Patient Intensity in an Ambulatory Oncology Research Center: A Step Forward for the Field of Ambulatory Care — Part II

Executive Summary

- In Part II of the series regarding the implementation of the Ambulatory Intensity System (AIS), the authors describe aspects of integrating the tool with the patient scheduling system, improving reliability of data collection from the staff, and emphasizing performance improvement throughout the process.
- Implementation success was attributed to creating a data collection tool that required fewer than 30 seconds to complete, fostering enthusiasm and focus through ongoing education, and giving routine feedback to staff.
- With a flexible appointment scheduling system and knowledge of the resource requirements for different types of visits, the patient scheduling system was adapted to integrate a consideration for intensity while prospectively scheduling appointments.
- Data from the AIS supported a performance auditing process identifying opportunities to further focus chart documentation, delegate tasks to ancillary staff, and improve time management.

AMBULATORY CARE’S NEED for available tools to quantify nursing workload is well recognized in the literature. This is the second part in a three-part series on how this need has been addressed at the Warren Grant Magnuson Clinical Center, National Institutes of Health (CC). In the first article, nursing acuity/intensity was defined, the added value of intensity tools was explained, and the creation and implementation of the Ambulatory Intensity System (AIS) tool was described (Cusack, Jones-Wells, & Chisholm, 2004). In this article, the ongoing implementation of the system, its incorporation into the organization's established computerized appointment system, reliability measures, and related performance improvement activities will be discussed. In the final article of this series, the application of the tool in resource allocation and patient care assignments, enhancement of critical thinking skills, and use of the AIS in other ambulatory care areas will be illustrated.

Implementation

Implementation of the AIS required a shift in the level of commitment and thinking within the nursing and clerical staff. Often pilot projects are met with enthusiasm and maximum participation because they are associated with a new product or procedure. Maintaining that level of enthusiasm and interest was the first challenge. To assure buy-in, bolster interest, and foster reliability, project leaders provided ongoing education in using the tool. Providing staff with feedback about the results of tool use, and its direct and indirect impact on patient care outcomes was essential.

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stabilize the workload required to administer safe patient care. This method separates the number of visits at each level and calculates total full-time equivalent (FTE) need for a day’s expected volume and intensity. It allows the auditor to view how different nurses assign different categories to patients requiring similar levels of care.

To conduct the audit a process is used to verify the planned number and type of visits on a given day against the actual number and type of visits seen. These data are then inserted into a formula to determine FTEs needed per day (see Table 1). The data generated from the tool provide the nurse manager with objective information that may be used to support a perceived increase in patient intensity, calculate the sufficiency of the nurse/patient ratio, as well as determine inter-rater reliability. Data collected over the first year provided the justification that led to the approval of a request for two additional nursing FTEs. This need would have been exquisitely difficult to justify with the current system of FTE budgeting employed in the OCC.

Another critical feature used to monitor reliability is the performance of frequency checks (Hernandez & O’Brien-Pallas, 1996). While the literature varies on how often frequency checks should be done, there is agreement that monitoring should occur more often in settings where there is a low degree of inter-rater reliability. Factors that influence reliability include:

1. Characteristics of the tool. Indicators must be congruent with nursing language because ambiguity can have a negative impact on the results.
2. Person completing the classification. Should be done by the nurse who is familiar with the patient care requirements (ideally the nurse caring for the patient).
3. Time of classification. Classification should occur after all care needs to be standardized in using the tool. Staff who work in a research facility enjoy receiving data and facts. Sharing results enhances understanding of how staff and patients can both benefit from the tool. Another element that contributed to continued compliance in using the tool was the ease of completion (less than 30 seconds). Continued efforts are underway to make this process even easier for the nursing staff.

Securing the active participation from the clerical staff proved challenging. Since clerical staff are often tasked with making appointments, they have an intimate knowledge of patient volume that makes their participation in AIS critical to its success. Additionally, their involvement is essential because they provide the administrative functions critical to the data collection process. The importance of each staff member’s role was demonstrated by clarifying individual responsibility for tool completion, and by soliciting his or her ideas on how to improve the process.

