Quality Improvement in Cath Lab Teaching

Cath lab teaching and learning are hindered by unstructured approaches to educational activities. Teachers are also limited by time constraints, competing responsibilities, and lack of formal training and support as educators. Learner experiences may be compromised as teachers prioritize treating critically ill patients, performing high-risk interventions, or avoiding complications. The following information is presented to help improve teaching within the catheterization laboratory.

Teacher Purpose (RISE):

R: Role model
I: Introduce concepts
S: Set expectations
E: Evaluate learning

Teacher Requirements:

• Positive attitude towards teaching
• Calm and courteous manner
• Willingness to provide hands-on training
• Patience to guide learners to success

Learner Goals:

• Building knowledge, skills, and character
• Self-monitoring and reflection
• Seeking feedback and understanding limitations
• Building lifelong learning skills

Structured Approach to Cath Lab Teaching

Prepare	Perform	Debrief
Steps for a pre-procedure huddle.	Teaching is adjusted to fit each learner's experience.	Teaching continues after the procedure is finished in order to provide opportunities for improvement.
STEP 1: Diagnose your learner • Query learner's prior experience • Ask for learner's strengths/ weaknesses • Discuss learner goals for the procedure **STEP 2: Pre-procedure huddle** • Do a verbal "walk through" • Use visual aids • Anticipate challenging steps **STEP 3: Preview learning strategies** • Set expectations for learner actions • Describe how you will give guidance • Prepare learner for interruptions	**DEMONSTRATE (novice level):** • Teacher performs all or part of the procedure • Teacher narrates each step • Learner performs steps under direct supervision **COLLABORATE (advanced beginner to competent level):** • Teacher and learner team up to complete procedure • Learner gains autonomy as proficiency is obtained • Teacher assesses and adjusts level of support **CONSOLIDATE (proficient to expert level):** • Learner performs the procedure • Teacher manages the procedure and complications • Focus is on developing confidence and autonomy	**COMPETENCE:** • Request learner perception of performance • Provide constructive criticism • Develop an action plan together **CONDUCT:** • Discuss good & bad interactions with others • Promote leadership • Emphasize culture of safety and respect **CONFIDENCE:** • Give positive feedback • Review progress towards goals • Compare perceived to actual skill level (overconfidence vs. timidity)

Teaching within a culture of safety and respect

SCAI
Society for Cardiovascular
Angiography & Interventions

Learn more at https://scai.org/

Quality Improvement in Cath Lab Teaching (continued)

Understanding Different Learning Styles

https://educationdesignsinc.com/index-of-learning-styles/

ACTIVE LEARNERS
Learn information through active engagement first, such as group interaction, discussion and application.

REFLECTIVE LEARNERS
Learn information best by thinking through concepts first, may be less inclined to try out new concepts before prior reflection.

SENSING LEARNERS
Patiently and carefully learn information related to practical, specific real-world scenarios. Learners tend to enjoy solving problems by known methods rather than innovating new ones.

INTUITIVE LEARNERS
Like to discover new concepts, relationships, and possibilities between ideas. Learners tend to work faster, are more innovative, and are more comfortable with abstract and theoretical topics.

VISUAL LEARNERS
Learn best when visual information is presented. Materials including visually appealing figures, images, videos, or demonstrations are helpful.

VERBAL LEARNERS
Learn information best from written and spoken explanations, including lectures, didactics, and group discussions. Using these methods learners hear explanations from others or do the explaining themselves.

SEQUENTIAL LEARNERS
Learn best in logical sequential steps towards understanding information before applying it. "Big picture" concepts and topical connections may still be missing before application.

GLOBAL LEARNERS
Learn in larger, less organized steps to understand the "big picture" before applying it. Specific details may still be missing before application.

Teaching Quality Improvement and Patient Safety

ON-THE-FLY ROOT CAUSE ANALYSIS:
- Define an unintended outcome
- Ask the learner to critically evaluate why an error occurred
- Start by having the learner write down "Why" 5 times on separate lines
- Next to each "Why" write down what led to the event
- By the 5th "Why" an approximate "root cause" of the outcome will be found
- Discuss with the learner how this outcome could have been avoided
- Identify an intervention that would have prevented the outcome

PLAN, DO, STUDY, ACT (PDSA)
PDSA is a method used for changing or improving a process, and testing the change that is implemented. A simple action that is carefully planned and evaluated can improve care.

- **Plan:** Think about an intervention intended to improve an outcome
- **Do:** Conduct the intervention
- **Study:** Review the process and its outcomes
- **Act:** Based on the previous steps, determine the next step

References: 1) Bass TA, Abbott JD, Mahmud E, et al. 2023 ACC/AHA/SCAI Advanced Training Statement on Interventional Cardiology (Coronary, Peripheral Vascular, and Structural Heart Interventions): A Report of the ACC Competency Management Committee. Circ Cardiovasc Interv. 2023 Apr;16(4):e000088. doi: 10.1161/HCV.0000000000000088. 2) Mookherjee S, Cosgrove EM (Eds.). (2016). Handbook of Clinical Teaching. Springer. https://doi.org/10.1007/978-3-319-33193-5. 3) Brent R, Felder R. (2024 April 5). Resources for Teaching and Learning STEM: Index of Learning Styles. Education Designs Inc. https://educationdesignsinc.com/index-of-learning-styles