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Bedside clinical teaching for respiratory therapy students and clinical staff.

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"Experience without theory is blind, but theory without experience is mere intellectual play." Immanuel Kant

Effective patient assessment, based on the bedside review of health history combined with physical examination, has been the hallmark of clinical practice. At the beginning of the 20th century, American medical schools adopted a new strategy promoted by Sir William Osler at The Johns Hopkins Hospital and published by the Carnegie Foundation as the Flexner Report. Osler stated, "Medicine is learned by the bedside and not in the classroom." He combined bedside observation with pathological study.¹ This approach can be applied in any setting or level of acuity: outpatient/hospital room, ED, ICU, diagnostic lab, extended care facility or home. Robust patient assessment includes deliberate review of the written history, diligent interview to elicit information directly from the patient, adept physical examination, knowledge of clinical manifestations of pathologic processes and clear reasoning to integrate findings. Respiratory therapy programs dedicate considerable resources to this process to prepare students for their clinical-based experiences and future careers. After graduation, mentors, preceptors and directors of in-service education continue this life-long learning process.

A study of internal medicine trainees found a recent decline of 13% in time spent in direct patient contact.² Such changes have been attributed to the electronic health record, overreliance on technology-based tests, changes in duty hours, economic pressures, and patient throughput being a priority. The consequence of reduced direct patient contact has resulted in a decline in assessment skills resulting in increased diagnostic errors, poorer clinical outcomes and increased medical costs.^{3,4} The shift away from the bedside human contacts has the

potential to decrease clinicians' empathy, caregiver-patient relationships as well as an increase in their stress and burnout.⁵

The purpose of this article is to briefly describe a bedside teaching strategy and tactics which were implemented as part of a formal respiratory therapy program. Similar approaches could also be used as part of departmental staff continuing education to advance patient assessment abilities.^{6,7,8}

When our respiratory therapy program converted from an associate degree to baccalaureate degree level, we were able to implement a new curriculum with a greater emphasis on bedside patient assessment. The change was implemented based on the profession's evolution as respiratory therapists have increased their clinical responsibilities for patient care. This has been attributed to both more complex technology and the greater need for RTs to provide meaningful input for patient management. To achieve such goals, in addition to additional didactic coursework, our strategy was to incorporate structured student bedside encounters to complement two courses. The first was part of a dedicated patient assessment course in the fall of the junior year; the second supplemented a pulmonary pathophysiology course in the spring semester. The plan was to involve a class of students as a team for a bedside patient case review one morning a week. In contrast to physician rounds seeing a list of patients, the focus would involve only one patient; the purpose would be solely educational not for diagnosis or clinical management. Each bedside encounter was planned by both a member of the RT program's faculty and a physician who also was the medical director; they would also serve to direct and debrief the sessions. The program expected that this tactic would be more dynamic than just reviewing case studies in a classroom setting and allow nearly immediate and direct application of didactic topics and skills. The approach would be analogous to lab sections associated with science courses such as chemistry or physics. The bedside teaching encounter would be student-centered and use an interactive-engagement strategy; the evidence for this approach in science education appears to be sound.⁹ The experience would involve key tactics for student-based learning: problem orientation, collaborative, use inquiry and discovery, as well as be technology enhanced.¹⁰ Members of the class would each be assigned a portion of the patient's assessment and later report their findings. Those areas included: past medical history; current presentation/interview; physical exam (cardiopulmonary-targeted); imaging; pertinent laboratory and/or point-of-care testing; pharmacology; respiratory care; pathophysiology of the primary problem and related sequela; summary comments based on an interview with the patient's nurse; and relevant psychosocial issues. The bedside visit would also provide an opportunity for role modeling and professional behaviors by faculty. A faculty-led debriefing would involve students summarizing their findings for the class to

support their communication skills and promote discussion and questions. The debriefing would also serve to integrate and make connections of the assessment to the patient's diagnosis, exam findings, pathophysiology and care. Careful patient selection would allow deliberate review of most important respiratory care disorders. The program also endeavored to positively impact student's perspectives in caring for those of different races, ethnicity and cultures as part of highlighting humanistic aspects of care.¹¹ Table 1 describes details involved in preparing for the bedside encounter, the pre-briefing and information review, the patient encounter, debriefing and the follow-up student assignment.

The response to the bedside experience was positive. Students expressed interest in direct patient-focused contact as well as interaction with the physician faculty member during the exam and debriefing. Students felt they could see the complete medical picture and how the respiratory care fit in, versus isolated therapy events or equipment checks. The event put the patients in center-stage; during the visits, patients seemed to enjoy the experience and felt that they had contributed to the group's education.¹² We observed that without prompting, many of the students personally thanked patients after the bedside sessions and wished them well. The affiliated hospital's respiratory staff were made aware of this addition to the curriculum and felt it was a valuable teaching tool. They became helpful in alerting RT program faculty of patients that might be valuable to be considered for case reviews. The RT program faculty found the bedside cases important in that they could be assured that all students had first-hand clinical contact with key patient problems. They were also able to directly observe student's interpersonal skills with patients, fellow students and physicians in a clinical setting. The immediate debriefing sessions were particularly valuable as they were conducted in a non-threatening and non-judgmental atmosphere. Faculty used techniques of reflective practice to ensure that both students and faculty asked questions and raised issues.^{13,14} Efforts were made to support learning to help students connect classroom theory with observed patient events. This strategy puts their respiratory care and the role of therapist into overall perspective of the care plan.¹⁵ It should be noted that not all reviews of physician-based bedside education in medical literature are overwhelmingly positive. Some trainees have noted concern on bedside rounds as they worried about making mistakes, causing harm and appearing incompetent to the group.¹⁶ The RT program faculty felt the students' post encounter write-up was helpful in developing technical writing skills. The bedside review's quiz helped confirm the students' ability to integrate key medical aspects of the bedside case experience. The faculty also noted the bedside encounters required considerably more work compared to that required for didactic presentations.

