Improving Documentation of Arterial Pulse Exams: An EMR Intervention

Katrina Chu, MD, Alexander Misono, MD, MBA, Meredith Preziosi, PA-C, Melissa Chittle, NP, Gregory Walker, MD
The authors do not have any financial relationship with commercial organizations that may have a direct or indirect interest in the content.
Interventional radiologists (IRs) perform procedures requiring arterial access on a daily basis

- The peripheral pulse exam is a critical part of the patient evaluation, for access and in case of complications
- However, the pulse exam is not always done or documented

Study Purpose: To employ tools from our hospital’s new electronic medical record (EMR) that prompt clinicians to perform and efficiently document the pulse exam
**Intervention:** We deployed a smart-phrase that when typed, immediately inserts a dedicated fill-in-the-blank peripheral pulse exam

- "PULSES"

<table>
<thead>
<tr>
<th>Skin: Intact, warm, no lesions, no rashes, no cyanosis, no ulcers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Right pulses:</strong> radial ***, femoral ***, DP ***, PT ***</td>
</tr>
<tr>
<td><strong>Left pulses:</strong> radial ***, femoral ***, DP ***, PT ***</td>
</tr>
<tr>
<td>Laboratory:</td>
</tr>
<tr>
<td>@LASTCOAGS@</td>
</tr>
</tbody>
</table>

**Additionally,** IR department-wide templates were updated to automatically embed the new smart-phrase, e.g.

- "IRCONSULT"
- "IRINPATIENTPROGRESSNOTE"
Materials and Methods

- **Patient population**: New patients to the multidisciplinary hepatobiliary IR clinic being evaluated for a procedure that requires arterial access
- **Study period**: April 2016 (the “go live” date of the hospital’s new EMR) to December 2016
- **Intervention date**: An email was sent September 2016 notifying all IR clinicians of the new tools
- **Analysis**: Single-institution, IRB-exempt study
  - Documentation rates, specific peripheral pulses documented, and clinician type were compared before and after the intervention
  - Data were compared and analyzed using the N-1 chi-squared test
Results

- 64 new outpatients (33 pre-implementation, 31 post) were evaluated for a procedure requiring arterial access

- Performed arterial procedures included: transarterial chemoembolization (TACE) (42%), selective internal radiotherapy (SIRT) (34%), uterine artery embolization (UAE), peripheral angiography, and selective embolization of visceral arteries (remainder <10%)

- **Findings:** Rate of documentation went from 42% (14 of 33) to 71% (22 of 31) (p=0.02)
Documentation rates of peripheral pulses rose significantly after implementation of the new smart-phrase and templates.
Results

The radial pulse exam was least frequently performed compared to the lower extremity pulses.

Midlevel practitioners had the best rate of documentation overall, followed by fellows/residents and then attendings.

FEM = femoral, DP = dorsalis pedis, PT = posterior tibialis
Discussion

- **Templates and smart-phrases** appear to be helpful reminders to document (and perhaps perform) critical peripheral arterial pulse examinations in IR clinic
  
  - Simple interventions may be useful in **modifying other behaviors** of IRs in clinic (e.g. assessing cardiovascular risk factors)

- **Additional analysis** may be conducted to characterize:
  
  - **Longer-term impact** of the intervention
  
  - Impact of documentation on inpatients and/or the perioperative setting
Conclusion

- **Transarterial procedures** are a core part of interventional radiology

- **Proper documentation of peripheral pulses** are a small but essential component of good clinical practice

- This QI initiative suggests that a straightforward intervention using **simple tools from the EMR** can significantly improve documentation and perhaps performance of this exam
Thank you

Katrina F Chu, MD, Alexander Misono, MD, MBA, Meredith Preziosi, NP, Melissa Chittle, PA-C, Gregory T Walker, MD

kfchu@partners.org
amisono@mgh.harvard.edu