

# *Advancing* NP diagnostic reasoning with multimedia learning and formative practice

A practical approach to making diagnostic reasoning visible, measurable and competency-aligned



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# Introduction

Nurse practitioner (NP) education is fundamentally competency-based: programs must prepare graduates to demonstrate, not merely describe, the clinical judgment and decision-making expected of a provider. Among these competencies is diagnostic reasoning, one of the most difficult skills for students to develop, and one that is consequential for safe, effective practice. However, diagnostic reasoning is often assumed to emerge on its own during clinicals rather than being taught, practiced and measured deliberately.

This brief outlines an evidence-informed, multimedia approach to making diagnostic reasoning visible and practicable and shows how Osmosis from Elsevier can support programs in connecting instruction to measurable, competency-based outcomes.

# The challenge

NP programs face two distinct but connected challenges: a student skill gap and a pedagogical gap.

## **Challenge 1: The student skill gap**

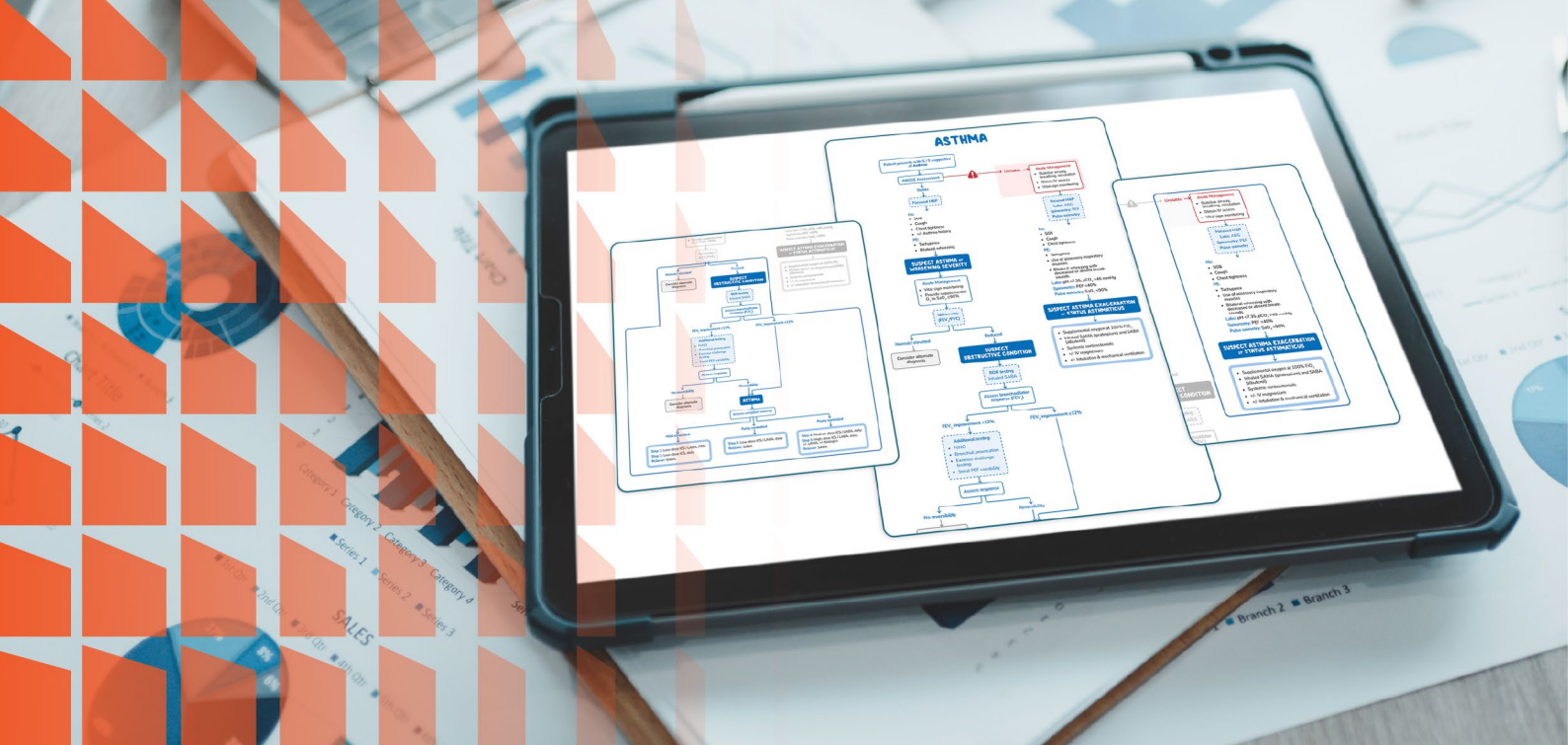
As students move into advanced practice, they must shift from nursing diagnoses and care planning to provider-level clinical decision-making. This transition forces them to go beyond simply knowing more concepts and content to actually reasoning differently. In practice, learners frequently struggle to recognize key clinical cues, generate differential diagnoses, prioritize the most likely diagnoses and make sound decisions under time pressure. A recent scoping review of diagnostic reasoning in U.S. primary care NP education reinforced that skills such as history taking, problem statement formation, differential diagnosis development and evidence-based treatment plan generation are precisely the competencies that require deliberate mastery for safe, independent practice (Smith et al., 2022).

