Preparing Quality Improvement, Research, and Evidence-Based Practice Manuscripts

EXECUTIVE SUMMARY

Preparing Manuscripts for submission to peer-reviewed journals requires an understanding of essential information to be disseminated about a study or project, guidelines for writing various types of papers, and effective ways of communicating information to readers. Writing for publication is critical to share the outcomes of quality improvement (QI), findings of research, and results of evidence-based practice (EBP) initiatives. Writing for publication is a skill to be developed, not only by nurse researchers and leaders, but also by clinicians and nurses in other roles who have a responsibility to share their knowledge with others.

Understanding how to organize a manuscript reporting quality improvement (QI), research, and evidence-based practice (EBP) initiatives is important to provide essential information for readers to evaluate the findings for possible use in their own settings and replicate studies. A well-written manuscript describes the problem addressed; background and why the study or project was needed; procedures, measurements, and data analysis; and findings or outcomes considering study limitations. Manuscripts submitted to peer-reviewed publications need to report essential information and communicate it clearly to readers. This is important for readers to understand the study or project, and it also may affect the likelihood of the manuscript being accepted for publication.

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The purpose of this article is to describe the preparation of manuscripts reporting QI, research studies, and EBP projects. With this information readers will have a framework as they develop their manuscripts for submission to peer-reviewed journals. This framework also guides the design and implementation of a project to ensure the information needed for a manuscript is collected and recorded for use in dissemination when the project is completed.

**Reporting Quality Improvement**

The rapid expansion of Doctor of Nursing Practice (DNP) programs has been accompanied by an increased number of submissions of manuscripts describing the outcomes of DNP Capstone projects, which are often QI rather than research studies (Nelson, Cook, & Raterink, 2013). By disseminating the outcomes of QI work, interventions can be shared with others who may have similar problems in their clinical settings. Although QI studies focus primarily on solving problems in one’s own setting, they frequently lead to generalizable knowledge about new practices and systems of care. Adequate reporting of QI is critical for readers to understand the problem that was addressed in the setting, the interventions employed, if they made a difference in patient and other outcomes, and the context or local conditions that could influence implementation. Diamond and Armistead (2010) emphasized the strength of evidence from improvement studies is contingent not only on the quality of the study design and analysis of resulting data but also depends on the accuracy and completeness of reporting.

The Standards for Quality Improvement Reporting Excellence (SQUIRE) were developed to ensure adequate reporting of improvement studies. They consist of a checklist of items that help authors prepare manuscripts about QI that are complete and report critical information for readers to understand the study and evaluate the resulting evidence (Holzmueller & Pronovost, 2013; Oermann, 2009; Ogrinc et al., 2008). Most of these items are equally important when disseminating the findings of research, but the SQUIRE guidelines also take into consideration other aspects such as the local problem that was addressed, intended improvement, who led and participated in the change in practice, and other information about the setting, providing the context for the intervention.

Although the SQUIRE guidelines were intended as a framework for reporting an improvement study, they also can be used for designing and planning a study that can eventually be published (Oermann, 2009). The guidelines indicate the essential components of a QI study and specify the information that would need to be reported in a manuscript. By using the guidelines for planning the study, researchers, clinicians, DNP students, and others ensure they are designing a study that will generate strong evidence and provide the information they will need when preparing a manuscript on their work.

Because of the limited number of pages allowed for manuscripts submitted to most nursing and health care journals, such as the 15-page limit for *Nursing Economics*, it is difficult to address each of the 19 sections in the SQUIRE checklist as distinct parts of a manuscript. The resulting text would be too long. Instead, individual items recommended for reporting can be combined (Ogrinc et al., 2008). The principle is for authors to use the guidelines to confirm they are reporting the main areas of information that need to be addressed, and there is logical flow of information in the manuscript, not for each item in the SQUIRE checklist to be included as a separate section of the paper. We identified the principles authors should follow in preparing a manuscript on a QI study, based on the SQUIRE guidelines. Examples are provided in Table 1 of each of these parts of an article.

**Title and abstract.** The title and abstract are important parts of the manuscript. They are seen first by readers, are often the only parts available online for searching, and are used for indexing articles in databases such as PubMed and the Cumulative Index to Nursing and Allied Health Literature and by search engines such as Google (Annesley, 2010; Oermann & Leonardi, 2013). The title of a manuscript should be clear and informative (Hartley, 2012). It should provide enough information for readers to find the article when searching for literature relevant to their own work. For a QI manuscript, the title should indicate the article reports QI and should include the intervention. In the example in Table 1, it is clear from the title this is a report of an improvement study, and the intervention is the use of the Josie King Care Journal.

