ACES Policy and Procedure Review and Sessions

Week 3—Medications

1. **Medication Reconciliation**
2. **Pain Mgmt:Surveys/Patient Education info/Pain Mgmt Algorithim**
3. **Equianalgesic Chart**
4. **PCA Policy / Protocol /Patient Instructions**
5. **Guidelines for Ordering & Administration of Medications**
6. **Medication Highlights/Drugs Requiring Filters Resource**
7. **Hyper/Hypoglycemia chart / Insulin Preparations info**
8. **Hypoglycemia Protocol**
9. **Insulin Basal Bolus Order Set**
10. **Insulin Pump Algorithim / Order Set**
11. **Potassium Therapy Protocol**
12. **Alcohol Withdrawal Protocol**
13. **Adult Antiemetic Protocol / Peds Antiemetic Protocol**
14. **Adult Heparin Protocol/HIT/Argatroban Order Set**
15. **Medication Errors and Adverse Drug Reaction Reporting**

A.M. Session 0800-1215 (Team Presentations per Matrix)

Pretest / Personalities
Pharmacy Overview—Q & A

Insulin Basal Bolus / Hypoglycemia Protocol Worksheet

Heparin Protocol / HIT Worksheet

Guidelines for Ordering Meds / Med Errors Worksheets

Pain Surveys/ PCA Worksheet

Potassium Therapy / Antiemetic Worksheet

P.M. Session 1215-1630

Suicide Key points / Alcohol Withdrawal Protocol Review

Scenarios:

- Surgical Patient / Hip replacement
- Post-Op / DVT Patient
- PCA Use

Quiz

Evaluations

WEEK 3 Spring 2010
SKILLS STATION MATRIX AND SIMULATION MATRIX

Time	All Groups Together
0800-0830	Pretest/Learning Styles
0830-0900	Pharmacy Overview
0900-0930	Team Assignments/Worksheets
0930-0945	Break

TEAM Presentations				
Group 1 0945-1015	Group 2 1015-1045	Group 3 1045-1115	Group 4 1115-1145	Group 5 1145-1215
Insulin Basal Bolus/ Hypoglycemia Protocol	Heparin Protocol/ HIT	Guidelines for Ordering Meds/Med Errors	Pain Surveys/ PCA Use	Potassium Therapy/ Antiemetic
1215-1300	Lunch on your own			
1315-1345	Group Review— Suicide Handout/Alcohol Withdrawal			

Scenarios	Surgical Patient	Post-op Care / DVT	PCA
1345-1430	Group 1	Group 2	Group 3
1430-1515	Group 2	Group 3	Group 1
1515-1600	Group 3	Group 1	Group2

1600 –1620	Quiz
1620 –1630	Evaluations

Review of Pharmacy Services

Question and Answer

Pharmacy Management Team

Carol Vanevenhoven, PharmD

Pharmacy Services

Clinical Orientation

Computer System Overview

- Siemens Pharmacy
- Siemens MAK
- MedDirect
  - STAT Stickers
- Acudose
- Soarian

Decentralized Pharmacists

- CCU/2W
- 2NW/2E/2S
- 3E/W
- Peds/NICU
- 5E/W
- Infectious Disease
- 1N/LTC
- Evening Shift
- ED (Proposed)

Errors Resulting in Preventable Adverse Drug Events

- Prescribing – 39%
  - 43% Interception
- Transcription – 12%
  - 33% Interception
- Dispensing – 11%
  - 34% Interception
- Administering – 38%
  - 2% Interception

Complete Order

- Drug Name – Generic
- Drug Dose
- Drug Route
- Dosing Frequency
- PRN with indication
- Unapproved Abbreviations
  - (QD, need leading "0", don't use trailing"0"

Sound-Alike Look-Alike Drugs (SALAD)

- CeleXA® Citalopram
- ClonazePAM (Klonopin®
- DiphenhydraMINE (Benadryl®
- GliPAZide
- Hydromorphone (Dilaudid®)
- HydroXYZine
- Methylprednisilone Acetate (Depomedrol®
- Metoprolol Tartrate (Toprol XL ®)
- NovoLIN R ® (Regular Insulin)
- Oxycontin® (oxycodone)
- PredniSONE
- CefOTAxIME (Claforan®)
- CeleBREX ® (Celecoxib)
- ClozoPIN (Clozaril®)
- DiphenhydraNATE (Dramamine®)
- GlyBURide
- Morphine
- HydrALAzine
- Methylprednisolone Sod Succ. (Solumedrol®)
- Metoprolol Succinate (Lopressor®)
- NovoLOG® (Aspartate Insulin)
- MS Contin® (morphine)
- PrednisoLONE
- CeftRIAxONE (Rocefin®)

"10 Rights" for Order Verification

1. Right **Patient**
2. Right **Drug**
3. Right **Dosage Form** (i.e., XL vs Reg)
4. Right **Dose**
5. Right **Route**
6. Right **Time** (Frequency)
7. Right **IV rate**
8. Right **Start** date and time
9. Right **Stop** date and time (order duration)
10. Right **Order Directions** (Addl Sig)

Unit Dose System

- Schedule Meds- ROBOT: 8/99
- Acudose – 32 Cabinets
  - PRNs and Controlled Substances
  - Profile Dispense
  - Allergies
- Controlled Substances
  - Record Keeping
  - Security
  - Accountability
- Med Administration Check (MAK): Oct ' 05

Sterile Products (IVs)

- Add Vantage® System – Demo
- Piggy-Backs and Syringes
- Large Volume IVs
  - The Pink Reorder Card
- TPNs
- MAK Considerations

Outpatient Services

- Discharge Prescriptions
  - UPT program
  - Use Community Pharmacies
- Employee Prescriptions (Refill line 8883)
- Anticoagulation Management Program
- Hospice
- Garden Village
- Heritage Grove

Clinical Pharmacy Activities

- Allergy Screen (Required)
- Pt Height and Weight (Required)
- Code 99/RRT/Trauma Team participation
- Therapeutic drug dosing
- Hospital Formulary and Interchange
- ADR and Med Error Reporting – Quantros®
- Patient Education
- Pharmacist Consultation

Pharmacy Staff

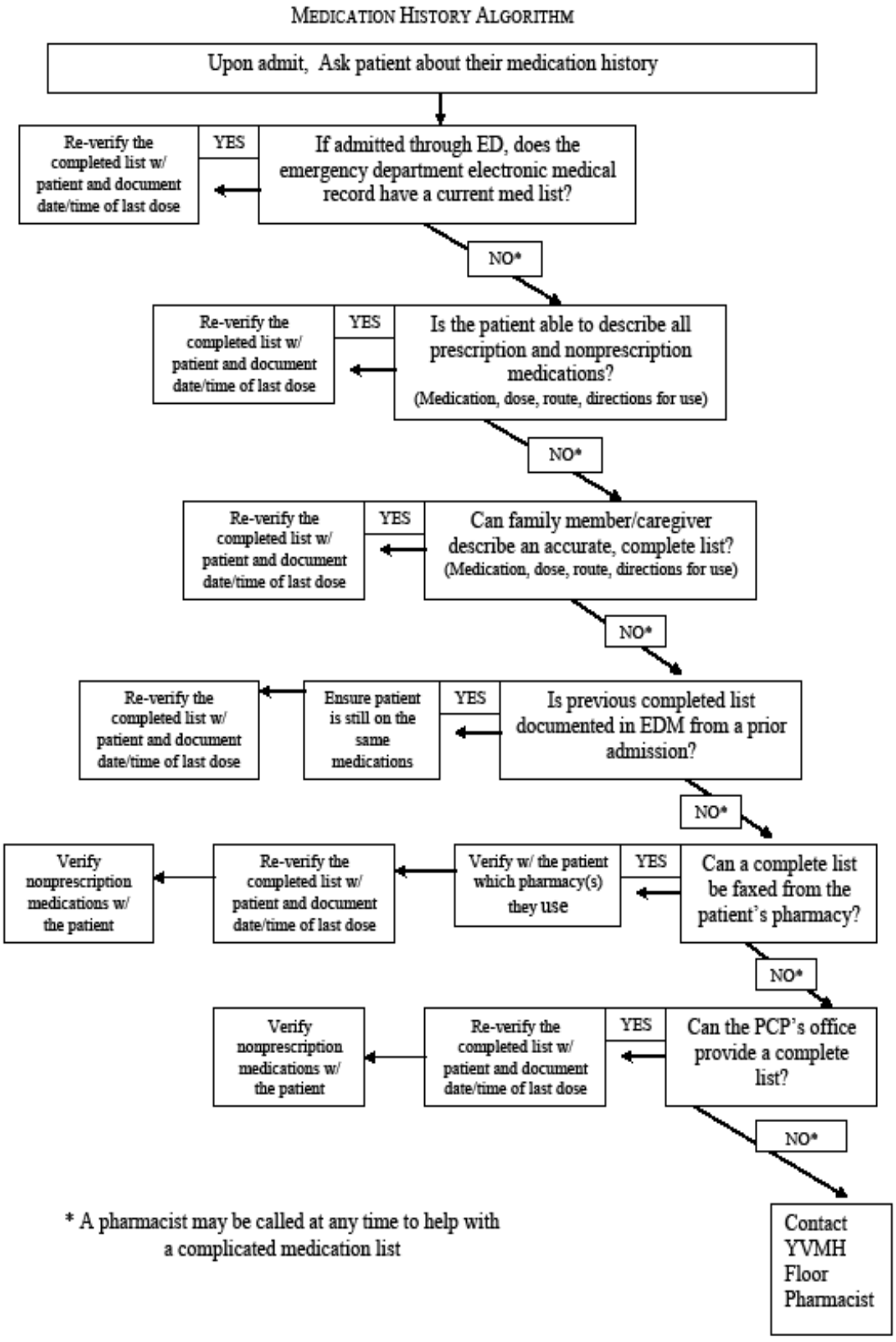
- Pharmacists – 25 FTEs
- Technicians – 29 FTEs
- Residency Program
- WSU Training Site
- Technician Students

How and When to contact Pharmacy

- Open 24/7
  - In-Patient Pharmacy - 8037
  - Prescription Services - 8036
  - IV Preparation/compatibilities - 8174
- Pagers and Cell Phone
- MAK Interventions and Rx Message

Turn-around time

- STAT (less than 15 min)- STAT Box
- Routine (less than 2 hrs)
- Tube System


MEDICATION HISTORY ALGORITHM
Upon admit, Ask patient about their medication history
If admitted through ED, does the emergency department electronic medical record have a current med list?
YES
Re-verify the completed list w/ patient and document date/time of last dose
NO*
Is the patient able to describe all prescription and nonprescription medications? (Medication, dose, route, directions for use)
YES
Re-verify the completed list w/ patient and document date/time of last dose
NO*
Can family member/caregiver describe an accurate, complete list? (Medication, dose, route, directions for use)
YES
Re-verify the completed list w/ patient and document date/time of last dose
NO*
Is previous completed list documented in EDM from a prior admission?
YES
Ensure patient is still on the same medications
Re-verify the completed list w/ patient and document date/time of last dose
NO*
Can a complete list be faxed from the patient's pharmacy?
YES
Verify w/ the patient which pharmacy(s) they use
Re-verify the completed list w/ patient and document date/time of last dose
Verify nonprescription medications w/ the patient
NO*
Can the PCP's office provide a complete list?
YES
Re-verify the completed list w/ patient and document date/time of last dose
Verify nonprescription medications w/ the patient
NO*
Contact YVMH Floor Pharmacist
* A pharmacist may be called at any time to help with a complicated medication list

Pain Survey

*Answer **true** or **false** to the following questions:*

_____1. Because of the chronicity of pain, patients are less sensitive and better able to tolerate pain.

_____2. Pain for which there is no known organic cause is a symptom of psychological disturbance.

_____3. If the patient's pain occurs or increases soon after a traumatic life event - for example a divorce, or death in the family, this stress is probably what caused or increased the pain.

_____4. Patients who are awaiting litigation after an injury or who receive worker's compensation are very likely to exaggerate their pain for financial gain or may be malingerers.

_____5. A patient who "exaggerates" his or her pain and/ or has a greater decrease in function than can be explained by the physical cause, is consciously trying to manipulate others or obtain secondary gains.

_____6. If the patient is depressed, especially if there is no known cause for pain, then the depression is causing his or her pain. The pain would subside if the depression could be effectively treated.

_____7. Opiods are inappropriate for all patients with chronic non-malignant pain. People with chronic pain who have been taking opiods for months or years are addicted to narcotics.

_____8. When patients with chronic pain non-malignant pain are non-compliant, it is probably because they do not want to give up their pain.

(Source: McCaffery and Pasero 1999)

Pain Management Survey

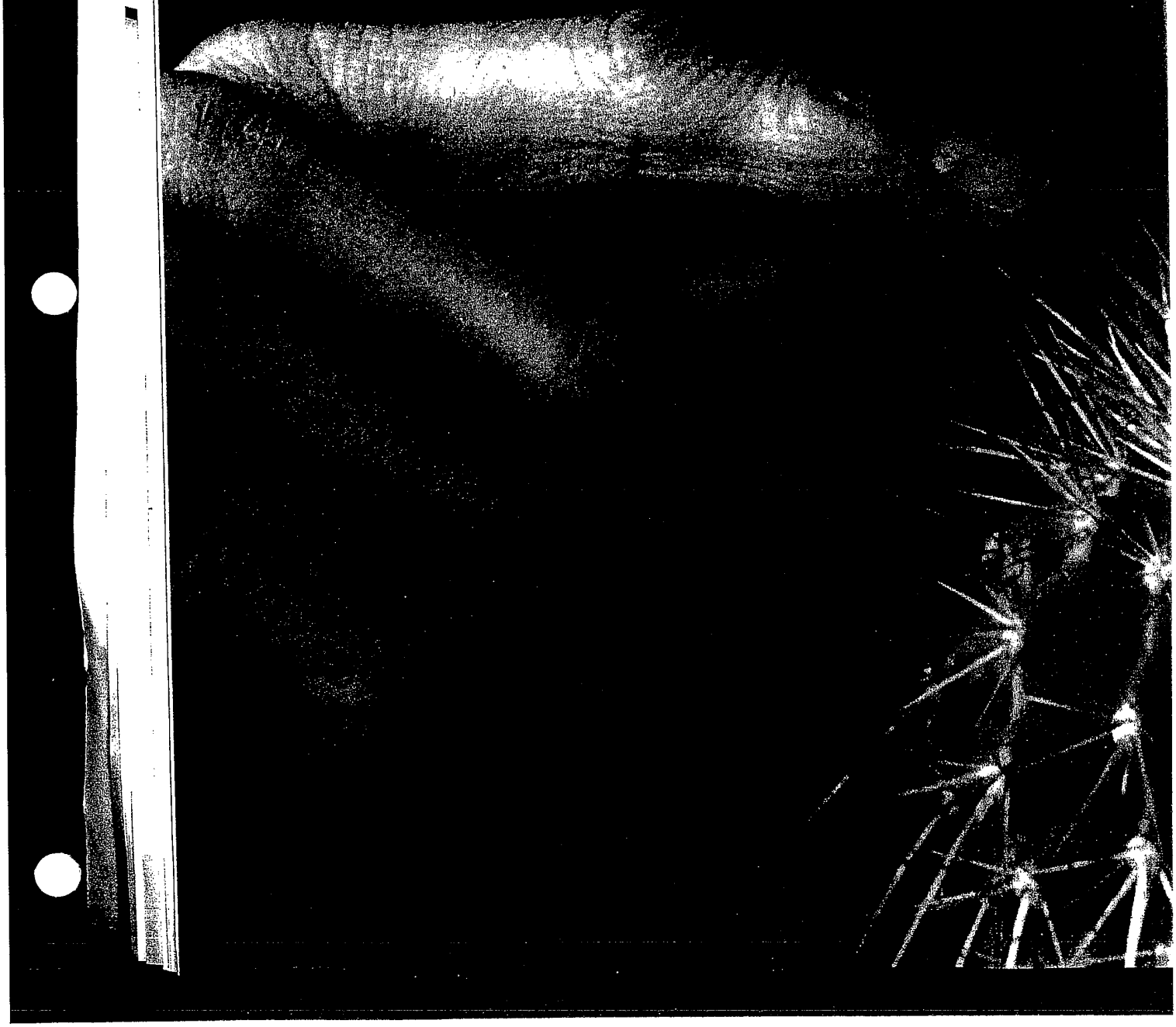
Please write: True/False/ or the correct answer under each question

1. Increases in vital signs are an indication that the patient is experiencing pain.
2. Intramuscular (I.M.) injection is a good way to deliver pain medication.
3. A patient may sleep despite being in pain.
4. Depression is common in patients who have chronic pain.
5. A nurse can tell how much pain a patient is experiencing by closely observing him.
6. Behavioral pain scales using behaviors such as grimacing, moaning, or rubbing are effective for assessing pain in nonverbal patients.
7. Patients who exhibit behaviors such as clock-watching are showing signs of addiction.
8. Continuous infusion via patient-controlled analgesia (PCA) pumps is a good way to provide analgesia for all patients.
9. Differences in mu (opioid) binding sites account for differences in patient's response to opioid.
10. Management of neuropathic pain, such as diabetic neuropathy, often requires a combination of medications such as opioids and antidepressants for affective pain relief.
11. There is no ceiling or upper limit on how far you can increase doses of opioid medication to improve pain relief.
12. Nonsteroidal anti-inflammatory drugs (NSAIDs) used for relief of mild pain cause few adverse reactions.
13. In patients with chronic pain, functionality may be a better measure of the efficary of pain medication than decreased pain levels.
14. Giving a patient a placebo is a good way to tell if he's really having pain.
15. What percentage of patients who receive opioids for short-term treatment of acute pain (1 to 3 days) will become addicted?
16. What percentage of patients who have chronic pain and use opioids for 1 year become addicted?
17. What percentage of addicted patients who abuse prescription opioids can be considered dependent of opioids?

