COMPETENCIES

Domain of Competence: Patient Care

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THE PATIENT CARE domain contains the greatest number of competencies of the 7 domains of competence considered by pediatrics. Combined with a historical emphasis on the central nature of patient care to physician practice, it may be tempting to assume the number of competencies in this domain means it is the most important or is sufficient to stand alone. On the contrary, looking beyond patient care to the other domains is essential to meeting the Institute of Medicine goals of providing care that is safe, effective, efficient, patient centered, timely, and equitable.1 Further, the competencies in the domain of patient care are far from independent. Indeed, much overlap exists between many of the patient care competencies and competencies in other domains, such as interpersonal and communication skills, professionalism, personal and professional development, and medical knowledge.

Looking within the domain of patient care, there is a focus on competencies that go beyond the traditional emphasis on taking a history, performing a physical examination, and managing a patient’s illness. In an era of focus on patient safety and duty hours limitation, transfer of care emerges as a critical competency. While clinical reasoning may already be considered a foundational aspect of patient care, we hope to draw attention to it in both curriculum and assessment of learners through defining explicit milestones for this competency. Finally, optimal patient care goes beyond competencies addressing the relationship between the physician and the patient and family. It is also includes the relationship between supervisors and trainees, necessitating competencies focusing on role modeling what it means to provide patient-centered care and the dance between the supervisor and the supervisee that balances safe care of the patient with the professional growth of the learner.2

REFERENCES


Competency 1. Gather essential and accurate information about the patient

Daniel Schumacher, MD, MEd

BACKGROUND: EARLY DEVELOPMENT OF INFORMATION-GATHERING SKILLS

In the early stages of clinical reasoning, learners must rely upon their knowledge of basic pathophysiology and principles learned in their preclinical training when they gather information about patients. This knowledge allows them to use analytic reasoning to generate mental maps, which are representations of how things are related and linked to one another. In this situation, mental maps represent the way in which components of a patient’s history and physical examination are linked to one another as well as to the possible diagnoses.1-5 With limited clinical experience, these mental maps can be both overly extensive and inappropriately convoluted, including information of no or...
limited clinical relevance to the patient’s current presentation. At the same time, the lack of clinical experience may result in neglecting important features of the history and examination. The end result is often limited connections between the pieces of information gathered.

**Intermediate Development of Information-Gathering Skills**

As they gain exposure to clinical practice, learners begin to link signs and symptoms of their current patient to patterns of signs and symptoms they have seen in previous patients. With increasing clinical experience, learners use these prior clinical encounters to help them filter and group the information gathered into more specific diagnostic categories and then gradually advance to creating illness scripts. These scripts are based on recognizing patterns of signs and symptoms seen in previous clinical encounters and can be thought of as mental scaffolding representing the characteristic features of specific illnesses.\(^1\to6\) Illness scripts are unique to each physician and become more robust with advancing clinical experience. As an example, the early development of an illness script for group A streptococcal pharyngitis may include fever, throat pain, and oropharyngeal erythema with exudates on examination. With further clinical experience, this illness script may advance to include the additional features of headache, abdominal pain, malaise, tender anterior cervical lymphadenopathy, and palatal petechiae. With still further experience, this illness script may advance to include features such as Pastia lines and circumoral pallor. As illustrated in this example, illness scripts become more robust and discriminating as they develop, allowing the physician to become more facile and exacting in gathering essential and accurate information about his patients.

**Advanced Development of Information-Gathering Skills**

As clinical expertise continues to develop, practitioners move from using prototypical illness scripts to creating more robust and elaborate scripts that incorporate specific characteristics of individual patients to form “instance” scripts.\(^1\) Recognition and use of these subtle variations in disease and patient characteristics help to discriminate features of similar illnesses and enhance the precision and accuracy with which clinical information is gathered, thereby avoiding premature closure in the development of a differential diagnosis.\(^1,2\) In the example of pharyngitis, this clinician would be open to the unexpected and may consider the possibility of a pseudomembrane when tonsillar exudate appears atypical. The clinician may subsequently suspect a diagnosis of diphtheria, even though many clinical characteristics overlap with group A streptococcal pharyngitis (throat pain, fever, headache, malaise, nausea, and cervical lymphadenopathy).

In the progression of information gathering, it is important not to misperceive pattern recognition as a higher-order cognitive process than analytic reasoning. Rather, the increased use of pattern recognition with advancing clinical experience simply represents the natural progression of information-gathering skills.\(^2\) However, even master clinicians engage in analytic reasoning when presented with rare cases not previously encountered in practice.

**Developmental Milestones:**

- Relies on a template to gather information that is not based on the patient’s chief complaint, often either gathering too little or too much information in the process. Recalls clinical information in the order elicited,\(^7\) with the ability to gather, filter, prioritize, and connect pieces of information being limited by and dependent upon analytic reasoning through basic pathophysiology alone.
- Relies primarily on analytic reasoning through basic pathophysiology to gather information, but the ability to link current findings to prior clinical encounters allows information to be filtered, prioritized, and synthesized into pertinent positives and negatives as well as broad diagnostic categories.
- Gathers information while it is simultaneously filtered, prioritized, and synthesized into specific diagnostic considerations (using advanced development of pattern recognition that leads to creation of illness scripts to accomplish this). Data gathering is driven by real-time development of a differential diagnosis early in the information-gathering process.\(^2\)
- Gathers essential and accurate information to reach precise diagnoses with ease and efficiency when presented with most pediatric problems (using well-developed illness scripts to accomplish this), but still relies on analytic reasoning through basic pathophysiology to gather information when presented with complex or uncommon problems.
- Demonstrates effortless gathering of essential and accurate information in a targeted and efficient manner when presented with all but the most complex or rare clinical problems (using robust illness and instance scripts to accomplish this—instance scripts add specific details of individual patients to illness scripts). Able to discriminate among diagnoses with subtle distinguishing features.

**References**

Competency 2. Organize and prioritize responsibilities to provide patient care that is safe, effective, and efficient

Daniel Schumacher, MD, MEd

**BACKGROUND:** In the 2001 report, *Crossing the Quality Chasm: A New Health System for the 21st Century*, the Institute of Medicine (IOM) describes “the prevailing model of health care delivery [as] complicated, comprising layers of processes and handoffs that patients and families find bewildering and clinicians view as wasteful . . . and fail [ing] to build on the strengths of all health professionals involved to ensure that care is timely, safe, and appropriate.”1 The IOM described 6 aims for improvement: safety, effectiveness, patient-centeredness, timeliness, efficiency, and equality in patient care. With this in mind, this competency for organizing and prioritizing responsibilities to provide patient care that is safe, effective, and efficient finds important relationships with several other competencies in all competency domains. Given the broad and deep relationships to other competencies that address the provision of patient care that is safe, effective, and efficient, the time management and prioritization of responsibilities to provide patient care that is safe, effective, and efficient techniques provide a useful construct for consideration.2 In the TMMT, all activities are placed into 1 of 4 quadrants on the basis of their relative importance and urgency as follows: quadrant I—important and urgent; quadrant II—important and not urgent; quadrant III—not important and urgent; and quadrant IV—not important and not urgent.

As Covey describes, the goal is to organize and prioritize responsibilities such that they fall within quadrant II (important and not urgent), which focuses on planning ahead, being proactive, and optimizing productivity. In contrast, quadrant I (important and urgent), which focuses on being reactive and responding to crises, should be avoided as much as possible. In clinical practice, it is sometimes not possible to avoid emergent situations, as patients can acutely decompensate without warning. In this situation, working in quadrant I (important and urgent) is inevitable and unavoidable. However, even in clinical medicine, being proactive and astutely aware of the current situation can allow one to anticipate and avoid many crises, maximizing functioning in quadrant II (important and not urgent) and minimizing transitions into quadrant I (important and urgent). An example of this is the night rounds done by the junior and senior members of the health care team leading to the discovery of and intervention on behalf of a child with worsening respiratory distress, thereby preventing the child’s eventual respiratory failure.

The activities of quadrant III (not important and urgent) include interruptions as well as required unproductive work (eg, attending a poorly run meeting in which nothing meaningful is accomplished). These activities are also sometimes unavoidable in clinical practice. However, they can also be anticipated and proactively avoided at times (remaining in quadrant II [important and not urgent] and avoiding a transition to quadrant III [not important and urgent]). An example of this is the physician who makes sure to address the questions and concerns of the multidisciplinary team and family on bedside rounds to prevent some pages, which serve as interruptions,3–5 as he continues his work for the day.

While the activities of quadrant IV (not important and not urgent) are not important in terms of organizing and prioritizing responsibilities for patient care, they can serve as important outlets for maintaining work–life balance, reducing stress, and enhancing personal and career satisfaction (eg, the physician who reads a good mystery novel for 20 minutes during lunch, when able, as an enjoyable escape from the workday).

**MULTITASKING AND MINIMIZING INTERRUPTIONS:** In addition to time management, important foundational elements of organizing and prioritizing patient care responsibilities include 1) the optimization of multitasking and 2) the minimization and successful navigation of interruptions. The nature of work in the emergency department has led to several articles describing the frequent interruptions and multitasking,6–9 which can lead to lapses in information transfer, that occur in that environment.6 Unfortunately, these activities can compromise the safe and effective care of patients, an important consideration when viewing this competency in its entirety. The next 2 sections therefore describe the role of these elements in the safe and effective, as well as efficient, organization and prioritization of responsibilities.

