PAIN SCENARIOS IN TEACHING

GUIDELINE FOR USE of Scenarios

These patient scenario models originally evolved from a SIG-Nursing Issues workshop at the Canadian Pain Society (CPS) 2009 meeting, with further validation from the SIG-Education Committee members and external pain experts (revised 2014). A CPS survey indicated members wanted help with patient cases/scenarios for teaching. These examples provide beginning data related to patients with diabetic neuropathy, post- trauma pain, and neonatal pain. The purpose is not to develop a definitive plan but to include key assessment and management considerations with some related questions to guide the educator. The level of complexity will vary according to the student's level/need. An interprofessional lens is important and has been part of the development of these scenarios. They can be developed further using the IASP Interprofessional Curriculum Outline (1) and the related core competencies for pre-licensure health professional students (2,3).

1. PATIENT SCENARIO: Surgery Following Trauma

Who:

Michael is a 38 year-old male who is on a surgical ward 48 hours after surgery for a fractured right femur and debridement of facial abrasions following a motorcycle accident.

Chief Concern:

- severe, sharp pain on movement around incision in right leg NRS 9/10 , at rest 2/10
- constant burning pain in his right wrist NRS 7/10 on movement.
- facial and right torso contusions/abrasions painful when moves NRS 4/10.
- some postoperative facial pain but says it is not as bothersome NRS 3/10.

HPI (History of Present Illness):

- motorcycle accident 48 hours ago; driving under the influence of alcohol.
- PACU pain control inadequate NRS 10/10; PCA – morphine initiated to achieve levels of NRS 4-6/10

PHH (Past Health History):

- appendectomy age 15, fractured clavicle age 19.
- laminectomy (L4-5) 1 year ago due to a work related injury.

Past Medications:

- oxycodone SR 40 mg q12h po x 1 year for chronic back pain (post back injury/surgery)
- oxycodone IR 5mg with acetaminophen 325mg 1-2 po q4h PRN (uses 4/day).
- acetaminophen 500 mg q6H po prn for occasional headache (~1 q month)
- ranitidine in last 2 weeks for gastric discomfort

Current Medications (48 hours):

- generic oxycodone SR 80 mg PO q12h
- acetaminophen 500 mg PO q6h RTC
- gabapentin 200 PO mg q8h
- oxycodone IR 5mg with acetaminophen 325mg 1-2 po q4h PRN (3 doses in past 24h)

Physical Exam:

- BP 130/82 P 88 regular R 28 T 38.2
- Height 188 cm, weight 118 kg
- Small lump over old clavicle fracture, small incision scar at L-5
- Incision over surgical site healing well with slight redness.

- Wrist does not appear deformed, can rotate slowly with pain
- Hand has exquisite sensitivity over dorso-lateral aspects and keeps bedclothes off it; also has steady burning and some shock-like pain every 2-3 hours NRS 8/10

Social History:

- Canadian born, graduated grade 12 high school
- works on an assembly line in manufacturing company; is physically demanding but works most days on long-acting opioid; has good health coverage and long-term disability insurance
- smokes 1pk/day x 18 years, occasional marijuana use; drinks beer ~ 24/week.
- recently lost a long-time high school friend to cancer.
- married x 12 years to wife Denise (34 years), works full time at the local Bank.
- two children aged 7 and 9 (Todd & Alison) are healthy; staying with their grandmother who lives very close to their school.
- Michael's wife confided concern about her husband's recent increase in drinking alcohol since his friend died; says no history of addiction or mental illness in family

Family History

- Michael's mother (57 years) is a recently diagnosed diabetic, has chronic depression.
- Michael's father (59 years) and healthy
- Two brothers live in city (aged 40 & 36), oldest brother recently diagnosed with diabetes

Assessment Conclusions

1. What are Michael's main care issues/diagnoses?
2. What are the patient priorities?

Plan: Identify and involve an interprofessional team

1. assessment re grieving over friend and drug use
2. pain management
    - assess adequacy of pharmacological management including pre-op baseline and additional needs
    - include physical strategies and consider a mobility program
    - suggest a self-management program, other psychological strategies
3. diet modification & assess for diabetes
4. home/work assessment
5. family support

Some questions to consider in related to mechanisms and rationales in developing a management plan

1. How do you approach assessment with a patient experiencing pain in multiple sites?
2. What types of pain is Michael likely experiencing? mechanisms? Implications?
3. What post-operative pain management plan would you put in place before surgery and why?
4. What red flags would you consider from the patient's history? Potential screening tools?
5. What is the purpose of multimodal pain management and related rationales?

2. PATIENT SCENARIO: Diabetic Neuropathy

Who:
Jose is a 63 year old male diagnosed with painful diabetic neuropathy in his feet, obesity, CAD (coronary artery disease) and PVD (peripheral vascular disease).

