Case Histories in the Education of Advanced Practice Nurses

Chris Winkelman, RN, PhD, CCRN, CNP
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Case histories—rich, anecdotal narratives—are theorized to support the acquisition of cognitive, social, cultural, and emotional knowledge and motor skills through active learning. This manuscript focuses on the value of case histories in teaching and evaluating acute and critical care advanced practice nursing students. Information about the use of case histories in advanced critical care education and clinical practice is limited. Case histories support student-centered learning and development of clinical reasoning. An exemplar of a case history is provided, and application of case histories to both electronic and classroom settings is explored. (Critical Care Nurse. 2012;32[4]:e1-e18)

Defining Case Histories
A number of terms evoke “case history,” including case study, scenario (or case scenario), case presentation, patient problem, and clinical exemplar. All of these terms refer to a rich narrative about one patient. However, the terms used to describe cases may not be interchangeable (Table 1). For the purposes of this article, the term case history is defined as a verbal or written narrative that presents a clinical problem or puzzle where relevant history and clinical findings are provided. Generally, the problem embedded in the case history represents a common, priority condition; builds on prior knowledge; and provides sufficient complexity without interpretation to promote advanced practice nursing (APN) knowledge.
and skills. In a case history, data are not preinterpreted, and there are opportunities for elaboration and integration of knowledge and skills needed for advanced nursing practice. Because case histories are usually based on individuals, they provide contextual nuances that address variability in patients’ conditions, situations, and communities.21 Surprisingly, the use of case histories does not have a long history in the education of nurses but is recommended by expert teachers.2,22-24

Theoretical and Empirical Support for Case-Based Methods of Teaching

Case-based teaching is advocated to help nurses “develop habits of thought”24 essential to practice. Case-based methods are congruent with adult learning theory as they present knowledge and skills that are contextual and engaging.25 Case histories provide opportunity for educators to facilitate clinical reasoning—the cognition and self-reflective skills to solve clinical problems.26 Case methods of teaching promote the cyclic process of expert clinical knowledge development, consisting of intuitive and analytic processes for examining and evaluating information, adding to it, and reorganizing it to solve a problem, make a diagnosis, or develop a plan of care.19,27,28 Case histories provide opportunity for participation, self-directed learning, analysis, and synthesis of theory with practice—all components of active learning.29 Data from associate and baccalaureate nursing programs indicate that case histories are an engaging and satisfying learning strategy.20,30

Both expert educators and theories of learning support the use of case histories in nursing education. Carefully constructed case histories allow acute care graduate nursing students to consider multiple possibilities such as alternatives to the interpretation of data, prioritization of problems, and selection of interventions along with consequences of various decisions.32 Case histories encourage reflective examination of thought processes used to arrive at decisions.31,32 Guided instruction during the use of case histories helps learners acquire new behaviors or knowledge, build on foundational experiences and knowledge, and investigate evidence-based, contextual, and practical solutions to relevant patient situations.34

Research on case-based learning in APN education is limited, and no research with acute care APN students as learners has been published. However, a growing body of research supports case-based strategies as important to “thinking like a

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition/unique features</th>
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<tbody>
<tr>
<td>Case report9-12</td>
<td>Usually prepared for publication; related literature review and interpretation of data provided</td>
</tr>
<tr>
<td>Case presentation11,13</td>
<td>Often an oral report; no literature review but data interpretation is included; communicates pertinent findings to members of the health care team</td>
</tr>
<tr>
<td>Case study14</td>
<td>A specific research strategy with specific guidelines about the level of detail in content presented</td>
</tr>
<tr>
<td>Scenario15</td>
<td>Implies evolving narrative with sequential information; may include a series of changes in patient’s status based on replies to queries or exploration of multiple themes</td>
</tr>
<tr>
<td>Patient problem16 or case-based patient problem17,18</td>
<td>Often associated with problem-based learning, the narrative is designed to promote development of prioritization, clinical judgment, self-reflection, and learning strategies specific to problem-based approaches in classroom settings</td>
</tr>
<tr>
<td>Clinical exemplar20</td>
<td>A brief focused narrative that places content in context for illustration or discussion such as an exemplar of moral distress or cost-benefit analysis</td>
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Table 1 Variations of “case history” in teaching and learning

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Practice-generated knowledge, distilled into case histories, develops clinical reasoning. Although critical thinking skills change in graduate nursing students in the course of their studies, it is not yet clear what techniques help graduate nursing students improve evaluation, inference, and analysis. In medical education, case narratives are used regularly to complement content delivered in classrooms in more than 60 schools. Data suggest that the performance of medical students is similar between “traditional” and problem-based learners, with some gains in social and cognitive performance in problem-based environments. Other findings support the need for discussing multiple cases for optimal gains in learning and evaluation. Data about the effects of case-based methods related to teaching and learning are generally at the level of case or case control.

**Constructing a Case History**

Constructing a case history is time-consuming. Key components of a case history follow a standard format: chief complaint, history of present illness, past medical/surgical history, allergies/medications, social/work history, smoking and alcohol use or abuse, family history, review of systems, physical examination, diagnostic tests (completed studies), assessment/differential diagnoses, and plan. Adding functional and developmental assessment; information about advance directives; and ethnic, cultural, socioeconomic, and religious background introduces students to the complexities of individualized acute care.

The attributes of a well-constructed case history include an overview, acceptable format, cogency, and completeness. Case history progression can have new, essential data organized in a SOAP format (Subjective, Objective, Assessment, Plan). Congruence with objectives or learner outcomes is important to both developing and editing the case history. Uncertainties, ambiguities, and “near misses” or errors can be included to illustrate all aspects of clinical reasoning, especially as students progress beyond beginner status in a program of study.

Case histories can be developed directly from clinical experiences of the faculty member or they can be generated by students during clinical rotations. When using information from patients, attention to regulations about protected health care information is imperative; demographic and diagnostic information should be altered to prevent identification of patients. With any clinically based case history, specific information about dates, contacts, and other identifiable characteristics (eg, photograph, website, fingerprint) must be altered or eliminated before presentation. Hospital staff on the institutional review board can be consulted to ensure that privacy regulations are observed in public presentations. Alternatively, informed consent can be obtained from patients in order to use their health information. Hospital administrators also may need to grant approval to present case studies publicly.