**Computerized Appointment System**

An additional supportive factor in the development and continued implementation of the AIS is the fact that the CC employs a proprietary software program known as the Computerized Appointment System (CAS). While many computerized appointment systems have only fixed appointment types available, the CAS is adaptable and accommodates to the unique patient care areas within the CC. The versatility of this system allows customization to the unique care requirements encountered throughout the ambulatory care areas within the CC. The nature of ambulatory care encompasses many unknowns, so the CAS has been crucial in allowing appointments to be structured in ways that better reflect the varying intensity of patients with different nursing needs.

The nurse manager from the outpatient cancer center (OCC) met with the information technology (IT) expert responsible for the CAS to determine how to mesh clinical care needs with existing automation. As a result, the OCC’s unique appointment types are customized, appropriately incorporated into the AIS, and then built into the CAS. This collaboration was critical because articulating the patient care needs to the IT expert, and gaining an understanding of the capacity and limitations of the organization’s computer system, allowed development of a reliable, reproducible, and efficient system of tracking. When making appointments, clerical staff are able to select AIS categories that reflect the intensity required from within the CAS system rather than having to rely on a separate system. This feature also fosters compliance because it eliminates the need to set up new tracking systems, a common annoyance when new processes are put into place. The CAS also generates monthly appointment summaries that assist in the performance improvement process. Since 95% of appointment entry occurs prospectively, these reports are ideal for comparing planned versus actual visits.

**Reliability**

The literature describes reliability as the extent to which data are reproducible. There are three types of reliability: stability, homogeneity, and equivalence (Hernandez & O’Brien-Pallas, 1996).

Equivalence, also known as inter-rater/observer reliability, refers to the extent to which nurses agree on a choice of indicators or categories of care. This type of reliability is considered to be the most important for workload measurement systems (Alward, 1983; Hernandez & O’Brien-Pallas, 1996).

To begin addressing reliability, an auditing method was implemented in the OCC. These audits evaluate AIS use as well as substantiate the workload required to administer safe patient care. This method separates the number of visits at each level and calculates total full-time equivalent (FTE) need for a day’s expected volume and intensity. It allows the auditor to view how different nurses assign different categories to patients requiring similar levels of care.

To conduct the audit a process is used to verify the planned number and type of visits on a given day against the actual number and type of visits seen. These data are then inserted into a formula to determine FTEs needed per day (see Table 1). The data generated from the tool provide the nurse manager with objective information that may be used to support a perceived increase in patient intensity, calculate the sufficiency of the nurse/patient ratio, as well as determine inter-rater reliability.

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3. Time of classification. Classification should occur after all care needs to be
have been taken into account.

4. **Motivation of the person classifying.** The rater must see value in the system (Hernandez & O’Brien-Pallas, 1996).

For the first 2 years of this pilot, the clinical nurse specialist and nurse manager took on the responsibility of auditing. The delegation of this task is now being shifted to trained senior staff nurses, and the auditing methodology is being refined to capture vital information about patient intensity within timeframes conducive to thorough, yet concise, data gathering. With this information a nurse manager can perform prospective and retrospective analysis of staffing needs, and at designated time points review patient intensity patterns to make projections for future staffing needs.

**Performance Improvement**

Auditing provided many performance improvement opportunities. Deficits in documentation, improper use of resources, inadequate time management, organization and prioritization skills were all identified as weaknesses that could potentially lead to suboptimal reliability. Efforts to address the documentation issue included educating the nursing staff on the importance of clear, concise charting accurately reflective of the level of care assigned. Audits pointed to the fact that many activities that added to patient intensity were more appropriately done by ancillary staff. Clarification of the roles and responsibilities of team members was deemed necessary to lessen the improper use of nursing resources. Teaching the nurses to tease out these activities helped them clarify their roles and better serve patients by having nurses more available to offer true nursing services.

Duties related to time management, organization, and prioritization are often difficult to quantify due to the varying perceptions that individuals bring to the planning process. The unpredictable nature of ambulatory care adds another layer of complexity because patient emergencies and unplanned appointments often arise and throw a severe kink into an otherwise predictable day. Strategy sessions were employed to motivate staff to deal with these types of situations. The entire nursing team was brought together to draw upon the expertise of both the experienced staff as well as newer staff in an open, nonthreatening exchange. Peer-to-peer sharing of tips helped staff discover practical ways to better organize and prioritize their work. All of these interventions brought about a more consistent approach to the use of the AIS.

