Concept Mapping: A GPS for Patient Care in Various Health Care Environments

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Concept Mapping....

Objectives:

1. Discuss the history and evolution of concept mapping in education and practice.

2. Describe the use of concept mapping in strengthening clinical reasoning skills in practice.

3. Apply learned principles by constructing a concept map using a provided case study.
Concept Maps

- Are diagrams of patient problems and interventions (Schuster, 2008)

- Organize information, contain links, cluster data, and visually demonstrate relationships between data (Ferrario, 2004; Hsu, 2004; Williams, 2004).

- Serve as a teaching/learning strategy successfully used by many disciplines with roots in education and psychology (St.Cyr & All, 2009).
A Concept Map

1. Altered Nutrition/ Fluid and Electrolyte Imbalance
   - NPO
   - Mouth ulcers
   - FBS 147 (history of diabetes)
   - NG Tube
   - Dry skin
   - TPN
   - Anemic
   - IV
   - Weakness
   - 129 lbs, 5' 10"

2. Pain
   - Abdominal-abscess-surgical wound
   - Mouth-ulcers
   - Ca Bone/Lung with chronic pain
   - Emoral
   - Morphone

3. Infection/skin integrity
   - T = 100.5
   - Abscess-wound
   - 2 drains, purulent drainage
   - Fecal material in drain
   - WBC 12.9

4. Elimination
   - Foley
   - Check urine output > 60 cc per hour
   - Enlarged prostate
   - Proscar
   - Creatinine .7
   - BUN 22

5. Decreased Gas Exchange/Oxygenation
   - Ca of Lung (history)
   - Radiation/Chemotherapy (history)
   - Respiratory Treatments
   - Decreased Breath sounds rt. lung
   - Incentive spirometer
   - Respirations labored check q4h
   - RT q4 h, Ventolin
   - RR=22
   - Oxygen 5L
   - Hgb=10
   - Fatigued

6. Immobility
   - Ca of Bone (history)
   - Chemotherapy (history)
   - Fall protocol
   - Lethargic/Fatigued
   - Tubes(tripping)
   - Plexipulses

7. Decreased Cardiac Output
   - Atrial Fibrillation
   - K=3.3
   - Vitals q4h
   - Lanoxin
   - Rate=128
   - (irregular)
   - Ptt=40.2
   - BP 113/60
   - Fatigue

8. Anxiety
   - Surgery
   - Says he knows he's going to die
   - Clenches his fists when he can't do something
   - Chronic pain
   - Fidgets with his hands
   - Cries
   - Verbalized that he is nervous

Chief Medical Diagnosis:
Abdominal Abscess/ Bowel Obstruction/post-op
Priority Assessments: Pain, Distention, Bowel Sounds, I and O, Drainage, Abd Wound
How Does This Work?

Boy, do I need a vacation....
Can I Go on Vacation??

- Work #1
- Sitters #2
- Getting Away on Vacation
- Pack #4
- House #3
Concept Mapping in the Healthcare Environment

- Organize your workload
- Prioritize patient assignments
- Critically think through abnormal assessments
- Develop plans of care
Characteristics

- Readable and clear
- Creative, yet concise
- Prioritized nursing diagnosis - the basis of concept mapping is the nursing process
- Patient problems must be listed and used to formulate the nsg dx
- Lists supporting assessments, diagnostic studies, medications, etc
- Nursing interventions must be relevant
Joseph Novak

- Developed the technique of concept mapping with his research team at Cornell University in the 1970’s
- Used concept mapping to teach biology concepts to his students
History of Concept Mapping

- Origins of concept mapping are based on Constructivism (Kolb, Dewey, Piaget, Montessori) believe that learners activity construct knowledge through the use of filters that we place over realities to create order from chaos.
- Concept maps are used to generate new ideas and stimulate creativity based upon what is already known.
- Interest in nursing grew in the late 1990’s and early 2000’s.
- Regional in nature in US nursing practice.
Concept Maps and the Health Care Environment

- Promotes critical thinking and clinical reasoning
- Guides students and novice nurses to link theory to practice
- Promotes a holistic view of the patient
- Allows a multidisciplinary approach to patient care
Benefits to Concept Mapping

- Allows for visual illustrations of thought processes (Novak, 2004).

- Improves student/GN ability to assess patients holistically, synthesize complex patient data, and build relationships among data (Baugh & Mellott, 1998).