**OPTIMIZATION OF MULTITASKING:** While multitasking can impair the safe and effective care of patients, it can also benefit the efficiency of that care. Among emergency medicine residents, work efficiency is enhanced not only by clinical experience but also by the ability to multitask well.3 Therefore, the optimization of multitasking is an important skill in developing in this competency. The work of Chisholm et al3 underscores the importance of this in pediatrics. The authors showed that while emergency medicine physicians have more interruptions and spend more time simultaneously managing more than 1 patient, office-based primary care physicians spend more time performing simultaneous tasks. Similarly, O’Leary and colleagues3 found that hospital-based internal medicine physicians spent 21% of their time multitasking.
**MINIMIZATION OF AND RESPONSE TO INTERRUPTIONS:**

Multitasking and interruptions are closely related in many ways. Increasing interruptions often leads to the increased need for multitasking. Therefore, minimizing interruptions can benefit the optimization of multitasking. The minimization of interruptions was previously discussed briefly as it relates to time management. The response to interruptions will be addressed here.

The literature reports a variable response to interruptions. Brixey and colleagues noted that emergency medicine attendings most often responded to an interruption with a brief break in task followed by a return to the same preinterrupted task. However, they note that O’Conaill and Frohlich found that 41% of interruptions in the office workplace lead to a permanent break in task in which there is no return to the preinterrupted task. While there are urgent and emergent interruptions in clinical medicine that necessitate a prolonged or permanent break in task (e.g., a physician is examining a child in the emergency department with viral conjunctivitis when another child begins seizing and becomes apneic), most responses to interruptions in the clinical setting are likely related to the developmental level of the individual being interrupted. When early in clinical experience, interruptions are more likely to lead to a prolonged or permanent break in the present task to respond to the interrupting task. This can be true even when the interrupting task is less important. For these learners, permanent breaks in task are likely secondary to forgetting about the preinterrupted task altogether. As Brixey and colleagues demonstrate, individuals with more advanced clinical experience are more likely to respond to an interruption with a brief break in task, with return to the preinterrupted task after the interruption. They are also more likely to prioritize interruptions and address them in order of importance.

**DEVELOPMENTAL MILESTONES:**

- Organizes patient care responsibilities by focusing on individual patients rather than multiple patients; responsibilities are prioritized as a reaction to unanticipated needs that arise (those responsibilities presenting the most significant crisis at the time are given the highest priority); even small interruptions in task often lead to a prolonged or permanent break in that task to attend to the interruption, making return to initial task difficult or unlikely.
- Organizes the simultaneous care of a few patients with efficiency; occasionally prioritizes patient care responsibilities to anticipate future needs; each additional patient or interruption in work leads to decreases in efficiency and ability to effectively prioritize; permanent breaks in task with interruptions are less common, but prolonged breaks in task are still common.
- Organizes the simultaneous care of many patients with efficiency; routinely prioritizes patient care responsibilities to proactively anticipate future needs; additional care responsibilities lead to decreases in efficiency and ability to effectively prioritize only when patient volume is quite large or there is a perception of competing priorities; interruptions in tasks are prioritized and only lead to prolonged breaks in task when workload or cognitive load is high.
- Serves as a role model of efficiency; patient care responsibilities are prioritized to optimize efficiency; provides care to a large volume of patients with marked efficiency; patient care responsibilities are prioritized to proactively prevent those urgent and emergent issues in patient care that can be anticipated; interruptions in tasks lead to only brief breaks in task in most situations.

Serves as a role model of efficiency; patient care responsibilities are prioritized to proactively prevent interruption by routine aspects of patient care that can be anticipated; unavoidable interruptions are prioritized to maximize safe and effective multitasking of responsibilities in essentially all situations.

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**Competency 3. Provide transfer of care that ensures seamless transitions**

*Robert Englander, MD, MPH*

**BACKGROUND:** With the advent of work duty hours and the Institute of Medicine reports on patient safety of the past decade, the skill of transferring care between providers and teams has become paramount. The literature on teaching and assessing handoff communication has proliferated in the realms of nursing, patient safety, medical education, and medical specialties. Handoffs occur in a variety of settings and contexts. For example, handoffs may occur within units, between units, between specialists and generalists, between subspecialists in different specialties, or between
inpatient and outpatient settings. In addition, they may occur in person, by telephone, or by written document.

Emerging from the literature is a developmental progression in this skill, both at the individual and system levels. Novice systems and individuals have in common a lack of standardization in the process. There is variability in the content, efficiency, accuracy, and synthesis of information both within and between individuals handing off on different patients. In addition, Arora and Johnson observed significant variability in the process between teams, departments, units, and different hospitals or clinical settings within a system. The foundation of developmental progression in this skill is the development and use of standardized templates for information exchange. Many templates have been provided in the literature. To some extent, this stage of development requires support from the system in which the practitioner practices. The advanced beginner may use the template but has minimal ability to abstract pertinent information or add pertinent information beyond the script. As one becomes proficient, one can reliably and reproducibly transfer the pertinent information using and adapting the template. Assessment of this level of skill has been demonstrated through observed structured clinical examinations (OSCEs). The progression to competence includes becoming more succinct, avoiding errors of commission and omission, and improving one’s ability to anticipate events and responses for the practitioner accepting responsibility. In addition, the competent practitioner in this skill facilitates the opportunity for the receiving caregiver to read back, repeat back, or question any critical information. The competent receiving caregiver of handoff information also takes ownership for ensuring understanding of the information and using deliberative inquiry to fill in any perceived gaps.

As one advances beyond the competent stage, one becomes increasingly agile in communicating the right information in a succinct manner in increasingly complex, demanding, and specialty-specific situations. The expert and master stages in handoff communication also involve superimposing a critical element of professionalism on this skill, that is, the transfer of professional responsibility. Even when separated in time or space, the master in handoff communication makes clear to patients, families, and members of the health care team when the professional responsibility for the patient has changed. On the part of the transferor, that professional responsibility includes transfer of all pertinent information for both active and anticipated issues during the ensuing time period. For the transferee, it includes the responsibility to obtain clarity and to assume responsibility once clarity around the patient’s issues has been provided, whether that responsibility is to last an hour, a shift, a week, or longer. For the individual assessing handoff communication, the master would never think nor utter the words, “I am just cross-covering.”

DEVELOPMENTAL MILESTONES:

- Demonstrates variability in transfer of information (content, accuracy, efficiency, and synthesis) from one patient to the next.
- Uses a standard template for the information provided during the handoff. Unable to deviate from that template to adapt to more complex situations. May have errors of omission or commission, particularly when clinical information is not synthesized. Neither anticipates nor attends to the needs of the receiver of information.
- Adapts and applies a standardized template, relevant to individual contexts, reliably and reproducibly, with minimal errors of omission or commission. Allows ample opportunity for clarification and questions. Beginning to anticipate potential issues for the transferee.
- Adapts and applies a standard template to increasingly complex situations in a broad variety of settings and disciplines. Ensures open communication, whether in the receiver- or provider-of-information role through deliberative inquiry, including but not limited to read-backs, repeat-backs (provider), and clarifying questions (receivers).
- Adapts and applies the template without error and regardless of setting or complexity. Internalizes the professional responsibility aspect of handoff communication, as evidenced by formal and explicit sharing of the conditions of transfer (eg, time and place) and communication of those conditions to patients, families, and other members of the health care team.

Competency 4. Interview patients/families about the particulars of the medical condition for which they seek care, with specific attention to behavioral, psychosocial, environmental, and family-unit correlates of disease

Daniel Schumacher, MD, MEd

BACKGROUND: Models that shine light on the behavioral, psychosocial, environmental, and family-unit correlates of health and disease critical in the medical interview focus on the therapeutic relationship formed between the

REFERENCES

physician and the patient and family rather than on an act of information gathering driven by the physician. With this in mind, we will use the term medical encounter rather than interview when considering this competency.

Ideally, the medical encounter serves 3 functions: gathering biological and psychosocial information, responding to the emotions of patients and families, and educating patients and families to ensure optimal outcomes. The encounter can be divided into 4 functional components: building a relationship, data gathering, patient education and counseling, and activating and partnering. Building on this construct as well as on the work of Freire, Roter has conceptualized the developmental continuum of physicians’ skills in facilitating the involvement of patients in their care as beginning with patient participation and moving to patient activation and then empowerment facilitation. We also propose a developmental stage before this, in keeping with the work of Roter, which we have labeled “doctor participation” because this stage includes behaviors that do not engage the patient and/or family to participate. The components of these participatory communications skills are shown in Table 1.