There are various formats and word lengths allowed for abstracts, and authors should adhere to the requirements of the journal to which the manuscript is submitted. For searches, readers scan titles and abstracts for key words; abstracts should include these same terms to direct readers to the article. For QI studies, the abstract should include the words “quality improvement” or related terms, similar to the title. A study on search terms and strategies used to locate QI publications indicated a search using quality AND improv* AND intervention* was effective in retrieving 183 publications, 67% of which were relevant to QI (Hempel et al., 2011).

**Introduction.** The introduction of a QI manuscript includes a brief background of the problem addressed in the study and related...
### Table 1.
Examples Comparing Parts of Quality Improvement, Research, and Evidence-Based Practice Manuscripts

<table>
<thead>
<tr>
<th>Parts of Manuscript</th>
<th>Quality Improvement</th>
<th>Research</th>
<th>Evidence-Based Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title</strong></td>
<td>Implementation of the Josie King Care Journal in a Pediatric Intensive Care Unit: A Quality Improvement Project¹</td>
<td>Specialized New Graduate RN Pediatric Orientation: A Strategy for Nursing Retention and its Financial Impact²</td>
<td>Use of Clinical Decision Support Tool to Improve Guideline Adherence for Treatment of Methicillin-Resistant <em>Staphylococcus aureus</em>: Skin and Soft Tissue Infections³</td>
</tr>
<tr>
<td><strong>Introduction</strong></td>
<td>Local Problem: Enhance communication and family engagement in pediatric intensive care unit (PICU). Intended Improvement: Implementation of Care Journal will enhance communication and family engagement.</td>
<td>Background: Need for orientation programs to prepare new nurses for specialized areas of practice. Research Questions: (1) What is the difference in retention pre and post-initiation of the pediatric nurse fellowship program (PNFP)? (2) What is the net cost savings from retaining nurses post-initiation of the PNFP?</td>
<td>Background: Prescriptive inconsistencies in treatment of community-acquired MRSA skin infections. Review of Evidence: Purpose: Determine if implementation of a clinical decision support (CDS) tool embedded into electronic medical record would improve provider adherence to the NC Consensus Guideline in treatment of patients in emergency department (ED) with subcutaneous abscess formation.</td>
</tr>
<tr>
<td><strong>Results</strong></td>
<td>Results: On survey results of parents (92% believed Journal improved communication), of nurses, and analysis of open-ended items using Wordle text visualization application.</td>
<td>Results: Reports demographic data and findings organized by research questions.</td>
<td>Results: Significant increases in selection of appropriate antibiotic regimens and patient education on infection control through decontamination; negative effects on rate of wound cultures.</td>
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literature, similar to research reports. In addition, authors should provide the context for the QI study. This is more than explaining the physical setting; authors also should describe the types of patients, provide information about nursing and other staff, and explain care processes before the intervention was introduced (Ogrinc et al., 2008). With this background readers can determine if the findings are transferable to their own setting.

Two other sections of the introduction, which are unique to QI manuscripts, are a description of the local problem that was addressed and the intended improvement; these sections should include subheadings to differentiate the paper from a research report. The events or situation that created the need for a change in practice or in the system should be explained in the subsection “Local Problem.” The “Intended Improvement” subsection describes the aim of the proposed intervention and individuals or groups that were involved in the study. The last item in the introduction of a QI manuscript is the question that the study was designed to answer, similar to a research report.

Methods. The SQUIRE guidelines outline six items to be included in the methods section of a QI report. These items include, in this order: (a) a description of the ethical aspects of the study with a statement that it was approved by the institutional review board (IRB); (b) the specific characteristics of the setting, expanding on what was provided earlier in the introduction; (c) planning the intervention, which includes a description of the intervention with enough details for others to reproduce it; (d) planning the study of the intervention including the design; (e) methods of evaluation, which describe the instruments and procedures used; and (f) data analysis. As these items are similar to reporting the methods of a research study, the methods section can be organized based on the SQUIRE guidelines or by using the standard format for research reports: design; sample and setting, which includes a statement about IRB approval; description of the intervention; instruments and measures; procedures; and data analysis. Authors should review similar articles in the target journal and format the methods section consistent with those articles, ensuring the items are included. Similar to research reports, the methods section needs to be sufficiently detailed to convey what was done and for the study to be replicated.

If the study used a specific QI methodology, such as the Plan-Do-Study-Act (PDSA) cycle, its use should be explained as part of planning the intervention. Taylor and associates (2013) analyzed 47 articles on QI that reported application of the PDSA cycle. There was inconsistent reporting, and less than 20% of the articles fully documented the sequence of iterative cycles used in the PDSA methodology. When a specific QI approach is used for a study, authors should indicate the methodology and each of its phases, describe what was planned and implemented, and report issues that occurred and how they were resolved.