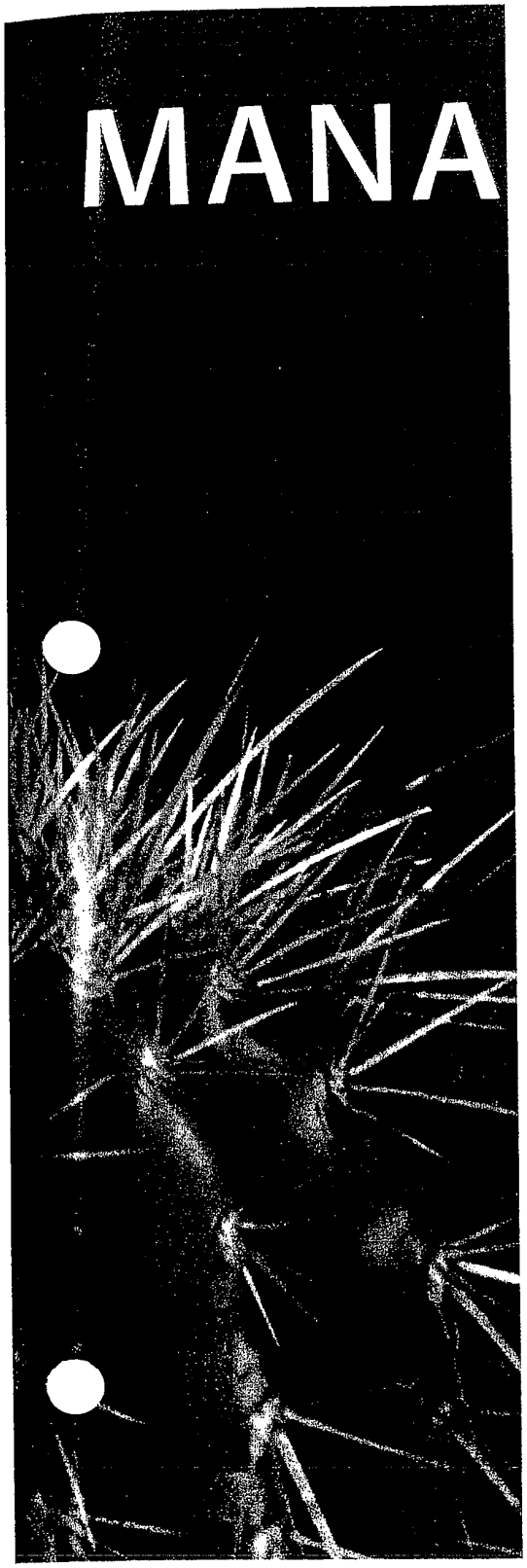
(Source : D'Arcy, Yvonne, Nursing 2008, June 2008, pg.43 –49)

Nursing2008

PAIN



CE
3.0
ANCC/AACN
CONTACT HOURS



MANA survey report

How sharp are you about pain management? See how your responses to this survey compare with those of nursing colleagues across the country and beyond.

By Yvonne D'Arcy, CRNP, CNS, MS

IN THE AUTUMN of 2007, I asked nurses to complete a survey on their pain management knowledge, attitudes, and practices. My goal was to learn if nurses understand the principles of pain management and apply current standards and best practices when they care for their patients. From across the United States and beyond, 2,949 nurses responded. (See *Respondent snapshot* for a profile of survey respondents.)

Overall, the results were encouraging, with most respondents demonstrating a good understanding of pain management principles. But the results also pinpointed areas where nurses may need more education, such as pain assessment and the appropriate use of opioid analgesics.

Many nurses provided lengthy and passionate personal comments, many of which were truly inspiring. But as I read through the comments, certain frustrations became apparent.

Exploring common themes

One of the most common frustrations nurses identified in their comments were concerns with ***physician prescribing patterns,*** such as prescribing too little medication or the wrong medication for the patient's condition. I encourage nurses who are having this problem to look at ways to solve the issues through education and the use of formulary protocols (see "Using a Medication Protocol to Improve Pain Management," *Nursing Management*, March 2008).

Pain assessment just never seems to get any easier. Although this survey demonstrated that nurses generally have a good grasp of many facets of pain management (as I'll discuss in detail shortly), many remain misinformed on certain key issues. For example, about 80% of respondents believe—incorrectly—that an increase in vital signs is a reliable indicator that a patient is experiencing pain.

Some nurses also have issues related to ***believing the patient's report of pain***. Most nurses know that the patient's self-report of pain is the most reliable indicator of pain, yet many remarks in the comments section belied this understanding. For example, some nurses commented on trying to determine the "real" status of pain

in patients they described as "drug seeking," "frequent flyers," or "clock-watchers." Despite what they say, in practice some nurses have trouble believing the patient's report of pain and are overly vigilant when observing for behaviors they interpret as drug seeking.

Fear of triggering addiction to opioids was also a frequently voiced concern, even though most respondents (89%) know that less than 1% of patients receiving short-term opioid therapy for acute pain become addicted.

For more discussion of these and other key issues, let's examine each survey question in turn. Please note that percentages have been rounded and that not all respondents answered every question.

Don't rely on vital signs

1. Increases in vital signs are an indication that the patient is experiencing pain.

FALSE. Correctly answered by 20%.

Vital signs may increase for brief periods with acute pain, but this may not occur in patients with chronic pain.[1] Besides pain, an increase in vital signs can signal many other problems, such as anxiety or deterioration in the patient's clinical status. Conversely, a patient with chronic pain may be experiencing severe pain with no changes in vital signs if he's adjusted to the higher pain intensity over time.

The best way to tell if the patient is experiencing pain is to ask him.[1] Self-report, not physiologic changes, is still the gold standard for assessing pain.

Respondent snapshot

Here's an overview of nurses responding to this survey:

- **primary work setting:**
  hospital, 71%
- **current position:**
  staff/primary nurse, 53%
- **primary clinical area:**
  medical/surgical, 29%
  ICU/CCU, 10%
  geriatrics, 9%
- **highest educational level:**
  BS/BSN, 36%
  AD, 20%
  RN diploma, 16%
  MS/MSN, 15%
  LPN/LVN, 6%
- **years of nursing experience:**
  over 15, 58%
  5 or less, 20%
- **age:**
  over 50, 40%
  41-50, 30%
  31-40, 19%
- **practice location:**
  urban, 42%
  suburban, 33%
- **certified in a specialty:**
  no, 63%

I.M. injections aren't recommended

2. Intramuscular (I.M.) injection is a good way to deliver pain medication.

FALSE. Correctly answered by 75%.

For many years, I.M. injection was the standard for delivering pain medication. Current practice discourages this method for several very good reasons: Medication absorption is irregular, muscle tissue can be damaged, and I.M. injections are painful.[1]

Most (75%) survey respondents in all age-groups and educational preparation levels were aware that I.M. injections aren't the best practice. Older, more experienced nurses have adjusted their practice to meet current standards.

Sleep isn't always pain-free

3. A patient may sleep despite being in pain.

TRUE. Correctly answered by 94%.

As most respondents know, patients can sleep despite pain, especially those who've been living with pain for a long time and are exhausted. In the past, nurses typically perceived the sleeping patient as being comfortable, so this high proportion of correct answers reflects a significant advance in nurses' knowledge and attitudes.

Depression plays a part

4. Depression is common in patients who have chronic pain.

TRUE. Correctly answered by 98%.

Many patients with chronic pain suffer from depression; as a patient group, they have an increased risk of suicide.[2] A long period of pain coupled with deterioration in the patient's functional ability and relationships can cause a situational depression that affects pain relief, rest, and interpersonal relationships. Sometimes treating the depression makes controlling pain easier. Nearly all respondents to this survey were aware of the truth in this statement, an encouraging finding.

Whose pain is it?

5. A nurse can tell how much pain a patient is experiencing by closely observing him.

FALSE. Correctly answered by 82%.

You can't tell how much pain a patient is experiencing just by watching his activity level, and observing his behavior is no substitute for patient self-report if he can communicate and rate pain intensity. If he leaves the unit to smoke or go to the gift shop, for example, that doesn't mean he's having no pain. Patients with chronic pain accommodate to higher pain levels and may continue to function despite intense pain. And some patients are very stoic or ashamed of their pain and try to hide it from others.

Health care professionals tend to do poorly when they rate a patient's pain based on their observations. In one study comparing patients' pain ratings with those of health care professionals, the patients rated their pain from 7 to 10 on a 0-to-10 numeric scale. The percentages of health care professionals who correctly matched the patients' ratings were very low: nurses, 7%; house officers, 20%; and fellows, 27%.[3] Remember, you can't experience someone else's pain, and observing his behavior won't provide the information you need to assess his pain.

Only about 20% of respondents replied incorrectly to this survey item, with nursing students having the highest deviation from the correct answer. This has important implications for nurse-educators. When nursing students are in clinical rotations, nurse-educators need to provide them with direction on how to assess pain correctly and avoid the pitfall of observation rather than appropriate pain assessment techniques.

What if the patient can't communicate?

6. Behavioral pain scales using behaviors such as grimacing, moaning, or rubbing are effective for assessing pain in nonverbal patients.

TRUE. Correctly answered by 91%.

Now that The Joint Commission requires pain assessments for all patients, using behavioral pain scales for patients who can't self-report pain has become common. Some of the newer tools include the Pain Assessment in Advanced Dementia scale for patients with dementia and the Payen behavioral pain scale for critically ill, sedated, and mechanically ventilated patients.[4,5] By using the same tool each time, nurses can consistently assess pain in nonverbal patients.

Drug seeking or relief seeking?

7. Patients who exhibit behaviors such as clock-watching are showing signs of addiction.

FALSE. Correctly answered by 80%.

Patients who watch the clock or know just when the next medication dose is due are likely to be suffering from undertreated pain, not addiction. Once pain is relieved, these behaviors tend to disappear. Rather than considering these patients as drug seeking, think of them as relief seekers trying to obtain adequate medication.

Most nurses responding to the survey understood this differentiation, with only about 20% indicating that clock-watching is a sign of addiction. See *Understanding aberrant drug-related behavior* for a list of behaviors that are more predictive of addiction.

PCA has limitations

8. Continuous infusion via patient-controlled analgesia (PCA) pumps is a good way to provide analgesia for all patients.

FALSE. Correctly answered by 83%.

Patient-controlled analgesia lets the patient give himself intermittent bolus doses as needed to manage pain. In the past, PCA pumps were often set to deliver a continuous basal intravenous (I.V.) infusion as well. But we now know that continuous infusions via PCA may cause oversedation and respiratory depression yet add little to pain relief. Consequently, continuous basal infusions via PCA are no longer recommended for opioid-naive patients.[1,2] However, some opioid-tolerant patients who were taking opioids before PCA therapy, such as oncology patients and those being treated for chronic pain, may require a continuous infusion to manage pain, so this option should remain available for them.

Most respondents to the survey were up-to-date with their information on this point, with only 17% answering incorrectly.

Opioid polymorphism plays a role

9. Differences in mu (opioid) binding sites account for differences in patient response to opioids.

TRUE. Answered correctly by 93%.

Opioid polymorphisms, defined as differences in patient response to opioids based on physiology, has become a new area of pain management research. To date, at least 45 different types of opioid binding site variations have been identified.[6] These variations mean that based on their physiology,

Understanding aberrant drug-related behavior

Aberrant drug-related behaviors are maladaptive but not always predictive of addiction risk in patients with chronic pain.

Probably more predictive of addiction	Probably less predictive of addiction
• Prescription forgery	• Drug hoarding during periods of reduced symptoms
• Selling prescription drugs	• Aggressive complaining about need for higher doses
• Stealing or borrowing another patient's drugs	• Requesting specific drugs
• Injecting oral formulation	• Unapproved use of drug to treat another symptom
• Obtaining prescription drugs from nonmedical sources	• Obtaining similar drugs from other medical sources
• Concurrent use of illicit drugs	• Reporting psychic effects not intended by the clinician
• Unsanctioned dose escalations	• Unsanctioned dose escalations one or two times
• Recurrent prescription losses	• Expressing worry over changing to a new drug, even if it would have fewer adverse effects
• Evidence of deterioration in the ability to function at work, in the family, or socially that appears to be related to drug use	
• Repeated resistance to changes in therapy despite clear evidence of adverse physical or psychological effects from the drug	

Source: Passik SD et al., Pain and aberrant drug-related behaviors in medically ill patients with and without histories of substance abuse, *Clinical Journal of Pain*, 22(2):173-181, February 2006.

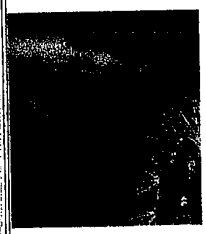
some patients respond better to one opioid than another. A patient who lacks enzymes that allow opioids to bind to the mu site will have great difficulty getting enough medication activated to relieve pain. The fact that 93% of respondents answered this question correctly is truly a sign of progress because this information is newer and less commonly addressed in nursing education.

Different pain requires different treatment

10. Management of neuropathic pain, such as diabetic neuropathy, often requires a combination of medications such as opioids and antidepressants for effective pain relief.

TRUE. Correctly answered by 88%.

Neuropathic pain is different from musculoskeletal pain because it results from injury to nerves rather than bones or muscle. Because of this difference, medications designed to decrease nerve pain transmission or prevent pain-related responses are needed. Although not all patients require a combination of medications, combining an opioid with an antidepressant or an antiepileptic drug (AED) is common. For example, the AED gabapentin may be prescribed to help treat chronic neuropathic pain, such as diabetic neuropathy.



Because they've developed tolerance to opioids, some oncology patients on chronic opioid therapy safely receive very high opioid dosages.

To assess your patient's pain, listen to the way he describes it. If he says it's burning, painfully numb, tingling, or shooting, it's most likely neuropathic. One patient described his postthoracotomy pain as feeling "like a blowtorch across my chest." You can help ensure that your patient receives the most effective therapy by documenting verbal descriptors that indicate nerve injury.

No limit to opioid analgesia

11. There is no ceiling or upper limit on how far you can increase doses of opioid medication to improve pain relief.

TRUE. Correctly answered by 42%.

Morphine and other opioids, such as fentanyl and hydromorphone, have no ceiling on the degree of pain relief they provide. Raising the dosage increases analgesia, but dosages are limited by the risk of adverse reactions, such as oversedation. The dosage of an opioid is also limited when it's combined with another drug, such as acetaminophen, that has a dosage ceiling.

When given I.V., opioids can easily be titrated upward to effect. Because they've developed tolerance to opioids, some oncology patients on chronic opioid therapy safely receive very high opioid dosages to control the pain of tumor growth and metastasis.

Fewer than half our respondents had a good understanding of these points. Higher educational levels correlated with more correct answers; advanced practice nurses scored the highest percentage of correct answers (70%).

Opioids are commonly given in high dosages in oncology practice. Only about 6% of survey respondents worked in oncology, which may have affected the response pattern.

Benefits and risks of NSAIDs

12. Nonsteroidal anti-inflammatory drugs (NSAIDs) used for relief of mild pain cause few adverse reactions.

FALSE. Correctly answered by 52%.

In the past, the main concern for patients who took NSAIDs was the potential for gastric ulceration and gastrointestinal bleeding, particularly with chronic use. In 2005, however, the Food and Drug Administration issued recommendations related to increased cardiovascular risks such as myocardial infarction and stroke, as well as serious allergic reactions such as Stevens-Johnson syndrome. Currently all NSAIDs have a black-box warning indicating an increased risk of these events. Under current recommendations, patients should use NSAIDs at the lowest effective dose for the shortest time possible. Certain patients, such as cardiac surgery patients, aren't good candidates for these medications.