- Demonstrated a statistically significant improvement in critical thinking post-test scores between an experimental group and control group when concept mapping was taught and used (Atay & Karabacak, 2012).
Role in Nursing Education

- Concept mapping is effective as a teaching and learning strategy in the clinical, classroom, and simulation setting.
- Improvement in flow of ideas and making clinical links with successive preparation of concept maps (St Cyr & All, 2009; Daly et al., 1999).
- Assists faculty in identifying and correcting areas of theoretical and clinical deficiencies.
Role with Novice or Graduate Nurses

- Allows for visual formatting and prioritization of patient care
- Assists in organizing and linking patient information
- Can be included in the content of a GN orientation program and used throughout clinical orientation
- Strengthens care planning skills

(Wilgis & McConnell, 2008)
Challenges to Concept Mapping

- May be difficult to follow if poorly constructed
- Illegible handwriting can lead faculty or reviewer to misunderstand data as presented
- Time to teach mapping to students, staff, faculty can be time consuming
- Reading and responding to concept maps can be a lengthy process

(Billings & Halstead, 2009)
Concept Mapping as a Learning Strategy
Learning....

**Causes:**
- Essential - Family history of hypertension, hyperlipidemia, smoking, high sodium, caffeine, and alcohol intake, overweight/obesity, physical inactivity, stress.

**Symptoms:**
Most people have none.
- Patients may experience headaches, facial redness, dizziness, fainting as a result of the high blood pressure.

**Hypertension**
- A blood pressure of over 140/90 mmHg in people who do not have diabetes.

**Nursing Care:**
- Educate patient on how to lower sodium intake, reducing weight if overweight, use alcohol sparingly, exercise 5 days a week, use relaxation techniques to decrease stress, and avoid tobacco and caffeine.

**Nursing Assessment:**
- Take blood pressure readings in both arms, palpate all pulses, and document differences. Conduct an assessment of the skin and abdomen. Check for psychological life stresses that may worsen HTN or affect patient's ability to continue treatment. Assess these stresses and discuss post canting methods.

**Diagnostic Tests:**
- None for essential HTN.
- Secondary HTN -
  - Urinalysis
  - Creatinine clearance test
  - Chest radiography
  - Electrocardiogram

**Medical Treatments:**
- Lifestyle changes to help control hypertension, anti-hypertensive drugs, surgery may be needed for certain causes of secondary HTN such as: RAS, coarctation of the aorta, pheochromocytoma.
Steps to Concept Mapping
Five Steps to Concept Mapping

- Develop a basic diagram
- Analyze then categorize collected data
- Label nursing diagnosis and link the data
- Identify goals, interventions, outcomes
- Evaluate patient responses

(McHugh-Schuster, P., 2012)
Step One: Develop a Basic Diagram

- Begin with the collected patient information and assessed patient problems that led them to seek medical attention.
- Create a problem list from your nursing assessments that reflect why the patient was admitted.
- Problems should be written in broad term, not as nursing diagnosis.
- The main or admitting medical diagnosis and the patient’s age, initials are written into a centered “circle or square” as the beginning of the diagram development.
Step One: Example

Problem List:

- Can’t breathe well, getting worse
- Having trouble walking to bathroom
- Coughing productive, clear mucus
- Pale skin color
- Temperature 100°F
- Weakness
Next...

Begin the Diagram

Admitting
Dx

Pneumonia

J.K. 63y.o.
male
Step Two: Analyze and Categorize

- Analysis of the patient data requires that you determine what is abnormal physical assessment findings, abnormal results of labs, diagnostics, medications, and past medical history.

- Data that is related to the main diagnosis can be written in the same admitting diagnosis box and this data can be repeated in multiple boxes as it applies to the problem.
Step Two: Analyze Findings

**PMH**
COPD
smoker, 2ppd,
BPH

**Labs/Dx studies**
PFT
Echocardiogram
CXR

**Medications**
Albuterol, Prednisone
Mini neb tx, Zithromax
Proscar, Coreg, Nicotine
Patch

**Physical Assessment**

**Findings:**
Vitals: T-100F, P-88,R-28,
BP-148/90
Accessory muscle use
Pallor
Weakness
Productive cough
Decreased breath sounds
Rhonchi, rales
O2 nasal cannula 3 liters
Assist of one to ambulate
## Categorize-- Cluster Data

### Can’t breathe well
- accessory muscle use
- SOB
- rales, rhonchi
- CXR-pneumonia
- productive cough
- smoker
- COPD
- albuterol, mini neb, zithromax, nicotine patch
- respirations-28

### Coughing
- productive cough
- green mucus
- zithromax

### Trouble walking without help
- weakness
- needs assist of one to walk
- short of breath

### Temperature
- 100F
- BP 148/90
- P 88
- R 28
- pallor
- skin warm to touch
- zithromax

### Weakness
- needs assist of one for ambulation
Step Three: Label & Link

- In this step, a nursing diagnosis is formulated for each of the problems listed.

- Next, each problem must be prioritized in order of importance.

- Link the diagnosis and corresponding data to indicate the recognized relationships or interrelationships.
Step Three: Example Label & Link

Nursing DX:
#1 Ineffective breathing
   R/T insufficient gas exchange

AEB: Can’t breathe well, accessory muscle use, SOB, decreased breath sounds, rales, pneumonia, smoker, nicotine patch, R-28

Nursing DX:
#2 Ineffective gas exchange R/T decreased lung function

AEB: Productive cough, green mucus, pallor, skin warm, O2sat 89%, mini neb tx., Albuterol, prednisone, weakness
Step Four: Identify Goals, Interventions, Outcomes

- Develop patient goals that are measurable and outcomes. Both should be written below the nursing diagnosis.