Results. The next section of a QI manuscript, the results section, is similar to a research report.

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<tr>
<td>Discussion</td>
<td><em>Discussion: Organized by focus of QI project: perceptions of Journal were positive in enhancing communication and family engagement</em></td>
<td><em>Discussion: Organized by research questions</em></td>
<td><em>Discussion: Implementation of CDS tool based on a clinical guideline reflecting improved patient care in terms of acute treatment and surveillance; barriers to adoptions</em></td>
</tr>
<tr>
<td>Conclusion</td>
<td><em>Conclusion: Use of project as platform for future QI projects evaluating strategies for enhancing communication, family engagement, and patient outcomes</em></td>
<td><em>Conclusion: Related to research questions and results</em></td>
<td><em>Conclusion: CDS support tools can be successfully embedded into EMR to improve patient care.</em></td>
</tr>
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</table>

**Table 1. (continued)**

**Examples Comparing Parts of Quality Improvement, Research, and Evidence-Based Practice Manuscripts**

**Sources:**
1. Turner et al., 2013
2. Friedman et al., 2013
3. Carman et al., 2011
Both types of manuscripts present the findings of the study, linking back to the aims and research questions. In a QI manuscript, however, the results section includes the outcomes associated with the intervention and changes in processes of care. The results section should explain the implementation of the intervention and experiences during each phase, degree of success in implementing it, and lessons learned (Ogrinc et al., 2008). A timeline can be developed to illustrate changes that occurred as the project progressed in the setting.

**Discussion.** In the discussion section, authors explain what the findings mean, comparing them with the results of other studies. The SQUIRE guidelines, however, also recommend authors summarize successes and difficulties in implementing the intervention. Similar to research reports, this section includes limitations, particularly factors that could affect generalizability of the findings such as characteristics of the setting and issues with implementation of the intervention (Holzmueller & Pronovost, 2013; Ogrinc et al., 2008). The discussion also should include recommendations of how to modify the intervention to improve its use.

**Reporting Research**

Manuscripts that report the findings of research studies follow typically the IMRAD format: Introduction, Methods, Results, and Discussion (American Medical Association, 2007; International Committee of Medical Journal Editors, 2013). This format can be used to structure research reports written for scientists and researchers and also for papers submitted to clinical and practice-oriented journals, although for clinical specialty manuscripts, the literature review might be less extensive, there would be fewer details on the research methods and statistical analyses, and the implications of the research findings for practice would be emphasized in the manuscript (Oermann & Hays, 2010).

Research reports must be written clearly and be complete. Guidelines similar to SQUIRE for reporting QI are available for authors to use when preparing manuscripts of different types of studies to ensure essential content is included for accurate interpretation of the findings. In an evidence review, O’Leary and Crawford (2013) found use of these guidelines improved the quality of published research in biomedical journals. One such set of guidelines is the Consolidated Standards of Reporting Trials (CONSORT) for reporting randomized controlled trials (RCTs). A Cochrane review confirmed the CONSORT checklist improved the completeness of reports of RCTs in peer-reviewed journals (Turner et al., 2012). Polit, Gillespie, and Griffin (2011) analyzed 199 reports of RCTs in 16 nursing journals regarding the extent to which nurse researchers reported they used blinding. Among other findings, the use or reporting of blinding in the articles correlated to whether the journal endorsed CONSORT for preparing manuscripts on RCTs for submission to the journal.

Guidelines for reporting various types of research are presented in Table 2. Authors should use these guidelines in preparing their manuscripts if recommended by the journal. If not specified by the journal, authors can consult the guidelines to ensure they are reporting complete information about the study.

**Title and abstract.** For research reports, the title should convey the aim and type of the study (e.g., if it was a RCT or ethnography) to improve the likelihood of the study being found in a search. This is important not only for researchers to locate relevant studies to build on but also for systematic reviews, meta-analyses, and other types of evidence reviews. The type of study can be included in the title or as a subtitle, for example, “CONNECT for Better Fall Prevention in Nursing Homes: Results from a Pilot Intervention Study” (Colon-Emeric et al., 2013).

The abstract of a research report should provide a summary of the study: the background, aims, methods, main findings, and conclusions. Some journals require structured abstracts with subheadings for each of those areas. With unstructured abstracts, written in paragraph form, authors should report the same information within the allocated word length.

**Introduction.** In the background of the research report, the author explains the need for the study and how it builds on previous research. For some manuscripts, there is a separate section for the literature review, and in others the literature is integrated in the background. Regardless of the format, the literature needs to be synthesized rather than each article summarized individually (Holzmueller & Pronovost, 2013; Oermann & Hays, 2010). Some research manuscripts include an explanation of the conceptual or theoretical framework that guided the study; the framework can be integrated in the background or developed as a separate section. The extent of discussion about the framework depends on the study and the journal for submission, and authors are advised to review other research reports published in that journal as to the description of the framework. A well-written introduction of a research manuscript identifies the gaps in knowledge and leads to the purpose, research questions, and/or hypotheses addressed in the study. An example from an article published in *Nursing Economics* is provided in Table 1.