Dedicated scenarios at the institution's clinical simulation center were also developed to complement the student's group encounters for both the patient assessment and cardiopulmonary pathophysiology courses. These patient assessment-oriented scenarios primarily used standardized patients (SPs) which allowed students to independently interview and examine "real" patients. Literature supports use of SPs to improve student confidence and skills compared to peer-practice.¹⁷ SPs were carefully coached to report history and symptoms as well as how to respond during physical examination. The reality of the examinations was enhanced by applying mock injuries and conditions to actors or manikins, as well as bedside monitoring devices which control of vital signs.(e.g. pulse oximeters), and stethoscopes programmed to produce breath sounds consistent with the clinical scenario.¹⁸ Those additions were also valuable in giving students the opportunity to identify changes of the SP's clinical status during the scenario and respond accordingly. Post-scenario debriefing included the ability for students to review audio-visual recordings of their performance. At the end of each semester, simulation scenarios were included to formally assess whether students had successfully achieved course objectives based on an objective structured clinical examination (OSCE) format.^{19,20}

The objective of this article was to underscore the importance and suggest a strategy for teaching bedside patient evaluation to respiratory therapy students and departmental staff. Modern technology and testing do have the potential for distraction and overreliance. When used in a complementary fashion with bedside assessment, technological advances such as clinical simulation, the electronic medical record (EMR), bedside monitoring, digital radiographic imaging and devices such as point-of-care-ultrasonography (POCUS), have the potential to enhance bedside teaching and ultimately better care of patients.^{2,21}

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Table 1. Tactics for RT staff & physician facilitated bedside teaching: Patient Assessment and Cardiopulmonary Pathophysiology

Tactic	Justification
The day before the event, the RT & MD faculty select a patient.	A patient is identified with an appropriate cardiopulmonary problem. The problem and complexity are based both on the level of student's abilities and didactic course topics. The patient is visited for their permission and coached for the event. The importance of their participation in the educational event is emphasized. Family members are encouraged to be present if they wish. Nursing personnel are notified of the event.

Table 1 Continued:

Tactic	Justification
<p>A RT faculty-prepared encounter-guide/spreadsheet is emailed to students via <u>intranet</u>. Individual or student teams are assigned specific roles in the bedside encounter. The patient's location and medical identification data are provided with reminder to keep information confidential.</p>	<p>A (Word doc) spreadsheet template is modified (for that patient) to provide a guided and logical approach for the faculty to help students organize their bedside encounter's information. The spreadsheet components include: (1) patient data (gender, age etc.); (2) relevant history of present illness with emphasis on cardiopulmonary issues or related surgical or medical problems; (3) related past medical history; (4) physical examination; (5) relevant imaging studies (radiographic, ECG, ultrasound); (6) relevant laboratory studies (PFTs, ABGs with Davenport diagram); (7) relevant pharmacology; (8) important comments from the patient's RN based on student interview of the nurse; (9) respiratory care; (11) cardiopulmonary pathophysiology; and (12) psychosocial aspects and patient's perspectives. The form's categories could be modified based on the individual patient's setting and problems. The faculty could include links to important online sources and specific journal articles which contained information relevant to the patient.</p>
<p>Students meet at a hospital conference room equipped with computer stations. They are given one hour to prepare their component of the encounter. RT faculty are present to provide assistance.</p>	<p>Time permits students to become proficient with locating information in the electronic medical record, imaging files, pharmacology and written notes by the respiratory therapy staff. Students were also able to use the hospital's intranet to have online access to journal articles (Medline etc.). The plan was to introduce and encourage students to reading of journals articles.</p>
<p>The group meets with the physician at the patient's room.</p>	<p>The RT faculty (who had previously met with the patient) provides introductions. The MD faculty and the student interviewer/examiner review the patient. The student conducts the interview with assistance from the MD faculty. The exam involves a general physical assessment with a focus on aspects that may be impacting the cardiopulmonary pulmonary systems and pertinent to the history.</p>
<p>The group adjourns to a meeting room for debriefing</p>	<p>The debriefing allows each student to relay a summary of the findings of their component of the encounter. The facilities allowed display of digital imaging. The student presentations promote medical terms. Besides just answering questions, the RT & MD faculty serve to focus or identify important historical data, integrate physical examination findings and "connect-the-dots" to the pathophysiology and current or pending care. They also were able to reinforce aspects of human caring.</p>

Table 1 Continued:	
Tactic	Justification
Students complete a write-up of their portion of the encounter document which was emailed to the RT faculty within 24 hours.	The faculty member would grade the write-up based on both content and use of medical terminology, English grammar and composition. Tract changes relay suggested edits for improved technical writing. The quality and completeness of the write-up is graded.
RT faculty collates student contributions and creates a composite document based on all students' (edited) write-ups. That is then sent to all students along with a series of questions to be returned the following day. [confidential patient data and identifiers are removed from this summary document]	The questions (multiple choice and short answers) prompt students to read the responses of other classmates. It reinforced how all the components of the encounter related to the patient's problem(s) and their care. The final question asked, "What was the most important aspect you felt you learned as part of the bedside encounter?" The results of the "quiz" became part of the evaluation/grading for the course.

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