Only 52% of survey respondents answered this question correctly. Because NSAIDs are no longer considered as benign as in the past, the patient's history and cardiovascular risk/benefit analysis should be evaluated before an NSAID is included in his ongoing treatment plan.

Assessing for medication efficacy

13. In patients with chronic pain, functionality may be a better measure of the efficacy of pain medication than decreased pain levels.

TRUE. Correctly answered by 91%.

The ability of a patient to care for herself or to walk a certain distance is a better indicator of pain medication efficacy than a numeric pain rating. Patients with chronic pain can accommodate to and tolerate more pain. Medication use has become regulated by opioid contracts in many practices that treat patients with chronic pain.[7] An opioid contract is a written agreement signed by a patient and his physician at the beginning of treatment. The purpose is to inform the patient about the risks and benefits of opioid therapy, define treatment goals, and document informed consent. Although these contracts aren't legally binding, they may encourage patients to follow the prescribed treatment regimen. These contracts are among the newest elements of opioid management for chronic pain, and little research-based information on

eir effectiveness is currently available.

Tools that measure functionality, such as the Oswestry Disability Questionnaire, SF-36 (Short-form 36), and chronic pain tools such as the Brief Pain Inventory and McGill Pain Questionnaire, all include functionality measures. For a quick evaluation of the efficacy of your patient's medication regimen, ask her what activities she can do when using her pain medication versus what she can do without it.

The addition of functionality as part of a normal assessment highlights the goal that both the patient and nurse are trying to reach. Most respondents answered this item correctly, an encouraging sign that nurses are going beyond a minimal numeric assessment of their patients' pain.

Weighing the placebo response

14. Giving a patient a placebo is a good way to tell if he's really having pain.

FALSE. Correctly answered by 92%.

Most respondents recognized this statement as false. Placebos should never be used to determine if a patients' pain is real.[1] Many patients respond positively to placebos, despite the fact that placebos have no active ingredients—a phenomenon recognized as the placebo response. This positive response doesn't mean the patient wasn't in pain.

To give a patient a placebo without informed consent is deceptive and unethical and can destroy her trust in her caregivers. The only time a placebo can be ethically used is in a research setting where the patient is informed that she may receive a placebo as part of the research protocol.

Addiction and dependency: Questions still remain

15. What percentage of patients who receive opioids for short-term treatment of acute pain (1 to 3 days) will become addicted?

Less than 1%. Correctly answered by 89%.

The number of patients in acute care settings who abuse substances is dramatically increasing. One recent study found that up to 60% of trauma patients are actively abusing substances such as alcohol, marijuana, cocaine, or heroin or have a history of substance abuse.[8] This makes managing their pain more difficult. However, most patients without prior substance abuse problems who receive opioid therapy for acute traumatic or postoperative pain don't become addicted. Most patients use the medication to relieve pain so they can become more functional and return home.

The difference between addiction and dependency is clear from their definitions:

Addiction is a chronic neurobiologic disease characterized by the four Cs: *craving* for the substance, *compulsive* use, lack *control* over the drug, and *continued* use despite harm.

Dependency is a physical state that occurs when the body becomes accustomed to the regular use of the medication. Abruptly stopping the medication will trigger a withdrawal syndrome in a patient who's dependent on the medication. Patients who are addicted to a drug are also physically dependent on it and will likewise experience withdrawal syndrome if the drug is withdrawn.

With short-term use of opioids, most patients will stop the medications when the acute pain episode resolves. A patient who's addicted needs higher doses of opioids to control pain and will continue to use opioids for reasons other than pain relief long after the pain resolves.

16. What percentage of patients who have chronic pain and use opioids for 1 year become addicted?

5%. Correctly answered by 40%.

Although estimating the rate of addiction in patients using opioids to manage chronic pain is difficult, new research indicates a previously unrecognized risk of addiction in this patient group. In a study of 800 patients in primary care practices, the rate of addiction among patients with chronic pain who'd been prescribed opioids by primary care physicians was roughly 4%. This is within the 4% to 6% range estimated in other research. This means that approximately 1 in every 25 patients in the study was abusing opioid medications. Some of the diagnoses for patients in the study were degenerative arthritis, low back pain, migraines, neuropathy, and fibromyalgia.[9]

The low proportion of correct responses to this survey item indicates that the use of opioids to treat chronic pain continues to trouble nurses. Most of the incorrect responses were very high, with 20% predicting that 25% of these patients would become addicted and 13% predicting 50%. Interestingly, however, 27% of respondents indicated the addiction rate was low, less than 1%.

Fear of addiction and misunderstanding of dependency creates a high potential for undertreatment and labeling of patients as drug seekers. Many nurses confuse addiction with aberrant pain behaviors, such as frequent requests for early prescription refills, "lost" prescriptions, drug hoarding, or requests for specific medications or doses. The rates for patients with chronic pain who demonstrate aberrant pain behaviors range from 5% to 24% of the patient population.[10] These behaviors are maladaptive but don't necessarily indicate addiction.

For many years, some well-meaning pain practitioners, while correctly placing pain relief at the forefront of treatment, failed to recognize that some of their patients would become addicted to opioids with long-term use. We now know that for some patients with chronic pain, taking opioids isn't the answer and may in fact create serious new problems.

17. What percentage of addicted patients who abuse prescription opioids can be considered dependent on opioids?

50% or more. Correctly answered by 54%.

As I discussed above, all patients who are truly addicted to

opioid medications are also physically dependent and will experience withdrawal if the drugs are abruptly withdrawn. Signs and symptoms of withdrawal include nausea, vomiting, shaking, back pain, gooseflesh, and delirium.

Many nurses confuse dependency and addiction and don't understand how they relate to each other. In this survey, 16% of respondents thought that only 5% of addicted patients would be opioid-dependent; 24% of respondents put the figure higher at 25%.

Any patient who's addicted to opioids, no matter what the source, is also dependent on them. Knowing this is critical to treating his pain appropriately.

18. How comfortable are you giving opioids regularly to a patient who's been taking opioids for 12 months to control chronic low back pain?

35%	Very comfortable
45%	Comfortable
15%	Uncomfortable
4%	Very uncomfortable

The comfort level for providing opioids in this circumstance was very good in the survey respondents, with about 80% claiming to be comfortable or very comfortable giving opioids to an opioid-dependent patient with chronic low back pain. Unreasonable fear of addiction leads many clinicians to undertreat patients with chronic pain, causing them to suffer needlessly. As discussed above, however, from 94% to 96% of patients won't become addicted when using opioids to manage chronic pain.

Among survey respondents, nurses who were least comfortable with providing the opioids were newer nurses with less than 5 years' experience.

■ Is PCA used safely in your practice?

19. Please check all of the following that apply to use of PCA in your practice.

83%	Two nurses must sign when therapy is initiated and with all dosing changes.
69%	Standardized education on PCA use is provided to patients.
68%	Standard order sets are used for PCA.
67%	PCA solutions and concentrations are standardized.
63%	Annual competency on PCA use is required to assess your ability to correctly enter dose settings and parameters.
19%	Nurse-activated PCA or PCA by proxy is permitted.

The Joint Commission and the Institute for Safe Medication Practices recommended certain measures to improve the safety of PCA use, including standardizing order sets, drugs, and drug concentrations used for PCA, requiring annual competency for nurses, and requiring a second nurse's signature for all medication changes.[11-13]

Does your knowledge match your confidence?

Responding to this survey, 2,897 nurses answered this question: *On a scale of 1 to 5, how confident are you that you answered most of the questions correctly?* Here's how their confidence level matched up with their knowledge.

Confidence level		Score: First 14 questions all correct
5 (very confident)	11%	16%
4	45%	5%
3	37%	2%
2	6%	1%
1 (not confident)	2%	0%

Nineteen percent of respondents indicated that nurse-activated PCA or PCA by proxy is permitted at their workplace. These practices are controversial and risky because they bypass an important safeguard built into the system: A patient who's comfortable or sedated won't give himself another dose, but a well-intentioned nurse, friend, or family member could cause significant oversedation by delivering an unneeded dose. However, some clinicians argue that it's appropriate in certain settings, such as pediatric units. In this survey, respondents reporting that PCA by proxy is permitted at their workplace tended to be younger nurses working in urban settings. The Joint Commission recommends that facilities permitting these practices maintain strict criteria and thoroughly educate family members and other caregivers.[11]

As you can see, about two-thirds of nurses reported that recommended changes to PCA use have been implemented in their practice settings. See "Keep Your Patient Safe during PCA" in the January issue of *Nursing2008** for a more detailed discussion.

■ How confident are you?

20. On a scale of 1 (not confident) to 5 (very confident), how confident are you that you answered most of the questions correctly?

See *Does your knowledge match your confidence?* for a correlation of respondents' confidence level with correct answers to all of the first 14 questions. Although 56% chose a 4 or 5 confidence rating, indicating a high level of confidence, only about 21% of these respondents answered all 14 questions correctly.

The questions most often answered incorrectly reveal some common themes. Nurses still need education about how to assess pain intensity levels accurately, consistently, and objectively. Trying to correlate vital signs with pain level and concern about clock-watching and other behaviors associated with "drug seeking" were common pitfalls. Other areas of misunderstanding involve the appropriate use of NSAIDs and the no-ceiling effect of opioids. And although most nurses know that I.M. injections are no longer recommended for pain control, a few nurses still haven't gotten the word.

Overall, however, survey results were positive. Despite

* Individual subscribers can also access this article free online at **http://www.nursing2008.com**.

eir concerns about addiction, the nurses weren't afraid to give opioids to patients with a diagnosis of chronic low back pain. This is definitely a change in attitude. Nurses also understand that placebos shouldn't be used to test whether a patient's pain is real, and they understand the effects of chronic pain, such as loss of functionality and depression. Most also know that neuropathic pain requires a specialized treatment plan. Nurses recognized one of the newest entries into the pain assessment toolbox, behavioral pain scales, as a good way to assess pain in special patient populations. It's encouraging to see that most nurses have let go of myths and misperceptions about opioid use.

I appreciate the efforts of nurses who took the time to complete this survey. I hope this report will help educate all clinicians about pain management concepts and best-practice interventions. ✧

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Nursing2008 Pain management survey report

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Pain Management After Surgery

Pain control plays an important part in recovery. When pain is controlled, you will experience comfort while you heal, get well faster and have better results. Being prepared about pain puts you in control. Pain is personal; the amount and type you feel may differ from another person, even if you have had the same surgery. Do not worry about getting addicted to pain medicine, studies show this is very rare unless you already have a problem with drug abuse. You are the key to getting the best pain relief.

BEFORE SURGERY:

1. Ask the preoperative (pre-op) education nurse about taking your usual pain medication.
2. Learn about pain after surgery from the pre-op education nurse and your physician.
3. Learn about the pain scale and choose your own personal pain goal number.
4. Learn about Slow Rhythmic Breathing for Relaxation.

AFTER SURGERY:

1. Develop a pain management plan with your physician and the nurses caring for you. The plan will include which medication is to be used and how the medication will be given to you.
2. Include your own personal pain goal number in your plan. Discuss the pain management plan with your physician during visits. **If the plan you, your physician and nurse have developed does not meet your pain goal, ask to change the plan.**
3. Take pain medicine as a pill, shot, suppository, patch or through a small tube in your vein or back
4. If you are not receiving pain medicine on a set time schedule, take or ask for pain relief medicine when pain first begins or if you anticipate that your pain may worsen with specific activities such as physical therapy, walking, coughing, etc., take the medicine first.
5. Use other non medicine pain relief methods such as rest, massage or cold packs when ordered by your physician.
6. Use distraction (T.V., family visits, music, rhythmic breathing) when possible.

COMMON SIDE EFFECTS OF PAIN MEDICINE

1. Nausea/vomiting
2. Drowsiness
3. Constipation
4. Itching
5. Interference with urination or breathing

PAIN SCALE

0	1	2	3	4	5	6	7	8	9	10
No pain					Moderate Pain					Worst Pain

PERSONAL PAIN GOAL

_____

OW RHYTHMIC BREATHING FOR RELAXATION

1. eathe in slowly and deeply.
2. As you breathe out slowly, feel yourself beginning to relax; feel the tension leaving your body.
3. Now breathe in and out slowly and regularly, at whatever rate is comfortable for you. You may wish to try abdominal breathing. If you do not know how to do abdominal breathing, ask your nurse for help.
4. To help you focus on your breathing and to breathe slowly and rhythmically: Breathe in as you say silently to yourself, "in two, three." Breathe out as you say silently to yourself, "out, two, three."

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5. Each time you breathe out, say silently to yourself a word such as peace or relax.
6. You may imagine that you are doing this in a place that is very calming and relaxing for you, such as lying in the sun at the beach.
7. Do steps 1 through 4 only once or repeat steps 3 and 4 for up to 20 minutes.
8. End with a slow deep breath. As you breathe out, say to yourself "I feel alert and relaxed."

ddi al points: If you intend to do this for more than a few seconds, try to get in a comfortable osition in a quiet place. You may close your eyes or focus on an object. This breathing exercise may be sed for only a few seconds or for up to 20 minutes.

From: McCaffery, M. and Beebe, A. (1989). Pain: Clinical manual for nursing practice. St. Louis: C.V. losby Company.

VAKIMA VALLEY MEMORIAL
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PAIN MANAGEMENT FLOW CHART

Initial Pain Assessment: (completed on first patient/caregiver contact)
A. Introduce tools (0 – 10 scale, faces, etc.)
B. Patient determines pain relief goal

Develop Pain Management Plan:
A. Patient/family education (options, addiction, patient responsibility)
B. Patient/family, physician, nurse and pharmacy collaboration
C. Plan documented on patient kardex as a focus problem

Documentation Example: Kardex

Focus Problem	Expected Outcome	Interventions
7/21/99 Back Pain	Patient's pain goal	Meds as ordered
Nurse (Rt Bone Ca) Sig.	3/10 with activity	Freq. rest periods Signature

No pain or pain not requiring pharmacological intervention.

Reassessment:
A. Post-op assessment every 2° x 24° then every 4° and PRN
B. Cardiac every 8°, with activity and PRN
C. Medical/Chronic at least every 8°
D. Documentation Example: Progress Notes (DAR)
E. Outpatient – Appropriate to patient's treatment
Note: After 24 hours of no pain, yellow out on focus problem list.

Pain requiring pharmacological intervention

Administer Pain Management Plan:
A. Assess for effectiveness after intervention
   1. Cardiac – 5 min. after intervention
   2. Other – 30 min. – 1 hour after intervention.
B. Reassess pain
   1. Post-op at least every 2° x 24° then every 4° and PRN
   2. Cardiac every 4° and PRN
   3. Medical/Chronic at least every 4°
   4. Epidural Analgesia – Follow-up protocol
   5. Outpatient – Appropriate to patient's treatment
C. Assess for side effects i.e., nausea, constipation
D. Document in MAK

Pain relief meets patient goal

Yes → Reassess according to pain management Flow Chart

No → Change pain management plan

Discharge:
Inpatients as well as ambulatory patients will be assessed for pain/side effects management needs at discharge. If applicable a written plan will be developed with patient/family input and will be indicated on the discharge instruction sheet.

May 2007

Pain Management

REQUIREMENTS:

1. Pain intensity and pain relief must be assessed and reassessed at regular intervals on all patients. Assess pain using rating scales and teach patients how to use assessment tools; document the efficacy of pain relief.
2. Educate physicians, staff, patients and families regarding the use of pain management medications with a focus on the following:
   A. Recognition that prn medications may be given around-the-clock.
   B. The difference between tolerance, physical dependence, addiction and the low risk of addiction from long-term use and/or high doses of opiates.
   C. Intervention to treat pain before the pain becomes severe.
   D. Suggest and use non-drug interventions to assist in pain alleviation.
   E. Use knowledge of equianalgesic dosages to maintain both patient safety and pain relief as routes and types of ordered drugs change.
   F. Intervene to minimize drug side effects.

3. Patients' preferences must be respected when determining methods to be used for pain management.
4. Use the simplest dosage schedules and least invasive modalities first.
5. Choose the oral route for analgesic administration when available, for its convenience and economy.
6. Use opioids to treat moderate to severe pain. The appropriate dose is the amount of opioid that manages pain with tolerable side effects.

PRINCIPLES:

1. Successful assessment and control of pain depends, in part, on establishing a positive relationship between health care professionals and patients. Patients have the right to be informed that pain relief is an important part of their health care, that information about options to manage pain is available to them, and that they are encouraged to discuss their concerns and preferences with the health care team.
2. Unrelieved pain has negative physical and psychological consequences, including increased heart rate, blood pressure, loss of sleep, depression, etc. which prolong patient hospital days.
3. It is not practical or desirable to eliminate all postoperative pain, but techniques now available reduce pain to levels acceptable to the patient.
4. Prevention is better than treatment. Pain that is established and severe is difficult to control.
5. Patients who may have difficulty communicating their pain require particular attention (access pain management tools).
6. Family members should be involved when appropriate.
7. Symptom/side effect management will be addressed in the care plan of all patients requiring pain management.

