Teaching Intuitive Clinical Expertise: Overcoming the Curse of Knowledge

Kelly A. Ryan, MD, and Josephine Stout, MD, Nemours Children's Health, Wilmington, DE

Once you know something, it is hard to imagine not knowing it.
The fix is to make the hidden steps explicit again.[1]

Recognize the Expert Blind Spot

As skills become automatic, experts forget the individual steps and cues that got them there, making it hard to narrate what they are doing, let alone explain how.[1]

Experts unconsciously skip steps and assume learners see what they see. This is a predictable byproduct of expertise, not an individual teaching failure.

Example: "This kid will be a difficult airway": a judgment that is hard to explain.

Know Your Learner's Stage: The Dreyfus Model[2]

1. Novice	Follows rules rigidly; needs step-by-step guidance
2. Advanced Beginner	Spots patterns but leans on rules; can't yet prioritize
3. Competent	Plans and prioritizes with deliberate effort
4. Proficient	Sees the whole; intuition starts replacing reasoning
5. Expert	Fluid, largely unconscious tacit understanding

With mixed-level teams, ask **tiered questions**: foundational for novices, "what if" for seniors.

Create the Two Conditions for Tacit Knowledge to Transfer

1. The expert slows down: willing to expose reasoning, uncertainty, and gaps, even if slower.
2. The learner feels safe: able to admit not understanding what seems "obvious."

Both depend on **psychological safety**, a shared belief that the team is safe for interpersonal risk-taking.[3] Build it by modeling uncertainty aloud and inviting input from every team member.

Make Your Thinking Visible: Cognitive Apprenticeship

Six methods bring tacit expert reasoning into the open:[4]

- **Modeling** (think aloud while doing)
- **Coaching** (real-time hints)
- **Scaffolding** (temporary structure, then faded)
- **Articulation** (learner explains reasoning)
- **Reflection** (learner compares with you)
- **Exploration** (new case, less support)

Example (post-op Fontan, pH 7.28 / pCO_2 55): "CO_2 is up, so I could increase the rate, but in a Fontan I'm also asking what that CO_2 is doing to PVR and to preload for the single ventricle." Then hand the next gas to the trainee: "Walk me through this one."

Respect Cognitive Load in High-Acuity Moments

Working memory holds only ~4–7 new elements.[5] In a crisis, **intrinsic** load (unstable physiology, doses, algorithms) and **extraneous** load (alarms, crowding, unclear roles) are both high, leaving little capacity for **germane** load (actual learning). Acute stress narrows attention further.[6]

- Use mnemonics and frameworks to "chunk" information and free up working memory.
- Keep teaching brief, concrete, and one concept at a time
- Defer articulation and reflection to the debrief, once the patient is stable

Teach in the Time You Have: The One-Minute Preceptor [7]

1. Get a Commitment: *"What's your plan, and what worries you most?"*

2. Probe for Evidence: *"What led you there? What else did you consider?"*

3. Teach a General Rule: One take-home principle aimed at the gap, not a mini-lecture.

4. Reinforce the Good: Be specific: *"Watching the trend was the right call."*

5. Correct Mistakes: Name the specific gap and how to approach it next time.

Remember to consider: What stage is this learner at, and what do they need from me?

Model uncertainty out loud. Invite questions. Articulate your reasoning.

References

1. Heath C, Heath D. The curse of knowledge. Harv Bus Rev. 2006;84(12):20-23.
2. Dreyfus SE, Dreyfus HL. A Five-Stage Model of the Mental Activities Involved in Directed Skill Acquisition. Berkeley: University of California ORC; 1980.
3. Edmondson A. Psychological safety and learning behavior in work teams. Adm Sci Q. 1999;44(2):350-383.
4. Collins A, Brown JS, Holum A. Cognitive apprenticeship: making thinking visible. Am Educ. 1991;15(3):6-11,38-46.
5. van Merriënboer JJG, Sweller J. Cognitive load theory in health professional education: design principles and strategies. Med Educ. 2010;44(1):85-93.
6. LeBlanc VR. The effects of acute stress on performance: implications for health professions education. Acad Med. 2009;84(10 Suppl):S25-S33.
7. Neher JO, Gordon KC, Meyer B, Stevens N. A five-step "microskills" model of clinical teaching. J Am Board Fam Pract. 1992;5(4):419-424.