As this construct illustrates, the recognition and sensitivity toward the verbal and nonverbal cues and statements from the patient and/or family are important in guiding the encounter as well as in forming a therapeutic relationship with the patient and family that will lead to empowering them with their own health care. For example, not interrupting, showing empathy, and expressing concern with a teen presenting for a health supervision

### Table 1. Developmental Continuum of Facilitating Patient and Family Involvement (adapted from the work of Roter)

<table>
<thead>
<tr>
<th>Doctor Participation</th>
<th>Relationship Skills</th>
<th>Partnering Skills</th>
<th>Patient Education and Counseling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Gathering Skills</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADVANCING DEVELOPMENT</td>
<td>Closed questions.</td>
<td>Negative talk (eg, disagreements, disapproval, criticism).</td>
<td>Unilateral, prescriptive, and/or otherwise doctor-centered education without consideration of the patient and/or family's needs.</td>
</tr>
<tr>
<td>Patient and/or Family Participation</td>
<td>Open questions, eliciting topics/chief concerns for the medical encounter at the beginning of the encounter and jointly prioritizing the topics.</td>
<td>Not interrupting, emotional responsiveness (includes behaviors such as empathy, reassurance, expressing concern), legitimizing feelings and thoughts, engaging in social conversation, clarifying and summarizing.</td>
<td>Showing interest through verbal and nonverbal behaviors, paraphrasing the patient and/or family member, avoiding verbal dominance in the conversation.</td>
</tr>
<tr>
<td>Patient and/or Family Activation</td>
<td>As above under patient and/or family participation.</td>
<td>As above under patient and/or family participation.</td>
<td>Sharing information desired by the patient and/or family.</td>
</tr>
<tr>
<td>Empowerment Facilitation</td>
<td>As above under patient and/or family participation as well as patient and/or family activation.</td>
<td>As above under patient and/or family participation as well as patient and/or family activation.</td>
<td>As above under patient and/or family participation as well as patient and/or family activation.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Verification of information and counseling about treatment, lifestyle, and psychosocial issues; motivational interviewing.</td>
</tr>
</tbody>
</table>
visit can prompt further information gathering that leads to the diagnosis of pregnancy, with subsequent formation of a vital therapeutic partnership and counseling that facilitates empowering her to share in decision making about care options.  

In the developmental trajectory of physicians’ skills in facilitating the participation of patients in their care described above, it should also be noted that early in their development, physicians will tend to focus on gathering biomedical information, whereas later in development they will include elicitation and then joint decision making and counseling around psychosocial issues as well. Additionally, as physicians continue to develop their communication skills with a deliberate focus on the behavioral, psychosocial, environmental, and family-unit correlates of disease, more advanced skills are incorporated as well. These include understanding of personality type and communication style of self and others to tailor and optimize communication as well as perceiving and responding appropriately to defense mechanisms (eg, silence, denial, attacking back, blaming others, and changing the subject) in critical conversations. 

Previous studies have shown declination in interpersonal communication skills with advancing medical education. This may not be surprising given that the emphasis on teaching medical interviewing skills is limited to early in the undergraduate medical education curriculum. Given that competence is a habit and that skill maintenance depends on deliberate practice, the continued focus on these foundational skills throughout the graduate medical education years is important.

**DEVELOPMENTAL MILESTONES:**

- Focuses the medical encounter on gathering biomedical information important to the health care provider rather than using a biopsychosocial model that includes information important to the patient/family as well. Patients’ and families’ emotional cues and expressions are not noticed and/or not acknowledged.
- Forms a therapeutic relationship through patient and family participation in eliciting both biomedical and psychosocial information. Responds to patients’ and families’ emotional cues and expressions in a manner that shows respect and acknowledges their role in the encounter, but does not yet build a patient-centered therapeutic alliance that allows for shared decision making and counseling.
- Shares control of the medical encounter to create a therapeutic relationship with patients and families that aims to activate and empower them. Responds to emotional cues and expressions in a manner that allows the medical encounter to go beyond information gathering to focus on joint problem solving, shared decision making, and counseling, being sensitive to the developmental level of the child and his/her role in this process.
- Tailors the encounter to optimize communication based on the personality type and communication style of self and others; advanced and dynamic perception of and response to emotions fosters a patient-centered therapeutic relationship even in difficult encounters (eg, the delivery of bad news or counseling a defensive patient).
- Current literature does not distinguish between behaviors of proficient and expert practitioners. Expertise is not an expectation of GME training, as it requires deliberate practice over time.

**REFERENCES**


Competency 5. Perform complete and accurate physical examinations

Daniel Schumacher, MD, MEd

**BACKGROUND:** The foundation of learning to perform complete and accurate physical examinations is found in the deliberate practice of performing examinations on many patients. Only through ongoing practice can one become adept in both performing examination maneuvers correctly as well as eliciting and recognizing normal and abnormal findings. When considering the pediatric physical examination, flexibility to reorder the approach and agility in performing the maneuvers to maximize their efficacy and efficiency are also foundational to engaging children at their developmental level and accommodating their current behavioral states.
Trends over the past few decades toward reliance upon imaging modalities over physical examination skills and also away from teaching and possessing superior and discriminating physical examination skills during training have led Bordage to ask, “Where have the history and the physical examination gone?” In an editorial bearing a similar name, Bordage cites the work of Peterson and colleagues, who showed that while history is the major determinant leading to a final diagnosis among the physicians they studied, physical examinations were important in excluding and confirming diagnostic hypotheses. In short, performing complete and accurate physical examinations is an important next step after performing a complete and accurate history.

Demonstrating the importance of history to examination, Norman and colleagues have shown that approaching the physical examination with diagnostic hypotheses and their associated findings in mind leads to a greater likelihood of noticing these findings when they are present. Conversely, approaching the physical examination without specific findings in mind makes someone more likely to miss those findings even when they are present. Furthermore, incorrect diagnostic hypotheses prior to the physical examination can lead to misinterpretation of physical findings (ie, confirmation bias) and attribution of importance and meaning to irrelevant findings. Thus, it is not approaching the physical examination merely with a list of diagnostic hypotheses in mind but rather with a more accurate and select list of diagnostic hypotheses in mind that is most important in performing physical examinations that are complete and accurate and that lead to success in diagnostic reasoning. With this in mind, the material discussed in the competencies of 1) gathering essential and accurate information about the patient and 2) making informed diagnostic and therapeutic decisions, both under the Patient Care domain, provide a necessary foundation to this competency of performing physical examinations.

The findings of LeBlanc, Brooks, Norman and colleagues have led others to advocate for a hypothesis-driven physical examination (HDPE), in which learners make diagnostic hypotheses before examining a patient, over the standard head-to-toe examination, in which learners perform a complete examination with minimal or no regard given to the presenting complaint or history (a method of learning physical examination skills that is common in medical school training). Through use of the HDPE, the relevance and efficiency of a learner’s physical examination maneuvers are enhanced as they mindfully attend to specific maneuvers that confirm as well as discriminate between the diagnostic hypotheses being entertained.

While it is important to use diagnostic hypotheses to drive the physical examination, it is also important to perform a more complete physical examination survey when examining patients. Making a habit of routinely performing a survey examination helps to develop a range of normal findings, gain fluency in executing the maneuvers, and avoid premature closure around a diagnosis by surveying for findings that may otherwise be missed but would contribute meaningful information to clinical reasoning, diagnosis, and/or treatment. Consider as an example the 12-year-old child without a history of asthma who presents with bilateral knee pain and whose physician suspects Osgood-Schlatter disease but also discovers wheezing on lung examination, which he performs as part of his survey physical examination. Without a careful and deliberate lung examination, this finding would have gone unnoticed. Here again, however, the mindfulness with which this survey examination is performed is paramount. As the work of LeBlanc et al suggests, if this physician were going through the rote steps of a survey examination without anticipating potential findings during each part of the examination and being mindful of what he is seeing and hearing, he could still miss the lung finding.

The increasing rarity of being taught and possessing superior examination skills during training underscores the importance of “making the direct observation of students and residents, while they take histories and conduct physical examinations, a major responsibility and activity of the faculty. Faculty members could thus give the students and residents constructive feedback on the appropriateness and accuracy of their history-taking and physical-examination techniques and of their interpretation of the findings.”

DEVELOPMENTAL MILESTONES: MILESTONES FOR THE PERFORMANCE OF THE PHYSICAL EXAMINATION

- Performs and elicits physical examination maneuvers without the correct technique
- Performs basic physical examination maneuvers correctly (eg, auscultation of the lung fields) but does not regularly elicit, recognize, or interpret abnormal findings (eg, recognition of wheezing and crackles)
- Performs basic physical examination maneuvers correctly and recognizes and correctly interprets abnormal findings
- Performs, elicits, recognizes, and interprets the findings of basic and more advanced physical examination maneuvers correctly (eg, Rovsing, psoas, and obturator signs for appendicitis)
- Performs, elicits, recognizes, and interprets the findings of special testing physical examination maneuvers correctly (eg, stork test for spondylolysis)

MILESTONES FOR THE APPROACH TO THE PEDIATRIC PHYSICAL EXAMINATION

- Uses a head-to-toe approach to the physical examination rather than a developmental approach.
- Uses a developmentally appropriate approach to the physical examination without consistency.
- Uses a developmentally appropriate approach when examining children with consistency; facilitates the engagement of the child as well as the caregiver in the physical examination.
- Uses a fluid approach and is agile in performing the physical examination in a way that maximizes cooperation of the child; facilitates the engagement of the child as well as the caregiver in the physical examination.
- Current literature does not distinguish between behaviors of proficient and expert practitioners. Expertise is not an expectation of GME training, as it requires deliberate practice over time.
MILESTONES FOR THE APPROACH TO THE FOCUSED PHYSICAL EXAMINATION

- Conducts examination looking for a myriad of potential positive and negative findings (diagnostic hypothesis testing).
- Conducts examination looking for multiple diagnostic considerations (based on a broad list of diagnostic hypotheses). Using this broad and general approach, misses important physical findings that are present, misinterprets physical findings, and/or attributes importance and meaning to findings that are not relevant/important.
- Conducts examination looking for specific positive or negative physical findings of only the most relevant diagnostic considerations (based on a narrow list of diagnostic hypotheses); performs a survey physical examination to elicit unexpected abnormalities but may not recognize these as important when it is difficult to integrate these findings into the working differential diagnosis.
- Conducts examination looking for key specific physical findings that discriminate between competing similar diagnoses (in a narrow list of diagnostic hypotheses); uses surprises that result from a survey physical examination to rethink and retest diagnostic hypotheses; actively looks for physical examination findings that disconfirm the working diagnosis or rule in or out rare but high-risk alternative diagnoses.
- Current literature does not distinguish between behaviors of proficient and expert practitioners. Expertise is not an expectation of GME training, as it requires deliberate practice over time.