Case histories can also be found in publications such as journals and textbooks. Table 2 contains some sources of case histories constructed to promote clinical reasoning. Some published case histories are freely available online.
Case Histories as Teaching Tools

Case histories, to be successful in teaching or evaluation, must be linked to learning objectives or outcomes. Facilitating learning that is based on a case history requires intensive preparation of faculty. Faculty must be comfortable deconstructing the problem in a small group and guiding students through the analysis of a case history.

Resources cited in this article have strategies for faculty to implement case-based methods of teaching.

Typically, case histories present a problem. The problem may be a classic presentation of a common condition, a unique presentation of a common condition, or a presentation of a rare condition. Case-based teaching strategies in nursing uniquely address issues related to actions, and those actions are usually clinical skills, particularly how to assess and manage patients.

Champions of case histories as a teaching method suggest that case histories offer unique experiences that promote a systematic way of looking at events, collecting data, analyzing information, and reporting. With repeated exposure to case histories over their educational course, acute care APN students experience model narratives with opportunity to establish possible causes, arrive at diagnoses, and formulate an appropriate and tailored plan of care in a language shared with other health care providers.

Case histories provide realistic scenarios to highlight critical decision points in the iterative process of assessment leading to diagnosis and management. This iterative process is especially important in educating APN students. We have observed that experienced registered nurses in APN programs tend to jump to diagnostic tests without obtaining a thorough history and physical examination. We also find that APN students tend to develop incorrect diagnoses when inadequate information is collected. A case history that shows the results of a truncated assessment can illustrate the consequences of premature diagnostic decisions, such as delay in treatment, financial burden, and mismanagement. Histories can be developed with increasing complexity to challenge clinical judgment, determine assessment strategies, select diagnostic tests, establish differential diagnoses, and plan management that reflects evidence.

Case histories can be designed or selected to capture the diverse experiences of patients with single diagnoses versus those with multiple, chronic conditions. For example, early in APN education, case histories can provide isolated acute diseases with “classic” signs and symptoms and a common diagnostic workup. As the semester and educational program progress, case histories can feature less familiar content and ambiguities that occur when patients have multiple comorbid conditions, requiring the student to cluster conditions and symptoms and prioritize problems and planning.

Alternatively, case histories can be developed with minimal data to force the student to think about pertinent information they need to obtain from a patient. Although these minimal-data scenarios are initially easier to construct, students can create an array of responses that need to be considered by faculty. To illustrate, if a student requests a barium enema rather than the expected abdominal computed tomography scan in the presence of abdominal symptoms congruent with an ileus, faculty need to provide the results of the barium enema in such a way that the student understands the consequences of a wrong procedure or a delay in the necessary test.

The highly focused format can also be used to convey specific content. For example, to convey the differences between genetic risks in a single gene condition versus more complex inheritable diagnoses, a series of brief histories can focus on family history and the interactions between genes and environment or the interactions between multiple genes. Table 3 illustrates a case history with a single problem, with multiple problems, and with a reduced/focused level of detail.
Table 3: Exemplars of a case history

**Assignment:** List all identified patient problems in the following case history. Address the priority problem by using a problem-oriented documentation. Include citations for best practices related to diagnostic studies and treatment.

**Chief complaint (CC):** “I am so wiped out from the fever and diarrhea.”

**History of present illness (HPI):** 62-year-old white man admitted through the emergency department (ED) 4 hours ago with diarrhea for the preceding 72 hours accompanied by generalized malaise and “feeling hot.” Discharged from hospital 4 days ago following a total knee replacement for osteoarthritis; his surgical course was unremarkable. On arriving for his first scheduled outpatient rehabilitation, the physical therapist advised him to proceed to the ED for his fever and “hard belly.”

In the ED, abdomen was firm and distended with generalized pain during palpation. Radiography showed marked distension of the colon without obvious obstruction or free air. Initial white blood cell (WBC) count was 16,300/µL. A surgical consult in the ED recommended “watchful waiting, no surgery.” Oral metronidazole and famotidine were started. Record of 1 loose, watery stool.

Past medical history (PMH): Osteoarthritis bilateral knees: “I used to run track in high school and college, and then to keep fit until my knees gave out.”

Past surgical history (PSH): Left total knee arthroplasty X/XX/XXXX (8 days ago). Cefuroxime 1.5 g intravenously (IV) every 6 hours perioperatively for a total of 14 doses while hospitalized; stopped at discharge.

Past medical history (PMH): Osteoarthritis bilateral knees: “I used to run track in high school and college, and then to keep fit until my knees gave out.”

Family history (FH): Father, died of a stroke at age 87; “never had a day of illness”; hypertension (HTN). Mother, 84 years old, well, HTN, arthritis in her legs, hands and back; remains active. Brother, 56 years old, alive and well. Offspring: son 33 years old and daughter 29 years old, alive and well.

**Social history (SH):** High school principal, married, lives with wife. Has 2 adult children who live at long distance (limited help). Supportive neighbors. No religious preference.

Review of systems (ROS): No sick contacts. Reports fever (but did not take temperature), malaise, and chills worsening in past 3-4 days. Head, ears, eyes, nose, mouth, and throat (HEENT): No changes in vision or hearing, sore throat. Respiratory: No shortness of breath, cough, and sputum production. Cardiovascular: No chest/shoulder/neck/jaw pain, syncope, palpitations. Gastrointestinal (GI): Reports cramping and generalized abdominal pain; no heartburn, dysphagia, constipation, weight loss. Genitourinary (GU): No urgency/frequency, hesitancy, and hematuria. Endocrine: No thirst, polyuria, heat/cold intolerance, tremor, or change in hair/skin/nails. No change in libido Skin: No rashes, itch; no drainage or increased tenderness at left knee surgical site. Musculoskeletal: Reports pain urgency/frequency, hesitancy, and hematuria. Endocrine: No thirst, polyuria, heat/cold intolerance, tremor, or change in hair/skin/nails. No change in libido Skin: No rashes, itch; no drainage or increased tenderness at left knee surgical site. Musculoskeletal: Reports pain

**Function:** Independent in activities of daily living. Full-time employment.

**Allergies:** None.

**Home medications:** Enoxaprin 40 mg subcutaneously once daily, beginning day of surgery; none today.

**Vital signs:** Blood pressure (BP), 112/68 mm Hg; heart rate (HR), 92/min; respiratory rate (RR), 20/min; body temperature 102°F (oral). Input/output (I&O): 500 mL IV normal saline, current rate 100 mL/h; 1 void of 100 mL in ED for urinalysis.