PATIENT ASSESSMENT TOOLS:

1. The single most reliable indicator of the existence and intensity of pain – and any resultant distress – is the patient's self-report.

2. Self-report measurement scales include numerical or adjective ratings and visual analog scales.
3. Tools must be appropriate for the patient's developmental, physical, emotional, and cognitive status.

PREOPERATIVE PREPARATION:

1. Discuss the patient's previous experiences with pain and beliefs about and preferences for pain assessment and management.
2. Give the patient information about pain management therapies that are available and the rationale underlying their use.
3. Develop with the patient a plan for pain assessment and management.
4. Select a pain assessment tool, and teach the patient to use it. Determine the level of pain above which adjustment of analgesia or other interventions will be considered.
5. Provide the patient with education and information about pain management, including training in nonpharmacologic options such as relaxation, massage, heat, cold, exercise, etc.
6. Inform patients that it is easier to prevent pain than to chase and reduce it once it has become established and that communication of unrelieved pain is essential to its relief. Emphasize the importance of a factual report of pain, avoiding stoicism or exaggeration.

POSTOPERATIVE ASSESSMENT:

1. Assess the patient's perceptions, along with behavioral and physiologic responses. Remember that observations of behavior and vital signs should not be used instead of a self-report unless the patient is unable to communicate.
2. Assess and reassess pain frequently during the immediate postoperative period. Determine the frequency of assessment based on the operation performed and the severity of the pain. For example, pain should be assessed every 2 hours during the first postoperative day after major surgery.
3. Increase the frequency of assessment and reassessment if the pain is poorly controlled or if interventions are changing.
4. Record the pain intensity and response to intervention in an easily visible and accessible place.
5. Revise the management plan if the pain is poorly management.
6. Review with the patient before discharge the interventions used and their efficacy and provide specific discharge instructions regarding pain and its management.

SPECIAL CONSIDERATION FOR ELDERLY PERSONS:

1. Elderly people often suffer multiple chronic, painful illnesses and take multiple medications. They are at greater risk for drug-drug and drug-disease interactions.
2. Pain assessment presents unique problems in the elderly, as these patients may exhibit physiologic, psychological and cultural changes associated with aging.
3. Elderly patients sometimes believe that pain cannot be relieved and are stoic in reporting their pain. The frail and oldest - old (+85 years) are at particular risk for under-treatment of pain.
4. Aging need not alter pain thresholds or tolerance. The similarities of pain experience between elderly and younger patients are far more common than are the differences.
5. Cognitive impairment, delirium and dementia are serious barriers to assessing pain in the elderly. Sensory problems such as visual and hearing changes may also interfere with the use of some pain assessment scales. However, as with other patients, the clinician should be able to obtain an accurate self-report of pain from most patients.

6. When verbal report is not possible, clinicians should observe for behavioral cues to pain such as restlessness or agitation. The absence of pain behaviors does not negate the presence of pain.
7. Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) can be used safely in elderly persons, but their use requires vigilance for side effects, especially gastric and renal toxicity.
8. Opioids are safe and effective when used appropriately in elderly patients. Elderly people are more sensitive to analgesic effects of opiate drugs. They experience higher peak effect and longer duration of pain relief.

SPECIAL CONSIDERATIONS FOR THE MANAGEMENT OF PAIN IN NEONATES AND INFANTS:

1. Young infants, especially those who are premature or have neurologic abnormalities or pulmonary disease, are susceptible to apnea and respiratory depression with the use of systemic opioids. However, neonates and infants do experience pain, and adequate analgesia during invasive procedures and after surgery is essential.
2. Apnea and respiratory depression appear to be closely related. Most practitioners reduce the initial dose and use intensive monitoring for infants up to about 6 months of age; this age is arbitrary and based on a cautious interpretation of the literature. For non-ventilated infants, the initial opioid dose calculated in milligrams per kilogram should be about one-fourth to one-third of the dose recommended for older children. For example, 0.03mg/Kg of morphine could be used as the initial dose. Careful assessment and reassessment are necessary to determine the optimal dose and interval of administration from clinical parameters.

INSTITUTIONAL RESPONSIBILITY FOR PAIN MANAGEMENT:

1. The institutional process of acute pain management begins with the affirmation that patients should have access to the best level of pain relief that may safely be provided.
2. YVMH's quality assurance procedures should be used periodically to assure that the following pain management practices are being carried out:
   A. Patients including children and their parents are informed that effective pain relief is an important part of their treatment, that communication of unrelieved pain is essential, and that health professionals will respond quickly to their reports of pain. They are also told that a total absence of pain is often not a realistic or even a desirable goal.
   B. Clear documentation of a pain assessment and management is provided.
   C. There are institution-defined levels for pain intensity and relief that elicit review of current pain therapy, documentation of the proposed modifications in treatment, and subsequent review of their efficacy.

PAIN RELIEF FOR SUBSTANCE ABUSE DISORDERS:

1. It is imperative the health care providers initiate discussion about substance abuse with patients and family.
2. The substance abuser has the same right to pain relief as any other patient.
3. The goal of providing adequate pain management for the abuser is to:
   A. Relieve pain
   B. Prevent withdrawal symptoms
4. Anticipate the need for larger than usual doses of opiates for recovering or active opiate abuser or those who are on methadone maintenance.
5. The substance abuser experiencing pain is the authority about his/her pain.

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Approved by:	Nursing Policy & Procedure Committee	Date:	06/20/2000, 08/22/2006, 05/01/2007

New PCA Policy
To be handed out in class

STAT ❑

Protocol for Adult Patient Controlled Analgesia System (PCA)

Allergies _____

1. Document patient medication allergies: _____
Select patients for PCA use carefully. Patients who have the following conditions are **NOT** good candidates for PCA use:
   - Sleep Apnea, or CPAP use at home (contact respiratory care)
   - COPD, Asthma
   - Obesity
   - Cognitively impaired or confused

If 2 or more of these conditions exist PCA should be used with extreme caution & frequent patient monitoring
2. Provide Patient Education. Reinforce that the patient is **THE ONLY** person who pushes the PCA button.
3. Hang 500 mL Normal Saline TKO if no other primary solution is ordered.
4. Loading dose may be given IV push or via PCA pump, one time.
5. Agents listed in order of preference. Morphine is agent of first choice.

	❑ Morphine	❑ Hydromorphone	❑ Fentanyl
Standard Protocol	Loading Dose: 2 mg PCA Dose: 1 mg Lockout: 10 min 4 hr limit: 20 mg	Loading Dose: 0.2 mg PCA Dose: 0.2 mg Lockout: 10 min 4 hr limit: 4 mg	Loading Dose: 25 mcg PCA Dose: 10 mcg Lockout: 10 min 4 hr limit: 300 mcg
Continuous Rate	❑ 1 mg/hour	❑ 0.2 mg/hour	❑ 25 mcg/hour

OR

Individual Dosing:	❑ Morphine 1 mg/mL	❑ Hydromorphone 0.2 mg/mL	❑ Fentanyl 10 mcg/mL
Loading Dose: (Optional) Range Suggested	1-5 mg 2 mg _____mg	0.2-1 mg 0.4 mg _____mg	25-50 mcg 25 mcg _____mcg
PCA Dose: Range Suggested	0.1-5 mg 1 - 2 mg _____mg	0.05-0.5 mg 0.1-0.3 mg _____mg	5-20 mcg 5-10 mcg _____mcg
Lockout Interval: Range Suggested	5-100 min. 5-10 min. _____min	5-100 min. 5-10 min. _____min	5-100 min. 5-10 min. _____min
4 Hour Limit: Range Suggested	0.1-30 mg 20 mg _____mg	4-8 mg 4 mg _____mg	100-500 mcg 300 mcg _____mcg
Continuous Rate: Range Suggested	**Per Hour** 0.1-20 mg 1-3 mg/hr _____mg	**Per Hour** 0-0.2 mg 0.1 mg _____mg	**Per Hour** 0-10 mcg 5 mcg _____mcg

6. If patient persistently complains of inadequate analgesia, Nursing may (**one time only**):
   A. Increase PCA dose by:
      Morphine 1 mg or _____
      Fentanyl 10 mcg or _____
      Hydromorphone 0.1 mg or _____
      Or
   B. Decrease lockout interval by 2 minutes,
   C. If analgesic effect still not sufficient, notify physician.
7. ■ Continuous Oximetry to be used:
   A. For the first 24° after initiation of PCA, PRN and
   B. Initiating or dose increase using continuous mode, or
   C. Initiating or dose increase using PCA+ continuous mode
8. Vital Signs, Sedation Scale, and pain assessment to be completed every 2° x 24° then every 4° and PRN
9. See Narcan Protocol

Physician's Signature: _____ Date/Time: _____

ADM

ATN

Patient Controlled Analgesia (PCA) System
Rev. 1-10 Form 0014

Page 1 of 1

YAKIMA VALLEY MEMORIAL
AWARD WINNING HOSPITAL

PO0001

General Nursing Policy and Procedure Manual
Medications
Patient Controlled Analgesia (PCA)
DRAFT 5/09

YAKIMA VALLEY MEMORIAL
AWARD WINNING HOSPITAL

DEFINITION:

Patient Controlled Analgesia (PCA) is patient self-administration of pain-relieving medication through the use of a computerized, electronic infuser set to deliver a specific dose of analgesia at specific time intervals as prescribed by a physician.

PURPOSE:

To provide patient comfort by self-control of administration of narcotics. **PCA** allows patients to gain greater control of their pain relief by maintaining a more constant serum level of analgesia. Frequently **PCA** patients use less analgesia than patients who receive pain medication through intramuscular or even intravenous push route.

PATIENT SELECTION:

PCA is not appropriate therapy for all patients. It is most commonly used for acute (ex. post operative) and chronic (ex. cancer) pain.

PCA should be used with **caution** on the following patients:

- History of respiratory, renal, hepatic disease, or cardiac impairment.
- Patients with the following histories have an increased risk of over sedation:

  1) sleep apnea or on CPAP at home –contact Respiratory if CPAP machine needed

  2) asthma

- Severely debilitated
- Hypovolemia until that condition is corrected
- Patients that are taking drugs that potentiate opiods, such as, muscle relaxants, antiemetics and sleeping medications

- Pregnant or nursing patients because of the action of the medication
- Very thin or obese patients
- Elderly patients
- Patients on narcotic patches such as Fentanyl

PCA should NOT be used for the following patients:

- Who are confused
- Who are physically unable to push the button independently.
- Infants and young children unless strict guidelines used per American Society of Pain Management Nursing. (www.aspmn.org). (Peds section inserted here)

PHYSICIAN RESPONSIBILITY:

1.Write order on the *Protocol for Adult Patient Controlled Analgesia System* form (found in Zynx) to include:

A. Type of Analgesia and Concentration:

- Morphine Sulfate 1 mg/ml
- Fentanyl 10 mcg/ml
- Hydromorphone 0.2 mg/ml

B. Dosing Terminology and Definitions:

- **Loading Dose:** one time dose administered by nurse using pre drawn medication or per PCA pump.
- **PCA Dose:** amount of medication the patient can self administer in-between the lockout intervals.
- **Lockout Interval:** the time frame between doses.
- **4 hr. Limit:** amount of medication the patient can receive in a 4 hr. period.
- **Continuous Rate**: continuous dosage of medication delivered each hour alone or in addition to the PCA dose. (Research shows this additional dosing rate should be used with caution in opiate-naive patients as overdoses have occurred.)

NURSING RESPONSIBILITY:

1. Initially assess patients for:

    - Medication allergies
    - Pain level (0-10)
    - Baseline parameters to include: LOC, vital signs, oximetry level
    - '7 Rights' of medication administration:

        Right Patient.

        Right Drug

        Right Dose

        Right Route

        Right Time

        Patient's Right to Refuse

        Right Documentation

2 Review the orders on the *Protocol for Adult Patient Controlled Analgesia* order set completed by the physician.

3 Assemble equipment and prepare:

- PCA Pump (from Central Supply).
- Obtain key to open med chamber on pump. Check with Shift Coordinator and /or coworkers for key location.
- *Operating instructions are attached to each pump, ABBOTT LIFECARE "PCA" PLUS II INFUSER Pump for questions and troubleshooting.
- Select (Hospira/Abbott) PCA tubing from floor supply. Label tubing with date and time and change every 96 hours. **WARNING: To prevent free flow of medication ALWAYS clamp tubing before loading or unloading the analgesic injector.**

4 Hang 500 ml Lactated Ringers (LR) at TKO rate (if no other primary solution is ordered) to attach to shorter arm of the PCA tubing. Prime tubing to distal endpoint. Remember the longer arm of the 'Y' on the tubing should **not** be primed with solution as it is primed with the medication. Priming should occur **prior to** connecting to patient.

> **NOTE:** Second intravenous line is needed if potential for medication incompatibility exists or blood product infusion is anticipated.

5 Obtain ordered analgesic medication from Pharmacy or Acudose. If cabinet empty or using last vial, notify Pharmacy.

6 **Prime** PCA tubing with analgesic medication manually or through PCA pump **only to Y** – the remainder of the tubing should be primed with the maintenance fluid or LR (see #4 above).

7 **Program** pump settings per physician orders.

> **NOTE:** **ALWAYS** double check physician orders and pump settings with second RN and cosign the order.

8. **Instruct** patient in proper use of PCA pump and evaluate patient understanding of safety measures and benefits of PCA therapy.

- Reinforce that the patient is **the only** person who pushes the **PCA** button
- Review potential adverse effects: over-sedation and respiratory suppression if someone other than client activates the pump.
- Instruct patient to notify staff if machine malfunctions (alarm sounds), pain not controlled, with any questions, and with any other symptoms.

9. **Prior to starting infusion: Reassess patient parameters to include:**

- **Pain Scale**
- **Vital signs, including oximetry level**
- **LOC**

- **Sedation Scale (use of Aldrete scale being discussed for Soarian)**

10. Scan Medication into the MAK system (if available)
11. Begin administration of analgesic medication as ordered
12. Monitor patient parameters and document as indicated:

- every 30 minutes X 4 hours
- every 4 hours X 24 hours

NOTE: If patient on continuous **PCA** mode patient to be monitored closely and oximetry utilized for 24 hours (obtain from Respiratory Care.)

13. Notify physician of any deterioration in the patient condition.

Have reversal drugs and resuscitation equipment readily available. See *Naloxone (Narcan) Administration Orders* Policy

- Reversal of Morphine Sulfate: Narcan
- Reversal of Hydromorphone: Narcan
- Reversal of Fentanyl: Narcan

14. Documentation of **medication** to include:

- Total dose in mg/mcg under shift total in MAK every 8 hours (0600-1400-2200).
- Any changes in analgesic dosage in MAK and document patient response in Soarian Clinical Notes.

15. Documentation of **pain** to include:

Effectiveness of analgesia and pain scale **30 minutes** after initiation of PCA documented in MAK, in Soarian Clinical notes or on chart as applicable.

Postop patients: **every 2 hours X 24 hours** then every 4 hours and PRN

Medical/Chronic: **every 4 hours** and PRN

Patients on PCA need to be monitored for respiratory and neurologic depression!

16. Any unused narcotic will be discarded and recorded on the unit according to existing policy (in MAK on inpatients). Any waste **must** be signed by a combination of two licensed nurses. Report any discrepancy to Nurse Manager.

References for PCA Protocol and Policy:

D'Arcy, Yvonne. *Keeping your Patient Safe During PCA*. Nursing 2008, January 38(1): 50-56. 2008

American Society for Pain Management Nursing. *Core Curriculum for Pain Management Nursing*. WB. Saunders Co. 2002.

Principles of Analgesic Use in the Treatment of Acute and Cancer Pain 5th Edition. American Pain Society, 2003.

Cohen, R. Smetzer, J. (2005). Patient Controlled Analgesia Safety Issues. Journal of Pain and Palliative Care Pharmacotherapy 19(1): 45-50. 2005.

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Yakima Valley Memorial Hospital
PCA (Patient Controlled Analgesia)
Patient Instructions

WHAT IS A PCA PUMP?

One method of giving pain medications is via a PCA pump (Patient Controlled Analgesia). The PCA pump allows you to give yourself pain medication by pressing a button connected to the PCA Pump. When you press the button, you will hear a beep and the pump will deliver a specific amount of pain medicine. If you press the button, but you do not hear a beep, that means that you have already received the maximum amount of pain medicine for that time period.

Your physician and healthcare team determines the amount of medicine you will receive based on your size, age, and diagnosis.

ASSESSING YOUR PAIN

You are the only one who knows how your pain feels. To help your caregiver and nurse understand your pain, they will ask you to rate your pain using a 0-10 scale. Zero is no pain and 10 is the worst pain possible. You will be asked frequently about your pain using this scale or the Wong-Baker face scale. Always tell your nurse or caregiver about any pain, which is new, changed, or does not improve with pain medication. When you become or are non-verbal, the FLACC scale may be used.