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Competency 6. Make informed diagnostic and therapeutic decisions that result in optimal clinical judgment

Daniel Schumacher, MD, MEd

BACKGROUND: When considering the developmental progression of making informed diagnostic and therapeutic decisions that result in optimal clinical judgment, the role of previous clinical experience cannot be emphasized enough.1–9 With increasing clinical experience, learners do not simply gain new knowledge in an additive manner. Rather, they reorganize existing knowledge in an elaborated way that allows them to become more efficient and effective in diagnosing and treating new patients who possess features similar to those of previous patients.1–4 This highly learner-specific knowledge is best gained through individual clinical experience, which is a necessary but not sufficient prerequisite for developmental advancement in making informed diagnostic and therapeutic decisions that result in optimal clinical judgment. As Kolb15 suggests in his experiential learning theory, this knowledge is strengthened through reflective observation, active experimentation (eg, in a simulation environment), and abstract conceptualization. In fact, the mental energy that is saved as one becomes more efficient and effective in diagnosing and treating new patients must be reinvested in reflection and new learning if one is ultimately to become an expert clinician and not just an experienced nonexpert.11

EARLY CLINICAL REASONING: ANALYTIC REASONING THROUGH BASIC PATHOPHYSIOLOGY

Development of expert diagnostic and therapeutic reasoning follows a predictable progression.1 In the preclinical and early clinical stages, learners rely on knowledge of the pathophysiologic causes and consequences of disease and analytic reasoning to formulate diagnostic considerations. As a result, knowledge is organized as a causal network. At this stage, the learner presented with a child who has hemolytic uremic syndrome may reason, “Not urinating in the past day seems like it could be a problem with the kidneys’ ability to make urine. The low hemoglobin seems likely to be from hemolysis, which is one of the ways that red blood cells can be lost in the body. In this way, the red blood cells are broken open, often because the kidney’s ability to make urine. The low hemoglobin seems likely to be from hemolysis, which is one of the ways that red blood cells can be lost in the body. In this way, the red blood cells are broken open, often because they have fragile structuring on the inside or are having trouble passing through certain vessels of the body and
are being broken from the outside. With the low platelets as well, I wonder if this child has an illness that affects all cell lines—perhaps an infection with fever and bloody diarrhea. With clinical experience, these “networks of detailed, causal, pathophysiologic knowledge become encapsulated into diagnostic labels...that explain signs and symptoms.” At this stage, the learner may reason, “This child has infectious diarrhea that has led to a secondary process affecting the kidneys (anuric renal failure), the red blood cells (hemolytic anemia), and the platelets (thrombocytopenia).”

In early clinical reasoning, it is important to note that learners are also likely to be less developed in other competencies of patient care, such as gathering essential and accurate information about the patient in the history and performing complete and accurate physical examinations. Therefore, learners may not successfully elicit salient features of the clinical presentation and/or may give undue weight to features that are not as important, leading to suboptimal clinical reasoning that can include diagnostic and therapeutic considerations that are unnecessary and/or exclude considerations that are important.

**INTERMEDIATE CLINICAL REASONING: THE EMERGENCE OF ILLNESS SCRIPTS**

With even further clinical experience, learners organize knowledge as illness scripts or narrative scripts in which the characteristic features of specific illnesses form clinical patterns in memory. At this stage, the learner arrives at the diagnosis of hemolytic uremic syndrome through matching the patient’s clinical picture to his illness script for this disease, which may include elements of renal failure (anuria, elevated creatinine, edema), hemolytic anemia (low hemoglobin, high LDH, pallor, tachycardia), thrombocytopenia, and other features (eg, bloody diarrhea, a history of eating a hamburger at the state fair, ill appearance, decreased energy and playfulness, irritability, and a myriad of other clinician-specific components). These illness scripts can be used to compare and contrast diagnostic possibilities by comparing clinical patterns of disease presentations. Clinicians continue to refine and remodel these scripts as they encounter new patients. Over time, they become robust representations of diseases, each one riddled with nuances and discriminating features of illnesses that even become context dependent. Episodic memories of individual patients seen in the past add specific situational information to these scripts, transforming illness scripts into “instance scripts” unique to individual patients (eg, the 1-year-old with diabetes insipidus who dunked his head under the bath water and gulped water as quickly as possible).

**ADVANCED CLINICAL REASONING: AVOIDING PREMATURE CLOSURE**

With advanced clinical experience, the knowledge structures formed previously in the development of clinical reasoning “do not decay; neither do they become inert, nor inaccessible. They sediment into multiple ‘layers’ which are accessed” in future clinical presentations where illness scripts or instance scripts stored in memory cannot be readily matched to a new patient who presents a diagnostic and/or therapeutic dilemma. With this in mind, it is important to note that advanced clinicians are not just using pattern recognition from previous cases they have seen. They are also engaging in analytic reasoning and using their understanding of the underlying causal mechanisms of diseases and their pathophysiologic consequences to compare and contrast the discriminating features of the diagnoses they are entertaining. This mental activity avoids premature closure or settling on an incorrect diagnosis based on cases in the past that looked similar on the surface but were different upon deeper probing—a problem that would persist if the clinician were using pure pattern recognition.

**PROBLEM REPRESENTATION AND SEMANTIC QUALIFIERS**

In this developmental progression, the sophistication with which medical knowledge in memory is organized and made available for use in diagnostic and therapeutic reasoning is ever improving, a key determinant to the increasing success of clinical judgment. Storage of knowledge and the retrieval of that knowledge, rather than the amount of knowledge, is related to diagnostic reasoning performance. For example, possessing a high level of knowledge that is poorly organized is associated with inadequate accessibility of diagnostic considerations and suboptimal diagnostic reasoning. It is here again that the role of experience is important. With increased clinical experience, learners begin to reorganize clinical information that is gathered from the patient into abstract terms in their minds that they can then use to categorize and understand clinical presentations, “facilitating the retrieval of pertinent information from memory” and making it available for diagnostic reasoning. This process is known as “problem representation.” As part of this process, learners begin to use semantic qualifiers in their abstraction and description of cases.

Semantic qualifiers are qualitative modifiers that give deeper meaning to clinical information in the learner’s mind and subsequently help learners discriminate clinical features and diagnostic hypotheses with more precision and accuracy. They are most often described as paired opposites that are used to describe clinical information (eg, acute and chronic; focal and diffuse; proximal and distal). However, they also include pathognomonic findings (eg, opsoclonus-myoclonus in neuroblastoma), criteria that are essential to make a diagnosis (eg, the triad of hemolytic anemia, thrombocytopenia, and acute renal injury in the diagnosis of hemolytic uremic syndrome or the presence of 4 of 5 clinical features in addition to high fever to confirm the diagnosis of typical Kawasaki disease), and absolute criteria for exclusion of a diagnosis (eg, focal seizure excluding the diagnosis of simple febrile seizure). As use of semantic qualifiers allows enhanced discrimination between diagnoses, increasing use of semantic qualifiers is associated with increasing success in diagnostic reasoning performance.
reasoning. As learners begin to use problem representation and semantic qualifiers, the 2-year-old with “a temperature to 103°F and really bad ear pain on the left and right that began last night” becomes the “febrile (opposite of afebrile) toddler with acute (opposite of chronic) onset of severe (opposite of minor) bilateral (opposite of unilateral) ear pain.” Through this abstraction and reorganization, this clinical knowledge is reframed in the learner’s mind in a manner that facilitates the ready access to connect to and build upon previous knowledge for use in diagnostic and therapeutic reasoning.

**Evolution of Creating a Working Differential and Subsequent Decision Making**

In the developmental progression of diagnostic and therapeutic reasoning, it is also helpful to consider the evolution of creating a working differential diagnosis and subsequent therapeutic decision making. Novel learners, who do not possess knowledge specific to pediatrics, struggle to create diagnostic hypotheses for pediatric diseases. As a result, their early diagnostic hypotheses tend not to change as more clinical information is gathered (because this new information is not helpful in diagnostic and therapeutic reasoning). Intermediate learners tend to change their diagnostic hypotheses frequently as more information becomes available, often changing their diagnostic schema after the history, after the physical examination, after initial testing, and after initial therapy and management. Their resultant therapies tend to treat the features of a diagnosis rather than a unified diagnosis. Interestingly, the changing of diagnostic hypotheses for novice and perhaps for intermediate learners may depend on the type of additional clinical information provided. The work of Coderre and colleagues demonstrates that first-year medical students are much less likely to retain their initial diagnostic hypothesis when additional information is discordant with initial information, whereas they are much more likely to retain their initial diagnostic hypothesis when subsequent information is concordant. Advanced learners tend to develop quite advanced and narrowed diagnostic hypotheses early in a case and use subsequent history, physical examination, and tests to confirm this initial schema. As a result, their therapies tend to be focused and specific, based on a unifying diagnosis for the patient.

