Evaluation of the Oncotype DX Test Review in Breast Cancer Patients at the BC Cancer Agency (BCCA)

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Background
The Oncotype DX assay is a treatment decision-making tool recently funded at the BC Cancer Agency (BCCA). This genomic assay analyzes the expression of 21 genes to quantify the 10-year distant recurrence risk in hormone receptor-positive, early breast cancer patients treated with adjuvant hormonal therapy. It also predicts the magnitude of clinical benefit with additional adjuvant chemotherapy. The Oncotype DX result (recurrence score, RS) is a numeric score between 0 to 100:
- RS <18: low recurrence risk, small benefit with chemotherapy (Hormonal treatment alone is recommended)
- RS >30: high risk, larger benefit with chemotherapy
- RS 18-30: intermediate risk, currently there is little treatment guidance for patients in this category. The BC Cancer Agency (BCCA) Compassionate Access Program (CAP) reviews evidence-based treatments that are restricted in funding. Currently, CAP reviews all applications for the Oncotype DX test to:
1. verify the eligibility criteria of patients
2. liaise between the BCCA and Genomic Health, Inc., a diagnostic-test laboratory providing the assay

Due to the expected numerous requests for the test, pharmacy technicians were trained to assist CAP in reviewing patient eligibility.

Objectives
1. To assess the value and clinical role of pharmacy technicians in the BCCA CAP review process for the Oncotype DX test
2. To determine the impact of the Oncotype DX test results on treatment plans

Methods
Design: Retrospective, multi-centre analysis
Study Site: BCCA centers and community hospitals in BC
Inclusion: Breast cancer patients with CAP requests for the Oncotype DX test reviewed between June 1, 2014 – May 31, 2015

Objective 1:
The value and clinical role of pharmacy technicians are determined by:

<table>
<thead>
<tr>
<th>Workload</th>
<th>Independence</th>
<th>Accuracy</th>
<th>Pharmacy Technician Satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>- turnaround time to provide a CAP outcome (approved/denied request)</td>
<td>- frequency in requiring assistance from a pharmacist (RPh) or physician reviewer (MD) at time of review</td>
<td>- discrepancy rate between technicians’ CAP outcome and the study investigator’s outcome (a study investigator independently audited the requests that were reviewed by technicians during the study period)</td>
<td>- satisfaction of technicians in this clinical role</td>
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</tbody>
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Objective 2:
The impact of the Oncotype DX test is determined by reviewing the concordance rate between the RS and the given treatment.

Concordance is defined as:

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<tr>
<th>High RS</th>
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<th>High RS</th>
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<tbody>
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<td>Therapy</td>
<td>No treatment</td>
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Results
Clinical Role of Pharmacy Technicians
- Technicians reviewed 435 CAP requests for 423 patients (Table 1)
- 395 requests were approved and 40 were denied
- Three pharmacy technicians were trained to review requests:
  - two were regulated technicians
  - one had prior clinical experience
- Technicians provided a CAP outcome for each request in ~50 hours on average
- Technicians required assistance from MD or RPh in ~20% of cases when reviewing requests (Figure 1)
- Discrepancy rate between technicians’ and investigator’s outcome: 1.1% (Figure 2)

Table 1. Patient Demographics

<table>
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<tr>
<th>Number of patients</th>
<th>Number of requests*</th>
<th>Average Patient Age (range), yr</th>
<th>Gender</th>
<th>ECOG** 0-1</th>
<th>Grade**</th>
</tr>
</thead>
<tbody>
<tr>
<td>423</td>
<td>435</td>
<td>58 (30-81)</td>
<td>100%</td>
<td>94%</td>
<td></td>
</tr>
</tbody>
</table>

Grade**
- Grade 1: 31 (7%)
- Grade 2: 251 (57%)
- Grade 3: 151 (35%)

Node negative 412 (95%)

* Including 9 appeals for denied requests and 3 requests submitted for disease in multiple sites
** ECOG available in 154 patients (35%) only

Figure 1. Pharmacy Technician Workload and Independence

- Average turnaround time: 50.1 hrs (range: 0.1 – 196.2 hrs)
- Average review time spent on each request: 13.8 minutes (range: 4 – 90 minutes)
- Average # of times treating physician contacted: 0.6 times (range: 0 – 5) per case

Figure 2. Pharmacy Technician Accuracy

- 339 approved/77.9% |
- 6 denied/0.0% |
- 49 referred to MD/11.3% |
- 4 not applicable/0.9% |
- 5 referred to TGD/RPh/1.6%

- 38 approved/8.7% |

Pharmacy technicians were satisfied with this new clinical role. On a scale of 1 to 10 where 1 is the least and 10 is the most challenging, the technicians rated their roles as 2 or 3. All were satisfied with their role in reviewing requests and liaising with Genomic Health. All technicians were supportive of having a clinical role and found themselves as valuable resources to pharmacists.

Impact of the Oncotype DX Test
Of the 395 approved Oncotype DX requests, RS was low in 191, intermediate in 122, and high in 62 requests. An RS was not available for 20 requests. Concordance rate was 96% between RS and the given treatment (Figures 3 and 4). Of the 10 discordant cases:
- 3 cases: patient refusal of chemotherapy despite high RS
- 3 cases: physician deciding on chemotherapy despite a low RS for disease-specific reasons
- 2 cases: patient refusal of any treatment altogether

Discussion
This is the first time pharmacy technicians have been involved with assessing patient eligibility criteria for diagnostic testing at the BCCA. The discrepancy rate of BCCA pharmacy technicians (1.1%) is acceptable based on literature on similar technician roles, suggesting that the current task and other similar clinical tasks can be reliably delegated to technicians. For example, a study found that pharmacy technicians conducting medication histories had a discrepancy rate of 1.1%. Similarly, pathology technicians were found to have an average discrepancy rate of 6.7% when performing anatomic pathology reviews.

The overall concordance rate between the RS and the given treatment is 96%, which is relatively high. This is reflected by the individual concordance rates of low RS (97.4%) and high RS (91.9%) being higher than ones reported in literature. A meta-analysis of 14 studies including 3,104 patients showed that 83.4% and 5.8% of patients with a high and low RS received chemotherapy respectively. The concordance rate in our study is higher than what has been found in literature, suggesting that most of our patients are treated in accordance to RS-based recommendations. However, since many discordant cases were due to patients refusing treatment after receiving a high RS score, it may be prudent for physicians to carefully assess patient’s treatment preference prior to requesting the Oncotype DX test to avoid unnecessary testing and associated test costs.

Conclusions
- BCCA pharmacy technicians accurately reviewed Oncotype DX test requests with a low discrepancy rate of 1.1%.
- BCCA Patients were treated in accordance to RS-based recommendations with a concordance rate of 96%.

References