removed at Dartmouth General Hospital, St Martha's Hospital, Aberdeen Hospital and Colchester Regional Hospital is performed at the pathology laboratory of Capital Health (QEII Site). Evaluation of the hormone receptor (ER/PR) status of breast cancers removed at South Shore Regional Hospital, Cape Breton Regional Hospital, Valley Regional Hospital and Yarmouth Regional Hospital is performed on site at those institutions.

Cancer Care Nova Scotia is a program of the Department of Health. Its mandate is to evaluate, coordinate and strengthen the cancer system in Nova Scotia.

Cancer Care Nova Scotia works with and supports professionals and stakeholders in the health care system to bring about patient-centred change. Its ultimate goal is to reduce the burden of cancer on individuals, families, communities and the health care system.

In Practice is a supplement to *Cancer Care Nova Scotia's* newsletter. It is written specifically for primary care practitioners with information that we hope will make a difference in your cancer practice.

Please contact Christine Smith, Communications Coordinator, *Cancer Care Nova Scotia*, by phone at 902-473-2932 or by email at christine.smith@ccns.nshealth.ca with comments or suggestions for future topics.



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The pathology laboratory at the Capital Health (QEII site) employs a number of measures to promote accuracy in the evaluation of ER/PR testing in breast cancer. These include:

- (a) Protocols to ensure prompt receipt of tissue specimens in the laboratory following excision, and careful selection of the best tissue sample for ER/PR testing
- (b) Involvement of dedicated and fully trained IHC technologists in the preparation of the slides
- (c) Use of an automated immunostainer which promotes consistency of testing
- (d) Interpretation of the tests by experienced pathologists in the Division of Anatomic Pathology, including a core subspecialist group which actively participates in weekly Breast Cancer Site Team rounds
- (e) Participation in external quality assurance programs (College of American Pathologists, Canadian Association of Pathologists (cIQc program) and regular continuing education on best practices in IHC testing
- (f) Periodic evaluations of ER/PR positivity rates confirming that those at the Capital Health site are comparable to those in the medical literature
- (g) Re-evaluation of the ER/PR status of breast cancer specimens previously reported as negative, from patients referred from other hospitals for oncologic consultation (medical, radiation, surgical) at Capital Health, to minimize the incidence of false negative reporting.

Similar measures are in place in our regional hospital laboratories with on-site immunohistochemical testing. Additional quality control measures for some sites include re-evaluation of negative results, sending cases to other labs for repeat testing and close monitoring of tissue fixation. Automated immunostainers, if not already in place, are to be acquired in the near future. Technical work is performed by trained laboratory technologists.

Physicians and patients in Nova Scotia can be assured that substantial efforts have been, and are, in place to promote high standards in the assessment of ER/PR status and other laboratory evaluations of breast cancer. Although, in medicine, 100% accuracy can never be guaranteed, attention to quality control measures, such as those outlined above, have been shown to enhance test outcomes and decision making related to patient care.

We continue to monitor and assess quality control issues on an ongoing basis to maximize accuracy and ensure that patients continue to receive the best possible advice and recommendations for the treatment of breast cancer.

If you have other questions about Hormone Receptor Analysis in Breast Cancer in Nova Scotia, please contact Dr. Daniel Rayson by phone at 902-473-6106 or by email at daniel.rayson@cdha.nshealth.ca or Dr. Penny Barnes by phone at 902-473-2832 or by email at penny.barnes@cdha.nshealth.ca