**Developmental Milestones:**

- Presents history and physical examination in the order they were elicited without filtering, reorganization, or synthesis. Presents a list of all diagnoses considered rather than a focused set of working diagnostic hypotheses. Limited development of a diagnostic and therapeutic plan.
- Focuses on features of the clinical presentation, making a unifying diagnosis elusive and leading to a continual search for new diagnostic possibilities. Presents several tests and therapies rather than a focused set of working diagnostic hypotheses. Develops a diagnostic and therapeutic plan that is not clear, organized, and/or well aligned with a prioritized differential diagnosis.
- Uses semantic qualifiers (such as paired opposites that are used to describe clinical information [eg, acute and chronic]) to compare and contrast diagnoses being considered. Presents a focused set of working diagnostic hypotheses. Develops diagnostic and therapeutic plans that are well synthesized and organized around a focused differential diagnosis.
- Demonstrates the ability to initiate and articulate early directed hypothesis testing and confirm these hypotheses with subsequent history, physical examination, and diagnostic tests. Identifies discriminating features between similar patients and avoids premature closure. Presentations focus on tailored therapies based on a unifying diagnosis. Develops diagnostic and therapeutic plans focused on an effective and efficient diagnostic workup tailored to address individual patients.
- Current literature does not distinguish between behaviors of proficient and expert practitioners. Expertise is not an expectation of GME training, as it requires deliberate practice over time.

**References**

Competency 7. Develop and carry out management plans  
Robert Englander, MD, MPH

**BACKGROUND:** This competency is intimately enmeshed with other competencies and domains of competence described in this document. It is perhaps most intimately linked to competency 6: “Make informed diagnostic and therapeutic decisions that result in optimal clinical judgment.” Much of the literature refers to “making informed diagnostic and therapeutic decisions” and “developing management plans” with one voice, often under the rubric of clinical judgment. The literature on illness scripts is particularly pertinent and has been covered in the “Make informed diagnostic and therapeutic decisions…” competency.

Nilsson and Pilhammar provide an additional framework for understanding the developmental progression in clinical judgment through a qualitative analysis of junior and senior physicians using a critical incident technique. They found that junior and senior physicians demonstrated differences in clinical judgment in a number of different areas, including those that follow.

**USE OF THEORETICAL KNOWLEDGE VERSUS USE OF PREVIOUS EXPERIENCE AND KNOWLEDGE OF THE COURSE OF EVENTS**

Junior physicians tend to base their clinical judgments and management plans predominantly on their theoretical knowledge. As one matures, one has increasing superimposition of experience to place the theoretical knowledge in context toward an understanding of issues such as risk and prognosis. The most seasoned clinician can build upon theoretical knowledge with experience in ever more complicated and difficult situations.

**ETHICAL APPROACH TO MANAGEMENT DECISIONS**

Junior physicians tend to exercise clinical judgment founded on their own personal assumptions of how one should behave in general and in consideration of health care resources. The senior practitioner is increasingly able to understand individual patients in the context of their lives to make decisions that maximize well-being, minimize harm, and avoid overtreating.

**MEETING AND COMMUNICATING WITH PATIENTS**

Junior physicians tend toward 1-way communication of information to patients. Senior physicians become increasingly engaged in 2-way discussions around management. The most experienced clinicians are also aware of how their own biases, needs, and behavior play into the communication with patients around clinical judgment.

**FOCUSING ON AVAILABLE INFORMATION**

The most inexperienced clinician will be unable to sift through the information available to come to the key elements. As a result, clinical judgment is often based on a relatively arbitrary and poorly prioritized sampling of the information and is limited by the time available. With increasing experience, one is able to focus on key elements of information early and then augment from the remaining sources of information as necessary. An example might be a patient with multiple medical problems who comes for a health supervision visit to the outpatient setting. The inexperienced clinician will be unable to navigate the long medical record in a meaningful way in the time allotted, resulting in less than optimal use of the time to plan patient management. The experienced clinician, conversely, will zero in on the key information from the medical record in the time allotted, before entering the examination room, allowing optimal use of time to plan care.

**BEING DIRECTED BY THE ORGANIZATION**

Junior physicians note that they often develop management plans according to perceived or real health care organization directives (eg, “The Joint Commission makes me do this”) without an understanding of the rationale or importance to the patient. Of note, senior clinicians do not cite this as an issue for them in clinical judgment, even though they follow the organizational guidelines. For them, directives become a matter of habit and form the basis, rather than the entirety, of the discussion around management.

These differences inform the milestones outlined below and aid in creating a picture of the continuum of competency in developing and carrying out management plans.

**DEVELOPMENTAL MILESTONES:**

- Develops and carries out management plans based on directives from others, either from the health care organization or the supervising physician. Unable to adjust plans based on individual patient differences or preferences. Communication about the plan is unidirectional from the practitioner to the patient and family.
- Develops and carries out management plans based on one’s theoretical knowledge and/or directives from others. Can adapt plans to the individual patient, but only within the framework of one’s own theoretical knowledge. Unable to focus on key information, so conclusions are often from arbitrary, poorly prioritized, and time-limited information gathering. Management plans based on the framework of one’s own assumptions and values.
- Develops and carries out management plans based on both theoretical knowledge and some experience, especially in managing common problems. Follows health care institution directives as a matter of habit and good practice rather than as an externally imposed sanction. Focuses on key information, but still may be limited by time and convenience. Plans begin to incorporate patients’ assumptions and values through more bidirectional communication.
- Develops and carries out management plans based most often on experience. Efficiently focuses on key information to arrive at a plan. Incorporates patients’ assumptions and values through bidirectional communication with little interference from personal biases.
• Develops and carries out management plans, even for complicated or rare situations, based primarily on experience that puts theoretical knowledge into context. Rapidly focuses on key information to arrive at the plan and augments that with available information or seeks new information as needed. Has insight into one’s own assumptions and values that allow one to filter them out and focus on the patient/family values in a bidirectional conversation about the management plan.

Competency 8. Prescribe and perform all medical procedures

Patricia Hicks, MD, MHPE

BACKGROUND: All of the competencies are involved in prescribing and performing medical procedures. In an integrated fashion, development of elements of competence in the performance of procedures takes place along a continuum, with ongoing deliberate practice required to achieve and sustain competence.

Prescribing medical procedures is a process that includes the ability to weigh many factors to achieve the optimal outcome for an individual patient. Prescribing medical procedures requires careful consideration of the indications, contraindications, benefits, risks, anticipated undesirable outcomes, and complications, all within the specific anatomic and physiologic state of a specific patient’s condition. Consideration of these many factors and their complex interplay results in determining the best short- and long-term therapeutic outcome. Awareness and appreciation of unintended, but known, consequences or risks is part of the decision-making process, as well as the postprocedure management process. The prescribing process as part of procedural competency involves other competencies, such as diagnostic reasoning, clinical decision making, and communication; informed consent is a related but separate area of competence embedded within the achievement of performance of medical procedures. The prescribing process may be undertaken for the purpose of achieving an immediate, desirable, therapeutic outcome as the primary goal (eg, bladder catheterization for a neurogenic bladder or suturing of a laceration), or the procedure might be prescribed as a beneficial means to an end (eg, obtaining evidence in the form of laboratory data or providing access to administer medications into a vein). Thus, developing competence in prescribing and performing procedures involves cognitive and communication skills as well as psychomotor skills.

The problem of assessing competence in the performance of procedures has been reported for over 2 decades. In 1989, Wigton et al1 surveyed 2500 general internists and reported that newer graduates were performing more and more procedures. However, a survey of internal medicine training program directors conducted at the same time reported that while 53% had developed a list of procedural skills that all their residents must master, only 21% had developed specific criteria for competence in procedural skills. Fifty-six percent of the 389 program directors surveyed stated that they planned to develop criteria for competence in procedural skills. Eighty-two percent stated that a “uniform system to be used by all programs to document procedures would be helpful.”2 Today, there is still not a uniform system for demonstrating graduate competence in procedural skills.

In 1992, responders to a survey of internal medicine graduates reported that they had not mastered the procedures that their program directors thought they should master. Their program directors had approved privileges for these procedures on credentialing applications, allowing those graduates to perform those procedures without supervision. Many of the survey’s responding graduates reported learning procedures without supervision, often after they entered practice.3

Confidence, or operator comfort with performance of procedures, has not been shown to be a useful proxy in providing evidence of competence of performance of procedures.4 The popularity of evaluating curriculum at Kirkpatrick’s lowest stage,5,6 which is learner satisfaction, has been addressed by Kirkpatrick in the following judgment: “Evaluating reaction is the same thing as measuring customer satisfaction.”6 Enjoying simulation training sessions and leaving those sessions with a great confidence, comfort, or satisfaction may not necessarily equate to competence in performing those procedures. Just as the physician’s ability to self-assess his cognitive skills is often flawed, so is self-assessment of procedural competence.7 Some examples follow.

Carbine et al8 videotaped individuals providing neonatal resuscitation to compare the resuscitation methods applied against the standards set forth by the Neonatal Resuscitation Program (NRP). Their group found a “significant number of deviations from the NRP guidelines” demonstrated on video recordings; 30% of NRP steps were not performed or were performed incorrectly despite having completed NRP training.

Adams et al9 reported that despite going through NRP training, residents were less successful at intubation on

REFERENCES
Table 2. Assessments by Procedure and Along a Developmental Continuum

<table>
<thead>
<tr>
<th>Group No.</th>
<th>Required Procedures</th>
<th>Optional Procedures§</th>
<th>Anatomy and Physiology</th>
<th>Indications and Benefits</th>
<th>Contraindications and Risks</th>
<th>Informed Consent</th>
<th>Pain Management; Patient Psychological Preparation</th>
<th>Specimen Handling</th>
<th>Interpretation of Results†</th>
<th>Checklist-Driven Task Analysis</th>
<th>Anticipation, Monitoring, Assessment‡</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lumbar puncture</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>3</td>
<td>Umbilical arterial catheter placement</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>...</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>1</td>
<td>Suturing of scalp</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>Operator</td>
<td>X</td>
</tr>
<tr>
<td>2</td>
<td>Suturing laceration across lip border</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>...</td>
<td></td>
<td></td>
<td>X</td>
<td>NA</td>
<td>X</td>
</tr>
<tr>
<td>3</td>
<td>Thoracentesis</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>...</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td>NA</td>
</tr>
</tbody>
</table>

NA indicates not applicable.