**Weight:** 72 kg (75-kg weight before admission to surgery).

**HEENT:** Conjunctiva noninjected, no drainage noted. Tympanic membranes intact bilaterally. Pharynx without redness or swelling. Oral mucosa slightly dry. No pain with sinus maneuvers. Cervical nodes not palpable.

**Cardiovascular:** Very warm centrally and cooler at extremities; slightly diaphoretic centrally. Nailbeds pale, brisk refill. 

**Respiratory:** Breath sounds clear anterior, slightly bronchial posterior. No egophany, no dullness to percussion. No cough, no sputum production. Shallow respirations at rest, with equal bilateral chest excursion. Peripheral oxygenation (SpO2) 95% on room air. Chest radiograph: Clear with normal cardiac silhouette.

**GI:** Distended, tender with hypokinetic bowel sounds in 4 quadrants. Rectal exam shows no masses; no stool in rectum, and patient reports recent use of bedpan in ED.

**GU:** Bladder not palpable. External genitalia unremarkable.

**Endocrine:** No thyromegaly; normoglycemic nonfasting serum glucose.

**Hematological/lymph:** No bruising, no lymphedema.

**Musculoskeletal:** 5/5 with major muscles upper and lower extremities except week knee extension: limited range of motion with left knee (0°-75°).

Continued
Neurological: Cranial nerves 2-12 intact, easily roused from dozing when name called; follows 2- and 3-step directions without error. Psychological: Slow to respond to questions but oriented x3. Serial subtraction with 7; slow to respond but correctly states name, place, and date. Skin: Intact without deformities over bony prominences; no rash. 4 in (10 cm) surgical wound in left knee open to air; slightly erythematous with palpable fibrotic tissue; intact with drainage and well-approximated; surrounding skin intact.

Studies: Initial immunoassay for *Clostridium difficile* toxin A and B was negative. Cytotoxin assay pending. Stool Gram stain showed leukocytes and fecal flora. Abdominal radiograph (KUB) in ED: no free air; no obstruction, dilated colon. Scheduled for abdominal computed tomography (CT) scan. Consulted GI service for possible colonoscopy.

ED lab/serum results: Complete blood cell count (CBC) with a hematocrit of 42%, hemoglobin 15 g/dL, WBC count 16 000/µL (75% bands); platelets 300 000/µL. WBC differential: Neutrophils 12500/µL, lymphocytes 3100/µL, monocytes 500/µL, eosinophils 400/µL, basophils 200/µL. Basic metabolic panel (BMP): Sodium 148 mEq/L, chloride 97/mEq/L, potassium 3.5 mEq/L, serum urea nitrogen 20 mg/dL or 7.1 mmol/L, creatinine 1.0 mg/dL or 75 mmol/L, glucose 118 mg/dL or 6.2 mmol/L. Albumin 4.0 g/dL.

International normalized ratio: 1.2.

Urinalysis: Unremarkable; no cells; leukoesterase negative.

Current medications: Metronidazole (Flagyl) 500 mg oral every 8 hours; first dose in ED. Normal saline at 100 mL/h.

1. Generate a problem list.
2. Select 1 problem, develop at least 3 probable diagnoses and describe an initial plan for care.

Ideal response….prioritized problem = most life-threatening:

Assessment or differential diagnosis and plan (expected student-generated responses in italics):

Assessment: enteritis versus colitis.

Differential diagnosis:
- a. Infectious enteritis or colitis: *Clostridium difficile* versus *Escherichia coli* or other infecting microorganism.
- b. Ischemic colitis.
- c. Inflammatory bowel disease: Crohn disease, ulcerative colitis.

Plan:
- Continue metronidazole 500 mg every 8 hours for 10-14 days.
- Stool x2 for repeat immunoassay for C difficile toxins. Follow-up results (within 6-8 hour of specimen collection).
- Daily CBC with differential; if spike in WBC count, increase metronidazole to every 6 hours.
- Daily BMP, I&O, and weight to monitor renal function and prevent acute kidney injury from dehydration; maintain IV fluids for urine output > 1 mL/kg (~850 mL/12 h).
- Obtain abdominal CT results.
- Follow-up; communicate with GI consulting service.
- Monitor vital signs every 4 hours until free of fever for 24 hours; then reduce frequency to every 8 hours.
- Morphine 2 mg intravenously every 4 hours as needed for abdominal pain; odanastatin 8 mg IV every 8 h as needed for nausea.

Variation 2—multisystem condition; multiple comorbid conditions

Assignment: Identify, prioritize, and then address each problem in the following case history. Use problem-oriented documentation format. Include citations for best practices related to diagnostic studies and treatment. (Note: Problems with key differential diagnoses listed for this exemplar to illustrate multiplicity of needs and prioritization.)

CC: Groans at rest with exhalation. Reported to have stated earlier in ED “My belly hurts.”

HPI: 82-year-old white man admitted through the ED 4 hours ago with diarrhea for the preceding 72 hours accompanied by generalized malaise and fever. Discharged from hospital 4 days ago to a rehabilitation setting following a total knee replacement for osteoarthritis; his surgical course was unremarkable. This morning, the rehabilitation staff member reports that patient has shown increasing confusion and lethargy.