Chief Concern:

- describes pain in both feet that is present day and night but worse at night
- has steady, burning constant pain in his toes and the bottom of his feet NRS 8/10
- has electric shock pain about every 2 hours in feet and up his legs NRS 10/10
- feet are sensitive to light touch such as bedclothes
- feet feel numb and feels like walking with shoes on feet, has paresthesias

Medications:

- Takes 6-8 acetaminophen with 30mg codeine/days with little relief
- amitriptyline 25 mg hs
- gabapentin 100 mg TID

History of Illness:

- diagnosed with Type II diabetes mellitus 20 years ago and CAD a year ago.
- has been on oral diabetic agents for 10 years and diet is not always well controlled
- some kidney impairment and retinopathy related to his diabetes
- is ~40 lbs overweight, has a history of hypertension, elevated cholesterol and occasional bouts of atrial fibrillation.
- had CABG bypass 5 years ago
- has pain in both calf muscles when walks about 100 metres; relieved when he stops and rests
- describes a sedentary lifestyle and frequent tobacco and alcohol use.
- sleeping and walking are a problem because of pain and he is depressed
- due to work accident 20 years ago he developed chronic back pain that he manages with heating pad and acetaminophen.
- states he is allergic to morphine sulfate.

Physical Exam:

- BP 170/100 both arms, P 85 regular, T 37C, chest clear
- no pulses in feet, thickened nails, feet cool
- loss of sensation in feet up to midcalf to touch, pinprick, cold
- both ankle reflexes absent, knee jerks 1 +
- has extreme sensitivity in feet which he says is a problem in bed at night because of sheets
- has problems with constipation and nausea
- HbA_{1C} 10

Social History:

- born in Portugal and came to Canada when 15 years old, speaks English fairly well.
- has been married for 35 years to Maria; they have 2 children not at home.
- worked in trades/factory but due to his back pain and latterly problems with legs has not worked for the last year, has small disability pension

- Maria is 58 years and works at Zellers full time, is the main wage earner; wife is aware of his need to watch his weight but meals are the only thing he enjoys right now, is worried about him
- live in 2-story semi-detached house with no mortgage; bathroom is on the 2nd floor so he mostly spends days on main floor and uses a urinal
- 21 year old daughter is in her 3rd year at Trent University; calls or comes home often and is concerned about addiction to pain medications
- son lives in North Bay, works in construction and does not see them often.
- Jose's 80 year old mother lives with them, is very dependent and refuses to consider an assisted living facility or retirement home, believes God will help her son.
- smokes one pack/day, reduced from 2 packs previously. drinks 2 glasses of wine with dinner.

Family History

- father died of a heart attack at 61 years
- mother is 80 years with diabetes (takes pills) and arthritis
- younger brother in Portugal also has diabetes and heart "problem"

Assessment conclusions

1. What are Jose's main health issues/diagnoses?
2. What are the patient priorities?

Plan: Identify and involve an interprofessional team

1. diabetic control and monitoring
2. pain management
    - Could increase gabapentin to effect or AE (max 3600 mg/24h, AE dizziness, nausea, fatigue, peripheral edema, weight gain), if AE could try pregabalin (150mg BID)
    - Confirm if morphine allergy or adverse effect, If yes use hydromorphone, tramadol
    - include physical strategies and consider a mobility program
    - suggest a self-management program, other psychological strategies
3. diet modification. nicotine habit
4. mood assessment
5. home assessment
6. family support

Some questions to consider in related to mechanisms and rationales in developing a management plan

1, What evidence is there for a diagnosis of painful diabetic neuropathy?
2. What are the parameters of good diabetic control?
3. Why is his pain mostly in the feet? What is extreme sensitivity of the skin called and why does it occur with neuropathic pain?
4. How does the pain in calf muscles differ from pain in his feet and what is this called?
4. What rationales need to be considered for possible approaches?

3. PATIENT SCENARIO: Baby Zachary

Who:
Baby Zachary is a 27 2/7 weeks gestation age male infant, birth weight 1000 g (appropriate for his gestational age). Transferred to NICU at 15 minutes of age for further management of extreme prematurity.
Maternal history /risk factors
Zachary was delivered by emergent cesarean section under general anesthetic due to fetal compromise following induction of labor with oxytocin secondary to worsening maternal HELLP syndrome. Mom is a36 year old previously healthy G1P0A3 (3 early miscarriages). Blood group A+. Protective serology. No mediations except multivitamins. Non- smoker. Pregnancy conceived from in-vitro fertilization following prolonged history of infertility. Baby Zacchary requires resuscitation with intermittent positive pressure ventilation and intubation in the birth unit. Apgar score 1 (1 for HR < 60 minute) at one minute;
6 (2 for HR>100; 1 tone; 1 grimace; 1 color; 1 irregular respirations) at 5 minutes.

