Original Contributions

Use of the Omaha System Data to Validate Medicare Required Outcomes in Home Care

Bonnie L. Westra; Debra Solomon, RN, MS; and Donna M. Ashley

ABSTRACT

Millions of dollars have been spent developing standardized terminologies for nursing. However, many nurses are unaware of them, because vendors have not incorporated them into electronic health records (EHRs), and quality assurance staff and researchers have not benefited from reuse of the data to examine practice. Government regulations require the use of particular data sets, such as OASIS in home care. Most staff and agencies are focused on government-mandated data without realizing how the nationally recognized terminologies for nursing can benefit an agency. This article seeks to demonstrate the value of using the Omaha System in an EHR for documenting care and conducting Medicare’s required Outcome-Based Quality Improvement process in one home care agency.

KEYWORDS

- Electronic health record (EHR)
- Omaha System
- OASIS
- Quality improvement
- Outcome-based quality improvement
- Home care
- Nursing terminologies

Since the mid-1970s, nursing has diligently pursued the development of standardized terminologies to describe nursing practice. One of the earliest nursing terminologies, funded by the Division of Nursing and the National Institute of Nursing Research is the Omaha System.1

After terminologies are developed, they can receive national recognition by the American Nurses Association, which uses international standards comparable to medicine and other disciplines for evaluating nursing terminologies.

The Omaha System is one of the first terminologies recognized by the ANA, along with 12 additional terminologies, vocabularies, or data sets for use in EHRs and public policy.

ANA also has developed criteria for certification of information systems; however, few vendors have sought ANA certification of their systems and few vendors market their information systems based on the inclusion of ANA recognized terminologies.2 Until nursing incorporates national standardized terminologies into clinical information systems...
so data can be abstracted for evaluation, nursing will remain largely invisible as a contributor to client safety and quality.

This article seeks to demonstrate the value of using the Omaha System in an EHR to plan and document care provided in home health. A case study is used to demonstrate the value of reusing—specifically, abstracting and analyzing—the Omaha System clinical data for validating Medicare outcomes based on Centers for Medicare & Medicaid Services' required quality improvement process.3

**The Omaha System**

The Omaha System is a research-based standardized method to organize and collect clinical data.4 It consists of three components: the Problem Classification Scheme, the Intervention Scheme, and the Problem Rating Scale for Outcomes. When the three components are used together, the Omaha System provides a comprehensive assessment and documentation tool.

The Omaha System was developed and refined by the Visiting Nurse Association of Omaha staff over a period of 18 years through four federally funded research projects. The result of nearly two decades of work is a reliable, valid, and useful tool for any clinical information system. The Problem Rating Scale for Outcomes contains three five-point Likert-type scales for measuring knowledge, behavior, and status. Likert-type scales are measures of levels or degrees of a phenomenon on a continuum to obtain a numerical rating on three-, five-, or seven-point scales. These ratings enable statistical analysis to compare changes over time. An example for interpreting the problem rating scale for pain is shown in Figure 1.

These ratings are documented at multiple times, including at admission and discharge, and provide a way to monitor client progress. For example, one Problem Classification Scheme in the Omaha System is pain, which is assessed for the presence of signs and symptoms as shown in Figure 2.

If one or more signs and symptoms are present, the clinician determines whether to add the problem to the care plan. Only if the problem is

