White Paper

Strengthening Students' Clinical Judgment Through Conceptual Care Mapping

STRENGTHENING STUDENTS' CLINICAL JUDGMENT THROUGH CONCEPTUAL CARE MAPPING

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Nursing students are required to develop complex clinical judgment skills essential for professional nursing practice. The estimated doubling of medical knowledge every 73 days by 2020 (Densen, 2011) requires educators to better prepare students to be lifelong learners. Teaching methods must actively engage students in critical thinking strategies that require the application of theory to practice. This will encourage students' pursuit of knowledge and set students up for success on the Next Generation NCLEX® (NGN). Various forms of concept mapping, including conceptual care mapping that consistently incorporates the nursing process, are evidence-based teaching strategies that help students develop higher-level cognitive skills.

Educational Theory Behind Conceptual Care Mapping

Concept maps were first created by Novak and Gowin (1984) based on Ausubel's (1963, 2000) assimilation theory of meaningful learning. Concept map research in nursing education began in the 1990s. More recently, concept mapping has been shown to promote critical thinking and build clinical judgment skills (Yue, Zhang, Zhang, et al., 2017; Williams-Brennan & Flynn-Post, 2015; Gerdeman, Lux & Jacko, 2013), enhance students' ability to problem solve (Chan, 2017; Yu, Zhang, Xu, et al., 2013), link theory to practice (Bressington, Wong, Lam, et al., 2018), and contribute to test success (Joshi & Vyas, 2018; Jaafarpour, Aazami & Mozafari, 2016). Breytenbach, et al. (2017), in their literature review of eight evidence-based teaching strategies, noted that concept mapping was one of only three strategies found to significantly increase nursing students' knowledge and contribute to deep learning.

Concept mapping promotes active learning and student preparation for class, clinical, lab, and simulation experiences. It requires students to read assigned textbook content, conduct literature reviews, and collaborate with peers and faculty. Research suggests that concept mapping is an excellent way to help motivate students to learn (Chan, 2017). Concept maps (also referred to as conceptual care maps) that replace traditional care plans, "provide a visual model for students to view the interactions and relationships between bio–psycho–social aspects of the patient, disease signs and symptoms, medical management, medications, and nursing process" (Cook, Dover & Dickson, et al., 2012, p. 92).

Parallels Between Clinical Judgment and the Nursing Process

Clinical judgment layers identified for the NGN (NCSBN, 2019), parallel the five steps of the nursing process to evaluate a new graduate's thought process related to patient needs (Figure 1). A strong and consistent emphasis on the nursing process in our classrooms, labs, and clinical sites helps students develop the clinical judgment required for safe practice. Students must be challenged to use knowledge and evidence-based practice (EBP) gained throughout their nursing curriculum to guide their decision making. Novice nurses are expected to integrate research evidence; patient needs and values; clinical expertise; and quality, cost-effective health care when using EBP to plan and implement patient care.

Figure 1.

