

EMS educators should make sure they're incorporating challenging, scenario-based training into their curriculum, and providers should examine their decision-making processes.



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CRITICAL THINKING

**A NEW
APPROACH
TO PATIENT
CARE**

>> BY DAVID L. SULLIVAN, PHD, NREMT-P, & CHRISTOPHER CHUMBLEY, RN, BS, NREMT-P

As EMS responders, we're challenged with complex patient care situations, and we often make decisions using past experiences, protocols and medical consultation to guide us through treatment "mazes." Using our natural problem-solving process, we tend to see a problem and think about similar past experiences, which we believe will help us implement a workable solution to the problem.^{1,2,3}

As we strive toward patient care excellence, however, we need to also look for the best solution for our patient care needs. Research continues to reveal that EMS responders may benefit from increasing their practice of critical thinking, problem-solving and decision-making in initial and continuing education.⁴⁻¹³

Studies are finding that increased practice and exposure to triage, airway management and medication administration decision-making will allow us to achieve an increased quality of patient care.^{7,14-22} Research has also found many reasons for patient care deficiencies, but a common theme is that EMS students and providers may not be getting enough practice or exposure to thinking "outside of the box" in difficult, critical-thinking scenarios.^{12,14,18,20,21,23-25}

This lack of exposure is why EMS educators should continue to challenge students with skills practice and competency assessments. Even with minimal time and prac-

tice in the classroom and clinical settings, EMS educators and instructors should infuse the curriculum with complex scenarios and problems to stimulate students' critical thinking and problem-solving skills.²⁶⁻³⁰

This can be accomplished by using patient simulation, team-based thinking scenarios, realistic scenarios with variable outcomes and student-group-facilitated presentations.¹²

All of these combined will have a greater meaning to students as they navigate through the many requirements to achieve competence and real-life experience in the patient care setting.³¹

In response to this need, EMS educational materials are placing more emphasis on critical thinking and encouraging educators to challenge students to think through complex patient care situations.^{28,32,33}

THOUGHT PROCESS & DECISION-MAKING MODELS

These critical thinking and problem solving skills can't be taught by using only local protocols as gospel in the classroom, nor should we be teaching by a "cookbook" methodology alone.¹²

Problem solving and decision-making processes in the public safety professions have developed and evolved over many years, allowing researchers to explore the thought processes decision-makers use when confronted with real-life situations.^{1,2,34,35}

RECOGNITION-PRIMED DECISION MODEL

One thought process and decision-making model that has evolved and been widely accepted is the Recognition-Primed Decision Model (RPDM).^{2,36}

The RPDM uses three phases of processing and situation response. This decision-making process can occur very quickly as part of a natural thinking process (See Figure 1).² The phases of the RPDM include: 1) situation recognition (seeing a problem); 2) serial option evaluation (recognizing clues that match previously lived experience); and 3) mental stimulation (finding a solution that works and using it; if it doesn't work, find another one).^{1,2,3,6}

By using the RPDM, a responder is able to use situation matching with previously experienced problems, developing expectations for what may happen in this situation, and find what's worked in the past, evaluating to find a workable solution and implementing a reasonable plan of action to solve the problem.²

This process, which is a natural part of our decision-making process, helps us quickly find a workable solution and may not always lead us to the best solution for all patient care problems, especially if the decision-maker doesn't have past experiences to call upon.^{2,3}