Not all pain is the same. Describing your pain in words such as "aching" or "shooting" may help your nurse and caregiver to administer the most appropriate medication. There are other medications that could be used in combination with the PCA to alleviate your pain. See scales on back.

MEDICATION SIDE EFFECTS

The most common side effects which may occur with patients receiving PCA pain medications include:

- Sleepiness or drowsiness
- Nausea
- Difficulty urinating
- Itchiness
- Constipation

*** Please pay special attention to the following symptoms of too much medication***

- **Change in behavior, speech, or thought process**
- **Excessive sleepiness (unable to awaken)**
- **Breathing rate of less than 10 breaths per minute**
- **Change in ability to respond to touch or other stimulation**

Let your nurse or caregiver know if you experience any of the side effects listed above.

WHEN SHOULD YOU USE YOUR PCA?

The degree of pain a person experiences may vary from very little to very much. However, with the help of the PCA, we would like to keep your level of pain at a comfortable level. You should press the PCA button before your pain becomes severe or when it first begins. If your pain is not relieved to your satisfaction, please contact your nurse. Other methods of pain control, such as proper positioning, decreasing environmental noises, heat and ice or other therapies can be used to enhance the effects of your pain medication.

Please remember that your comfort is important to us. You input is very helpful. Please don't hesitate to ask your nurse or healthcare team questions.

SAFETY INSTRUCTIONS

1. When possible, you are the only person who should push the PCA button. **Your family or caregiver may press the PCA button if you become physically unable to do so.**
2. Do not eat or drink if you feel very sleepy or drowsy. Do not allow visitors to feed you while you are feeling sleepy or drowsy. Wait until you are more awake.
3. If you feel dizzy or weak, ask for assistance before attempting to walk or get out of bed.

Advanced Clinical Education with Simulation (ACES) Scenario

Post-Op Patient PCA Worksheet

You are working on the Women's Unit today (3 East), and one of your patients, Mrs. Lala Land, is a 72 year old female who had a bladder suspension done along with a total vaginal hysterectomy. PACU is on the phone with report as you get back from your lunch break. They report that the surgery went well, she is awake, alert and oriented x 3, moves all extremities equally, pupils are equally reactive to light; heart is regular and in a normal sinus rhythm; lungs are clear and patient is on a non-rebreather mask at 15 L/min with O_2 sats 100%; foley draining clear, yellow urine and they emptied 750 ml of urine during total operative and post-operative time. She has complained of pain to the abdomen and vaginal area and received a total of 8 mg of Morphine in the OR and PACU stay. She is not nauseated at this time. Current vital signs are. . .

Temp-36.5
RR-18
HR-82
BP-124/75
O_2 sats-100% on 15L NRBM

After Mrs. Lala Land arrives to the floor, you go to tuck her into her room and do your initial assessment. She is complaining of pain, so after completing your assessment, which is within normal limits, you get the PCA machine and set it up for her using the standing Post-op orders for Morphine. You administer a 2 mg loading dose and set it up so she receives 1 mg bolus every 10 minutes with a 4 hour lockout limit of 20 mg. The daughter is a nurse and tells the patient she will help her push the button.

Please show the instructor how you would set the PCA with these settings and verbalize /document how you know it is correct.

Please document where the key is found:

Educate the patient and family on use of the PCA (to your instructor). Write two main teaching points you want to stress to this patient and family:

YAKIMA VALLEY MEMORIAL
AWARD WINNING HOSPITAL

Medication

Guidelines for Ordering and Administration of Medications

PURPOSE:

The purpose of this policy is to promote safe and effective medication therapy at YVMH through definition of required elements of a complete, and accurate pharmacy order for medications.

PROCEDURE:

1. **General medication orders:**
   A. All orders for medications will be written on the Prescriber's Order Sheet or an approved order form and be placed in the patient chart. Complete medication orders will include:
      - Drug name
      - Drug strength
      - Frequency of administration
      - Route of administration
      - An indication for use must be included in an order for a PRN medication
      - Date, time, name of prescriber

   B. There shall be an indicator for each ordered medication documented within the patient's medical record
   C. Medication orders are invalid if they contain abbreviations, acronyms, dose designations, and chemical symbols included on the hospital's list of dangerous and unacceptable terminology. The hospital policy regarding dangerous and unacceptable terminology is available on the hospital intranet. Also included is the list of approved medical abbreviations.
   D. Use of the generic name of a medication is preferred over use of the brand or trade name.
   E. The metric system of measurement shall be used in all orders
   F. A pharmacist or nurse will clarify medication orders that are incomplete, illegible, unclear, or invalid with the prescriber before medication is dispensed or administered.

2. **Medication orders for cytotoxic agents:**
   Refer to "Cytotoxic Agent" policy

3. **Verbal orders for medications:**
   A. Verbal orders for medications may be accepted only by personnel designated in the Medical Staff Bylaws. Verbal, telephone, and standing (routine) orders shall be noted as such by the non-physician writing them. Such orders will include the prescriber's name and the recording non-physician's signature.
   B. Obtaining Physician Orders:
      - Verbal orders is not accepted unless given during a procedure or an emergent situation. Verbal orders shall include a 3-way repeat back.
      - Telephone orders are to be written exactly as given. The 3-step process will be followed. Staff will listen to the telephone order, write the order exactly as given, read back the order, and confirm the accuracy of the order.

- Upon completion of reviewing orders the RN shall date, time and sign off each set of orders.

4. **Orders for DEA Schedule II medications:**
   Orders for DEA Schedule II drugs shall be written and signed by an approved prescriber except in an emergency situation. Pharmacy will ensure the prescriber has a DEA license to prescribe each class of controlled substance.
5. **Hold orders:**
   When an order to "hold a medication" is received, the order must be scanned to pharmacy. The medication order will be discontinued unless a clearly defined interval is specified (i.e. hold one dose). A new medication order must be received in order to restart the medication.
6. **Blanket reinstatement order:**
   Blanket reinstatement orders (ie. resume home medications) are incomplete and must be clarified with an order specifying each individual medication, dose, route, and frequency.

7. **Automatic Stop Orders:**
   No medication orders will be discontinued unless specifically ordered. Stop date and time will be entered based upon the order.
8. **Standing orders:**
   The use of standing orders is discouraged. The following standing orders are utilized throughout the hospital and do not require physician signature prior to dispensing and administration of medications.
   A. Normal Newborn Admission Orders
   B. Standing Admit Orders for Telemetry and ICU Patients
   C. The Adult Vaccination Standing Orders
   D. Admission Labor and Delivery Orders
9. **Post-operative medication orders:**
   All medication orders will be discontinued when patients go to surgery. New medication orders must be written by the prescriber before medications will be dispensed and administered post-operatively. Medications will not be discontinued from the pharmacy computer system or removed from the patient medication drawer until post-operative orders are written. However, no doses will be administered until a new order is received.
10. **ICU patient transfers:**
    When the physician providers change, all medications will be reconciled with the new physician provider.
11. **Titrating and Taper Medication Orders**
    Medication may be titrated up or tapered down.based on physician order or based upon the pharmokinetic/pharmocodynic properties of each medication and individual patient response to therapy.
12. **Routine medication should be administered within sixty (60) minutes of the designated time.**
13. **Medications are given in accordance with the established standard administration times unless otherwise designated by the doctor or needs of the patient.**
14. **The physician order must be "verified" by an RN before the medication is given. See "Verifying Orders" section of this policy.**
15. **Medication containers will be checked for correct drug, dosage, and expiration date. All drugs will be checked for expiration dates prior to administration. Drugs will also be checked for stability based on visualization for particulates or discoloration.**

16. A check of the "7 Rights" will occur when the barcode on the medication is scanned just prior to administration. Administration of medications shall follow the seven "R's":

1) Right patient
2) Right medication
3) Right dose
4) Right time
5) Right route
6) Right doumentation
7) Patient's right to refuse

17. Administration Tips:

A. The nurse preparing and pouring medications is responsible for the direct administration of those meds.
B. Pediatric calculated dosages are checked for accuracy by 2 RNs before the order is verified in MAK. This double check will be documented as an "Intervention" in MAK.
C. Chemotherapeutic drug dosages are checked by 2 RNs or an RN and a Pharmacist against the original order and the MAR before administration to a patient.
D. Coumadin must be reordered daily until the patient is stabilized.
E. All calculated doses of Insulin and anticoagulants will be double checked independently by 2 licensed personnel (RN, LPN, Pharmacist). An independent check includes the following:
   - Each licensed personnel independently looks at the lab results or Chem BG and the appropriate sliding scale to determine appropriate dosing.
   - Each licensed personnel looks at the dose and type of medication to check for accuracy.
   - For insulin and chemotherapy both licensed personnel sign off on the medication in MAK by scanning their badges. In non-MAK units two licensed personnel will sign off on the medication.
F. Weight/Body Surface Area (BSA) based dosing shall be used for all cancer chemotherapy patients.
G. Pediatric Dosing: Weight or Body Surface Area (BSA) based dosing shall be used for all pediatric patients (age 12 or under). All pediatric weights will be in kg.
   - Indicate the patient's weight on all orders for pediatric medications so that the pharmacy can confirm that the dose to be administered is within published dosing guidelines.
   - A space is provided on the Physician order form to record the weight and signature of person writing the weight. The unit secretary or nurse may communicate a current weight on the pharmacy copy of the order before sending it to the pharmacy.
   - ***Pharmacy will not fill medication orders for children without a current weight.***
   - Example of appropriate medication orders for children is:
     ⇒ Ampicillin 300mg IV every 6 hours, weight 5.7kg
H. Before administrating medication to a patient "ID Patient" in MAK by scanning the barcode on the ID Bracelet check/scan name band and ask patient to state their name. The nurse will use at least two (2) different patient identifiers.
I. Medications are NEVER left at the bedside for patients unless so ordered by the physician.
J. An apical pulse rate is taken before the administration of certain cardiac medications (i.e. Digitalis, Metoprolol, etc.) and recorded on the MAR or MAK.
K. On rare occasion, a patient's own medications may be administered when ordered by the physician. See"Meds From Home Policy".
L. Pain medications need to have a pain score documented before administering medication and pain must be reassessed and a pain score documented after administering medication according to the pain assessment algorithm.
M. Pain medications need to have a pain score documented pre and post medication.
N. Any questions or concerns regarding the appropriateness of a medication order will be clarified with the prescriber or covering physician before administering the medication.

18. Education

Spring 2010

A. The patient and, if appropriate, the patient's family will be advised about potential clinically significant adverse reactions or other concerns about the administration of a new medication. Clinicians can access information for patients and families from the "Net Access Browser." The Clinician can also access information from the MAK program using the "DRUG INFO" tab from the ORDER DETAIL window. This can be accessed from the Active Work list and the Med Summary folders. This information can also be accessed from the MAK Navigator; Click on "Rx Drug Inquiry", type in the name of the medication in the Drug Window, then click on "FDB Monograph" tab. All three sites can be used for Spanish instructions by clicking on "Spanish Monograph." (Drug Info button in MAK) The information can be printed out to be given to patient and/or family.

B. Clinical staff will monitor the effect of medication on a patient. Monitoring will include physical assessment, lab values and the patient's perceptions about efficacy and side effects. Particular attention will be paid when the first dose of a new medication is started using pertinent drug information.

C. Medication therapy monitoring shall include a review of the patient's medication regiment for:
   - Effectiveness of medication therapy
   - Allergies and adverse effects
   - Toxicity
   - Potential interactions and contraindications
   - Duplicate therapy (e.g., anti-infectives)
   - Interference and incompatibilities
   - Unnecessary medications
   - Appropriate choice of medication

D. In the event that a negative or unexpected reaction to a medication occurs, an adverse drug reaction report will be initiated.

19. Scanning a physician order:

The following procedures must be followed when transcribing medication orders for patients.

A. Make sure the order has been clearly labeled with the patient's name and ID number. Insert the order sheet into the scanner as indicated on the machine and touch the (SCAN) button. The form must go through the scanner correctly with no wrinkles or folds that could distort the image.

B. Once scanned, the order will be marked, just below the last order in red ink, with the word "**SCANNED**", noting the date, time and initials of the employee who scanned the form. Write the word "**SCANNED**" after each new order to differentiate from previously scanned orders. This ensures that all new orders were sent to pharmacy.

C. If an order has not been marked, it should be treated as an unscanned order, and pharmacy should be contacted to verify if the order was ever received. This is the responsibility of all staff members in positions to scan orders, such as RN's, LPN's and unit secretaries.

D. If the scanner goes down follow the trouble shooting steps listed with each scanner.

E. Once all admit medication orders are entered by pharmacy, the RN will view the eMAR in MAK and compare the physician order to the medications. The RN will verify that each order is correct by clicking on the "verify" tab on the screen. Administration times will be standard throughout the house except when Nursing and Pharmacy agree on non-standard times, i.e., now and routine doses. The generic and brand name will both print on the eMAR.

F. The eMAR will include pharmacy orders for:
   - Routine and PRN medications for all routes of administration.
   - Intermittent small volume parenteral (syringes and piggybacks).
   - Chemotherapy
   - Admixed/Premixed large volume IV (Heparin, theophylline, lidocaine, etc.)

- All IV's
- Respiratory Therapy treatments

G. All new orders must be verified against the original order by an R.N. and verified in MAK.

H. If a discrepancy is found on the eMAR, the original order should be verified in the chart. The discrepant order should be corrected prior to administering the medication. If the discrepancy is on the original order the order should be rewritten and scanned to Pharmacy. If the original order is correct but the eMAR is incorrect, open an "Intervention" in MAK. The pharmacist will then correct the order on the eMAR.

I. Pharmacy can also send scanned orders back to the nursing units for clarification by typing a short memo and hitting the "return form" button.

20. STAT Orders

A. Place a hot pink "STAT ORDER" sticker on the LEFT side in the UPPERMOST corner on the order that has been ordered STAT.

B. Fill in the STAT box on the Physician's Order sheet in the RIGHT hand corner of the page COMPLETELY with a felt tip marker (i.e. Sharpie).

21. All Orders (STAT and Regular)

A. Make sure the order has been clearly labeled with the patient's name and ID number. Insert the order sheet into the scanner as indicated on the machine and touch the "SCAN" button. The form must go through the scanner correctly with no wrinkles or folds that could distort the image.

B. Once scanned, the order will be stamped in red ink with the word "SCANNED" just below the last order, noting the date, time, and initials of the employee who scanned the form. This ensures that all new orders were scanned down to pharmacy.

C. If an order has not been marked, it should be treated as an unscanned order, and pharmacy should be contacted to verify if the order was received. It is the responsibility of all staff members in positions to scan ordes (i.e. RN's, LPN's, and unit secretaries).

D. If the scanner goes down follow the trouble shooting steps listed with each scanner.

22. Verifying Orders

Once all admit medication orders are entered by pharmacy, the RN will view the eMAR in MAK and compare the physician order to the medications. The RN will verify that each order is correct by clicking on the "verify" tab on the screen.

A. Check the original physician order against the eMAR for accuracy. Be sure the order is complete.

B. Questions or clarifications can be sent to pharmacy (or from pharmacy to nursing) by opening an "intervention" in MAK (see section on "Intervention" in MAK Training Manual).

C. When a medication is ordered for a defined time period, the start and stop date should be verified.

D. Administration times will be standard throughout the house except when Nursing and Pharmacy agree on non-standard times (i.e. NOW and routine doses).

E. The generic and brand name will both print on the eMAR.

23. Responding to Error Messages

If the Document Station returns a printed notice that contains a copy of the order and the following error message occurs "Scan from (nursing unit) failed to be processed by pharmacy", follow the Trouble Shooting guide.

24. Discontinuing Medications:

A. Scan the Physician’s Order Sheet to Pharmacy. This order will be received by the Pharmacist. The order will be D/C’d in the computer by pharmacy.

A. Discontinue orders will show up in yellow on the eMAR. An RN will "verify" these orders by clicking the "verify" tab in MAK.
B. Pharmacy will discontinue the following meds:
   - Medications not reordered post op, post delivery, or post CCU
   - Any discontinued medications (including IV solutions or medications) will be removed from the patient's room immediately, and either discarded or returned to Pharmacy.
D. Nursing will place all discontinued meds in a zip-lock bag with the patient's label and return to pharmacy.
E. If the patient is diagnosed with an active drug resistant infection (i.e. MRSA or VRE), medications must be thrown away or returned to the pharmacy.