*Includes indications, contraindications, complications, limitations, interpretation of findings, and technical (psychomotor) skills.

†Interpretation of laboratory findings of specimens, postprocedure radiographic images, therapeutic changes, and so on.

‡Anticipates complications and manages those complications; performs ongoing monitoring and assessment of patient with escalation of care as needed; provides communication of status with family and care team.

§These additional procedural skills may be pursued if the residents’ practice expectations indicate a use for such skills and if and only if the training environment is able to provide such training (includes availability of skilled teaching faculty15). It is beyond the scope of these milestones to propose pediatric program requirements and the examples here are listed simply as examples of possible procedures by category.

||Informed consent elements may be known, but the actual informed consent must take place by the primary operator for the procedure.
Table 3: Developmental Spectrum of Elements of Competency on Prescribing and Performance of Procedures

<table>
<thead>
<tr>
<th>Element</th>
<th>Beginning of Spectrum</th>
<th>Below Mean</th>
<th>Above Mean</th>
<th>Verification of Training Complete</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anatomy and Physiology; Indications and Benefits; Contraindications and Risks</td>
<td>2 SD below mean on knowledge test</td>
<td>1 SD below mean on knowledge test</td>
<td>1 SD above mean on knowledge test</td>
<td>2 SD above mean on knowledge test</td>
</tr>
<tr>
<td>Informed Consent</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Informed consent represents a process limited to obtaining a signature; limited knowledge of elements of informed consent restricted; dialogue with family/patient results in low information exchange. The signed document becomes the desired outcome, rather than achieving the patient/family understanding of the requisite discussion for true informed consent.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pain Management, Patient Psychological Preparation</td>
<td>Pain management is not discussed. Consideration of ease or efficiency of procedure takes precedence over family adjustment to or readiness for the procedure.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specimen Handling</td>
<td>Little understanding of how samples should be handled, resulting in need to repeat procedure or suboptimal results/interpretation.</td>
<td>1 SD below mean on knowledge test</td>
<td>1 SD above mean on knowledge test</td>
<td>Preprocedure planning with identification of needed studies. Contact made with special laboratories to assure that the samples can be transported and analyzed properly; scheduling of procedure is done with regard to special transporting, storage, or testing issues as well as patient preferences.</td>
</tr>
<tr>
<td>Interpretation of Results or Outcomes</td>
<td>Understanding results is limited to reading of a report; inability to determine what results mean in the context of the patient’s clinical condition; “normal” and “abnormal” are taken at face value without understanding of true meaning; analytical information about test specificity, sensitivity and confounding factors are not utilized.</td>
<td></td>
<td></td>
<td>Demonstrates consideration of patient age and the physiological conditions under which the results were obtained with consideration of baseline patient status, disease process, validity of evidence/results, coexisting conditions, and other confounders.</td>
</tr>
</tbody>
</table>

(Continued)
the first attempt than respiratory therapists on a transport team.

Eighty-seven percent of pediatric residents in training in a study by Falck et al.\(^\text{10}\) reported confidence in their ability to intubate neonates. Yet 35% of the intubation attempts were never successful by the pediatric house officers in that study. These individuals were surveyed after graduation, and 71% of the group’s respondents stated that they were practicing general pediatrics and 36% were attending deliveries.

There is abundant evidence that counting procedures alone is not adequate evidence of competence. Colliver et al.\(^\text{11}\) conducted a study comparing the number of procedures performed to performance of those procedures using a gold-standard competency assessment model of simulation and animal models. His work demonstrated that the number of procedures needed to demonstrate competence far exceeded the number recommended by most residency programs.

Last, the particular group of procedures a pediatrician wishes to perform without direct supervision depends largely on their individual career goals. Jones and McGuinness\(^\text{12}\) have described an educational approach that considers this differentiation. For the majority of procedures in pediatrics, the pediatrician may prescribe and manage the patient, but may not directly perform many procedures.

A relatively short, select list of procedures has been deemed by the American Board of Internal Medicine (ABIM) as appropriate for generalists to perform without direct supervision.\(^\text{13}\) It is anticipated that a finite group of procedures will be recommended for a categorical pediatric resident who anticipates hospital privileges as a general pediatrician; deliberate training for this subset of procedures is anticipated. Thus, the categorical general pediatric graduate would seek to be competent in the cognitive and psychomotor components of a select group of procedures, have awareness of these components for another group of procedures, and the ability to assist in yet another group of procedures.

With competence, performing any procedure without ongoing deliberate practice results in extinction or attenuation of skills. Likewise, deliberate practice is required to achieve more highly reliable functioning associated with proficiency and mastery. There are no data to address the intervals recommended for reassessment or retraining in procedural competence, but there is evidence that current intervals may be inadequate.\(^\text{14}\) Therefore, ongoing reassessment will need to be part of continuing professional development such as maintenance of certification, maintenance of licensure, or the granting of hospital privileges, and relate directly to the type of practice (and therefore the type of procedures encountered or performed) (Table 2).
DEVELOPMENTAL MILESTONES:
The component knowledge, skills, and attitude of each procedure are numerous and complex. They include:
- Anatomy and physiology.
- Indications and benefits.
- Contraindications and risks.
- Informed consent.
- Pain management, patient psychological preparation.
- Specimen handling.
- Interpretation of results or outcomes.
- Procedural technique (multiple elements unique to procedure; common elements to all [eg, sterile technique, situational awareness, course correction]).
- Postprocedure management.

This approach to assessment makes some assumptions:
- Performance level is specific to each procedure based on the relevant components and level of responsibility of the physician.
- Given the variability of required components, measures of competence are based on all of the relevant components for that procedure.
- Performance level for a given procedure therefore requires reaching the desired performance level for each of the individual components.

The developmental progression is outlined in Table 3.

REFERENCES

Competency 9. Counsel patients and families
Susan Guralnick, MD

BACKGROUND: Counseling of patients and families should be patient centered, requiring the practitioner to “meet the patient’s/family’s need for obtaining information about the disease, providing guidance and solving problems collaboratively, all of which are aimed at helping the patient to better manage the health problem.” The practitioner’s level of knowledge and self-confidence about a specific topic are key components of how well she will counsel patients. Essential to effective counseling is clarification of the desired outcome. The ideal approach balances the “discrepancy between the best possible care and the inevitable compromises in adapting management to the real patient’s circumstances.” For example, in the case of an asthma patient with frequent exacerbations, the practitioner must first determine whether the patient is taking the prescribed controller medications. If the patient is not, the practitioner must identify the reason or reasons for this nonadherence. There are many reasons why this may have occurred, including patient/family misunderstanding, inadequate resources, living conditions, or significant family issues that impede following the prescribed regimen. The practitioner will be unable to help the patient/family develop a plan for behavior change without an assessment of the patient/family situation and a behavioral management plan that takes the context of the patient’s/family’s lives into account.

The method of appreciative inquiry, in which the clinician “engages in a dialogue that draws out, builds on, and reinforces stories of what the [patient/family] feels works or has worked in his or her life, affirming [the patient/family’s ability] to make decisions” can be effectively applied here. Appreciative inquiry was defined in the 1980s as a “method of organizational development in which the ‘best of what is’ is made better.” Medical
practitioners have begun to successfully apply this approach to patient counseling. As applied to the asthma case above, the practitioner would engage the patient/family in a discussion of past successful behaviors. Through this process, they discover that in the past the patient has been most successful in completing prescribed medication courses when he consistently takes the medicine before bedtime or at mealtime, using a temporal cue as a reminder. A plan would then be developed using a temporal association to improve controller medication adherence.

Independent of the method, physicians must develop skills in each step of the counseling interaction. As defined in the literature, the critical steps of counseling include determining the magnitude of the problem, strongly encouraging behavior change, determining the patient’s willingness to change, and helping the patient change the behavior. In order to accomplish this, there must be use of language that is clear and understandable, open discussion, movement away from authoritarian recommendations to shared decision making, and empathy for the patient’s circumstances, goals, values, and culture.

DEVELOPMENTAL MILESTONES:

- Responds to patient’s/family’s questions without an adequate knowledge base, and does not initiate discussion of healthy behavior change. The conversation contains frequent medical jargon and displays personal biases. Does not demonstrate consideration of patient’s specific circumstances. No plan for change is discussed.
- Recommends healthy behavior change, but provides little opportunity for discussion or questions. The conversation contains frequent medical jargon and may display personal biases. Shows little empathy/adaptation for patient’s specific circumstances. Defines a plan for the patient.
- Encourages healthy behavior change and answers the patient’s/family’s questions. Listens to the patient/family and begins to express caring, concern, and empathy. Maintains a respectful tone and rarely uses medical jargon. Incompletely or inconsistently assesses patient/family understanding. Superficially addresses the patient’s options. Demonstrates recognition that patients have varying circumstances and begins to involve patient/family in developing a plan.
- Promotes healthy behavior change. Encourages the patient/family to ask questions. Uses active listening and expresses caring, concern, and empathy. Maintains a respectful tone and avoids medical jargon. Checks the accuracy of the patient’s/family’s understanding. Explains choices in light of patient’s circumstances, goals, values, and culture. Acknowledges the patient’s/family’s accomplishments, progress, and challenges and negotiates mutually acceptable plans.
- Partners with the patient/family to achieve healthy behavior change. Encourages the patient/family to ask questions. Uses active listening and expresses caring, concern, and empathy. Maintains a respectful tone and avoids medical jargon. Identifies the patient’s/family’s strengths through appreciative inquiry and builds on them. Engages in shared-decision making with the patient/family to develop plans for change that are realistic and achievable within the context of their lives and assesses the accuracy of the patient’s/family’s understanding.