In the ED, abdomen was firm and distended with generalized pain during palpation. Radiography demonstrated marked distension of the colon without obvious obstruction or free air. Initial WBC count was 26 300/mm³. A surgical consult in the ED recommended “watchful waiting, no surgery.” Oral metronidazole was started. Documentation recorded 6 loose, watery stools since admission. PMH: Osteoarthritis bilateral knees. HTN x15 years. Type 2 diabetes (T2DM) x10 years.
Table 3  Continued

Health maintenance: Primary physician Dr Shih; note indicates prostate exam 1 year ago and colonoscopies, most recently 2 years ago. Pneumococcal and influenza vaccine within past 8 months. Smokes 5-10 cigarettes/day; drinks 1-2 glasses of beer daily. Widow, not sexually active. Follows American Diabetic Diet; exercise limited by knee pain past 6-8 months.

PSH: Left total knee arthroplasty X/XX/XXXX (8 days ago). Cefuroxime 1.5 g IV every 6 hours perioperatively for a total of 14 doses while hospitalized; stopped at discharge.

FH: Father, died of a stroke at age 87; “never had a day of illness except for high blood pressure.” Mother, 84 years old, died of complications of breast cancer. Brother, 86 years old, dementia; in skilled care unit in distant city. No contact with his extended family. Limited social support; lives alone.

SH: Retired from factory work for >20 years. Attends Baptist church, has “lady friend” who visits regularly. Never married, no children, lives alone. Church visitors may be able to help at home.

ROS: No sick contacts. Reports fever (but did not take temperature), malaise, and chills worsening in past 3-4 days. HEENT: No changes in vision or hearing, sore throat. Respiratory: No shortness of breath, cough, or sputum production. Cardiovascular: No chest/shoulder/neck/jaw pain, syncope, palpitations. GI: Reports cramping and generalized abdominal pain; no heartburn, dysphagia, constipation, weight loss. GU: No urgency/frequency, hesitancy, and hematuria. Endocrine: No thirst, polyuria, heat/cold intolerance, tremor, or change in hair/skin/nails. No change in libido. Skin: No rashes, itch; no drainage or increased tenderness at surgical site in left knee. Musculoskeletal: Reports pain related to left knee surgery. Neurological: Reports slight headache as of yesterday with general weakness; denies focal weakness, seizure, memory loss, sensory loss, or vertigo. Psychological: Reports “not sleeping well” since surgery because of pain and more recently, fever. Reports decreased appetite with current fever. Reports no depression.

Function: Independent in activities of daily living, manages home, finances.

Allergies: None.

Home/SNF medications: Enoxaprin 40 mg subcutaneously once daily, beginning day of surgery; none today. Metformin 500 mg twice daily at home; withheld today. Normal saline infusing at 100 mL/h.

Code status: Full. Does not have advanced directive.

Physical examination: Appears acutely ill and uncomfortable.

Vital signs BP 92/68 mm Hg, HR 99/min, RR 20/min, body temperature 102.5°F (oral) (100°F in ED); SpO₂ 92% on 2 L of oxygen via nasal cannula.

I&O: 500 mL IV fluid; 1 void of 100 mL in ED for urinalysis.

Weight: 72 kg (75-kg weight before admission to surgery).

HEENT: No discharge from eyes, ears, or throat. Pharynx without redness or swelling. Oral mucosa slightly dry. No pain with sinus maneuvers. Cervical nodes not palpable.

Cardiovascular: Very warm centrally and cooler at extremities; slightly diaphoretic centrally. Nailbeds pale, brisk refill. S₁S₂ without murmur or rub. ECG: sinus rhythm.

Respiratory: Increased anterior-posterior diameter. Breath sounds with scattered ronchi in lower third anterior and scattered throughout posterior fields. No egophany, no dullness to percussion. Spontaneous moist cough, no sputum production. Shallow respirations at rest, with equal bilateral chest excursion. Peripheral oxygenation (SpO₂) 88% on room air.

CXR: Lungs with hyperinflation congruent with emphysema; slightly blunted diaphragmatic borders. No consolidation noted in lung fields. Cardiac silhouette normal.

GI: distended, tender with hypokinetic bowel sounds in 4 quadrants. Rectal exam showed no masses; no stool in rectum and patient reports recent use of bedpan in ED.

KUB in ED: No free air; no obstruction, dilated colon.

GU: Bladder not palpable. External genitalia unremarkable.

Endocrine: No thyromegaly; normoglycemic nonfasting serum glucose.

Hematological/lymph: No bruising, no lymphedema.

Musculoskeletal: 5/5 with all extremities except week knee extension: limited range of motion with left knee (0°-75°).

Neurological: Cranial nerves 2-12 intact, roused with tactile from dozing, follows 2-step directions with coaching.

Psychological: Slow to respond to questions but oriented x3. Unable to serially subtract 7s.

Skin: Intact without deformities over bony prominences; No rash. Has 4 in (10 cm) surgical wound on left knee open to air; slightly erythematous, intact with drainage and well-approximated; surrounding skin intact.

Studies: Initial immunoassay for Clostridium difficile toxin A and B was negative. Cytotoxin assay pending. Stool Gram stain showed leukocytes and fecal flora. Scheduled for abdominal CT scan today and possible colonoscopy by GI, pending CT results.

ED lab-serum results: CBC with a hematocrit of 42% hemoglobin 15 g/dL, WBC count 16 000/µL (75% bands), platelets 300 000/µL. WBC differential: neutrophils 12500/µL, lymphocytes 3100/µL, monocytes 500/µL, eosinophils 400/µL, basophils 200/µL.

Continued
### Table 3 Continued

BMP: Sodium 148 mEq/L, chloride 97 mEq/L, potassium 3.5 mEq/L, serum urea nitrogen 60 mg/dL or 21 mmol/L, creatinine 3.0 mg/dL or 225 mmol/L, glucose 318 mg/dL or 17.2 mmol/L; HbA1c 7.2%.

Albumin 2.9 g/dL.

International normalized ratio: 1.5.

Urinalysis: Unremarkable; no cells; leukoesterase negative.

