Improving Compliance with Nurse-Managed Unfractionated Heparin Infusion Protocol: A Quality Improvement Project

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Introduction & Background

- Unfractionated Heparin (UFH) is one of the most common anticoagulants (AC) administered in the inpatient setting.
- UFH is a high-risk medication; improper management increases risk of adverse drug events (ADEs) and reduced medication effectiveness.
- Nurse-driven UFH management protocols have become increasingly utilized and require close monitoring and infusion titration.
- Current literature findings include:
  - Audit and Feedback (A&F): capable of reviewing quality of care provided in hospitals & confirming the need for improvement.
  - Plan-Do-Study-Act (PDSA) model: shown to be useful in making small-scale changes in healthcare.
  - Little research exists on combining A&F and the PDSA model to improve inpatient nurse protocol adherence.

Purpose & Aims

**Purpose:** Implement a two-cycle A&F intervention on the CU with the following aims:

- **Aim 1:** Increase nurses’ overall UFH protocol compliance measured using pre-/post- chart audits
- **Aim 2:** Improve nurses’ self-efficacy with managing UFH infusions measured using a pre-/post- survey

Methods

**Design:** QI project with a pre-/post- test intervention design

**Setting:** 32- bed adult cardiac unit (CU) in an urban academic medical center in the northeast

**Intervention:** One-group, two-cycle A&F process which was a collaborative approach to the PDSA model. Each PDSA cycle included:

- A chart audit, presentation of results to nurses and discussion of barriers that were reported by nurses via anonymous reporting systems and how to overcome before the next audit
- A&F: capable of reviewing quality of care provided in hospitals & confirming the need for improvement.

**Measurement & Data Collection:**

- **Aim 1:** Retrospective chart audits completed one month pre- and post-intervention, modeled after the current hospital-wide audit system, but more frequent and with unit-specific criteria
  - 11 specific criteria audited per chart; one point given for each met criteria
  - Inclusion criteria: Patient on infusion for at least 24 hours/infusion initiated on CU
- **Aim 2:** Generalized Self-Efficacy (GSE) Scale:
  - 10 items with a four-point Likert-type response scale. Higher score indicates higher self-efficacy
  - Paired results to measure self-efficacy pre-/post-intervention

**Sample:** 52 CU employed registered nurses who perform regular care of patients on UFH infusions

<table>
<thead>
<tr>
<th>Chart Audit</th>
<th>Pre-audit</th>
<th>Post-audit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Days on UFH</td>
<td>3.2</td>
<td>3.6</td>
</tr>
<tr>
<td>Self-Efficacy Score</td>
<td>7.0</td>
<td>7.2</td>
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</tbody>
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**Results**

**Aim 1:**

- 4 charts were included in the pre-audit and 5 in the post-audit.
- Pre-audit: median score was 6.5 (IQR 2.5); mean score was 7 (SD=1.41). Mean days that patients were on UFH was 3.75 (SD=1.5)
- Post-audit: median score was 8 (IQR 3); mean score was 7.6 (SD=1.52). Mean days on UFH was 3.2 (SD=1.64)

**Aim 2:**

- A total of 17 participants completed the pre- and post-GSE survey
  - Median score on the pretest was 33 (IQR 6); Post-test median score was 34 (IQR 7)
- A Wilcoxon Signed Rank test found that the increase in median GSE scale scores was not statistically significant (p=.775).

**Conclusion & Dissemination**

- Strengths:
  - Nurse feedback indicated frequent A&F/two-way communication was helpful and educational;
  - Highlighted areas that could be improved with the current hospital UFH audit system

- Limitations:
  - Low sample sizes, staff turnover, short duration, medication shortages

- Clinical significance is indicated in that nursing staff reported that the two-way communication regarding barriers to compliance to be beneficial
  - Results are disseminated to nursing leaders on the CU & hospital/unit anticoagulation committee members to encourage an extended intervention period with higher sample sizes

**References**