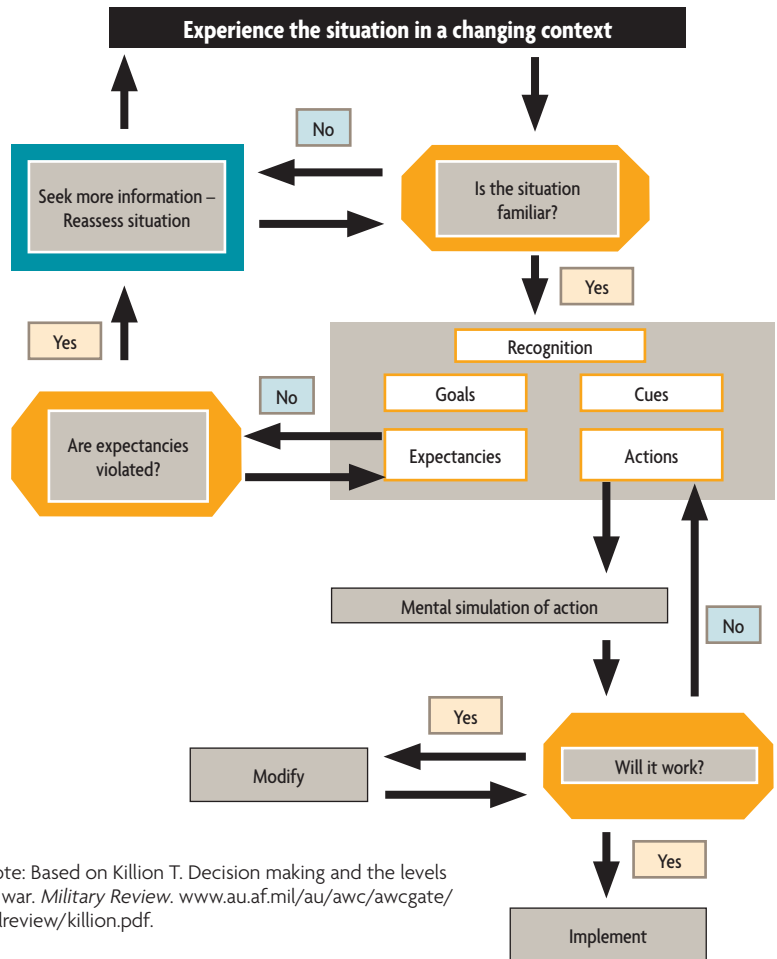
In EMS, we pride ourselves in making the best patient care decisions possible. Finding a workable solution is part of what we do in our ever-changing workplace, and working through our patient care decisions—before, during and after the call—is essential to ongoing learning. Because of this, we must explore ways to improve our thinking process.^{3, 8, 37-40} Critical thinking can greatly impact patient care and be enhanced by infusing it into all aspects of our lifelong learning.⁴¹

Here are some patient care examples to which we can apply decision-making and critical thinking processes:

Patient Care Example #1

- >> EMS is called to a private residence by a neighbor at 11:30 p.m.
- >> The patient thinks she's fine and that the neighbor is overreacting.
- >> The patient is an 82-year-old female.
- >> Her chief complaint is headache; and she wants to take an aspirin.
- >> EMS finds the patient alert and ori-

Figure 1: The Recognition-Primed Decision Model



Note: Based on Killion T. Decision making and the levels of war. *Military Review*. www.au.af.mil/au/awc/awcgate/milreview/killion.pdf.

- ented, seated in kitchen chair.
- >> The patient denies chest pain, shortness of breath, nausea or any other problems.
- >> The patient's skin is pink, warm and dry; capillary refill is < 2 seconds and her skin turgor is good.
- >> Lung sounds are clear and equal bilaterally.
- >> Vital signs are BP 230/124 by auscultation, heart rate 88 strong and regular, respiratory rate 20 and unlabored, pulse ox 98% on room air.
- >> Her grip strengths and motion capabilities are equal in all extremities.
- >> Her ECG reveals sinus rhythm at 88 without ectopy.
- >> Medications found in kitchen include a hypertension medication with a label that suggests she hasn't been taking it as prescribed.
- >> On further questioning, the patient states she had a ground-level fall last

week but denies loss of consciousness or problems afterward.

- >> The patient reluctantly agrees to be transported by EMS and will only go to the same local emergency department (ED) she went to this past week.