<table>
<thead>
<tr>
<th>RATING</th>
<th>KNOWLEDGE</th>
<th>BEHAVIOR</th>
<th>STATUS</th>
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<tbody>
<tr>
<td>1</td>
<td>No knowledge: Ex: Lacks knowledge about pain source or treatment</td>
<td>Never appropriate: Ex: Unwilling to participate in pain control program</td>
<td>Extreme signs/ symptoms: Ex: Regularly exhibits signs/ symptoms of severe pain</td>
</tr>
<tr>
<td>2</td>
<td>Minimal knowledge: Ex: Limited knowledge about pain source or treatment</td>
<td>Rarely appropriate: Ex: Takes medication only in presence of severe pain</td>
<td>Severe signs/ symptoms: Ex: Regularly exhibits signs/ symptoms of moderately severe pain</td>
</tr>
<tr>
<td>3</td>
<td>Basic knowledge: Ex: Knows which medications/ treatments relieve pain</td>
<td>Inconsistently appropriate: Ex: Refuses narcotics but uses other medications/ treatment</td>
<td>Moderate signs/ symptoms: Ex: Regularly exhibits signs/ symptoms of moderate pain</td>
</tr>
<tr>
<td>4</td>
<td>Adequate knowledge: Ex: Knows which medications/ treatments relieve pain as well as how and when to use</td>
<td>Usually appropriate: Ex: Uses appropriate medications/ treatments for pain control most of the time</td>
<td>Minimal signs/ symptoms: Ex: Regularly exhibits signs/ symptoms of mild pain; rarely in severe pain</td>
</tr>
<tr>
<td>5</td>
<td>Superior knowledge: Ex: Describes pain etiology, multiple effective treatment methods, and how to optimize effects of treatment</td>
<td>Consistently appropriate: Ex: Consistently uses medications/ treatments for pain control</td>
<td>No signs/symptoms: Pain signs/ symptoms controlled</td>
</tr>
</tbody>
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*Adapted from Martin, 2005, p. 253-254

**Figure 1. Omaha System Outcomes for Pain with Interpretive Examples**

| 01. expresses discomfort/ pain | 04. restless behavior |
| 02. elevated pulse/ respirations/ blood pressure | 05. facial grimaces |
| 03. compensated movement/ guarding | 06. pallor/ perspiration |
| Other, specify | |

**Figure 2. Omaha System Pain Signs & Symptoms**
added to the care plan would the clinician then rate the client’s admission knowledge, behavior, and status; create a goal using the same rating scale; and evaluate the final rating at discharge. Outcomes can be calculated by examining the amount and direction of change from admission to discharge.

**OASIS Data Set**

The OASIS data set was developed more than 15 years ago through federal and private funding to create a reliable and valid outcome assessment tool for home care agencies. Certified home care agencies are required to incorporate OASIS items into the client’s overall assessment as part of routine documentation. CMS requires this data be abstracted from the chart and submitted electronically for calculating risk-adjusted outcomes used for OBQI and which are posted on the CMS Web site for public review. An example of one OASIS item is improvement in pain interfering with activity, M0420, shown in Figure 3.

Outcomes are labeled as “improvement” or “stable” and calculated from OASIS items as the difference between two points in time, for example, admission and discharge. For example, the OASIS outcome of improvement in pain interfering with activity is calculated for clients with pain on admission and is reported either as improved or not improved. Only clients who had pain on admission are included in the calculation for improvement.

The OASIS data set is a minimum set of data items that is complementary to the Omaha System. The Omaha System is broader in scope for assessing problems, documenting interventions, and evaluating outcomes.

**Electronic Health Records**

Home care agencies are beginning to use EHRs to meet the multiple requirements for documentation, compliance with CMS
Original Contributions

Figure 5. The OBQI Process

Figure 6. OASIS Improvement in Pain Interfering with Activity

cases, Medicare-required quality improvement activities, and business functions.

However, most EHRs in home health lack ANA-recognized languages. Therefore, their ability to compare multiple valid and reliable measures for similar outcomes within and across agencies is missing. One system that incorporates the Omaha System is CareFacts Information System. The software application integrates the Omaha System and OASIS data for comprehensive assessments, care planning, and documentation, as shown in Figure 4.

Agencies use existing condition-specific pathways and guidelines or create their own for consistency in documentation. CMS rules are enforced for collecting and abstracting OASIS data entered by clinicians for routine charting to submit to CMS, as well as calculating the HHRG for payment and following through with financial functions. Furthermore, the software enhances the agency’s ability to conduct OBQI through reports aggregating data across clients into reports or exporting it into an Excel spreadsheet.

