

# **A cost benefit analysis of the 21-gene breast cancer assay within a Canadian health care system.**

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## **Abstract Disclosures**

### **Abstract:**

**Background:** The 21-gene breast cancer assay (21BCA; Oncotype DX) is a predictor of 10-year risk of distant recurrence and anticipated chemotherapy benefit for node-negative, early-stage, estrogen-receptor positive, HER2-negative breast cancer (BC). 21BCA represents a new cost to a health system. There may be some cost offsets. The budget impact relative to the addition of 21BCA to a Canadian provincial framework was estimated.

**Methods:** An Ontario population-based cohort was evaluated in 2010 Canadian dollars. A population-specific BC cohort was multiplied by the unit cost of 21BCA for the budget impact. Chemotherapy utilization, unit cost of chemotherapy, and proportion of recurrence score (RS) were used to determine potential cost offsets. For the base case eligible patients who received the assay, drug utilization was allocated equally between one of two treatments: docetaxel + cyclophosphamide (TC) or fluorouracil + epirubicin + cyclophosphamide or docetaxel (FEC-D). RS results were based on Canadian clinical experience and patients with low RS+50% of patients with intermediate RS were estimated to not receive chemotherapy. Sensitivity analyses included RS ranges, reduction in granulocyte-colony stimulating factor (G-CSF) use and chemotherapy costs. A three year time horizon for the analysis was used. The cost of adverse events was not considered in the analysis.

**Results:** The cost of introducing 21BCA to the system in the first year would be \$15.8 million (m), which would rise to \$16.5m by year three. For cost offset, there would be a \$27.0m cost savings associated with a reduction in chemotherapy administration in the first year; \$28.2m by year three. Total system savings would represent

\$34.5m over three years. The results of the sensitivity analysis were robust indicating a three-year cost savings to the system ranging from \$15m for low risk patients to \$100m for G-CSF reduction.

**Conclusions:** The budget impact of the cost of 21BCA would be offset by a reduction in costs associated with treatment. The use of 21BCA in BC patients resulted in more than \$11m per year in savings to the health care system. This conservative analysis may show even greater costs savings if adverse event costs were considered.