Current medications: Enoxaprin 40 mg subcutaneously once daily, beginning day of surgery; none today. Metronidazole (Flagyl) 500 mg oral every 8 hours; first dose in ED (resume metformin and enalapril).

Normal saline at 100 mL/h.

**Assessment/plan** *(ideal assessment/problem identification below in italics; no space for plan details in this exemplar)*

1. Enteritis versus colitis with related abdominal pain.
   - Differential diagnosis:
     - a. Infectious enteritis or colitis: Clostridium difficile versus Escherichia coli or other infecting microorganism.
     - b. Ischemic colitis.
     - c. Inflammatory bowel disease: Crohn disease, ulcerative colitis.

   **Plan**

2. Mental status changes
   - Differential diagnosis:
     - a. Hypovolemia/fever (inadequate cerebral perfusion)
     - b. Delirium versus dementia (new decompensation)
     - c. Alcohol use versus alcohol withdrawal
     - d. Stroke (ischemic versus hemorrhagic) related to history of hypertension or prolonged INR

   **Plan**

3. Hypoxia on room air
   - Differential diagnosis:
     - a. Rapid shallow breathing due to abdominal pain, altered mental status
     - b. Emphysema, chronic obstructive lung disease (COPD)
     - c. Pneumonia

   **Plan**

4. Elevated creatinine level
   - Differential diagnosis:
     - a. Acute kidney injury or acute-on-chronic kidney disease
     - b. Chronic kidney disease

**Established diagnoses**

5. Hypertension
   **Plan**

6. T2DM/hyperglycemia and nutrition
   **Plan**

7. Smoker
   **Plan**

8. Advance directive needed and discharge planning—complex because of need for rehabilitation of left knee arthroplasty and limited social support.
   **Plan**

**Variation 3—Focused case history to illustrate role of immune system in GI health and the interaction of an autoimmune disorder with subsequent conditions.**

In this focused case history, develop a problem list and an assessment and plan for 2 prioritized problems. Then discuss the role of immune cells in GI health from both a local (i.e., GI tract) and multisystem (specifically interaction between an immune system altered by autoimmune disorder and lifestyle/stress, diet, exercise, medications, environment). Include an overview of genetics in autoimmune disorders.
Case Histories and Evaluation of Students

Case histories can be invaluable to formative and summative evaluation of APNs. The goal of formative evaluation is improvement, and the process might be labeled as feedback or interim assessment. Summative evaluations are conducted to assess achievement of final educational goals or outcomes. For example, when the case history is student-generated,
Self-reflection can be a component of any interactive web-based instructional strategy and shared with faculty only or with peers. Simulation, whether online or classroom-based, can be combined with case histories to teach general principles or individualize care.

Blogs are particularly useful for encouraging interaction within an online community—a class or small group within a class. \(^5\) Blogs—more formally known as weblogs—are a type of online journal or diary. Faculty at our school has used brief case history blogs to provide peer-to-peer interactions in an advanced physiology class; feedback by students can be used to polish final analytic responses, and these responses are used in grading. Blogs are useful in this approach as they record author, date, and time of posting and allow reactions from readers. Because links can be posted within a blog, students can bring a variety of resources into the online journal and faculty/preceptors can comment on the journal, peer reactions, and the quality of resources. Faculty can return to a case history blog with new information over the course of a semester as students acquire new knowledge and information sources or as faculty seek to reinforce key, recurring concepts.

Wikis are an educational approach that uses an Internet site where information can be stored and modified. \(^5\) Useful for collaborative projects or reports, wikis track both individual and group contributions. They also enable group members to connect to original sources and hypertext that can be used to link additional pages to share information. Sharing and posting resources can expand skill sets in locating reliable and respected sources of knowledge and disseminating information across specialties. For example, we have used this technology with student dyads to build a student-based case history. Students have access to either a standard patient—an individual acting a role, presenting typical symptoms and communications—or a patient in a clinical site willing to interact with several students. They interview and assess the patient to obtain a history and perform a physical examination. Because wikis allow graphics and video clips, a wiki could be used with a virtual patient, a digital recording of a patient-student interaction, and diagnostic images such as radiographs or angiograms. Data are collected and analyzed by the student pair, and a thorough history and physical examination is constructed. Because a wiki can be easily added to or edited, and each author’s contribution can be tracked, the faculty can easily provide individual and group feedback about this collaborative work.

Discussion boards allow students to send messages through a web application. Only members of the community—either a class or a small group within a class—have access to the message. Responses to questions or messages can be posted asynchronously; users do not have to be online simultaneously, allowing time to obtain and post external references or opinions of experts. Like wikis and blogs, this electronic format allows development of responses over time but limits the amount of editing. Discussion boards can be moderated by faculty similar to a classroom.
Table 4  Evaluation rubric for student-constructed patient report