- Plan nursing interventions that will lead to patient goal achievement.

- Nursing interventions should be accomplished during the time you are caring for the patient.
Step Five: Evaluation of Patient Responses

- Evaluating patient responses enables the nurse to determine if interventions were effective or not effective.

- Evaluating patient responses also assesses if patient goals were met or not met.

- If you are not able to evaluate a patient’s response to care due to discharge, change of status, then indicate “unable to evaluate” and give the reason.
Using Concept Mapping As a GPS to Patient Care
A Case Study
Mrs M. J. a 63 year old female was brought to the ER with weakness in extremities, c/o fatigue, productive cough, slight fever, discomfort on inspiration, c/o nausea, denies diarrhea.

Vitals: BP 148/82 R-30, T- 99.6, O2 Sat -89% on room air. Pt was teary though out the physical exam. Pt’s husband was present.

Past Medical History (PMH): Hx of allergies to Bactrim, asthma, treated for R-breast cancer 5 years ago.

Family: Married, 4 children (two at home, two married with grandchildren). Husband brought pt to ER and is concerned “about breast cancer recurrence.” He is Insisting on having a CT scan of chest ordered.

Treatment Orders: CXR, O2 2Liters nasal cannula, TPR’s q 4 hours, Labs: CBC, H&H
Case Study: Nursing Assessment

- Pt admitted to unit with productive cough with yellow thick sputum. O2 at 2liters nc., able to converse without SOB. Rales and rhonchi bilaterally, no diaphoresis. T-99

- Walks with assist of one, very fatigued “I am so tired I can’t get to the bathroom its too far, my legs feel like jello!” Continues to c/o of discomfort “when I breathe in”- 3/10 pain scale. Pt still upset about being admitted. Husband attempting to calm pt down. Pt continues to be tearful through out shift.
Case Study (Continued)

Medications ordered:

- Zithromax
- Percocet for pain
- Solumedrol IVP
- Mini Nebulizer tx
- Guiefenisen prn
- Hycodan prn

Results of Labs/Dx tests:

- CXR shows bilateral infiltrates, Pneumonia
- WBC elevated 20,000
Problems & Patient Data

Problems:
- Weakness
- Fatigue
- Cough productive
- Fever
- Discomfort when breathing
- Nausea

Assessment Findings:
- Weakness in extremities,
- Cough productive tan mucus
- Pain 4/10 for discomfort
- Nausea, poor appetite
- O2 sat 89% room air
- Crying during exam
- Hx breast cancer tx 5 years ago
- Meds: Zithromax, Percocet, Solumedrol, mini neb tx
Case Study: Nursing DX and Links

#1 Impaired gas exchange r/t decreased lung elasticity

#2 Ineffective airway clearance r/t inflammation and secretions

#3 Fear r/t threat of well being

#4 Powerlessness r/t risk for recurrence of disease

#5 Activity intolerance r/t decreased gas exchange
**Admitting Dx:**

**Pneumonia**

**#1 Impaired gas exchange r/t decreased tissue elasticity**

AEB O2sat 89% room air, albuterol, pneumonia, infiltrates, Rales, rhonchi

**Pt Goal:** Pt will demonstrate correct use of IS prior to end of shift

**Outcomes:** Pt will maintain clear lung fields and be free of infection

**Interventions:**
- Assess breath sounds q shift and prn
- Monitor O2 sat q shift and prn
- Changes to respiratory status
- Teach pt to use IS q 1 hour x ten times

**Evaluation:** Observed pt using IS three times this shift

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**#2 Ineffective airway clearance r/t inflammation & secretions**

AEB productive cough, nausea, pneumonia, Hx asthma

**Pt Goal:** Pt will describe factors that increase risk of respiratory infections for asthma pts.

**Outcomes:** Pt will have clear breath sounds and maintain a patent airway

**Interventions:**
- Teach pt to avoid large crowds, avoid persons with URI, hand washing
- Teach pt and family importance of nutrition and use of inhaler, med regimen

**Evaluation:** Pt’s coughing frequency decreased and cough less productive at discharge

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**#3 Fear r/t threat of well being**

AEB tearful through out exam, husband expressing fear of cancer recurrence, tx for breast cancer 5 years ago

**Pt Goal:** Pt will demonstrate a coping method to reduce anxiety or fear

**Outcome:** Pt will express questions regarding health to staff and family as needed.

**Interventions:**
- Discuss with pt real and imagined fears about cancer returning
- Reassure pt as they describe fears and previous experiences with cancer and tx

**Evaluation:** Pt able to share some feelings about why she is afraid and how family will be impacted before discharge
References

References (continued)

Questions?