Case Study

Fairview Lakes HomeCaring & Hospice initiated a quality improvement process to enhance the outcome of improvement with pain interfering with activity. This home health agency is a department of Fairview Lakes Health Services, Wyoming, Minn., and provides home health and hospice care to persons residing in Chisago County and in portions of surrounding counties. Within home care, both skilled and supportive care is provided through a multidisciplinary team.

In home health, CMS mandates the use of the OBQI process for quality improvement; activities are driven by the selection of outcomes that need improvement, rather than selecting high-volume, high-cost, or high-risk patients.

In Figure 5, the OBQI process, the specific steps required by CMS are shown.5 After a provider submits data to CMS, outcomes are calculated and reported back to agencies for interpretation and specification of target outcomes for improvement. These reports represent 12 months of data; the most recent data is three to 15 months old. When reviewing its outcome report, the agency noted that the OASIS outcome shown in Figure 6, improvement in pain interfering with activity for June 1, 2002, to May 31, 2003, was lower in the current period (45.0 percent, n=222) than the prior period (51.9 percent, n=212) and was significantly lower than the national reference group (57.3 percent, n=1,461,372) (p<0.05).

The CMS outcome report was presented first to the quality team and then to the staff. They were surprised at the results because the staff at the agency did not think the outcome rating for pain matched their perception of clients’ pain status at discharge. The clinical coordinator further stated that staff members typically do not discharge patients unless their pain is improved or managed.
The agency downloaded the CMS tally report, which lists demographic and the CMS outcome calculation for each client so they could learn more about which clients were rated as not improving in pain. The agency compared the OASIS pain outcome with the Omaha System pain status outcome because both were similar measures.

Data were exported from the agency’s EHR to describe and compare the Omaha System outcome of pain status. The outcome is calculated as the difference in pain status at discharge on the five-point Likert scale from admission. Only 133 clients had both an OASIS and Omaha System pain outcome. The OASIS outcome is categorical, with clients either improving or not improving. For the OASIS outcome of improvement of pain interfering with activity, 42.9 percent improved and 57.1 percent showed no improvement. The Omaha System Outcome can vary from a -4 (not improving) to a +4 (improving) as shown in Figure 7.

Almost all patients (97.1 percent) either remained the same (score of 0) or had some improvement (score of 1). A comparison of pain outcomes was made as shown in Figure 8.

For the lowest and highest Omaha System Outcomes—either decline (-1) or improvement (+2)—there was agreement with the OASIS outcome. However, for the vast majority of cases (91.7 percent) with an Omaha outcome of 0 or +1, there was very little agreement between the two measures.

The agency staff decided to investigate clients with no improvement in the OASIS pain outcome. A chart audit was performed evaluating 25 charts that were systematically selected using every fifth name from an alphabetical list of clients.

The chart audit included a review of every visit to identify if pain was assessed and if pain existed, what interventions were documented, as well as the effectiveness of the interventions. It took approximately three months to complete the chart audit, summarize the results, and implement the action plan.

After completing the chart audits and sharing the results with staff, they concluded that the Omaha System pain status outcome accurately reflected additional information about the clients; that staff had inconsistent interpretations of how to document M0420 in OASIS; and there were many inconsistencies regarding requirements of what to record on the chart and how frequently to record it.

Following the OBQI process, an action plan was developed. It included guidelines requiring staff to document a
pain assessment at every visit. If pain existed, staff members were required to use a pathway-and-charting guideline that was added into the EHR. The pathway included the recommendation not only to complete a pain assessment every visit but also to document interventions performed to improve pain, and, most importantly, to document the effectiveness of pain management interventions.

An in-service was provided, including the use of case studies to re-educate staff about reliable documentation for the Oasis item M0420, requirements for assessment, management, and documentation of pain, and the requirement to use a pathway-charting guideline embedded in the EHR. The staff responded positively to the recommendations because they thought it would help demonstrate the quality of care they already provided and would help them provide consistent care to further improve pain outcomes.

