Evidence-based Injection Practice: To Aspirate or Not

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PiCO Question
At SMC, will the elimination of aspiration prior to subcutaneous or intramuscular injections (except for those given in the dorsal gluteal site) remain a safe practice for all patients receiving injections?

Abstract Summary
The Sanford USD Medical Center policy stated to aspirate for all intramuscular (IM) injections and subcutaneous (SQ) injections except for heparin and insulin. Our practice at SUSDMC was not consistent with the Center for Disease Control (CDC) recommendations to not aspirate prior to injection. A review of literature was performed. The Iowa Model for Evidence-Based Practice Projects was used. An educational presentation was developed for the Clinical Reasoning Committee (CRC). A policy change was recommended and subsequently implemented through the CRC. This change in practice was communicated through CRC, Nursing Senate and unit meetings.

Review of Literature

External Evidence
- There is lack of published data regarding syringe aspiration (2)
- There is no reported evidence that aspiration with or without blood return
  - confirms correct needle placement
  - eliminates the possibility of an IM injection into a non-subcutaneous blood vessel. (4)
- Elimination of the aspiration technique has potential to:
  - Reduce injection duration time
  - Decrease injection pain
  - Increase medication injection compliance (3)
- Aspiration during SQ or IM injection (except for the dorsal gluteal) is not necessary since there are no major blood vessels in these sites. (4)
- Dorsal gluteal site is not recommended for IM injection because of the sciatic nerve and vessels in the area.
  - ventrogluteal, deltoid, and vastus lateralis are the preferred sites for IM injections since they avoid nerves and blood vessels. (1)
- Recommended aspiration injection duration time of 5-10 seconds for confirmation of no blood return is not performed consistently. (3)
- Center for Disease Control (CDC) recommends that aspiration before injection of vaccines or toxoids is not necessary because no large blood vessels are present at the recommended injection sites, and a process that includes aspiration might be more painful for infants. (1)
- Over a 4-year period 36,000 allergy injections were administered using aspiration for blood return before administration with no blood aspirated during those injections. (5)

Practitioner Change & Implementation
1. A policy change was recommended and implemented through the Clinical Reasoning Committee:
   For administration of subcutaneous (SQ) and intramuscular (IM) medications, proceed according to Nurses’ Guide to Clinical Procedures excerpt for the following steps:
   - Administer SQ injections in the various sites depicted in Nurses’ Guide to Clinical Procedures but aspiration prior to injection is not recommended.
   - Administer IM injections into the deltoid, vastus lateralis or ventrogluteal sites as depicted in the Nurses’ Guide to Clinical Procedures. Aspiration prior to injection in these sites is not recommended. Unless it is indicated in the package insert for a specific medication, injection into the dorsal gluteal is not recommended since this site is close to the sciatic nerve. If the dorsal gluteal site is selected, aspirate prior to the injection.
   - Administer SQ or IM vaccines without aspiration prior to injection (1).
2. This change in practice was communicated through CRC, Nursing Senate and unit meetings.

Outcomes

Survey Questions (n=42)

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>If you administer SQ or IM injections without aspiration, did you aspirate for blood return before injection?</td>
<td>91%</td>
<td>9%</td>
</tr>
<tr>
<td>If you had an opportunity to give medication via IM or SQ routes since July, 2017?</td>
<td>86%</td>
<td>14%</td>
</tr>
<tr>
<td>Did you administrate ’yes’ on question 5, did you aspirate for blood prior to IM and SQ injections?</td>
<td>2%</td>
<td>98%</td>
</tr>
<tr>
<td>Did you know that SMC Administrative SOP M-159 states that aspiration is not recommended prior to IM injection using ventrogluteal, vastus lateralis, and deltoid muscular injection sites?</td>
<td>91%</td>
<td>9%</td>
</tr>
<tr>
<td>Did you know that SMC Administrative SOP M-159 states that aspiration is not recommended prior to SQ injection?</td>
<td>98%</td>
<td>2%</td>
</tr>
<tr>
<td>Did you know that elimination of the aspiration technique can reduce injection duration time, decrease injection pain, and increase medication compliance?</td>
<td>98%</td>
<td>2%</td>
</tr>
</tbody>
</table>

References
1. General Recommendations on Immunization: Recommendations of the Advisory Committee on Immunization Practice (ACIP). MMWR, January 28, 2011, 60 (RR02); 1-60.

Preferred sites

<table>
<thead>
<tr>
<th>Area</th>
<th>Image</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deltoid</td>
<td>![Deltoid Image]</td>
</tr>
<tr>
<td>Vastus lateralis</td>
<td>![Vastus lateralis Image]</td>
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<tr>
<td>Ventrogluteal</td>
<td>![Ventrogluteal Image]</td>
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