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Score 0-3 <em>(Note: some items have a penalty of -1)</em></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Headings are complete and appropriate</strong></td>
<td>0 = Not met/not present</td>
</tr>
<tr>
<td>(eg, chief complaint, HPI, PM/SH, medications, allergies, S/WH, FH, PE); functional and religious/cultural findings are described</td>
<td>1 = Needs improvement</td>
</tr>
<tr>
<td></td>
<td>2 = Met goals</td>
</tr>
<tr>
<td></td>
<td>3 = Exceeds goals</td>
</tr>
<tr>
<td><strong>Note reflects problem-oriented format</strong></td>
<td>-1 Does not reflect patient's current status</td>
</tr>
<tr>
<td></td>
<td>0 = Not met/not present</td>
</tr>
<tr>
<td></td>
<td>1 = Needs improvement, not clear, extraneous information</td>
</tr>
<tr>
<td></td>
<td>2 = Succinct, clear</td>
</tr>
<tr>
<td></td>
<td>3 = Demonstrates superior understanding and use of terminology</td>
</tr>
<tr>
<td><strong>Subjective data are included</strong></td>
<td>-1 Inaccurate</td>
</tr>
<tr>
<td></td>
<td>0 = Missing</td>
</tr>
<tr>
<td></td>
<td>1 = Incomplete, needs improvement</td>
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<td>2 = Present</td>
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<td>3 = Present with evidence of focused questions for nuanced details</td>
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<tr>
<td><strong>Objective data are included</strong></td>
<td>0 Missing vital signs, intake/output, or other aspects of physical exam</td>
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<td></td>
<td>1 Complete but not well organized; needs improvement</td>
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<tr>
<td></td>
<td>2 Complete and accurate</td>
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<td></td>
<td>3 Exceeds expectation with additional details in focus of concern</td>
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<tr>
<td><strong>Assessment flows from subjective and objective data</strong></td>
<td>0 Issues are not directly related to data; disconnect between assessment and subjective/objective data</td>
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<tr>
<td></td>
<td>1 Difficulty in finding issues</td>
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<tr>
<td></td>
<td>2 Identifies major issues</td>
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<td>3 Identifies major and minor issues</td>
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<td><strong>Differential diagnoses are sufficient</strong></td>
<td>-1 Differential diagnoses are incorrect</td>
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<td></td>
<td>0-1 Differential diagnoses are truncated or do not reflect patient's status</td>
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<td></td>
<td>2 Appropriate, reflect problems</td>
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<td>3 Clear linkage with problems, prioritized from life-threatening/most likely to benign/least likely</td>
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<td><strong>Plan addresses each identified problem; relates to assessment</strong></td>
<td>-1 Missing plan for identified problem/condition/diagnosis</td>
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<td>0 No evidence of prioritization or linkage to assessment</td>
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<td>1 Some errors in goals or prioritization</td>
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<td></td>
<td>2 Plan has reasonable goals and clear linkage to most problems</td>
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<td>3 Linkage is consistent and ordered</td>
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<td><strong>Plan is measurable</strong></td>
<td>0 Time frames missing</td>
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<td>1 Time frame is unclear</td>
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<td>2 Time frames are present and reasonable</td>
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<td>3 Time lines are notably efficient and reflect best practices</td>
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<td><strong>Prioritization is clear</strong></td>
<td>0 Difficulty in identifying and organizing plan</td>
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<td>1 Plan is poorly organized but essential components are present</td>
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<td>2 Action plan reflects priorities</td>
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<td>3 Consistently organized and logical</td>
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<td><strong>Use of standards, guidelines or evidence</strong></td>
<td>0 Absence of best practices</td>
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<td></td>
<td>1 Limited use of best practices or insufficient application of evidence</td>
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<td></td>
<td>2 Recalls and applies evidence-based guidelines; quality and safety addressed</td>
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<td>3 Uses original research/research summary: consistent use of quality and safety standards</td>
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<td><strong>Could the reader assume care of the patient based on the note?</strong></td>
<td>0 Vague, uninformative, confusing or extraneous information</td>
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<td>1 Some errors in level of detail, logic, or accuracy</td>
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<td></td>
<td>2 Detailed, logical, and accurate note</td>
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<td></td>
<td>3 Complete and accurate, creative</td>
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<td><strong>Use of sources/resources</strong></td>
<td>0 Nondiscriminating sources of information</td>
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<td>1 Mix of scholarly and nonscholarly resources or “padded” citations (cited but not used)</td>
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<tr>
<td></td>
<td>2 Citations/sources explicit, current, and pertinent</td>
</tr>
<tr>
<td></td>
<td>3 Scholarly sources with exceptional breadth or depth contributing to understanding</td>
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discussion by posting questions or otherwise guiding the direction of the discussion. Some educators find discussion boards useful for online debates or controversies related to management of a case history; the electronic discussion board allows every member of the class/group to have ample time and space to contribute to the discussion.\footnote{55}

Wikis, blogs, and discussion boards are not problem-free. The technology can fail during critical periods, inappropriate content can be posted, and an overeager student can flood the site.\footnote{55} An important step in using web technology for any class is to give students contemplating enrollment clear expectations about the equipment required, guidelines for site use, and an opportunity to test the technology before the start of class. Irrelevant discussion is usually addressed by students.\footnote{55}

However, faculty should address misinformation with respectful correction. The course faculty need to take the lead in resetting the overeager student; a private e-mail or phone call can usually establish reasonable parameters. Posts of 200 to 500 words have been suggested as a manageable size for these formats.\footnote{55}

There is increased support for use of simulation in nursing education.\footnote{57} Used for skills training and evaluation of skill attainment by ACNPs or CNSs, simulation can be readily combined with a case history to provide realistic situations and demonstrate variability in individual patients. Case history can be combined with devices for individual users or groups of students to simulate practice. Devices can be part task trainers such as a torso for practicing insertion of a central catheter or dense foam for practicing suturing. Simulators can also address the whole task with the use of computer-enhanced mannequins and virtual reality scenarios.\footnote{58} Simulation has the advantage over real-life cases because error, emotion (eg, student anxiety, panic, or anger) and exploration of alternatives does not have adverse consequences to real patients.\footnote{59}

Given the complexity of care and the high risk for life-threatening conditions in acute and critical care, simulation is particularly useful in de-escalating risk of harm to patients while educating ACNP and critical care CNS students. Simulation also provides a unique opportunity to reflect, typically focusing on four E’s: event, emotion, empathy, and evaluation.\footnote{47} This type of reflection, also called debriefing, provides individual and experiential feedback to guide future experiences.\footnote{57} Sample debriefing questions that support self-assessment are provided in Table 5.
A podcast is a digital media source that is downloaded from the Internet. It can be an audio or video recording and can be from an educational source (eg, a professional webcast) or teacher-constructed. Podcasts can be played on the student’s computer or loaded onto a special device that can then display the record, typically an MP3 device. Audio recordings are more common as podcasts. An audio recording offers portability so that students and teachers can access content at home, in the car, in the classroom, and in a clinical setting. With permission, podcasts could be made from a digital voice recording of a student-patient or student-preceptor interactions in relationship to a specific case history to illustrate best practices in the process of assessing, diagnosing, and managing patients in advanced nurse practice.