Throughout the year, the agency monitored the changes in documentation using a record review form, reviewing all client visits for assessment of pain. If pain was documented, the visit was audited to determine if the pathway-guideline was added to the care plan. Additionally, the audit focused on documenting the client’s response to pain interventions. As a final step in the OBQI process, outcome data were compared for the subsequent 12-month period. The results are shown in Figure 9.

This report shows that the agency demonstrated a significantly higher percent of clients (p<0.05) with improvement in pain interfering with activity in Year 2, compared with the previous period year. Improvement in pain interfering with activity was monitored on a monthly basis with the CMS OBQI reports and continued to show improvement in each subsequent quarter, with the agency achieving 65.7 percent of clients improving with pain, compared with the national average of 61.1 percent as of September 30, 2005.

Staff expressed satisfaction with improving their outcomes for pain management. The pathway now is part of routine documentation for the agency.

One consideration the quality improvement team is considering is adding pain management to their patient satisfaction instrument. This previously was done for hospice clients, but because most clients receiving home care services have pain management, this was considered another potential way to reinforce the ongoing importance of pain management.

Discussion
The purpose of this article is to demonstrate the value of integrating the OASIS and Omaha System in an EHR to document care as well as reuse the data for conducting OBQI in home care. The case study demonstrated an effective way to conduct OBQI in one home care agency, comparing the validity of the OASIS outcome of improvement in pain interfering with activity and the Omaha System pain status outcome abstracted from an EHR. Data from the Omaha System supported the staff’s perception that client outcomes were better than evidenced by the CMS data from June 1, 2002, to May 31, 2003. Additionally, staff improved its consistency in documenting pain management and incorporated these changes into their EHR.

The OBQI process recommended by CMS, which included investigating care, determining factors associated with inadequate outcomes, creating an action plan, and evaluating care resulted in a significant improvement in the
agency’s OASIS outcome rating for improvement in pain interfering with activity. The result was a gain of 19 percentage points in more cases with improvement in pain interfering with activity after implementing an OBQI process—45 percent in the first year, compared with 64 percent in the second year.

In future investigations, additional improvements could be made. Only the validity of the OASIS outcome data was questioned. Information from the chart audit supported the accuracy of the Omaha System pain status outcome; however, further investigation into the reliability of the Omaha System is needed. Its interrater and intrarater reliability between clients who have a score of 0 or 1 should be studied. This is particularly significant because clients with a 0 would be considered to be not improving, while those with a 1 would be considered to be improving.

While the Omaha System outcomes have been demonstrated to be valid and reliable, Martin, Norris and Leak6 recommended additional measures for improving their use, including additional training, standardized assessment tools, and interrater reliability testing. Examples that further clarify the use of the Omaha System outcomes applied to specific problems are provided in the Omaha System book.

Another issue to investigate is the amount of missing data from the Omaha System outcomes for pain. Of the 222 clients with an OASIS outcome, only 133 also had an Omaha system outcome. This is most likely a result of including pain management as part of another problem. For example, clients with a total hip replacement likely had a problem of neuro-musculoskeletal on their care plan. Staff often included pain management within this problem rather than creating a separate problem. The agency’s charting guideline subsequently specified that a separate problem for pain should be included whenever clients have related signs and symptoms.

One of the benefits of conducting an OBQI process is to continuously improve care and also to learn how to perform it more effectively. The data from CMS was beneficial for comparisons of improvement in pain within the agency over time and with a national reference group. However, there is a considerable gap in time between when data are documented and when it is available for OBQI. One recommendation for the future would be to use reports related to OASIS and the Omaha System on a routine basis for early identification of potential problems and provide continuous feedback to staff.

This study provides support for the value of the Omaha System for documentation and conducting quality assurance in home care. It demonstrates the value of using routine chart data abstracted from an EHR to validate the accuracy of information. Furthermore, this case study demonstrated the value of improving patient outcomes in a sustained way that was effectively implemented involving agency staff.

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References