Given these facts, do we treat her hypertension (systolic > 220 mmHg and/or diastolic > 120) with sublingual or IV nitroglycerine? Do we consider a hospital with neurosurgical capabilities (even if it's 15-20 additional minutes of transport time)? Is the patient suffering from an intracranial bleed? Do we need to consider anything else for this patient's condition?

So many questions can originate from this type of call, and it may take more than protocol to determine what's in the best interest of the patient.

Application of critical thinking in this situation will cause the personnel involved to dig deeper to help them make the right choice for the patient's best outcome.

Patient Care Example #2

- >> EMS is called by the patient's wife to a private residence at 2:42 p.m.
- >> EMS finds the patient sitting in his garage with painting materials next to him.
- >> The patient is a 63-year-old male with a history of tobacco use and hypertension. He's found to be diaphoretic with a slightly delayed verbal response to questioning.
- >> The patient states he was painting the outside of his house, in the sun, for some time before feeling weak.
- >> His lung sounds are clear and equal bilaterally.
- >> His radial pulses are strong and regular.
- >> Initial vital signs are BP 72/40 by auscultation, pulse rate 64, respirations 18 and unlabored, pulse ox 99% on room air and blood sugar 83 mg/dL.
- >> His ECG shows a sinus rhythm from limb leads.
- >> He denies any traumatic event, states he feels fine and asks EMS to leave.

Is this an environmental emergency? Does this patient warrant IV fluids? And if so, how much fluid should we give knowing he has strong radial pulses? Is the mean arterial pressure (MAP) significant in this situation considering we need a MAP of 60 mmHg to prevent renal ischemia or failure?

What blood pressure are we seeking and why? Is the hypertension history important in this situation? Why is the pulse slow? Calls like this may have a quick fix, but would a more in-depth understanding of the patient's condition (i.e., critical thinking) make a difference?

RICHARD PAUL MODEL

Another model of critical thinking that can provide a road map for comprehensive, ongoing thinking is the Richard Paul Model (RPM) for Critical Thinking.^{7,29,30,37} The RPM can't be introduced for the first time during a life-threatening situation at the patient's bedside, but can be used as a learning guide or tool (in initial and ongoing education) to teach providers how to consider all factors pertinent to patient care situations.

The RPM helps ensure we have effectively addressed all possible considerations

Research continues to reveal that paramedics and EMS responders may benefit from increasing their practice of critical thinking, problem-solving and decision-making in initial and continuing education.

(see Figure 2). First we must first use a set of standards to help us gather, sort and think through the information provided. Second, we must have certain elements in our reasoning process. And third, we must develop a set of traits we can use over and over again to help us think through and address problems.^{30,37,40}

Looking at standards of thinking in the RPM, we find many questions we can ask ourselves about our patient care, including:

- >> Do we really understand what the patient is describing/presenting to us?
- >> Is what we're finding/revealing in our assessment correct?
- >> How does what we're learning relate

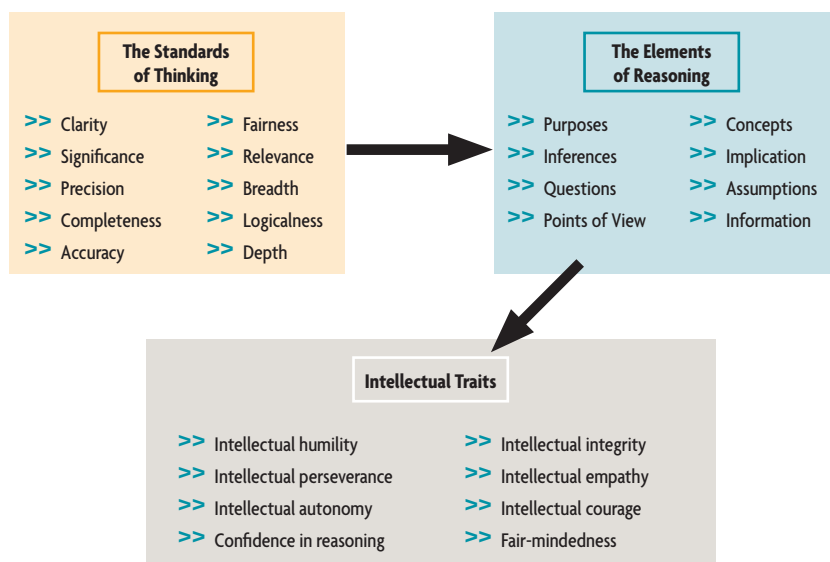
to the patient's condition?