The Institute for Healthcare Improvement uses podcasts and webinars to provide information about quality and safety in health care settings, and these presentations often have powerful case histories of pitfalls in the delivery of care. Podcasting an “ideal” or exemplar case history or discussion of a case history in the manner of grand rounds can introduce students to elements of therapeutic and insightful communication. For example, exemplars of screening for drug or alcohol use or how to present “bad” news can be done with a podcast. Although therapeutic communication is a skill that requires much practice, hearing examples and providing opportunity for reflection builds insight and motivation.

A related reflective exercise increases the interactivity of a podcast. We have used audio recordings of student interaction for both teaching and evaluating skills during a “real-time” standardized or laboratory-based history and physical examination experience (ie, using an actor-patient) in physical assessment and clinical courses in adult, family, and acute care specialty tracks. Classrooms also lend themselves to innovative use of case histories. One strategy that can be used in both a clinical and academic setting is “rounding” or oral, informal presentation of a clinical case. Generally, rounding implies a student-generated case. Rounding as a learning strategy uses a structured format followed by a brief discussion of priorities, and alternative diagnostic or management approaches are explored. We have used this strategy to round in an intensive care unit (ICU), with each student performing a physical examination, reviewing patients’ records, and using resources to add to theoretical and practical knowledge for differential diagnoses for problems without an established diagnosis and to collect evidence for best practices related to management. Each student presents the patient and related content. Rounding can incorporate preselected patients in the clinical setting (ie, verbal patients). After unit-based data collection, students present their assigned case in the unit or in conference away from patient care. An astute educator can use this opportunity to identify topics for future discussion in the classroom. Unit-based rounds can offer a unique opportunity to learn about collaboration experientially. Both communication and collaboration can be rehearsed and implemented by students and observed by faculty.

Rounds in selected cases can demonstrate interdisciplinary work and encourage exploration of differing perspectives on patient care needs.

Rounding can also occur as a formal presentation. We use this strategy in a discussion board format, with a student presenting a self-selected patient through a written comprehensive history and physical examination. Another student is assigned to comment on the document before submission to faculty, using specific guidelines to evaluate for completeness, accuracy, and plausibility/strength of evidence.
In another course, we require students to identify a case from clinical experiences and develop that student-generated case into a paper that focuses on important pathophysiology. For the past 6 years, 35% of class participants submitted this paper for successful publication. We believe that the case history—usually a powerful patient story that illustrates ACNP or critical care CNS practice—is both a motivator for the hard work of writing and builds the habit of thought needed for astute diagnosis and management in ANP practice.

Case histories can be used in the classroom in both a lecture and seminar setting. In a lecture format, it may be more useful to use a brief scenario (ie, 5-7 minutes) with specific questions tailored to the classroom content. We have used this approach in an advanced pharmacology class of 50 to 70 students, to explore decisions around drug selections to treat a condition. For example, we use a series of slides to facilitate student learning related to antibiotic selection, using a format of pertinent patient-, drug-, and microbe-related considerations for a healthy young adult with community-acquired pneumonia by using evidence-based guidelines, then alter the scenario to an older patient with severe chronic obstructive pulmonary disease with a recent hospitalization for an unrelated surgery and revisit the decision points. In this same class, we divide students into small groups that are assigned to consider prescriptions based on both simple (eg, single, acute disease) and complex (eg, multiple comorbid conditions, challenging social situations, and potentially dangerous drug-drug or drug-food interactions) patient conditions.

We have also used a sequential development of a case study in another course by dividing the participants into groups of 6 to 8 students, presenting a case history, allowing a 3- to 5-minute discussion period in each group, then adding more information, followed by a second period of discussion. Sometimes, only information requested by a student group is provided (eg, more history, additional examination findings, or a diagnostic test result); other times the story unfolds in a predetermined format. The sequential case history content continues for 3 to 5 interactions with faculty culminating in the construction of a problem-oriented note by group members for assessment. As a final step, the entire class participates in a wrap-up and debriefing. Although this process can take a full hour of class time, it can provide the same content as a lecture if carefully structured. With a case-based approach, almost two-thirds of the time is spent in small-group discussion rather than faculty-delivered content. A handout of key points at the end of the whole-class discussion can substitute for lecture notes and provide additional guidance for study.

In a seminar format, we have used both teacher- and student-generated case histories to model prioritization, establish the sensitivity and specificity of diagnostic tests, probe diagnostic reasoning, illustrate concepts, communicate collaborative and consultative aspects of care, model attention to multiple levels of care (eg, multisystem concerns in an individual patient) and the dynamics of working within a health care team and a health care system with concomitant limitations in choices for assessment and care, and exploring consequences of decisions. Seminar classes are generally small with fewer than 20 students enrolled. Expectations of preparation such as in-depth knowledge of pathophysiology and familiarity with the sensitivity and specificity of diagnostic tests are made clear before the discussion is convened. We find that allowing about 5 or 10 minutes for presentation, 10 to 15 minutes for discussion, and another 5 minutes for debriefing works well in a seminar format.

Implications for Advanced Practice Educators in Acute and Critical Care

Students often think they should learn about every possible clinical problem, but not all clinical problems will be encountered in a course or clinical program. Teaching students how to access sources to tackle a case is an essential skill. Identifying and evaluating sources of information for resolving the “puzzle” in a case history helps develop resourcefulness and judgment needed for lifelong learning and effective practice. Developing a repertoire of resources for direct and indirect patient care, including patient education materials, consultative services, ideas for reducing costs, and connections for support groups can be invaluable to a new graduate.

Case histories help students understand that optimal information about a patient's signs and symptoms and treatments are not easily found by using one source.
Early in a graduate critical care student program, sources may be clearly identified in the syllabus or referenced at a website; as students develop expertise in evaluating levels of evidence and sources of information, student-identified resources can be used and critiqued as part of the evaluative process. Identifying sources that are unique to acute care and shared across specialties is essential for holistic, expert care for patients at high risk for life-threatening conditions.