Nursing Process – *Patient Focused*

NGN Clinical Judgment Process –
Nurse Thought Process Focused
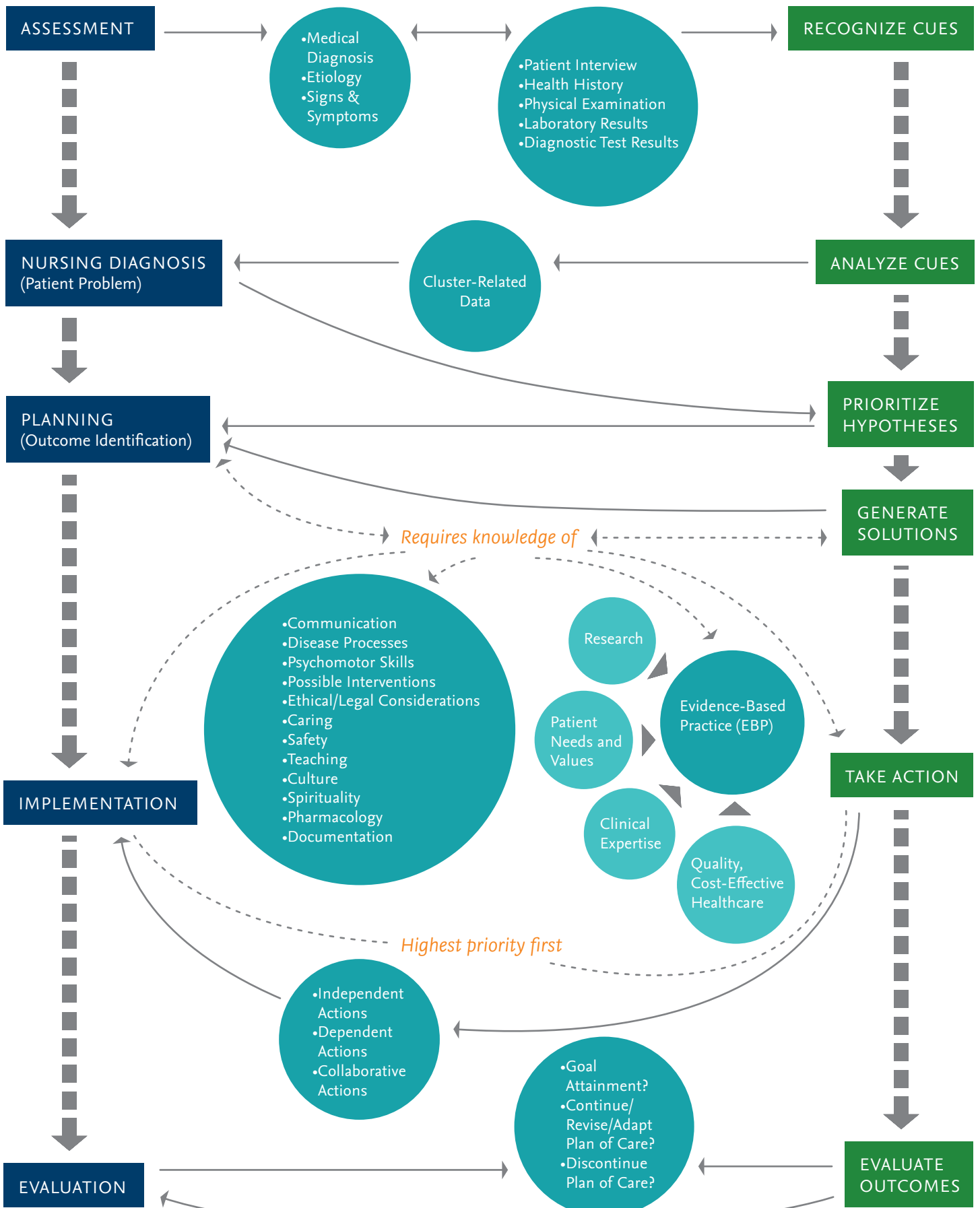
Conceptual Care Mapping to Develop Strong Clinical Judgment

The conceptual care map (CCM) facilitates student development of strong clinical judgment skills utilizing the nursing process. CCMs can be used in all clinical and simulation settings, as well as with case studies in the classroom or lab. The student nurse **recognizes cues** following **assessment** of the patient (case study, simulated, or real) and the organization of data obtained from the patient, as well as the electronic health record (EHR). Those **cues are analyzed** after data is clustered to identify the patient's **nursing diagnosis or problem**. Students **prioritize hypotheses** and **generate possible solutions** in the **planning** phase of the nursing process. Through **implementation** of interventions, a student **takes action**; delivering safe, quality patient care, sometimes through collaboration or delegation. Students **evaluate outcomes** during the **evaluation** phase of the nursing process. The use of color highlighting of related data within the CCM by students allows faculty to quickly evaluate students' ability to recognize, analyze, and hypothesize accurately. The care plan area of the CCM can clearly and succinctly demonstrate a student's ability to generate solutions, take action, and evaluate patient outcomes (Figures 2a and 2b).

Figure 2a.

Medications

Fursosemide 20 mg PO every morning. Loop diuretic to increase excretion in renal disease and heart failure

Digoxin 0.125mg PO every morning. Antiarrhythmic to increase myocardial contraction in heart failure

Acetaminophen 350mg, 2 tablets PO every 6 hours PRN for pain. Nonopioid analgesic for mild pain

IV Sites/Fluids/Rate

Saline lock with 22g cannula in left hand (LH), clear dressing dry and intact. No redness at site

Past Medical/Surgical History

Chronic Kidney Disease (CKD), 5 years.

