Patients receiving chemotherapy at a Tertiary Cancer Centre

Carmina Sun,1,2 BSc(Hons), PharmD; Ronald Chow, BSc(C); Phiomena Sousa, MBA; Carlo DeAngelis,1,2,3 BScPhm, PharmD, ACP; Flav Charbonneau,1,2 BScPhm; Stephanie Chan, BSc(C); Mark Pasetka,1,2,4 BSc, BScPhm, PharmD
1Sunnybrook Health Sciences Centre (SHSC), Department of Pharmacy; 2Odette Cancer Centre, SHSC; 3University of Toronto, Leslie Dan Faculty of Pharmacy; 4University of Waterloo, School of Pharmacy

BACKGROUND
• Despite the narrow therapeutic index of chemotherapy agents, monitoring of patients post-chemo is often absent, leading to patients calling in if treatment-related toxicities arise.
• Published studies involving clinical pharmacy services and proactive pharmacy follow-up for ambulatory cancer patients show that education provided by pharmacists is very well received and increases patients' understanding of their medication regimens.1,2
• Pharmacy intervention even improved quality of life and significantly reduced nausea/vomiting, pain, sleep disturbances, constipation, and diarrhea.3
• The Odette Cancer Centre Pharmacy has been conducting pharmacist-led follow-up calls with patients in this regard for over ten years, and thus the program should be reviewed.

OBJECTIVES
• To review the scope of a pharmacist-led telephone follow-up program in patients receiving parenteral anticancer therapy at the OCC through a retrospective chart review.
• To identify aspects of the telephone follow-up program to further investigate in future studies.

METHODS
Study Setting and Design
• Patients were identified using the centre’s computerized physician order entry system, OPIS (Oncology Patient Information System), and chemotherapy scheduling system, CHARM (Chemotherapy Appointment Reservation Manager).
• All patients who received parenteral antineoplastics as an outpatient at the OCC between June 5, 2013 and June 30, 2016 were included in the call-back program if any of the following criteria were met:
1. Patient receiving first chemotherapy treatment along with two or more supportive medications
2. Patient receiving a new treatment regimen (i.e. received a different one in the past) with two or more supportive medications
3. Patient had changes made to supportive medication(s) based on adverse effects experienced after previous cycle(s)
4. Patient is restarting treatment after a break of three or more months
• Patients enrolled in certain clinical trial treatments may have been excluded as they had standard protocols and adverse effect management guidelines to follow.
• Identification of patients enrolled in the follow-up program was done through the follow-up roster (spreadsheet) maintained in the OCC Pharmacy as part of the program.
• A retrospective chart review was conducted on patients called between June 5, 2013 to June 30, 2016 to gather quantitative data on the following:
1. Total number of follow-up calls made
2. Number of unique patients reached
3. Number of patients reached on first, second, and subsequent attempts
4. Number of patients never reached and most common reasons why
5. Number of patients who required more than one follow-up call (i.e. issues were identified and follow-up was performed based on recommendations made

Statistical Analysis
• Data was documented and compiled in Microsoft Excel® worksheets.
• Descriptive statistics (e.g. mean, median, percentage) were used to report the desired outcomes
• Each year was compared to determine trends or establish consistency

RESULTS

Table 1. Characteristics of Patients who Received N = 3184 (%)

<table>
<thead>
<tr>
<th>Outcome</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Attempts</td>
<td>1336</td>
<td>2228</td>
<td>2424</td>
<td>1005</td>
<td>6984</td>
</tr>
<tr>
<td>Total</td>
<td>1235</td>
<td>1908</td>
<td>1759</td>
<td>609</td>
<td>5511</td>
</tr>
<tr>
<td>Successfully Reached</td>
<td>(93.8%)</td>
<td>(85.6%)</td>
<td>(72.6%)</td>
<td>(60.6%)</td>
<td>(78.9%)</td>
</tr>
<tr>
<td>Unique Patients</td>
<td>726</td>
<td>1022</td>
<td>1000</td>
<td>436</td>
<td>3184</td>
</tr>
<tr>
<td>Patients Never Reached</td>
<td>102</td>
<td>88</td>
<td>91</td>
<td>33</td>
<td>314</td>
</tr>
<tr>
<td>Reached</td>
<td>(14.0%)</td>
<td>(8.6%)</td>
<td>(9.1%)</td>
<td>(7.6%)</td>
<td>(9.9%)</td>
</tr>
</tbody>
</table>

No. of Patients Requiring:
1. 1 Call 726
2. 2 Calls 1002
3. 3 Calls 301
4. 4 Calls 83
5. >5 Calls 8

No. of Patients Successfully Reached After:
1. 1 Call 556
2. 2 Calls 59
3. 3 Calls 9
4. 4 Calls 4
5. >5 Calls 0

Table 1. Characteristics of Patients who Received N = 3184 (%)

| Age, median (years) | 61 (13 – 92) |
| Gender | Male 1346 (43.4%) Female 1758 (56.6%) |
| Treatment Intensity | Neoadjuvant 653 (21.0%) Adjuvant 971 (31.3%) Curative 320 (10.3%) Palliative 1160 (37.4%) |
| Primary Cancer Site | Gastrointestinal 761 (24.5%) Gynaecological 690 (22.2%) Lymphoma 369 (11.9%) Lung 340 (11.0%) Head & Neck 331 (10.7%) Breast 175 (5.6%) Genitourinary 165 (5.3%) Leukemia 54 (1.7%) Multiple myeloma 53 (1.7%) Skin 50 (1.6%) Other/unknown 118 (3.8%) |

DISCUSSION
This is the first study to assess the number of patients reached via a pharmacy-led chemotherapy call-back program, and documents that it is highly utilized.
• Percentage of patients reached for follow-up after 2-3 calls increased over the years while the proportion of patients never reached declined, appearing as though the OCC Pharmacy is making more calls to reach a similar number of patients year-after-year.
• Fewest subsequent follow-up calls were made as years went by, likely decreasing the amount of time spent following up on recommendations made

Limitations:
• Study only demonstrates that the practice of regular telephone follow-up by a pharmacist and student team is achievable
• Feasibility and efficacy are indeterminate with this data

Future Investigations:
• Feasibility analyses should be performed by collecting:
1. Time spent with patients on the phone (recorded beginning in 2015)
2. Number of pharmacy staff (pharmacists and students) involved per day
• To determine clinical significance of this program can be determined by comparing time on therapy for patients who were called to patients who were not reached, and matching them according to baseline characteristics

CONCLUSION
• Results indicate that a relatively consistent percentage of ambulatory patients receiving parenteral antineoplastics have been called by the Odette Cancer Centre Pharmacy each year from 2013 to 2016
• These results do not prove the effectiveness of the program, but do show that it has been conductible for a long period of time since its inception in year 2000

REFERENCES