- >> Does what we're learning from our assessment and findings make sense?
- >> Have we explored the assessment and findings from all viewpoints?
- >> Are we gathering specific relevant information?
- >> Is what we're assessing and finding a priority for the situation?
- >> Were we thorough in addressing all information and findings?
- >> Have we examined all information and findings presented?
- >> Have we considered all viewpoints presented?

Looking at the elements of reasoning in

Figure 2: Richard Paul Model for Critical Thinking

The *Standards of Thinking* must be applied to the *Elements of Reasoning* in order to develop the *Intellectual Traits* that will establish the foundation for lifelong critical thinking.



Sources:

1. Paul RW, Elder L. *Critical thinking: Learn the tools the best thinkers use (concise ed.)*. Upper Saddle River, NJ.: Pearson-Prentice Hall, 2006.
2. Sullivan DL: *Paramedics' and employers' perceptions of critical thinking*. Unpublished doctoral dissertation, Barry University, Miami Shores, Fla., 2009.
3. Paul RW, Elder L. *The miniature guide to critical thinking concepts and tools (4th ed.)*. Dillion Beach, Calif.: The Foundation for Critical Thinking, 2006.

the RPM, we find questions to ask of ourselves, including:

- >> Do we understand why we're seeking information and what it will tell us?
- >> Are our questions meaningful, and do they relate to the patient's condition?
- >> Have we considered viewpoints and findings from others?
- >> Does what we're learning about our patient help guide our care?
- >> Have we made decisions based upon all available information?
- >> Do we have a general idea of the situation and appropriate patient care standards?
- >> Is what we are doing based on the facts presented?
- >> Are we asserting a claim based only on what we know or *all* of the facts?

Now, if we've applied these standards and reasoning elements to our situation, we've challenged ourselves to think comprehensively about our case. As we continue to practice this thinking behavior, we've learned intellectual traits that become part of our ongoing thought process.

Some of these lifelong learning traits and questions we can ask ourselves include:

- >> Can we be humble and willing to admit when we're wrong?
- >> Are we able to function independently and appropriately?
- >> Are we acting in an honest, moral and ethical way?
- >> Are we persistent in our actions and beliefs based on what we know?
- >> Are we acting logically and appropriately based on what we know?
- >> Have we considered the feelings and concerns of others when making our decisions?
- >> Can we hold our position with high confidence knowing we're addressing the patient's needs?
- >> Have we considered all possible options with an open mind?

DISCUSSION

As we treat our patients, we have a moral and ethical obligation to provide the best care possible. Responding to their emergent and non-emergent needs is a privilege

we've earned. Thinking through our patient care process and building upon what we learn during each call is part of what makes us the best providers we can be.

We have to make difficult and challenging decisions every day in our profession, so understanding how we make decisions and how we can improve our thinking are essential to making the most of our inner resources—our thinking and decision-making processes.

Using as many of the standards of thinking and elements of reasoning as possible while developing intellectual traits can help us benchmark our quality of care and identify areas we can improve (see Figure 3).

As we continue our professional journey in the prehospital care environment, consider a few recommendations:

EMS educators and teaching/education institutions: Take a good look at today's EMS curriculum, and make the commitment to foster challenging, scenario-based training that encourages students to apply what they're learning in lecture and work through their scenarios. Students really do want to be challenged!