**Methods.** The next section of the research paper is methods, and the standard format for reporting the methods was presented earlier. The description of the methods will differ based on the type of study, and authors are
advised to consult guidelines for reporting different types of research when writing the methods section (see Table 2). The key principle is to provide sufficient detail for others to evaluate the relevance of the findings for one’s own setting and to replicate the study. For a report of completed research, the methods section should be written in the past tense.

**Results.** The findings of the study are presented in the results section. The report of the findings should relate back to the purposes, research questions, and/or hypotheses. In writing this section of the manuscript, the author reports only the findings without discussion of their meaning or implications. In a qualitative research report, the purpose of the study and qualitative method used determine how the findings are presented.

For most research reports, the results section begins with a description of the participants and their demographic characteristics, avoiding redundancy with any prior information in the methods section. The main findings should be described first in the same order as the purposes, questions, and/or hypotheses presented earlier in the paper. The author should report main findings in the text and use tables for detailed and complex data to supplement the statements in the text without duplicating the information (Oermann & Hays, 2010).

**Discussion.** The discussion section of a research report provides an opportunity to interpret the findings and what they mean, indicate their consistency with prior studies with possible reasons for any discrepancies in findings, present implications of the study, and explain if the findings can be generalized and to whom. The implications are an important part of the discussion and should be based on the findings and not overstated. When reporting research for clinical and practice-oriented journals, this section, or a separate one, explains how readers can use the information in their own settings.

The conclusions can be provided at the end of the discussion or as a separate section. This is a brief summary paragraph that highlights the main findings and implications. Holzmueller and Pronovost (2013) recommended the conclusions section of a research manuscript be short and connected clearly to the questions and results.

**Reporting EBP Initiatives**

Evidence-based practice is the use of best evidence in conjunction with the nurse’s clinical expertise and patient values to guide decisions (Titler, 2008). It relies on a critical appraisal and synthesis of the evidence to answer a question. The process begins typically with a question and is followed by a literature review, appraisal of the evidence, and decision about whether a practice change is indicated (Carman et al., 2013; Shirey et al., 2011). Manuscripts on EBP initiatives can be prepared at any phase in the process: description of the problem or issue that led to an EBP project, report of the liter-
ature or systematic review of the evidence, and report on the implementation of the evidence and resulting outcomes.

Guidelines for reporting QI and research studies are applicable to EBP manuscripts. In the introduction, the author should describe the problem that led to the need for new approaches, characteristics of the setting, EBP model used for the project, and question to be answered. If the question was formatted as a PICO (Patient, Population, or Problem; Intervention; Comparison, the alternative to the intervention; and Outcomes), this should be reported in the paper. The literature review and process for appraising the evidence and rating its quality must be described clearly. The author should report the databases searched, electronic search strategy, process for selecting studies (screening and eligibility to be included in the review), and assessment of risk of bias that may affect the evidence (e.g., publication bias and selective reporting within studies) (Moher, Liberati, Tetzlaff, Altman, & PRISMA Group, 2009). The number of studies screened, assessed for eligibility, and included in the review; study characteristics; and the main findings including the strength of evidence also should be included in the manuscript. If the focus of the paper is to report the literature review and quality of the evidence, we recommend authors consult the PRISMA (Preferred Reporting Items for Systematic reviews and Meta-Analyses) guidelines (see Table 2). These guidelines were developed to improve reporting of systematic reviews but also can be used as a framework for writing a manuscript on a literature review for EBP (Moher et al., 2009; Oermann & Leonardelli, 2013).

Other manuscripts may include a report on the implementation of the evidence and resulting outcomes. For these papers, authors should describe the process used for determining whether a change in practice was indicated based on the evidence, factors that facilitated implementation and barriers to it, and lessons learned (Carman et al., 2013). Because the setting is integral to the EBP project, the discussion of the setting in the manuscript should include adopters, stakeholders, implementation, fidelity, and sustainability (Greenhalgh, Robert, Bate, Macfarlane, & Kyriakidou, 2005).

Conclusions

Guidelines for reporting QI, research studies, and EBP initiatives were provided to ensure manuscripts include essential information for readers to evaluate the studies and decide if the findings are applicable for use in their own settings. Each of these types of manuscripts has specific information that should be included for accurate and complete reporting.

REFERENCES


continued on page 69
Preparing Quality Improvement

continued from page 63