2 pack per day (ppd) smoker for 35 years, quit 20 years ago.

Appendectomy as a teenager.

Conceptual Care Map

Student Name_____

Patient Initials M.P.   Room # 321   Admission Date 12/29/18

CODE Status Full   Today's Date 12/30/18   Age 76 Gender M

Weight 84.4 kg (186 lb) Height 149.8 cm (59 in) Braden Score 20

Diet 2000 mg Na diet   Activity ____Up with assistance____

Religion Presbyterian_____   Allergies Penicillin_____

Admitting Diagnoses/Chief Complaint

Heart failure and aortic stenosis/shortness of breath

Assessment Data

Vital signs are T 37.1° C (98.8° F), P 110 and regular, R 24 and labored, BP 130/82 with a pulse oximetry reading of 94% on 2 L of O_2 via nasal cannula. He denies pain but states, "I felt like I couldn't get enough air at home. I was winded just walking around the house and I feel so tired all the time."

Alert and oriented x4. Neuro exam is within normal limits (WNL). Speech is clear and hearing is normal. Skin is warm to touch.

Crackles heard in all lung fields bilaterally. Systolic murmur noted on auscultation of the heart. No pulse deficit. Peripheral pulses are palpable with no edema noted. Abdomen soft and non-tender with BS present in all 4 quadrants. I&O: 200 mL juice with breakfast and 50 mL of water with medications. Voided in urinal, 180 mL of clear amber urine. Musculoskeletal exam is WNL.

Married for 52 years and states, "My wife will be in to see me this afternoon." Patient states that his wife attends a Presbyterian church but he doesn't go very often.

Lab Values/Diagnostic Test Results

BMP

145 N | 98 N | 32 ↑ \ 100 N
3.2 ↓ | 18 ↓ | 2.2 ↑

CBC

8.5 N \ 12 ↓ / 200 N
37% ↓

Misc Lab Values/Diagnostic Test Results

Glomerular filtration rate (GFR) 60 ↓ (N=75), Indicates moderate Chronic Kidney Disease (CKD)

K+ 3.2↓(N=3.5-5) excess secretion of K+ secondary (2°) to taking a loop diuretic

CO_2 18↓(N= 23-30) decreased reabsorption of bicarbonate secondary (2°) to CKD

BUN 32↑ (N=5-20) & Creatinine 2.2↑ (N=0.5-1.3) decrease in kidney function leads to build up of creatinine and urea

Hgb 12 ↓ (N=13.5-18) & Hct 37% ↓ (N=40-54%) Anemia 2° to CKD

Chest Xray: left atrial and ventricular enlargement, pulmonary congestion. Consistent with heart failure.

Echocardiogram results pending

Treatments

Strict I&O q shift
Daily weights
Fluid restrictions 1800 mL/day
2000 mg sodium diet
O_2 via nasal cannula at 2L/hr
Vital signs q 4 hours
Sequential compression devices (SCDs) when in bed
Up with assistance
Falls precautions
Coughing and deep breathing q 2 hours while awake
Incentive spirometry q 1 hour while awake
Cardiac rehab 3 times per week after discharge
Dietary consult

Figure 2b.

Primary Nursing Diagnosis Impaired Cardiac Output	Nursing Diagnosis 2	Nursing Diagnosis 3
Supporting Data Decreased cardiac contractility P 110 and regular; Crackles heard in all lung fields bilaterally; Systolic murmur noted on auscultation of the heart; Chest x-ray: left atrial and ventricular enlargement, pulmonary congestion		**Supporting Data**
STG/NOC Patient will ambulate in hallway without shortness of breath within 48 hours. NOC: *Cardiopulmonary Status*	**STG/NOC**	**STG/NOC**
Interventions/NIC with Rationale Monitor I&O and weigh patient daily to monitor effectiveness of diuretic therapy. Monitor pulse to evaluate effectiveness of antiarrhythmic. Auscultate lung sounds for crackles every shift to assess the effectiveness of drug therapy. Assess respiration and pulse oximetry every 4 hours and before and after ambulation to evaluate patient's activity tolerance and the need for continued oxygen therapy. Teach patient coughing and deep breathing exercises, and use of incentive spirometer to increase oxygen intake and enhance relaxation NIC: *Hemodynamic regulation*	**Interventions/NIC with Rationale**	**Interventions/NIC with Rationale**
Rationale Citation/EBP Yoost BL, Crawford LR. *Fundamentals of nursing: Active learning for collaborative practice, 2e.* St. Louis: Elsevier; 2020, Mosby.	**Rationale Citation/EBP**	**Rationale Citation/EBP**
Evaluation Goal met. Continue plan of care. Patient walking in hallway within 24 hours with R 20 and unlabored without supplement oxygen, P 88 and regular.	**Evaluation**	**Evaluation**