**Conclusion**

The AIS has been used in the OCC for over 2 years. Developing

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### Table 1.

**Intensity Tool Staffing Requirements**

<table>
<thead>
<tr>
<th>Intensity Levels</th>
<th>Average Time</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>I 0-15 min</td>
<td>7.5 min</td>
<td>0.01</td>
<td>0.03</td>
<td>0.04</td>
<td>0.06</td>
<td>0.07</td>
<td>0.09</td>
<td>0.10</td>
<td>0.12</td>
<td>0.13</td>
<td>0.15</td>
</tr>
<tr>
<td>II 16-30 min</td>
<td>22 min</td>
<td>0.05</td>
<td>0.09</td>
<td>0.14</td>
<td>0.18</td>
<td>0.23</td>
<td>0.28</td>
<td>0.32</td>
<td>0.37</td>
<td>0.41</td>
<td>0.46</td>
</tr>
<tr>
<td>III 31-60 min</td>
<td>45 min</td>
<td>0.09</td>
<td>0.19</td>
<td>0.28</td>
<td>0.38</td>
<td>0.47</td>
<td>0.56</td>
<td>0.66</td>
<td>0.75</td>
<td>0.84</td>
<td>0.94</td>
</tr>
<tr>
<td>IV 61-120 min</td>
<td>90 min</td>
<td>0.19</td>
<td>0.38</td>
<td>0.56</td>
<td>0.75</td>
<td>0.94</td>
<td>1.13</td>
<td>1.31</td>
<td>1.50</td>
<td>1.69</td>
<td>1.88</td>
</tr>
<tr>
<td>V 121-240 min</td>
<td>180 min</td>
<td>0.38</td>
<td>0.75</td>
<td>1.13</td>
<td>1.50</td>
<td>1.88</td>
<td>2.25</td>
<td>2.63</td>
<td>3.00</td>
<td>3.38</td>
<td>3.75</td>
</tr>
<tr>
<td>VI &gt;240 min</td>
<td>360 min</td>
<td>0.75</td>
<td>1.5</td>
<td>2.25</td>
<td>3.00</td>
<td>3.75</td>
<td>4.50</td>
<td>5.25</td>
<td>6.00</td>
<td>6.75</td>
<td>7.50</td>
</tr>
</tbody>
</table>

**Intensity Level:** Time required to deliver nursing care (direct and indirect)

**Average Time:** Average nursing time for each Intensity Level

**Staff Requirements:** RN time required to see a patient at a given intensity level, reflected as a fraction of 480 (minutes in an 8-hour shift)

**Example:**
If during a shift seven Level III patients (0.66) and six Level II patients are treated (0.28), nursing hours needed are 0.66 plus 0.28, which equals 0.94 or approximately one RN FTE.

**NOTE:** The original tool contained five levels. A sixth level was added based on experience during the pilot period. See Part I (Cusack, Jones-Wells, & Chisholm, 2004) for full explanation.
and piloting the AIS at the CC in 2001 demonstrated the ability to objectively quantify the nursing workload required in the OCC. Although it has presented some challenges, it has afforded multiple positive outcomes. Staff involvement has been critical in ensuring the successful implementation of the intensity tool.

While the AIS is easy to use, it is another task for staff members to add to often-busy workdays. Ongoing collaboration with staff in using this system sends the message that their input is valued and necessary. Presenting data to staff regularly keeps them connected to the tool and enhances their sense that the tool reflects their actual labors. It also predictably identifies barriers that might undermine buy-in and use of AIS tool.

Group discussions about the tool’s practical use, as well as assignment of responsibility for data entry and collection, have a significant impact upon its consistent use. To avoid data loss, it is important to determine early on who is responsible for data entry on all shifts, where information will be filed, how the auditing and report preparation will be done, and how data will be shared.

Part III, the final article in this series (July/August 2004), will focus on resource allocation, enhancement of critical thinking skills, and use of the AIS in other ambulatory care areas.

REFERENCES

