

Team Safety Brief

April 2016

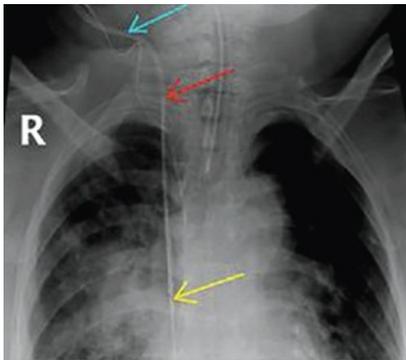
Team-Based Actionable Safety Solutions for Physicians, Nurses, Therapists & Directors

Guidewire Safety

By Drew Fuller, MD, MPH, FACEP and Karla Lacayo, MD, FACEP

Practical Solutions for Avoiding Complications with Guidewire Use

Guidewires are essential for intravascular line placement. The Seldinger technique has helped to make the practice mainstream since the 1950s. While the wires are important for accurate and safe placement of intravascular catheters, there are several potential complications that commonly occur.



The most common complication is cardiac arrhythmia from the wire stimulating the myocardium during central line placement (IJ or subclavian). Another notable and common event is loss or retention of the wire. Both can be avoided by limiting the depth of wire insertion.

Practical safety practices with guidewires, however, are not commonly taught nor formerly “hard-wired” in most clinical settings.

It is important to acknowledge system vulnerability and to reinforce key safety steps that can help avoid complications through formal practices, education, team engagement and monitoring. Addressing the key contributing factors and avoiding blame is essential for achieving sustainable safety success.



Common Complications

- Cardiac dysrhythmias
- Retention of the guidewire within the vascular system
- Perforation of vessels/heart
- Wire kinking, looping, or knotting
- Entanglement with previously placed intravascular devices
- Breakage of the distal tip of the guidewire

Hospital/Health System
Logo
Placeholder

Distribution Partner
Logo
Placeholder

www.EDSafety.org

Actions to Avoid Guidewire Complications

1. Limit insertion depth of the wire to less than 15-20 cm (high leverage action)

This depth is enough to allow the catheter to be adequately threaded into the vessel and decreases the chances of cardiac arrhythmias or retained wire.

2. Maintain one hand on the wire and only advance the catheter into the patient

This helps keep track of the wire and decreases chances of deep insertions or retained wires

3. Keep 1/4 or more of the guidewire out the distal HUB of the catheter

Guidewires for central lines are typically 60 cm (>2x times longer than the catheter). Keeping more than 1/4 of the wire out of the back hub allows for consistent visualization and handling; avoiding deep insertions or retained wires

4. If the wire is not retracting easily, remove the needle and the wire together

Occasionally the wire may be sheered or caught up on the insertion needle. If this occurs, remove the needle and the wire simultaneously. This will help avoid breaking off the distal tip of the wire and subsequent vessel damage, retention or embolization. Avoid reusing bent wires.

5. Incorporate guidewire removal into the insertion/bundle safety checklist

Create a formal step in the checklist to assure wire removal. Empower the team to affirm this step together.



6. Avoid interruptions during line placement

Minimizing interruptions may decrease the chance of injury or adverse events. Establish the importance with team members & consider signage on the door when placing the line.

7. Contact IR or vascular surgery immediately if suspected retention or fragmentation of the wire

Complications may occasionally occur; addressing the issue immediately will help decrease clinical or other complications.

Acknowledgments:

Safety Leadership Group of EMA/ASE,
Martin Brown, MD, FACEP, Scott Tears (Design)

References Links:

- 1) [VA Center for Patient Safety](#)
- 2) [Williams, T, et al, Journal of Assoc. of Vasc. Access](#)
- 3) [Andrews, RT. Critical Care Medicine](#)

Team Safety Briefs

Team Safety Briefs are prepared by practicing clinicians and safety leaders to help clinical teams and hospital leaders implement practical, actionable safety solutions.

Safety Brief topics as well as additional customizable team-based safety tools and resources are available on the ED Safety Solutions website at www.EDSafety.org