25. Transferring Patient:

A. Transferring from one unit to another
   - When a Unit Secretary processes a transferring order, she/he will place a patient label on clear plastic and secure to the MD order sheet.
   - The RN will use the envelope to retrieve all medication from the patient's bin and send with patient. The RN may delegate this task to an LPN, NTII, NAC, or Unit Secretary.
B. Transferring patient within the unit:
   - The RN will ensure the patient's medication bin is transferred with the patient to his/ her new room.

26. Discharging Patient:

A. When the patient has been discharged from the Unit, remove the medications from the patient's medication bin/drawer. Place the eMAR on the chart to be retained in the chart for permanent legal record. Return unused medications to the Pharmacy in a plastic bag along with the label from the medication bin.
B. A final paper summary of the patient's eMAR will automatically print in Medical Records upon discharge.

27. Placing the 24 hour eMAR in the patient chart:

A. 2300 to 0700 RN
   - Night shift RN's should look back 24 hours at med orders and double check the eMAR for accuracy.
   - eMARs will print each day at about 0200 on each nursing unit printer. These will be placed in the "Medication" section of the chart.

28. Administering and charting of medications:

A. Passing and charting medications
   - The nurse responsible for passing meds to the patient shall read through each eMAR completely at the beginning of each shift. The nurse is then aware of all medications the patient may require during that shift, scheduled or PRN.
   - Medications must be locked at any time the nurse is not actually dispensing them.
   - Obtain the medication from the patient’s drawer, cupboard, or Accudose.
   - Give medication directly from Unit Dose package whenever possible. Open Unit Dose package at bedside whenever possible. REMAIN WITH THE PATIENT UNTIL THE MEDICATION HAS BEEN TAKEN, unless otherwise ordered.
   - Chart the medication on the eMAR before administering the medication! Charting must take place at the bedside so that the RN can view both the patient and the computer screen to observe for warnings and alerts. Scanning the Administrating Nurse's name badge prior to giving the medication(s) (Accesses MAK) will identify in the eMAR who has administered the medication.

- Chart all PRN medications on the eMAR, follow with brief statement in the progress notes. PRN's may be summarized at the end of the shift. When charting PRN medications with a dose range, the exact dose given must be documented on the eMAR; i.e., I or ii tabs. A red star will appear when a follow-up intervention is required on the Active Worklist. You have ONE HOUR to chart your follow up pain assessment.
- The time a medication should be given but was omitted, shall be charted in the Active Work list as Non Admin and a reason for the omission noted.
- For injections, indicate the site in MAK.
- Patients will be monitored for effectiveness and untoward effects after the first dose of any new medication. Any untoward effects will be reported as adverse drug reactions (see Adverse Drug Reaction policy).

Key Words:

Medication
Medication Administration
Administration
Administration of Medications
Insulin

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Drugs Requiring a Filter for Administration

Drugs Generic (Brand)	**Class**	**Filter Size**	**Additional Comments**
Abatacept (*Orencia*)	Immunomodulator	0.2 to 1.2 micron	Use infusion set and a sterile non-pyrogenic, low-protein binding filter.
Abciximab (*ReoPro*)	Glycoprotein IIb/IIIa inhibitor	0.2 or 0.22 micron inline filter	**Continuous infusion:** Filter either upon admixture OR Upon administration (using an inline, sterile, non-pyrogenic, low-protein binding filter)
Agalsidase beta (*Fabrazyme*)	Enzyme	0.2 micron inline filter	Diluted solution should be filtered through an inline, non-pyrogenic, low-protein binding filter.
Alglucosidase alpha (*Myozyme*)	Enzyme	0.2 micron inline filter	
Alpha-1 proteinase inhibitor (*Zemaira*)	Respiratory enzyme	5 micron filter (not provided by manufacturer)	Administer with an infusion set.
Amiodarone (*Cordarone*)	Antiarrhythmic	0.2 micron inline filter (per manufacturer)	(Another source suggests 0.22 micron cellulose ester membrane filter.)
Amphotericin B desoxycholate (*Amphocin, Fungizone*)	Antifungal	1 micron or larger mean pore diameter (inline membrane filter)	Filter may be used, but not required.
Antihemophilic factor (*Kogenate*)	Antihemophilic	Not specified	Use infusion set with filter provided by manufacturer.
Antithymocyte globulin (*Thymoglobulin*)	Immune globulin	0.22 micron inline filter	
Asparaginase (*Elspar*)	Antineoplastic	5 micron	
Botulism immune globulin IV (*BabyBIG*)	Immune globulin	18 micron	Use inline or syringe tip sterile, disposable filter.
Cetuximab (*Erbitux*)	Monoclonal antibody	0.22 micron inline filter	Low-protein binding filter.
Cytomegalovirus immune globulin IV, human (*CytoGam*)	Immune globulin	15 micron inline filter	A 0.2 micron filter is also acceptable.
Digoxin immune Fab (*Digibind*)	Detoxification	0.22 micron membrane filter	
Epoprostenol	Vasodilator	0.22 micron	An inline filter was used during

sodium (*Flolan*)			clinical trials.
Ferumoxides (*Feridex IV*)	Diagnostic	5 micron filter	
Galsulfase (*Naglazyme*)	Enzyme	0.2 micron inline filter	Administer with a polyvinyl chloride (PVC) infusion set equipped with an inline, low-protein binding filter.
Gemtuzumab ozogamicin (*Mylotarg*)	Monoclonal antibody	1.2 micron terminal filter	Administer through a separate line equipped with low-protein binding 0.2 to 1.2 micron terminal filter.
Idursulfate (*Elaprase*)	Enzyme	0.2 micron	Filter to be used with an infusion set.
Imiglucerase (*Cerezyme*)	Enzyme	0.2 micron inline	Diluted solution may be filtered through an inline, low-protein binding filter.
Immune globulin IV (*Gammagard*)	Immune globulin	Not specified	Use of inline filter is optional.
Immune globulin IV (*Flebogamma*)	Immune globulin	15 to 20 micron inline filters	Filter is recommended for the infusion. Antibacterial filters (0.2 micron) may also be used, but may slow infusions.
In-111 ibritumomab tiuxetan and Y-90 ibritumomab tiuxetan (*Zevalin*)	Radioimmunotherapeutic monoclonal antibody	0.22 micron inline filter	Inline, low-protein binding filter.
Infliximab (*Remicade*)	Monoclonal antibody	1.2 micron or smaller inline filter	Use infusion set with sterile, non-pyrogenic, low-protein binding filter.
Inulin	Diagnostic	Not specified	Administer through filter.
Itraconazole (*Sporanox*)	Antifungal	Not specified	Use infusion set with filter provided by the manufacturer.
Lansoprazole (*Prevacid IV*)	Proton pump inhibitor	1.2 micron inline filter	Administer with inline filter provided.
Laronidase (*Aldurazyme*)	Enzyme	0.2 micron	Use PVC infusion set equipped with an inline, low-protein-binding filter.
Lymphocyte immune globulin, antithymocyte globulin (*Atgam*)	Immune globulin	0.2 to 1 micron inline filter	
Mannitol	Osmotic diuretic	5 micron inline filter	Filtration necessary if drug concentration ≥20%.
Methacholine (*Provocholine*)	Diagnostic	0.22 micron	A sterile, bacterial-retentive filter should be used when transferring a solution from each vial (at least 2 mL) to a nebulizer; initial use only.
Paclitaxel (*Taxol, Onxol*)	Antineoplastic	≤0.22 micron inline filter	Not recommended for albumin-bound paclitaxel (Abraxane).
Panitumumab	Monoclonal	0.2 or 0.22	Via infusion pump using a low-protein

(*Vectibix*)	antibody	micron inline filter	binding inline filter.
Parenteral nutrient solutions without lipids		0.22	
Parenteral nutrients solutions with lipids		1.2	
Phenytoin sodium	Anticonvulsant	0.22	
Respiratory syncytial virus immune globulin, IV (RSV-IVIG) (*RespiGam*)	Immune globulin	> 15 micron	Filtration is not necessary, but inline filter may be used.
Tositumomab and iodine I-tositumomab (*Bexxar*)	Radioimmunotherapeutic monoclonal antibody	0.22 micron inline filter.	The same filter set must be used for the entire dosimetric or therapeutic step; a change in filter can result in loss of drug.
Vaccinia immune globulin IV (VIGIV)	Immune globulin	0.22 micron inline filter	Administer via IV catheter with an administration set.
Verteporfin (*Visudyne*)	Ophthalmic phototherapy agent	1.2 micron inline filter	Administer using a syringe pump and inline filter.

References:

1) Wolters Kluwer Health/Facts and Comparisons. Drugs to be used with a filter for preparation and/or administration. *Hospital Pharmacy* 2007;42(4):378-382.
2) Clinical Pharmacology Online. Accessed on 6-7 Nov 2007.
3) Micromedex Online. Accessed 6-7 Nov 2007.
4) Prescribing Information/Package Inserts Online Accessed 6-7 Nov 2007.

Medication Management
Medication
High Risk/High Alert Medications

YAKIMA VALLEY MEMORIAL
AWARD WINNING HOSPITAL

PURPOSE:

To identify potential high risk medications at Yakima Valley Memorial Hospital (YVMH) and to outline steps to prevent errors that may result from confusion of these medications.

SUPPORTIVE DATA:

Confusion of medications may result in potential errors that can lead to patient harm or death. The Joint Commission has established a National Patient Safety goal to improve the safety of using medications

CIRCUMSTANCES INCREASING RISK ERRORS IN HIGH RISK MEDICATIONS:

1. Poorly written medication orders
2. Verbal directions/orders
3. Similar product packaging
4. Similar medication name
5. Improper packaging leading to improper route of administration:
   i. oral liquid in IV syringe
   ii. topical products stored in IV vials.
6. Storage of products with similar names in the same location
7. Similar abbreviations
8. Improper storage of concentrated electrolytes

STRATEGIES TO AVOID ERRORS INVOLVING HIGH RISK MEDICATIONS:

1. **Medication arrangement**
   a. Avoid storing look-alike, sound-alike drugs next to each other (i.e.; instead of storing by generic name (e.g. vincristine and vinblastine) store drugs by brand name (e.g. Oncovin and Velban). **SEE Sound Alike/Look Alike (SALAD) POLICY.**
   b. Limit high risk drug storage in Accudose

2. **Bar Coding**
   a. Serves as a double check system during medication selection, preparation, and prior to administration.
   b. Scanning a bar coded medication just prior to administration can detect many types of medication errors before they occur.

3. **Alert Notes**
   a. Tall man lettering is utilized in MAK, Siemans Pharmacy, Accudose, and medication labels

4. **Special Training**
   a. Nurses administering high-risk medications must have knowledge of intravenous therapy administration of such hazardous drugs and biologicals, and been determined procedurally competent. **NOTE: before administering chemotherapeutic agents, the nurse should meet the minimum qualification criteria per Oncology Nursing Society guidelines.**

TARGET HIGH RISK MEDICATIONS AT YVMH :

The following high risk medications have been identified by a literature review of high risk medications and an internal review of medication errors.

HIGH RISK DRUG NAMES	POTENTIAL ERROR AND CONSEQUENCES	SAFETY STRATEGIES
Highly Concentrated Electrolytes: Potassium and Magnesium	Potentially lethal	1. Eliminated from floor stock 2. Mixed in and dispensed from pharmacy
Chemotherapy/ Cytotoxic Agents	Potentially lethal	1. Eliminated from floor stock 2. Segregated storage in pharmacy 3. No verbal orders taken from physicians for original chemo orders, see cytotoxic order policy 4. Not pneumatically tubed 5. Used two pharmacists check orders for accuracy 6. Certification for nurses administering cytotoxic drugs 7. Lab values checked prior to administration 8. Admixture double-checked by two nurses prior to administration)
Insulin and Heparin	Potentially lethal	1. Standard concentration for insulin drips 2. Standard premixed Heparin drips 3. Insulin pens double-checked by two nurses
Narcotics	Potentially lethal	1. Medications are controlled in Acudose cabinets 2. Nurses reassess patients and do a pain score after each dose
Sedatives	Potentially lethal	1. Medications are controlled in Acudose cabinets 2. Nurses reassess patients fall risk when initiating a new medication

REFERENCES:

University of Kentucky Hospital Chandler Medical Center - Policy Number PH-04-17, 09/06

The Joint Commission - CAMH Medication Management Chapter MM.7.10

KEY WORDS:

chemo, cytoxic, chemo orders, chemotherapy

Effective Date:	09/23/2008
Prepared by:	

Novo Nordisk Pharmaceuticals Inc.
The worldwide leader in diabetes care

Novo Nordisk Diabetes Care
SERVICE PROGRAMS THAT EDUCATE AND SUPPORT

HYPERGLYCEMIA
(High Blood Sugar)

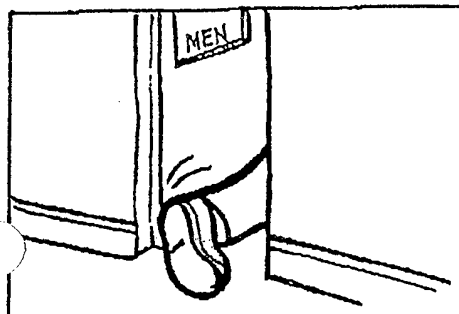
CAUSES: Too much food, too little insulin, illness or stress.

ONSET: Gradual, may progress to diabetic coma.

BLOOD SUGAR: Above 200 mg/dL.
Acceptable range: 115-200 mg/dL.

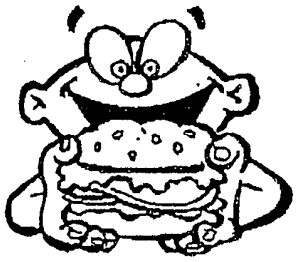
SYMPTOMS

EXTREME THIRST

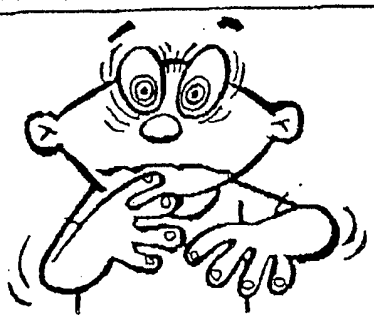


FREQUENT URINATION

DRY SKIN



HUNGER

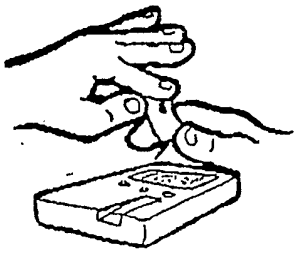


BLURRED VISION

DROWSINESS

NAUSEA

WHAT CAN YOU DO?



TEST BLOOD SUGAR

If over 250 mg/dL for several tests
CALL YOUR DOCTOR

Novo Diabetes Care
SERVICE PROGRAMS THAT EDUCATE AND SUPPORT

Novo Nordisk Pharmaceuticals Inc.
The worldwide leader in diabetes care

HYPOGLYCEMIA
(Low Blood Sugar)

CAUSES: Too little food, too much insulin or diabetes medicine, or extra exercise.

ONSET: Sudden, may progress to insulin shock.

BLOOD SUGAR: Below 70 mg/dL.
Normal range: 70-115 mg/dL.

SYMPTOMS


SHAKING


FAST HEARTBEAT


SWEATING


ANXIOUS


DIZZINESS


HUNGER


IMPAIRED VISION

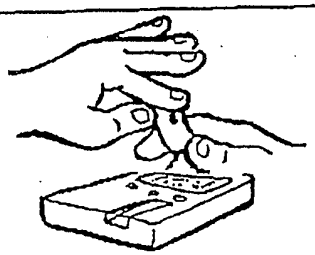

WEAKNESS, FATIGUE

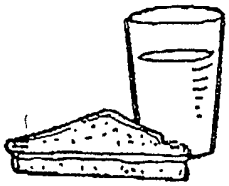

HEADACHE


IRRITABLE

WHAT CAN YOU DO?

Drink a cup of orange juice or milk, or eat several hard candles.


TEST BLOOD SUGAR
If symptoms don't stop, call your doctor.


Within 30 minutes after symptoms go away, eat a snack of a peanut butter or meat sandwich and a glass of milk.

U.S. Food and Drug Administration
FDA Consumer magazine
January-February 2002
Table of Contents

Insulin Preparations

Since 1982, most of the newly approved insulin preparations have been produced by inserting portions of DNA ("recombinant DNA") into special lab-cultivated bacteria or yeast. This process allows the bacteria or yeast cells to produce complete human insulin. Recombinant human insulin has, for the most part, replaced animal-derived insulin, such as pork and beef insulin. More recently, insulin products called "insulin analogs" have been produced so that the structure differs slightly from human insulin (by one or two amino acids) to change onset and peak of action. The following table lists some of the more common insulin preparations available today. Onset, peak, and duration of action are approximate for each insulin product, as there may be variability depending on each individual, the injection site, and the individual's exercise program.