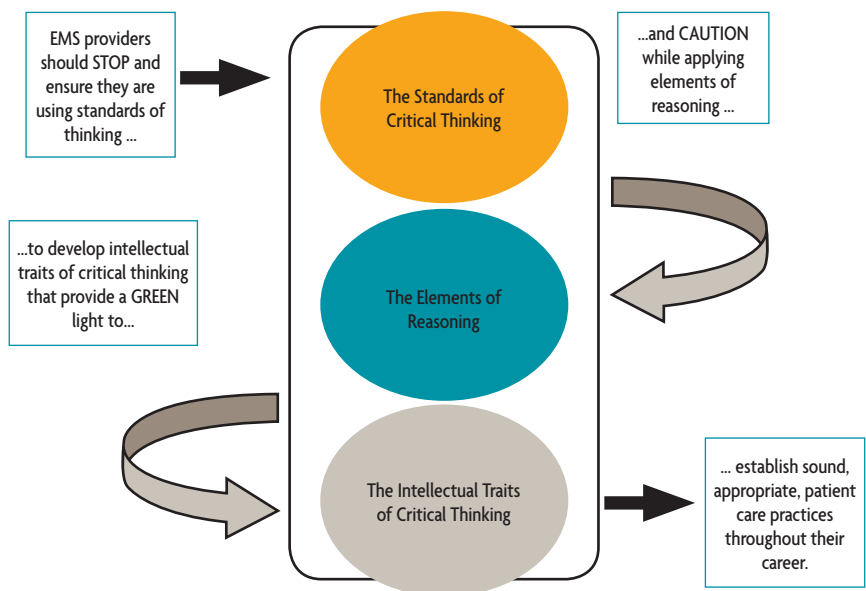
Field paramedics and EMS providers: Look at how you work through your decision-making process. Your true competence and ability to care for patients can be learned from your patients' outcomes, your co-workers' perception of you as a care provider, your supervisors' perception of your work and your medical direction's comfort with your care.

Field training officers, preceptors, supervisors and administrators: Be the example. Employees can learn to think things through and ensure all information is obtained via a structured thought process if we're leading the way. Provide constructive feedback to employees based on factual information. Some decisions need to be made *now*, but we can learn from those decisions and always improve our thought process for future encounters.

Medical control physicians: Encourage dialogue with your EMS care providers and share your thought process for making decisions that affect patient care. Proactive interaction with them through local seminars, educational forums, scenario-based practice or any venue that allows

Figure 3: STOP Light Approach to EMS Provider Critical Thinking

The *Standards of Thinking* must be applied to the *Elements of Reasoning* in order to develop the *Intellectual Traits* that will establish the foundation for life-long critical thinking.



Sources:

1. Paul RW, Elder L: *Critical thinking: Learn the tools the best thinkers use (concise ed.)*. Upper Saddle River, NJ.: Pearson-Prentice Hall, 2006.
2. Sullivan DL: *Paramedics' and employers' perceptions of critical thinking*. Unpublished doctoral dissertation, Barry University, Miami Shores, Fla., 2009.

you to be present and available to them can alleviate uncertainty and also build their confidence, comfort and trust in you as the medical authority.

SUMMARY

Although we may never achieve perfection in the patient care environment, valuing the notion that each of us strives for excellence in patient care is a noble cause. We need to challenge ourselves regularly and seek opportunities for improvement.

Once we learn good practices, morals and ethics, we can use them in our daily routine—take care of patients. If you seek patient care excellence, look at your own decision-making processes and work with your colleagues to build an ongoing learning relationship that will become part of your patient-care work environment. **JEMS**

David L. Sullivan, PhD, NREMT-P, is a program director and adjunct instructor with St. Petersburg College in Pinellas Park, Fla. He completed a doctoral dissertation on paramedic critical thinking and has been working as a paramedic for 17 years. He can be reached at sullivan.dave@spcollege.edu.

Christopher Chumbley, RN, BS, NREMT-P, is an emergency department nurse and a paramedic on a critical care transport unit. He can be reached at cchumbley@gmail.com.

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