Competency 10. Provide effective health maintenance and anticipatory guidance

Susan Guralnick, MD

BACKGROUND: Health maintenance and anticipatory guidance are fundamental to pediatric practice. Up to two-thirds of pediatric office visits are for well child care, and a great portion of each well-child care visit is spent addressing behavior, development, immunizations, nutrition, and injury prevention. Many of these issues are attended to during acute care visits as well. It is therefore essential that pediatricians be trained to provide appropriate health maintenance and anticipatory guidance. “Anticipatory guidance consists of the information that clinicians give families about what they should expect in their child’s development, what they should do to promote this development, and the benefits of these healthy lifestyles and practices. It is distinct from counseling, which is advice given in response to specific problems.”3,4 Anticipatory guidance can be offered in many forms, including personal discussion, written information, video, and via the Internet. There are several tools available that provide a systematic approach to this process. While it is clear that this is an important skill, evidence shows that physician performance in this realm is highly dependent on physician attitude, knowledge, and comfort. Another key factor is “confidence in their ability to motivate behavior change.”

The pediatrician must be prepared and willing to offer age-specific anticipatory guidance ranging from choking prevention in a toddler to drug and alcohol use prevention in an adolescent. The practitioner must be ready and available to work with the family to enable lifestyle and practice change with consideration of the family-specific situation. Beyond the basics of knowledge, skills, and attitudes, the practitioner has a lifelong responsibility to remain up to date with current guidelines and resources available for health maintenance. The medical education experience in the United States is often not ideally designed to prepare physicians as preventive medicine practitioners, emphasizing the diagnosis and treatment of disease over preventive care. Thus, many practitioners are not well equipped at the time of graduation from residency to provide the preventive care that is required in practice. Knowledge of the precepts of health maintenance, the use of appropriate screening procedures, moving from external to internal prompts for offering anticipatory guidance, health maintenance and well child care visits are a great opportunity for education. This article discusses how the medical education experience in the United States is failing to adequately prepare physicians to provide anticipatory guidance to families.

REFERENCES

guidance, and the ability to elicit and address unhealthy behaviors are the core elements necessary for competence in this domain. Opportunities to develop these skills must be provided and nurtured during training in order to develop the habit of emphasizing preventive care in practice.

**DEVELOPMENTAL MILESTONES:**

- Demonstrates little familiarity with health maintenance concepts (eg, recommending exercise, nutritional assessment). Performs age-appropriate screening procedures only when instructed to do so. Answers patients’ and families’ questions without offering anticipatory guidance.
- Demonstrates familiarity with, but has little knowledge of, health maintenance concepts. Uses resources made available to her for health promotion and disease prevention, but does not seek new information or resources. Often performs age-appropriate screening procedures. Inconsistently offers anticipatory guidance without prompting. Inconsistently identifies and addresses unhealthy behaviors during patient/family interactions.
- Demonstrates some knowledge of health maintenance concepts. Uses available resources and begins to seek new and current resources, guidelines, and recommendations for health promotion and disease prevention. Usually performs age-appropriate screening procedures and offers anticipatory guidance without prompting. Frequently identifies unhealthy behaviors during patient/family interactions and addresses those with the patient/family.
- Demonstrates knowledge about health maintenance concepts. Routinely identifies and accesses current best evidence-based resources and recommendations for health promotion and disease prevention. Habitually performs age-appropriate screening and provides anticipatory guidance. Characteristically communicates information about expected behavior, development, and safety needs as well as promoting a healthy lifestyle. Works with individual patients and populations of patients to promote healthy behaviors, change unhealthy behaviors, and enhance adherence to improved behaviors.
- Assesses health maintenance or anticipatory guidance needs at a local, regional, national, and global level and works to address those needs. Adapts health maintenance and anticipatory guidance interactions to the current and expected needs of patients and families in the context of their cultural and personal circumstances.

Competency 11. Use information technology to optimize patient care.

This competency is combined with the competency 7 (use information technology to optimize learning and care delivery) of Practice-Based Learning and Improvement.¹

Competency 12. Provide appropriate role modeling

*Susan Guralnick, MD*

**BACKGROUND:** Role models play an essential role in character and professional development. The *Merriam-Webster Dictionary* defines a role model as “a person whose behavior in a particular role is imitated by others.”¹ The term “role model” was coined by Dr. Robert K. Merton, the pioneering sociologist, in his publication of a 5-year study of the socialization of medical students. Merton theorized that individuals identify reference groups to which they may or may not belong for purposes of self-comparison. In addition, individuals identify social groups, each having a set of social roles that is associated with a specific set of behaviors, to help learn appropriate social roles.² Merton’s work defines socialization as the learning of those social roles. “Socialization takes place primarily through social interaction with people who are significant for the individual. In its application to the medical student, socialization refers to the processes through which he develops his professional self, with its characteristic values, attitudes, knowledge, and skills, fusing these into a more or less consistent set of dispositions which govern his behavior in a wide variety of professional (and extra-professional) situations.”³ Professional socialization refers to the aspect of socialization that must occur for an individual to be accepted into an occupational group; that is, he must “accept the common core of relatively homogeneous values, norms, and role definitions of that group.”⁴

“Role models—people we can identify with, who have qualities we would like to have, and are in positions we would like to reach—have been shown as a way to
Role modeling using both positive and negative examples is a core element in the training of physicians. Any interaction in any setting is a teaching opportunity—an opportunity to teach by example. “The informal curriculum, which consists of unscripted, unplanned, and highly interpersonal forms of teaching and learning” is a very powerful teaching tool for passing on the knowledge, skills, and values of the medical profession.

The skills and attributes of role modeling can be taught and developed. Physicians must become aware of the impact of their behaviors on others and begin to reflect on and articulate to learners what they are modeling “to make the implicit explicit.” When shared with learners, reflection in action, the practice of analyzing one’s performance as it occurs, and reflection on action, which takes place after the event, are extraordinary opportunities for role modeling. Reflection in action occurs when encountering a situation that is outside one’s experience or knowledge, leading the physician to immediately define the problem and identify a solution. For example, an intern enters a room and encounters an angry family. He must act to diffuse the situation but may have little or no experience. He will have to evaluate the circumstances and develop an immediate action plan based on information available and the dynamics in the room. In the next stage of development, reflection on action, the physician reflects on events after the fact, critically evaluating the situation and seeking alternate and possibly better solutions for future encounters. Absent the active and shared reflection, the passing on of these attributes to learners may not take place. “Awareness of being a role model, the conscious recognition of the importance of role modeling as a teaching and learning strategy, and the positive or negative impact of what we are modeling, is fundamental to improving performance. We are role models at all times.”

Competency 13. Provide appropriate supervision

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**BACKGROUND:** The definition of supervision embraces both the promotion of professional development and the assurance of patient safety, with positive effects on both patient outcome and trainee development when direct supervision is combined with focused feedback. Review of the literature highlights the critical importance of the relationship between the supervisor and the supervisee. To build this relationship, there must be continuity over time, reflection by both parties, and the ability of the supervisee to have some control over and input into the supervisory process. Helpful supervisory behaviors include giving direct guidance, aligning theory with practice, joint problem solving, and offering feedback, reassurance, and role modeling.

**DEVELOPMENTAL MILESTONES:**

- Performs routine duties and behaviors of profession without awareness of the impact on those around her. Does not demonstrate evidence of reflection on actions as they occur (reflection in action) and does not share reflections with others.
- Demonstrates awareness of the impact of one’s behaviors and attitudes on others inconsistently. Sometimes teaches by example. Occasionally will reflect openly on events as they occur (reflection in action) and demonstrates evidence of private reflection on events that have already taken place (reflection on action) through observable behavior changes.
- Expresses consciousness of being a role model during many interactions. Frequently teaches by example and often reflects in action openly in the presence of learners. Behavior implies frequent private reflection on action.
- Expresses consciousness of being a role model during most interactions. Routinely teaches by example. Regularly reflects in action and frequently reflects on action, resulting in behavior changes and sharing of this analysis of practice with learners.
- Demonstrates evidence that role modeling is a continuous process. Expresses recognition that she is a role model in all actions and behaviors at all times. Characteristically teaches by example. Routinely reflects both in action and on action. Examines, analyzes, and explains actions/behaviors in the presence of learners and colleagues.

**REFERENCES**


**ROLE IN PROFESSIONAL DEVELOPMENT AND PATIENT SAFETY:** When thinking about the role of supervision in promoting professional development, there is an important construct to be considered. Ten Cate et al. speak to the delicate balance between guidance and self-regulation; too much or too little of either may have adverse effects on learning. “Constructive friction” is the name given to this balance, which is related to Vygotsky’s zone of proximal development (ZPD). The latter is described as the distance between the actual developmental level, as determined by independent problem solving, and the level of potential development when problem solving under the guidance of a more capable peer or more senior teacher. According to Vygotsky, the most essential feature is that
the “developmental process lags behind the learning process; this sequence then results in zones of proximal development.” Harland builds upon this construct by speaking to the need for scaffolding, or providing higher levels of initial support for learners as they enter a new ZPD, and then gradually pulling back the support as they progress toward independence. As one scaffold is withdrawn, a new one is built for the learner as she enters a new ZPD.