Type of Insulin	Examples	Onset of Action	Peak of Action	Duration of Action
Rapid-acting	Humalog (lispro) Eli Lilly	15 minutes	30-90 minutes	3-5 hours
	NovoLog (aspart) Novo Nordisk	15 minutes	40-50 minutes	3-5 hours
Short-acting (Regular)	Humulin R Eli Lilly Novolin R Novo Nordisk	30-60 minutes	50-120 minutes	5-8 hours
Intermediate-acting (NPH)	Humulin N Eli Lilly Novolin N Novo Nordisk	1-3 hours	8 hours	20 hours
	Humulin L Eli Lilly Novolin L Novo Nordisk	1-2.5 hours	7-15 hours	18-24 hours
Intermediate- and short-acting mixtures	Humulin 50/50 Humulin 70/30			

	Humalog Mix 75/25 Humalog Mix 50/50 Eli Lilly Novolin 70/30 Novolog Mix 70/30 Novo Nordisk	The onset, peak, and duration of action of these mixtures would reflect a composite of the intermediate and short- or rapid-acting components, with one peak of action.		
Long-acting	Ultralente Eli Lilly	4-8 hours	8-12 hours	36 hours
	Lantus (glargine) Aventis	1 hour	none	24 hours

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FDA/Office of Public Affairs
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STAT ☐
PEDS ☐

Hypoglycemia Treatment Protocol

Allergies _____

Purpose: To rapidly treat hypoglycemia and restore normoglycemia in patient who is symptomatic and has BG <80 mg/dl.

Equipment:
1. Sure Step Glucose Meter
2. Liquid or gel carbohydrate if **patient is able to swallow**
3. 50% glucose or 1mg of Glucagon **if patient is unable to swallow**

Procedure:

If patient is **able** to swallow:
1. Take BG.
2. Give 15 gms of carbohydrate as either a tube of glucose gel or ½ cup of juice, or ½ cup of non diet pop.
3. Wait 15 minutes.
4. Repeat steps 1 through 3 until BG above 80 mg/dl.
5. Give snack if next meal is more than 30 minutes away. Snack suggestions: 1oz. Cheese and 6 saltines, or ½ meat sandwich, or 1-cup milk and 2 graham crackers.
6. Notify MD for medication evaluation.

If patient is **unable** to swallow:
1. Take BG.
2. If patient has IV line established administer 25 mL of 50% glucose IV. If patient does not have IV line give 1mg Glucagon IM or SQ. Glucagon frequently causes nausea and vomiting. Position patient on their side to prevent aspiration.
3. Wait 15 minutes.
4. Repeat steps 1 through 3 until BG above 80 mg/dl.
5. Notify MD for medication evaluation.

To: Nurses, Caregivers, Unit Secretaries
From: Abby Von Ruden, PharmD on behalf of the Diabetes Collaborative Multi-disciplinary team
Date: May 18, 2009
Re: Changes in insulin order sets

Memo

The American Association of Clinical Endocrinologists and the American Diabetes Association issued a consensus statement on inpatient glycemic control in May 2009. In response to these new recommendations and glycemic targets, there are going to be changes to insulin order sets available at Yakima Valley Memorial Hospital. These changes will go into effect late May.

1) **New glycemic targets for non-critically ill patients**
   - Premeal blood glucose 100-140 mg/dl, all values < 180 mg/dl

2) **The "Adult Insulin Orders—Diabetes Treatment" (i.e. insulin sliding scale) set will no longer be available.**
   - This order set is primarily used for sliding scale insulin with no basal or mealtime insulin ordered. Sliding scale or corrective scale insulin alone is *not* recommended to treat hyperglycemia in the hospital. If it is not known if a patient has hyperglycemia, there is a new order set that is specifically for corrective scale only (see #3 below). If a patient has hyperglycemia, he/she should be started on basal-bolus subcutaneous insulin (see #4 below).
   - *Orders for low, standard, high dose, or HS scale insulin will no longer be accepted. If a physician writes orders to start one of these scales, this order must be clarified.* If a physician wants the patient to have a patient-specific scale, it must be written out completely in the orders.

3) **There is a new "Adult Insulin Orders—Corrective Scale Insulin" order set.**
   - This order set is for corrective scale insulin alone. It is specifically for when it is not known if patients will have hyperglycemia. It is appropriate for patients during the first 24 hours while monitoring for hyperglycemia. It may be appropriate throughout the hospital stay if the CBGs are not elevated or only rarely elevated.
   - There is an option to have a pharmacist automatically order basal-bolus insulin using the "Weight-Based Basal-Bolus Adult Insulin Orders" if CBGs are consistently elevated (>180 mg/dl) in the first 24 hours. The physician would be responsible for adjusting insulin doses thereafter.
   - **Tier 1, 2, and 3 scales all start giving correction insulin when CBG>180 mg/dl in accordance with the new glycemic targets.**
   - If the CBG is <80 mg/dl and the patient is symptomatic, use the "Hypoglycemia Treatment Protocol" (found on Zynx).
   - The abdomen is the preferred injection site for insulin. Remember that insulin should be given subcutaneously into the fat. Most people do not have enough fat in the backs of their arms to absorb insulin but most people have plenty of fat in their abdomens to properly absorb insulin. If the abdomen is not a viable option, other preferred sites would be the thighs, butt, or hips. For pregnant women, thighs or butt would be preferred injection sites.
   - This order set has an order to automatically amend the diet to a carbohydrate-controlled diet and an option to order a Hemoglobin A1c.

4) **There are a few changes to the "Weight-Based Basal-Bolus Adult Insulin Orders."**
   - Have you ever wondered what to do when a patient's CBG is "too low" to give a long-acting insulin like insulin glargine (Lantus®)? This is a common question. This order set has been revised to include guidelines and automatic dose reductions for when a patient's CBG at the time of insulin glargine administration is 81-100. If this happens, a nurse can write a one-time order to give 70% of previously ordered dose. For example, if a patient's CBG at 2100 is 95 and 20 units of insulin glargine is ordered, a nurse can write an order per protocol:

5/18/09 2130	Insulin glargine 14 units (20 units x 0.7) SC x 1 tonight for CBG 95 Per wt-based basal-bolus protocol/Ima Nurse, RN

   - If the CBG is <80 at the time insulin glargine is due, follow the "Hypoglycemia Treatment Protocol" and call the physician for further orders. If the CBG is >100, the full dose can be given as ordered.

For more information: Moghissi ES, Korytkowski MT, DiNardo M, et al. American Association of Clinical Endocrinologists and American Diabetes Association Consensus Statement on Inpatient Glycemic Control. *Endocrine Practice*. 2009;15:1-15.

Thank you.

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•

Allergies: _____ Page 1 of 3

Weight-Based Basal-Bolus Adult Insulin Orders
Best Practice Recommendations: Basal-Bolus SC Insulin for Medical/Surgical Patients

Blood glucose goals: pre-meal = 100-140 mg/dl, all values < 180 mg/dl **Allergies**_____

Note: This protocol is not intended for use in patients receiving TPN or tube feeds

1. Blood glucose (BG) Monitoring. Chart in MAK and dock glucometer immediately.
   - ❑ Before meal time and at bedtime and prn if eating
   - ❑ Every 6 hours and prn if NPO
   - ❑ Other: _____
2. ■ Hypoglycemia (HG) protocol
3. ■ Diet: Add carbohydrate-controlled diet to diet order (if diet has been ordered)
4. ❑ Obtain Hemoglobin A1c with next lab draw
5. ❑ Change IV fluids to _____
6. ■ Discontinue previous insulin orders and oral hypoglycemic medications
7. Determine total daily dose (TDD) insulin requirement.
   a. Recommendations for insulin naïve patients *(for patients on insulin at home, see 7b)*:
      - ❑ 0.3 units/kg: Recommended for age > 65, *or* no known history of DM, *or* renally impaired (CrCl<30)
      - ❑ 0.5 units/kg: Recommended for all others

      Total Daily Dose = (Insulin Dose Requirement in units/kg) x (Wt in kg) = _____units (maximum=100 units if insulin-naïve)
   b. For patients on insulin at home:

      Pre-hospital insulin dose _____ units/day

      Consider this pre-hospital insulin dose and glycemic control in the hospital when determining total daily dose of insulin

*abdomen is preferred injection site	❑ Patient is eating	❑ Patient is NPO
Basal (50% of Total Daily Dose)	_____ units *Insulin glargine** SC at 2100 daily or q24h at this time: _____	_____ units *Insulin glargine** SC at 2100 daily or q24h at this time: _____
	If CBG > 100: give full dose. CBG 81-100: Automatically dose reduce to 70% of current order (write order to obtain new insulin syringe from pharmacy) ex. Dose x 0.7 = adjusted dose CBG < or equal to 80 mg/dl: See HG protocol if pt is symptomatic, call MD for further orders	
Bolus (50% of Total Daily Dose)	**Divide to cover 3 meals** (*Pharmacy to enter as "half or full dose"*) Breakfast 33% = _____ units *insulin aspart* * SC Lunch 33% = _____ units *insulin aspart** SC Dinner 33% = _____ units *insulin aspart** SC • Administer up to 15 minutes before meal if eating well • Administer immediately after meal if unsure of intake • Administer half dose if patient has eaten about half of meal • Hold dose if patient has had little or no intake	**Hold routine mealtime insulin** Continue to give insulin glargine
Correction (Select Tier 1, 2, 3 below, otherwise will be entered as according to total daily dose of insulin)	**Give at mealtimes and at 2100 SC. Use *insulin aspart**.** • Administer Bolus and Correction insulin as a single dose • Insulin aspart* & insulin glargine* must be given in separate syringes ❑ **Do not give Correction insulin at 2100** **Justification:** _____	**Give every 6 hours SC. Use *regular insulin**.**

❑ Tier 1	❑ Tier 2	❑ Tier 3
Recommended for patients requiring <40 units insulin/day	Recommended for patients requiring 40-80 units insulin/day	Recommended for patients requiring >80 units insulin/day
See p. 2 of protocol for scale		

Call physician if BG>400 mg/dl. See hypoglycemia protocol if BG<80 mg/dl and symptomatic.
*Insulin glargine is long-acting. Regular insulin is short-acting. Insulin aspart is ultra-short-acting.

Physician's Signature: _____ Date/Time: _____

ADM:

ATN:

YAKIMA VALLEY MEMORIAL
AWARD WINNING AC HOSPITAL

Weight Based Basal Bolus Adult Insulin Orders
Revised: 6/9/2009 Form 1220

Adult Insulin Orders
Best Practice Recommendations: Basal-Bolus SC Insulin for Medical/Surgical Patients

Pre-meal BG (mg/dl)	Tier 1 Recommended for patients requiring <40 units insulin/day	Tier 2 Recommended for patients requiring 40-80 units insulin/day	Tier 3 Recommended for patients requiring >80 units insulin/day
<80	See HG protocol	See HG protocol	See HG protocol
80-99	-1 unit of scheduled insulin aspart	-1 unit of scheduled insulin aspart	-1 unit of scheduled insulin aspart
100-180	**0 units**	**0 units**	**0 units**
181-210	1 unit	2 units	3 units
211-250	2 units	3 units	5 units
251-290	3 units	5 units	7 units
291-340	4 units	7 units	10 units
341-400	5 units	9 units	13 units

American Diabetes Association Goals

For *non-critically ill medical and surgical patients*: pre-meal = 100-140 mg/dl, all values < 180 mg/dl

Carbohydrate-controlled diets

Each tray will have 60-75 gm of carbohydrates
Are appropriate for any patient with hyperglycemia
Allow orders for the same dose of insulin (initially) to be ordered for each meal

Discontinue oral hypoglycemics

Sulfonylureas (ex. glipizide, glimepiride, glyburide) if NPO, unpredictable po intake, procedures anticipated
Metformin if severely ill, SCr>1.4 for women or 1.5 for men, contrast dye anticipated
Glitazones (ex. rosiglitazone, pioglitazone) if heart failure, fluid overload

If patient has been on insulin prior to admission

Consider patient's previous control (Hemoglobin A1c will be helpful) and increase dose as needed for stress/infection, decrease dose as needed for decreased intake

Recommendations for basal-bolus SC regimens for medical or surgical patients

If the patient is…		
Eating	**Basal**	Glargine once daily
	Bolus	Aspart up to 15 minutes before meals
	Correction	Aspart up to 15 minutes before meals
NPO	**Basal**	Glargine (usual daily dose) once daily
	Bolus	N/A
	Correction	Regular insulin every 6 hours

Adapted from Clement S. Better glycemic control in the hospital: Beneficial and feasible. Cleveland Clin J of Med 2007;74: 111-120.

Anticipate changes

Status: severity of illness, surgery, stressors, ischemia, pre- and post-delivery
Change in kidney, liver, cardiac function: SCr, electrolytes, urine output, fluid status
Medications: changes in steroid dose, pressors, oral diabetic medications held or restarted
Nutrition: changing oral intake, change in rates of D5W, TPN, tube feeds

Evaluate BG values and adjust insulin doses daily—Goal Range = 100-180 mg/dl

BG pattern	Insulin dose adjustment options
AC and HS values are above goal range	1. Add up all correction doses and divide to increase basal (with 50% correction dose) and bolus insulin (50% of correction dose divided to cover 3 meals) 2. Increase both basal and bolus doses by ~10%
AM BG within goal range but lunch/dinner/HS BG are high	1. Increase bolus insulin dose by ~10%. Doses can be changed for each meal separately. 2. May need to decrease basal insulin dose by ~10%.
AM BG below goal range and lunch/dinner/HS BG are within goal range or too high	1. Decrease basal insulin dose. May need small increase in bolus insulin dose. 2. Check BG at 02:00
Chaotic, no clear pattern	1. Look for missed doses 2. Look for variable intake 3. Nonrotation of injection sites 4. Check factors above in "Anticipate changes"

Adult Insulin Orders
Corrective Scale Insulin

Allergies_____

Blood glucose goals: pre-meal = 100-140 mg/dl, all values < 180 mg/dl

1. Appropriate for first 24 hours while monitoring for hyperglycemia.
   - ❑ If CBGs are consistently elevated (>180 mg/dl) during the first 24 hr, pharmacist may complete Weight-based Basal-Bolus Adult Insulin Orders. Physician to adjust doses thereafter.
2. Use "Weight-based Basal-Bolus Adult Insulin Orders" for patients who are consistently hyperglycemic.
3. Blood glucose (BG) Monitoring. Chart in MAK and dock glucometer immediately.
   - ❑ Before meal time and at bedtime and prn if eating
   - ❑ Every 6 hours and prn if NPO
   - ❑ Other: _____
4. ■ Hypoglycemia (HG) protocol
5. ■ Diet: Add carbohydrate-controlled diet to diet order (if diet has been ordered)
6. ❑ Obtain Hemoglobin A1c with next lab draw
7. ❑ Change IV fluids to _____

*abdomen is preferred injection site	❑ Patient is eating	❑ Patient is NPO
Correction (Select Tier 1, 2, 3 below)	Give at mealtimes and at 2100 SC. Use *insulin aspart**. ❑ Do not give Correction insulin at 2100 Justification: _____	Give every 6 hr SC. Use *regular insulin**.

Pre-meal BG (mg/dl)	❑ Tier 1 Insulin sensitive, thin, elderly, renal insufficiency	❑ Tier 2 Average	❑ Tier 3 Insulin resistant, on steroids
<80	See HG protocol	See HG protocol	See HG protocol
80-180	**0 units**	**0 units**	**0 units**
181-210	1 unit	2 units	3 units
211-250	2 units	3 units	5 units
251-290	3 units	5 units	7 units
291-340	4 units	7 units	10 units
341-400	5 units	9 units	13 units

Call physician if BG>400 mg/dl. See hypoglycemia protocol if BG<80 mg/dl and symptomatic.
*Regular insulin is short-acting. Insulin aspart is ultra-short-acting.

