Inappropriate Radiologic Staging Examinations in Early-Stage Breast Cancer: Assessment of the Costs to the Québec Government

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INTRODUCTION
Cancer staging is essential before the initiation of therapy. A sizeable portion of patients with early-stage breast cancer undergoes unnecessary staging tests, which are costly. Several national and international groups define which staging tests are considered necessary for staging.

OBJECTIVES
This study seeks to quantify the cost of such unnecessary tests in patients with early-stage breast cancer in the province of Québec, Canada.

METHODS / INTERVENTIONS
All patients diagnosed with breast cancer between 2012 and 2014 and listed in the tumour registry of the McGill University Health Centre, were included in this retrospective study. For each patient with early-stage breast cancer, the type and number of unnecessary staging tests, as per national guideline definitions, was extracted from the medical chart. The cost of each test, from a single payer point of view, was obtained from the Quebec government manuals of payment. The total cost of unnecessary staging tests was derived. Finally, an extrapolation was done to estimate the total cost for the whole province of Québec per year.

RESULTS
1845 patients were listed in the tumour registry of the MUHC, 1116 of which were diagnosed with early-stage breast cancer. 82.5% of patients underwent at least one inappropriate staging test. Less than 1% of these tests detected metastatic disease. The average cost of inappropriate staging tests per patient was $235.84, $251.83 and $217.34 for 2012, 2013, and 2014 respectively, with an average 10-year cost of $8,306,596.18.

PATIENT IMPACT
Unnecessary testing has a major patient impact: It exposes patients to radiation and risk of secondary malignancy. Furthermore, false positive results lead to further tests, some of which are invasive. These generate unnecessary anxiety, and possible complications to patients.

CONCLUSION
The majority of patients with early-stage breast cancer undergo unnecessary staging tests. In a social system with limited resources, these tests are costly to the single payer Québec government. Physician education is paramount in reducing the use of unnecessary staging tests performed in early-stage breast cancer.

TRANSLATION ACROSS THE RCN
This study applies primarily to the MUHC, but includes a sizeable minority of patients from RCN partner institutions. The data confirms that patients undergo unnecessary staging at all RCN institutions. Changes in practice must be implemented across the RCN.