## **Challenge 2: The pedagogical gap**

Next, the way diagnostic content is traditionally delivered does not match the way diagnostic reasoning is actually acquired. Reasoning is a skill, and like any skill it develops through repeated, applied practice across realistic patient presentations; not through the passive content review and disease-by-disease coverage that much of the curriculum still relies on. That traditional approach teaches conditions in isolation, so students may understand individual disease processes yet never build the comparative thinking that clinical practice demands. Common chief complaints, like shortness of breath, chest pain, abdominal pain and fatigue, each carry many potential etiologies and require students to weigh similar presentations against one another and prioritize a differential, a cognitive move that content review simply does not train. Cognitive load theory explains why the gap widens further: when instruction overwhelms working memory with undifferentiated information, it actively disrupts the very reasoning it is meant to build. Closing the pedagogical gap therefore requires more than better content. It requires tools that scaffold reasoning into manageable, visible steps students can rehearse, revisit and gradually master.

Bridging the two challenges is a practical reality: faculty need scalable ways to help students develop these skills before clinicals, certification and practice, but traditional content review alone does not always achieve this.





# An evidence-informed approach: Scaffold the reasoning process

Short instructional videos, decision-making trees and practice questions can scaffold diagnostic reasoning in a way that is structured, repeatable and student-centered. Used together, they apply multimedia learning principles to reduce cognitive load and make each step of the reasoning process explicit.

## Short instructional videos

Concise videos introduce or reinforce key clinical concepts, use focused visual explanations and chunk content to reduce cognitive load, helping students review complex concepts efficiently and return to them as often as needed.

## Decision-making trees

Branching if/then pathways help learners visualize how patient data shape the next step in an encounter, supporting differential diagnosis generation, prioritization and clinical decision-making in a form students can clearly follow and internalize.

## Practice questions

Low-stakes questions give students repeated opportunities to apply reasoning and identify gaps in their application of knowledge. Built around clinical vignettes, they require prioritization and reasoning rather than recall, and they provide feedback that supports self-assessment and remediation.

## Scaffolding toward higher-level learning

Effective scaffolding also works vertically. Content can be curated so that learning builds progressively toward higher-level clinical reasoning, and when a student struggles with a concept, they can drop back to more foundational pieces such as pathophysiology and anatomy before stepping back up. This layered structure supports learners in closing knowledge gaps without derailing their progress toward provider-level decision-making.

# Where Osmosis fits

Osmosis helps NP programs put this instructional approach into practice through short videos and practice questions, as well as other features like playlists, flashcards and structured study tools. Rather than adding content for its own sake, these resources operationalize a scaffolded approach:

- Students can review complex topics through **concise, multimedia instruction** that manages cognitive load
- Faculty can recommend **targeted resources** tied to course objectives or specific complex clinical presentations
- **Playlists, flashcards and study schedules** support spaced review and independent remediation
- **Practice questions** help students assess their readiness and identify areas for further study

Osmosis resources are modular; as such, they fit naturally into a flipped-classroom model, where content is used before class to prepare, after class to consolidate, during remediation to close gaps or in the run-up to certification. Flipped and active-learning designs of this kind have been described as an effective way to reorganize graduate nursing instruction around applied practice rather than passive coverage (Sullivan, 2022).



## Supporting competency-based education

A multimedia and practice-based approach supports competency-based education (CBE) by connecting learning activities to measurable outcomes. Learning objectives can be mapped to the AACN Essentials, NONPF Core Competencies and certification blueprints, so that every resource a student engages with ties back to an applicable competency.

Practice questions, in turn, can function as formative progression indicators. As students work through them, the resulting analytics provide faculty an early, actionable view of which students are on track and those who may need additional support well before a poor performance on a summative exam or clinical experience. Over a course or program, this gives students repeated opportunities to demonstrate applied knowledge and reasoning while providing faculty with the evidence to intervene earlier and more precisely.



# Benefits

## For faculty



**Scalable support for diagnostic reasoning instruction**



**Consistent resources across cohorts**



**Easier, data-informed remediation planning**



**Alignment with competency-based education expectations**



**Support for certification preparation and transition-to-practice goals**

## For students



**A clearer understanding of the steps involved in diagnostic reasoning**



**Repeated practice with realistic clinical presentations**



**Flexible review through videos, flashcards, playlists and questions**



**Greater confidence applying knowledge to patient scenarios**



**Stronger certification readiness and a smoother transition to advanced practice**

# Conclusion: Moving from knowledge acquisition to practice readiness

NP education requires more than content coverage. To practice safely and independently, students need structured, repeated and feedback-rich opportunities to develop diagnostic reasoning, and programs need a way to show that development is happening. By combining short multimedia

instruction, decision-making pathways and formative practice questions, Osmosis can help NP programs strengthen diagnostic reasoning, support competency-based education, bolster certification preparation and prepare learners for the transition to advanced practice.

**Explore how Osmosis can support diagnostic reasoning, remediation and certification readiness in your NP program.**

## References

Smith, S. K., Benbenek, M. M., Bakker, C. J., & Bockwoldt, D. (2022). Scoping review: Diagnostic reasoning as a component of clinical reasoning in the U.S. primary care nurse practitioner education. *Journal of Advanced Nursing*, 78(12), 3869–3896. <https://doi.org/10.1111/jan.15414>

Sullivan, J.M. (2022). Flipping the classroom: An innovative approach to graduate nursing education. *Journal of Professional Nursing*, 41, 26–32. <https://www.sciencedirect.com/science/article/pii/S8755722321001848>