As an example of a ZPD, consider the resident covering as night float when she encounters a child with an unfamiliar clinical situation. Her experience allows her to apply what she learned in caring for patients with similar signs and symptoms, ultimately diagnosed with scarlet fever, to initiate a diagnostic workup and supportive care for this new patient. She calls her attending with the laboratory results, and he asks her to prioritize her differential diagnosis. He leads her in formulating a differential expanded beyond scarlet fever, which ultimately includes an accurate diagnosis of Kawasaki disease. This is an example of the gap between her actual developmental level and her potential developmental level with senior guidance, as illustrated by ZPD 1 in the Figure. By providing a higher level of support as she entered this new ZPD, she learns new information and skills that take her to the next developmental level of competence. When later confronted with a child who has streptococcal toxic shock syndrome who presents with some similar signs and symptoms, but this time in extremis, she is able to immediately intervene and stabilize the child while calling for help. In this way, she demonstrates her ability to enter ZPD 2 (Figure), and with mentored support, again, she learns new information and skills that will take her to the next developmental level of competence. As she transcends each ZPD, she widens her realm of certainty and pushes further into her realm of uncertainty. The latter continually changes as she closes the gap between her actual and potential developmental levels within each successive ZPD.

Before we can assimilate this and relate it in a meaningful way to supervision, one more construct needs to be introduced: capability. Fraser and Greenhalgh define capability as “the extent to which individuals can adapt to change, generate new knowledge, and continue to improve their performance.” In contrast, they define competence as what “individuals know or are able to do in terms of knowledge, skills and attitudes.” Of note, they emphasize “capability is enhanced through feedback on performance and the challenge of unfamiliar contexts.”

In the above example, the resident demonstrated competence in caring for the familiar child with scarlet fever. When confronted with the child who had Kawasaki disease as well as the one with toxic shock, she demonstrated capability in caring for these patients. It is here that the striking analogy with supervision unfolds. In order to balance the 2 goals of supervision, it is essential to determine a trainee’s current level of competence and then provide the degree of support or scaffolding needed. In the case of supervision, the goal is the minimal type of supervision needed to ensure the safety of the patient. This requires continuous reevaluation of the support or scaffolding needed and the gradual shift to a lesser degree of supervision as the trainee becomes more capable. This process is an iterative one that allows for progressive self-regulation and fulfills the ultimate goal for the trainee to practice without direct supervision.

When thinking about the relationship between supervision and patient safety, the most enlightening literature comes from the work of Kennedy and colleagues and focuses on the facet of supervision that they term “clinical oversight.” Effective clinical oversight requires the alignment between the clinical skills of the supervisee and the supervisory skills of the physician providing the oversight. The complexity of this competency is based on the need for the supervisor and the supervisee to move along the developmental continuum in tandem.
A supervisee requires interaction with a supervisor who is developing or has developed the skills to progressively move along a continuum that provides the type of supervision that balances patient safety with the professional formation of the supervisee. In order to attain the milestones that span this developmental continuum, both supervisees and supervisors need to continually operate within their respective ZPDs, with the former developing the capability to expand their clinical skills in order to ultimately practice without direct supervision and the latter developing their ability to step back from direct care, judge the competence and capabilities of their supervisees, and award them the appropriate amount of self-regulation to balance safe patient care with continuous professional development.

**Types of Clinical Oversight:** Clinical oversight has been described in terms of the following levels of supervision: routine, responsive, direct care, and back stage. The type of oversight is context specific; each trainee may need differing types of supervision based on experience and the current clinical situation.

**Routine Oversight**

Routine oversight is supervision that is planned in advance, such as rounds or precepting in clinic, where the expectation from the beginning is that every case is reviewed. This type of oversight involves discussion, probing, confirmation, and refinement. In essence, these activities can be encompassed under the broad heading of monitoring.

**Responsive Oversight**

Responsive oversight goes beyond the routine and involves an escalation in intensity based on the needs of the patient, the trainee, or the supervisor. “Situation-specific triggers for responsive over-sight involve 3 main categories: 1) clinical cues, 2) information from a secondary source, and 3) language discrepancies/inconsistencies in clinical information.” Examples of these categories include, respectively, 1) a presentation about an infant in which “lethargic” is used to describe the general appearance of the infant that the learner assesses as having an upper respiratory infection; 2) the nurse’s triage note differs from the story that the resident is presenting; and 3) the CBC demonstrates a significant left shift in a child with a fever who the trainee describes as fine and plans to send home from the ED without further workup or follow-up. Prior experience with a trainee can also stimulate responsive oversight, such as when past encounters have demonstrated trainee-specific red flags (eg, inaccuracies in physical examination).

**Direct Care**

When a supervisor feels the need to go beyond responsive oversight, he becomes involved in direct patient care. The latter may be limited to a specific aspect of care or to taking over care based on concerns regarding a trainee’s competence. An example is precepting in clinic when the trainee’s recounting of the history and physical examination does not make sense, and upon going back into the room, the supervisor encounters a very sick patient and immediately takes over care based on the trainee’s lack of recognition of illness severity.

**Backstage Supervision**

Backstage supervision, unlike the types of clinical oversight described previously, involves checking that is not transparent to the learner. An example is the supervisor who reviews the laboratory values on a patient before coming to rounds, although he knows that these values will be presented during the case discussion.

In addition to these types of supervision described by Kennedy and colleagues, we propose another type of supervision: retrospective supervision. This type of supervision is exercised as a stopgap measure to ensure that elements of prospective supervision did not fail. Retrospective supervision is most appropriate for learners for whom supervision from a distance is warranted. An example of this type of supervision is when a faculty member reviews charts from the prior day’s clinic visits, ensures that documented care is appropriate, and gives either written or verbal feedback to the resident, allowing patient safety and learner professional development to be optimized.

For the supervisor, patient safety, direct observation of a trainee’s skills, experience with and knowledge of the trainee’s limits, perceived level of complexity of the task, feedback from others who have worked with the trainee, and the local clinical environment have all been described as playing a role in his ability to grant increasing independence. Trainee confidence and self-efficacy, as well as supervisor “audacity,” were also a part of the supervisor’s decision to provide less intense clinical oversight. The qualitative study by Kennedy et al of how supervisors determine the intensity of the oversight provided found that 4 dimensions are influential: knowledge and skill, discernment (ability to identify limits), conscientiousness, and truthfulness. These 4 dimensions formed the basis for what they termed “trustworthiness.” (See the competency on trustworthiness for a detailed explanation).

**Developmental Milestones:**

**Milestones for Supervisor**

- Supervisor’s limited experience in this role makes it difficult to step back from direct care.
- Supervisor recognizes the need to entrust care to his supervisee, but is not able to accurately assess the current level of competence of the trainee. This results in a mismatch between the level of competence of the trainee and the type of supervision provided, particularly for trainees who are not at either end of the performance spectrum.
- Supervisor accurately assesses the competence of the trainee and is able to align type of supervision to demonstrated level of competence. However, a personal need for greater involvement in care often results in an inability to empower the trainee to reach beyond her current level of comfort and competence to become capable of dealing with less familiar types of patients and clinical circumstances.
Supervisor accurately assesses both the competence and the capability of the trainee and provides a level of supervision that balances patient safety with the trainee’s professional development. Is dependent on a self-directed supervisee to provide the needed resources to support her own learning in managing less familiar types of patients and clinical circumstances (eg, the trainee who seeks out new learning opportunities, such as asking to do a procedure that she has never done before when her supervisor does not offer this experience).

Supervisor accurately assesses the competence as well as the capability of the trainee, aligning the type of supervision to maximize and balance patient safety and the trainee’s professional growth. Continuously evaluates the potential for the trainee to develop new capabilities and adjusts the type of supervision necessary to optimize professional development.

**MILESTONES FOR SUPERVISEE**

- **Supervisee requires direct supervision to ensure safety and quality care for the patient based on inability to demonstrate many or all of the following: required content knowledge, skills, knowledge of limitations, conscientiousness, and/or transparency/truthfulness about limitations**
- **Supervisee requires direct supervision in most cases. In previously encountered situations, responsive supervision is warranted based on transparency/truthfulness, conscientiousness, fundamental content knowledge, and skills but uncertainty about limitations (not enough experience to know what she doesn’t know).**
- **Supervisee demonstrates competence, requiring routine supervision in most cases based on transparency/truthfulness, conscientiousness, content knowledge and skill, and acknowledgment of limitations. May require responsive supervision or, rarely, direct care in cases of high acuity and/or complexity.**
- **Supervisee’s ability to demonstrate competence, combined with trustworthiness (knowledge/skill, knows limits, conscientiousness, truthfulness), allows for supervision at a distance, with the supervisee calling the supervisor as needed. The trainee often relies on her supervisor for prompts to expand her learning when entering unfamiliar clinical situations, but she demonstrates capability when given appropriate support to do so.**

- **Supervisee is ready to practice without direct supervision based not only on competence but also on demonstrated capability in safely caring for patients with unfamiliar problems and the drive to continually push herself beyond her realm of experience into new clinical circumstances; self-regulates and judges level of support needed for safe and quality patient care as she expands her capabilities.**

**REFERENCES**