Chief Concern in first hour of life:

- Severe respiratory distress requiring emergent intubation (without analgesia) and ventilation in Birth Unit at 2 minutes of age. Receives bovine lipid extract surfactant (BLES) (5ml/kg) via ETT.
- Transferred to overhead warmer, connected to ventilator, cardiac-respiratory leads and saturation monitor attached.
- An initial blood glucose collected from a heelstick at 20 minutes of age indicates hypoglycemia. A PIV is initiated after 3 attempts in the right saphenous vein. Glucose is provided as a continuous infusion. A heelstick is repeated for a blood glucose and additional labs.
- An umbilical arterial and venous catheter are placed and secured with tape on the abdomen.
- A naso-gastric tube is inserted and connected to low intermittent suction.
- An X-Ray is done.
- The umbilical catheters are both in a bit too far and require adjustment. The abdominal tapes are removed and the lines are adjusted. The skin under the original tape has been partially removed with the tape and is bleeding under the new dressing.
- The ETT is slightly low. The tape is removed to readjust the tube. The ETT is inadvertently dislodged. The baby is able to be maintained with intermittent positive pressure ventilation using a Neopuff but the decision is made to re incubate without analgesia. A second year pediatric resident makes 2 unsuccessful attempts followed by successful intubation by respiratory therapist with the second attempt.
- The baby now requires an increase in ventilation and O2 requirements. In addition becomes quite labile with any further handling having numerous desaturations and episodes of bradycardia.

Medications:
Standing order for 0.1 ml sucrose 2 minutes prior to skin breaking
procedure. Starter Primine with 0.5 u heparin/cc at 1.7 ml/h via UVC.
0.45% NACL + 0.5 units heparin/cc at 1ml/h via UAL.
Heplock solution as per unit routine q6h and post meds via PIV.

Physical Exam:

- Fontanelle soft and flat, some spontaneous eye opening and movement of all extremities, tone slightly decreased

- Air entry audible bilaterally, fine crackles throughout, decreased to both bases. Mod. subcoastal and intercostal retractions with occasionally spontaneous respirations. IMV 60, PIP 20, PEEP 5, IT. 3; FiO2 weaned from 80% to 30% post BLES
- BP 38/19 mean of 25 in all 4 limbs, P 175 bpm (NSR), grade 2/6 SEM RUSB, T 36.7C, peripheral
- pulses palpable X 4, cap refill 4 seconds centrally, 5 peripherally
- Abdomen soft, occ. BS, no urine or stool passed since birth, liver 1cm BRCM, spleen not palpated.
- Normal male genitalia. Anus patent.

Social history

- Mother is a chiropractor. She remains quite ill in the birth unit and has not seen or held her baby.
- Father is an explosive forensic officer in the military currently posted in Kandahar. Has been contacted and flight home is being arranged but may take several days.
- Few relatives locally, most of the family is living outside of Nova Scotia in Canada and United States.
- Both sets of grandparents are arranging to come as soon as possible.
- A close family friend is with the mother and speaking with father and family

Family History

- No family history of early fetal demise, chromosomal abnormalities or aberrations.
- No consanguinity.

Assessment conclusions

- What are Baby Zachary's main health problems/diagnoses?
- What are the patient priorities?

Plan: Identify and involve an interprofessional team

1. Ongoing medial intensive care management
2. Pain management
    - Continue 24% sucrose for procedural pain
    - Initiate non invasive monitoring such as transcutaneous pO2/pCO2, end tidal pC02
    - Limit painful procedures, continue arterial catheter for blood collection while acuity is high.
    - Continue umbilical venous until skin matures and central, more permanent, catheter can be placed.
    - Institute non-pharmacologic strategies as soon as possible– containment/nesting, facilitated tucking, decreased noise and light; maternal skin -to-skin care.
    - Limit routine care immediately following a painful procedure.
3. Family support

Some questions to consider in related to mechanisms and rationales in developing a management plan

1. Are there any concerns with repeated does of sucrose in very preterm neonates
2. What is the evidence about the use of analgesia for intubation in neonates? What is an appropriate choice of medication?
3. What evidence is there for using a continuous infusion of morphine for ongoing mechanical ventilation in preterm infants?
4. When does an infant experience chronic/persistent pain?
5. Are there differences between chronic pain and ongoing pain in preterm infants?
6. Can we accurately predict procedural, chronic or ongoing pain in preterm infants? Are some types of pain assessment tools better than others? Why?

7. Does the assessment of procedural pain change if multiple procedures occur in a short period of time?
8. What other factors confound our ability to assess and mange pain in the preterm?

References

1. IASP International Association for the Study of Pain (2012). *IASP Curricula.* Accessed October 20, 2014, from http://www.iasp-pain.org/Content/Navigation Menu/GeneralResourceLinks/Curricula/default.htm

2. Watt-Watson J, Siddall P. (2013). Improving pain practices through core competencies. *Pain Med* 2013 14, 966-967.

3. Fishman S, Young H, Arwood E, Chou R, Herr K, Murinson B, Watt-Watson J, Carr D, Gordon D, Stevens B, Bakerjian D, Ballantyne J, Courtenay M, Djukic M, Koebner I, Mongoven J, Paice J, Prasad R, Singh N, Sluka K, Marie B, Strassels S. (2013). Core Competencies for Pain Management: Results of an Interprofessional Consensus Summit. *Pain Med 14,* 971-981.