Research supports using concept maps, like the conceptual care map, to help students see the big picture in patient care situations and promote analysis and synthesis of new and previously acquired knowledge (Gerdeman, Lux & Jacko, 2013). Providing students with checklists for CCMs and grading rubrics that delineate expectations are valuable to their learning process. Having guidelines for completing all forms of concept maps reduces student anxiety and facilitates increased learning and recall of critical content in stressful clinical situations.

Nursing care continues to become more complex, requiring students to think at a higher level and make clinical judgments based on EBP and patient needs and values. Use of the CCM across the curriculum will enhance students' ability to make sound clinical judgments required for safe, quality patient care and passing the NGN.

References

Ausubel, D. (1963). *The psychology of meaningful verbal learning*. New York, NY: Grune & Stratton.

Ausubel, D. (2000). *The acquisition and retention of knowledge: A cognitive view*. Boston, MA: Kluwer Academic Publishers.

Bressington, D., Wong, W., Lam, K., et al. (2018). Concept mapping to promote meaningful learning, help relate theory to practice and improve learning self-efficacy in Asian mental health nursing students: A mixed-methods pilot study. *Nurse Educ. Today*, 60, 47-55.

Breytenbach, C., Ten Ham-Baloyi, W. & Jordan, P. (2017). An integrative literature review of evidence-based teaching strategies for nurse educators. *Nursing Education Perspectives*, 38(4), 193-197.

Chan, Z. (2017). A qualitative study on using concept maps in problem-based learning. *Nurse Education in Practice*, 24, 70-76.

Cook, L., Dover, C. & Dickson, M., et al. (2012). From care plan to concept map: A paradigm shift. *Teaching and Learning in Nursing*, 7, 88-92.

Densen P. (2011). Challenges and Opportunities Facing Medical Education. *Trans Am Clin Climatol Assoc*, 122, 48-58.

Gerdeman, J., Lux, K. & Jacko, J. (2013). Using concept mapping to build clinical judgment skills. *Nurse Education in Practice*, 13, 11-17.

Jaafarpour, M., Aazami, S. & Mozafari, M. (2015). Does concept mapping enhance learning outcome of nursing students? *Nurse Educ. Today*, 36, 129-132.

Joshi, U. & Vyas, S. (2018). Assessment of perception and effectiveness of concept mapping in learning epidemiology. *Indian Journal of Community Medicine*, 43, 37-39.

National Council of State Boards of Nursing (NCSBN): Next Generation NCLEX Project, 2019. Retrieved from https://www.ncsbn.org/next-generation-nclex.htm

Novak, J. & Gowin, B. (1984). *Learning how to learn*. Oxford, UK: Cambridge University Press.

Williams-Brennan, L. & Flynn-Post, M. (2015). Case scenario-concept mapping: An innovative teaching learning strategy to stimulate critical thinking and problem solving in oncology clinical trial nurses. *Cancer Nursing*, 38, 546-547.

Yu, D., Zhang, Y. & Xu, Y., et al. (2013). Improvement in critical thinking dispositions of undergraduate nursing students through problem-based learning: A crossover-experimental study. *J. Nurs. Educ*, 52 (10), 574–581.

Yue, M., Zhang, M. & Zhang, C., et al. (2017). The effectiveness of concept mapping on development of critical thinking in nursing education: A systematic review and meta-analysis. *Nurse Educ. Today*, 52, 87-94.

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