Case histories should allow inclusion of extraneous data that are not related to the main clinical puzzle. Inclusion of extraneous data allows the student to practice saliency, establish priority, and cluster related signs and symptoms. To illustrate, a case history can include enlargement of a single lymph node or a suspicious-looking skin lesion in the findings from a physical examination for a patient with chest pain or dyspnea. Most students readily discern that the lymph node/skin lesion is unrelated to the differential diagnoses that are a priority, but students are not yet sure what to do with this information unrelated to the presenting condition in acute care. All information in a case history provides an opportunity to discuss and communicate findings among providers and use situational, evidence-based, policy, and philosophical approaches to support a decision.

Case histories provide opportunity to discuss how to organize priorities, communicate with primary care or specialty providers, and determine parameters for consultation and follow-up. Clinical educators involved with credentialing and serving as preceptors can use case histories to monitor or evaluate skill sets at orientation and annually. Case histories provide opportunities to practice documentation for problem-oriented medical records. Providing a written summary of a patient’s conditions illuminates the APN students’ decisions, plan for care, and, if the case evolves beyond initial presentation, the results of that care. Combining a case history with problem-oriented medical records illustrates strategies for clear, consistent documentation and support information related to billing and reimbursement in APN practice.

A case history may be used to explore role components of the ACNP or critical care CNS besides direct provision of care to patients. Although the roles of the APN vary somewhat between tracks (ie, nurse practitioner, clinical nurse specialist), specialties, and environments (eg, settings, organizations, country), a case history can be used to focus discussion on policy development, education, research, professional development, and/or organizational leadership. For example, we use a scenario that details a client experiencing adverse effects from warfarin therapy related to inconsistent testing for international normalized ratio. This case history is used to (1) refine prescription practices (eg, regulations and privileging), (2) identify patient education resources, (3) investigate the pharmacology of warfarin and research related to patient adherence, (4) evaluate sources for best practices (ie, knowledge for ongoing professional development), and (5) develop strategies to promote organizational and legislative policies for safe, effective therapy.

Case histories lend themselves to analysis about professional, ethical, and policy issues in advanced nursing practice. We use a discharge scenario with a complex, chronically ill adult who transfers from the ICU to a step-down unit, to rehabilitation and, finally, to home, including topics of quality and safety in health care, interdisciplinary communication and collaboration, billing and reimbursement, ethics, and conflict resolution related to duty of care. Expanding discussion beyond direct patient care issues supports competent advanced nursing practice.

**Conclusion**

Developing expert knowledge to care for complex patients at high risk for life-threatening complications is a recognized and desired outcome in the education of APN students in acute and critical care. Case histories provide great value in teaching and evaluating acute care APN students and can be adapted for orientation and credentialing of APNs. Case histories support student-centered learning and can be applied to both electronic and classroom-based instructional strategies. Case histories are inherently interactive and can provide theoretical, empirical, and practical information beyond general principles of individual patient assessment and management.

Although development of detailed and challenging case histories can be time-consuming, these rich narratives are an important strategy for mastery and self-reflection. Use of case histories provides unique opportunities for problem-solving and evaluation of APN students in acute care. Case histories contribute to development and validation of
lifelong learning skills necessary for best practices. Despite limited empirical studies focused on the use of case histories in the education of APNs, there are data to support use of case methods in clinical education. Case histories promote clinical reasoning and active learning and should be used in the education of acute and critical care nurse practitioner and CNS students and can be adapted to postgraduate orientation and evaluation of APNs.

References


Test ID C1243: Case Histories in the Education of Advanced Practice Nurses

Learning objectives: 1. Define the term case history 2. Describe the use of blogs, wikis, and discussion boards with case history assignments 3. Discuss how case histories can be incorporated into lecture, seminar, and simulation experiences

1. Which of the following is a verbal or written narration that presents a clinical problem including relevant history and clinical findings?
   - a. Case scenario
   - b. Clinical exemplar
   - c. Case history
   - d. Case presentation

2. Which of the following would be considered an advantage of using case histories to promote expert clinical knowledge?
   - a. Case histories provide learning experience with just one answer.
   - b. Case histories allow the student to consider multiple possibilities when analyzing and prioritizing a problem.
   - c. Case histories are easier to grade than multiple-choice items.
   - d. Case histories take little time to prepare and do not require a standard format.

3. What component is missing from a case history with information presented about chief complaint, history of present illness, medical/surgical history, allergies/medications, social/ work history, smoking, drug and alcohol use/abuse, review of systems, and physical examination?
   - a. Family history
   - b. Identification of individual cardiac risk factors
   - c. Source of information
   - d. Photograph or equivalent identifying information

4. A student is developing a case history concerning a patient encounter during a clinical experience. Which of the following is needed if the case history is presented publically?
   - a. Hospital administrators, institutional review board, or patient consent
   - b. Nothing, the information is protected by academic freedom.
   - c. The patient should be easily identified by accurate demographics.
   - d. The instructor must get permission from the dean to allow the student to present the case history.

5. Which of the following is an example of fair use of a case history for a clinical assignment?
   - a. Allowing students to use the instructor’s password to access a restricted website to obtain the case history information
   - b. Having a student from another program access the case history and provide it to the students
   - c. Providing the students with a link to a free website that hosts the case history information
   - d. Providing the students with a password to the instructor reference section of the website in order to complete the assignment

6. Which of the following is true concerning using case histories as a teaching tool?
   - a. Case histories require little or no preparation for use by the faculty.
   - b. Case histories can be used to develop clinical and assessment skills of the students.
   - c. Case histories illustrate the point that there is only one right way to handle a problem.
   - d. Case studies allow the student to correctly diagnose a problem without having to collect assessment data.

Test answers: Mark only one box for your answer to each question. You may photocopy this form.

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Program evaluation

- Objective 1 was met
- Objective 2 was met
- Objective 3 was met
- Content was relevant to my nursing practice
- My expectations were met
- This method of CE is effective for this content
- The level of difficulty of this test was:
- easy:  ❑ easy,  ❑ medium,  ❑ difficult
- To complete this program, it took me ______ hours/minutes.

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