Physician's Signature: _____ Date/Time: _____

Adult Insulin Orders
Corrective Scale Insulin
Version 1.0
Revised: May 2009

Patient Label

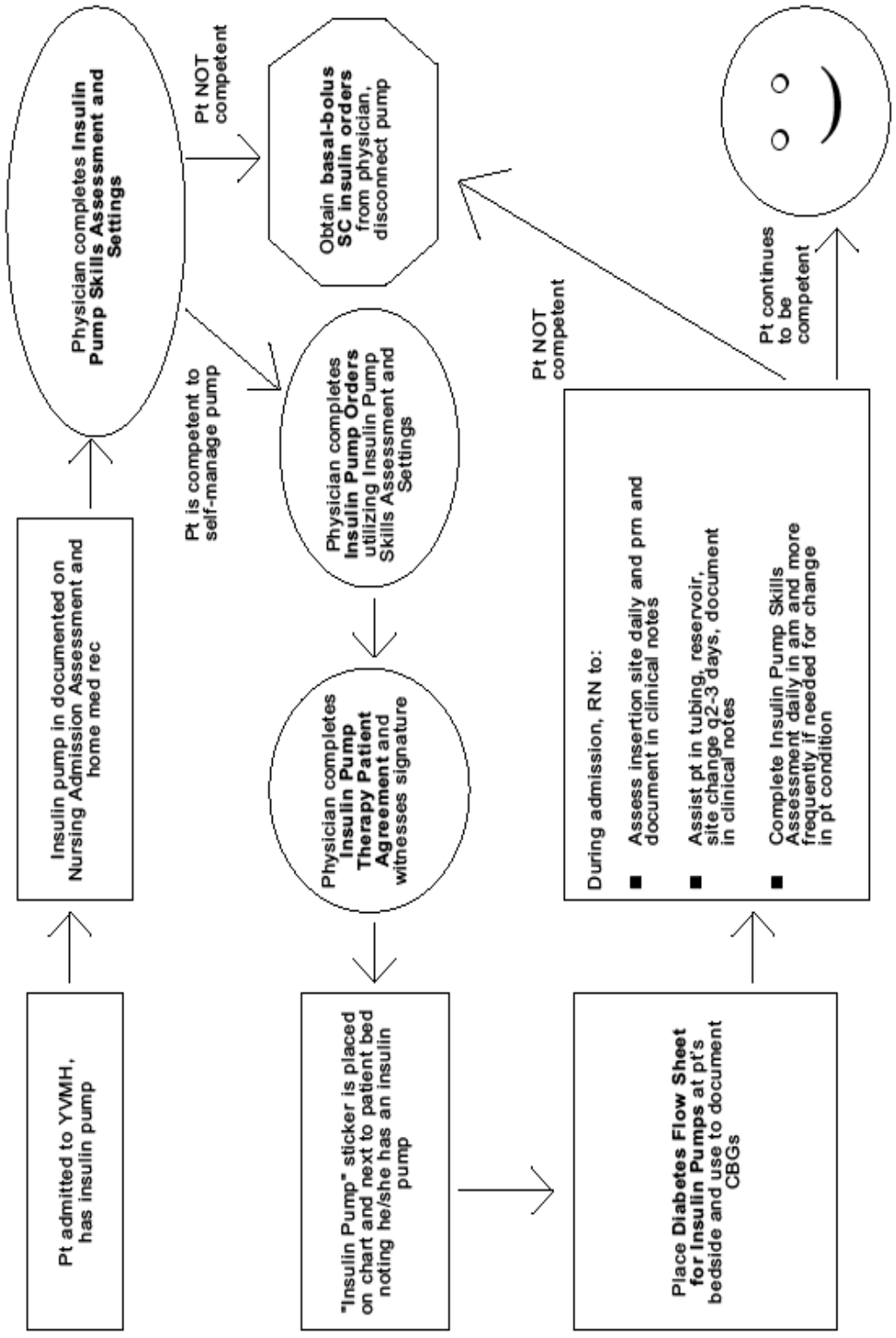
SureStep Flexx Blood Glucose Meter Competency Evaluation

Date _____ Name (PRINT LEGIBLY) _____ Unit _____ ID# _____

Performance Criteria	Competency		Comments
	Met	Not Met	
SureStep Flexx Meter Features			
Functions of the SureStep Flexx Meter			
Major system components (power button, test strip holder, LCD screen, bar code scanner)			
Precaution: avoid the laser light in the eyes			
Cleaning and disinfecting the meter (10% bleach)			
Battery change/ replacement			
Entering operator ID # (lockout feature)			
Location of supplies			
SureStep Flexx Test Strips			
Sample application (pink test square, confirmation dot)			
Storage temperature/conditions			
Verify lot number/control code of test strips			
Expiration date/opening date			
Quality Control			
SureStep Flexx glucose control solutions			
Expiration date/opening date			
Verify lot number of control solution			
Perform QC using High/Low control. 24hr QC lockout			
QC pass/fail prompts			
Documentation of QC fail notes			
Meter upload. Location of connection module.			
Patient Testing			
Types of blood samples (capillary, venous, arterial, neonate)			
Critical HIGH/LOW values			
HIGH message (>500 mg/dl)			
Accessing memory			
Hematocrit range of testing: not neo 25-60%, neo 25-65%			
Infection control procedures: wear gloves, disinfect meters			
Patient results: plasma converted results, consistent w/lab			
Documentation of patient error notes			
Miscellaneous Information			
Location of procedure and operator manuals			
Re-certification requirements			
Security of meters			
NICU: emergency names/pt ID			
Troubleshooting: quick ref. Booklet, lab, LifeScan 1-800-524-7226			

Evaluator Signature _____ Date: _____

Rev 7/1/02


Pt admitted to YVMH, has insulin pump
Insulin pump in documented on Nursing Admission Assessment and home med rec
Physician completes Insulin Pump Skills Assessment and Settings
Pt NOT competent
Obtain basal-bolus SC insulin orders from physician, disconnect pump
Pt is competent to self-manage pump
Physician completes Insulin Pump Orders utilizing Insulin Pump Skills Assessment and Settings
Physician completes Insulin Pump Therapy Patient Agreement and witnesses signature
"Insulin Pump" sticker is placed on chart and next to patient bed noting he/she has an insulin pump
Place Diabetes Flow Sheet for Insulin Pumps at pt's bedside and use to document CBGs
During admission, RN to:
Assess insertion site daily and prn and document in clinical notes
Assist pt in tubing, reservoir, site change q2-3 days, document in clinical notes
Complete Insulin Pump Skills Assessment daily in am and more frequently if needed for change in pt condition
Pt NOT competent
Pt continues to be competent

Insulin Pump Skills Assessment and Settings

Purpose: To determine patient competence to self-manage insulin pump while hospitalized

Assessment:

- Assess daily in am and more frequently as needed for change in patient condition.
- **If *any* response is circled in the *right column*, the patient is NOT competent to continue on their insulin pump while in the hospital.** Notify physician if patient is not competent to receive subcutaneous insulin orders using the basal-bolus insulin orders.
- If patient is not competent to self-manage (pediatric, developmentally disabled, etc) but a designated caregiver is available - 24 hours a day, complete with caregiver

	COMPETENT	NOT COMPETENT, do not continue
1. Altered mental status (consider narcotic use, anesthesia, conscious sedation procedures)	No	Yes
2. Any thoughts of harming self/suicide in last month?	No	Yes
3. Able to read all pump screens	Yes	No
4. Able to perform pincher/grasp with thumb and finger	Yes	No
5. Muscle strength adequate to perform pump tasks	Yes	No
6. Able to supply extra pump equipment/battery	Yes	No
7. Learning impairment	No	Yes
8. Developmental delay	No	Yes
9. Able to demonstrate pump features and functions	Yes	No
10. Pt has called help line # (located on back of pump) and is assured pump is functioning properly.	Yes	No
11. CBG's have all been within goal (100-180 mg/dL for medical surgical patients)	Yes	No-pump not effective

Pump Settings:

- **Only needs to be completed on Day 1**
- **Obtain information from the patient**

Pump Brand/model:_____ Emergency number: 1-800- _____

Infusion set:_____ Insulin Type: _____

Reservoir volume:_____ Date of most recent Infusion site change: _____

Target blood glucose level:_____

Basal

Rate	Start Time	Stop Time	Rate (units/hour)
1			
2			
3			
4			

Bolus

_____ unit(s) for every carbohydrate servings (1 carbohydrate serving = 15g of carbohydrate)

_____ unit(s) for _____ grams of carbohydrate

_____ unit(s) of insulin to lower blood glucose every_____ mg/dl above target

Blood glucose monitoring and frequency:_____

Frequency of insertion site change: ☐ 1 day ☐ 2 day ☐ 3 day ☐ Other _____

Site selection/rotation:_____

Physician managing Insulin Pump/Diabetes: _____

Use of own glucometer: Yes No

- Blood glucose must be within 10% or meter must be recalibrated. If result still not within 10%, use YVMH glucometer.
- Patient glucometer: _____ YVMH glucometer: _____

Physician Signature:_____

Date/Time: _____

Insulin Pump Skills
Assesement & Settings
Rev. 7-09 Form 1297

Page 1 of 1

YAKIMA VALLEY MEMORIAL
AWARD WINNING HOSPITAL

NM0087

Insulin Pump Therapy Patient Agreement

- Complete on Day 1 if patient is competent to self-manage insulin pump during hospitalization.
- If patient is not competent to self-manage but designated caregiver is able, that person should agree & sign.

After consulation with my physician, I have chosen to continue to use my insulin pump to help manage my diabetes during my hospital stay provided I am alert and fully oriented.

It is my responsibility to:

1. Change the infusion set every 48-72 hours or as needed for: skin irritation or two consecutive blood glucose readings greater than 240mg/dl.
2. Provide my own pump supplies and with in-expiration date insulin that has been stored properly.
3. Adjust basal rate per physician orders.
4. Program meal boluses and correction boluses as indicated.
5. Report symptoms of low blood glucose to nurse.
6. Report any mechanical dysfunction that cannot be corrected to the nurse.

The nurse will assist me to:

1. Test my blood sugar before each meal and bedtime, or _____ times per day per physician order.
2. Treat low blood glucose by providing snacks and or medications as needed.
3. Notify physician if two consecutive blood glucose readings are less than or equal to 70mg/dl. Treat with the hypoglycemia protocol.
4. Notify physician immediately if two consecutive blood glucose readings are greater than 240mg/dl.
5. Notify physician of mechanical dysfunction and need for alternative insulin delivery order.
6. Assess need for inpatient diabetic education or referral to outpatient program.

NOTICE REGARDING PATIENT RESPONSIBILITY FOR INSULIN PUMP

Patients who utilize insulin pumps outside the hospital sometimes prefer to wear the insulin pump, or otherwise have the pump in their possession, during times of hospitalization. Your physician may allow you to continue the pump if he/she feels that it will adequately regulate your diabetes while you are in the hospital.

However, please be advised that the hospital cannot take any responsibility to damage or theft of your personal property, including your insulin pump, while you are a patient within our institution. If the pump is damaged or stolen for any reason, the loss will be yours and will not be the responsibility of the hospital.

Your signature will indicate that you have been provided with this notice and understand its contents.

I realize that there may be instances when it is in my best interest that the nurse and physician may discontinue the pump to better manage my healthcare needs.

Patient/Designated Caregiver Signature: _____ Date/Time: _____

Witness Signature: _____ Date/Time: _____

●

Insulin Pump Orders

Allergies _____

1. Standard Pump Orders:

■ Complete "Insulin Pump Skills Assessment and Settings"
- ☐ Patient is competent, continue completing insuling pump orders.
- ☐ Patient is NOT competent, physician to complete basal-bolus insulin orders.

■ Have patient sign "Insulin Pump Therapy Patient Agreement"
■ Place sticker noting that patient has an insulin pump on chart and/or Kardex and above patient bed
■ Diabetes Education Consult
■ Hypoglycemia Protocol
■ Hyperglycemia Protocol

If *one* blood glucose reading is above 240mg/dl:
- ■ Bolus via pump _____ unit(s) correction factor as programmed into pump.
- ■ Recheck blood glucose in one hour

If a *second* blood glucose reading is above 240mg/dl:
- ■ Inject insulin aspart subcutaneous correction bolus by syringe (not through the pump) _____ unit(s)
  - ○ Write order to obtain insulin aspart pen from central pharmacy
- ■ Change pump infusion set and insulin reservoir.
  - ○ Write order to obtain insulin from central pharmacy
- ■ Drink 8 oz. liquid with no calories every 30 minutes. If pt is NPO, contact MD for IVF orders.
- ■ Test blood glucose every 2 hrs and continue corrective insulin until blood glucose reaches target
- ■ Check urine for ketones with each void until CBG<240. Call physician if ketones are present.
- ■ Call physician if blood glucose and urine ketones remain elevated (>4 hr) or if unable to drink

2. Blood Glucose Orders:

Target glucose: _____ mg/dl
- ☐ AC, every HS and PRN
- ☐ Every 6 hours and PRN if NPO
- ☐ Other, please specify _____

3. Insulin Type Orders in the Insulin Pump Reservoir:
- ☐ Lispro (Humalog)
- ☐ Aspart (Novolog)

4. Basal Rate Orders:

Basal Rate Start Time	Basal Rate End Time	Basal Rate Amount Per Hour

●

Insulin Pump Orders

Allergies _____

5. **Insulin to Carbohydrate Ratio for Meals:**

   _____unit per _____ grams of carbohydrates

6. **Sensitivity Factor/Correction Bolus Insulin Orders:**

   1 unit of insulin for each _____ mg/dl blood glucose greater than the target of _____ mg/dl

7. **Other Orders:**

   - Assess insertion site daily and PRN and document in progress notes
   - Document tubing, reservoir, and site change every 2-3 days and PRN
   - Prior to radiology procedure, disconnect pump. If procedure is >1hr, contact MD for subcutaneous insulin orders.
   - Prior to surgery, disconnect insulin pump and contact MD for subcutaneous insulin orders
   - Notify physician if _____
   - Nursing to perform "Insulin Pump Skills Assessment" as least daily in the am and more frequently as needed for changes in patient condition.

Physician's Signature:_____ Date/Time: _____

Physician's Contact Number:_____

Patient Record of Diabetes Flow Sheet for Insulin Pumps

- Place at patient's bedside
- When completed, place in patient's chart "graphics" section
- Please note: This form is completed by the patient

Date: ______________________________

Time	Blood glucose	Bolus insulin administered (units)	Carbohydrates eaten (gm)

Date: ______________________________

Time	Blood glucose	Bolus insulin administered (units)	Carbohydrates eaten (gm)

Date: ______________________________

Time	Blood glucose	Bolus insulin administered (units)	Carbohydrates eaten (gm)

Diabetes Flow Sheet for Insulin Pump
Rev. 7-08 Form 1391

Page 1 of 1

YAKIMA VALLEY MEMORIAL
AWARD WINNING HOSPITAL

ED0001

●

STAT ☐
PEDS ☐

Potassium Replacement Protocol: Unmonitored Beds

(Not to be used for patients less than 15 years of age or dialysis patients)

Guidelines for Implementation:

1. Obtain order from physician for protocol: ☐ until discontinued ☐ x 48 hours
2. Serum potassium (if unknown). Creatinine level (unless done within the past 24 hours).
   - If calculated GFR less than 20mL/min, contact physician for the renal function adjusted protocol
3. Evaluate urine output. Must be greater than 30 mL / hour for past two (2) hours prior to using this protocol. (Notify physician if urine output less than 30 mL/hour)
4. Obtain magnesium level if potassium level is less than 2.5. Contact physician for replacement orders if the magnesium level is less than 1.8.
5. Key Points:
   - **Never** give potassium via IV push. (Risk of bradycardia, ventricular fibrillation, cardiac arrest)
   - Potassium scleroses veins so oral / enteral route is always preferred. If patient is unable to take orally / enterally, preferred IV route is via a central line or PICC line.
   - All potassium-containing solutions will be prepared by pharmacy and be diluted with D5W or NS.
   - Potassium infusions must be administered using an IV pump.
   - Central / PICC: max. concentration = 20 mEq / 100 mL, (40 mEq/ 250 mL or 60 mEq/500 mL) max. rate of administration = 10 mEq / hour
     (Separate MD orders required for greater central line concentrations)
   - Peripheral / Midline: max. concentration = 10 mEq / 100 mL, max. rate of administration = 10 mEq / hour.

Potassium Level	PO / NG / OG *Preferred route*		Central / PICC Preferred IV route if unable to take po / ng / og	-IV-	Peripheral / Midline Least preferred route	Recheck Potassium level
4.0 - 5.5	-	-	-	-	-	NEXT AM
3.5 - 3.9	20 MEQ	OR	20 MEQ OVER 2 HOURS	OR	20 MEQ OVER 2 HOURS	NEXT AM
3 - 3.4	40 MEQ	OR	40 MEQ OVER 4 HOURS	OR	40 MEQ OVER 4 HOURS	4 HOURS AFTER DOSE
2.5 - 2.9	40 MEQ NOW THEN 20 MEQ ONE (1) HOUR LATER	OR	60 MEQ OVER 6 HOURS	OR	60 MEQ OVER 6 HOURS	2 HOURS AFTER DOSE
2.4 OR LESS	**CALL MD** AND GIVE 40 MEQ PO + CENTRAL: 20 MEQ OVER 2 HOURS OR PERIPH: 20 MEQ OVER 2 HOURS	OR	**CALL MD** AND GIVE 60 MEQ OVER 6 HOURS	OR	**CALL MD** AND GIVE 60 MEQ OVER 6 HOURS	1 HOUR AFTER DOSE

If patient experiences pain upon adminstration, you may:

- Hot pack
- Further dilute infusion by running maintentance IVF in same line
- Slow infusion rate

Notify the physician for:

- Potassium level less than 2.5
- potassium level greater than 5.5
- Calculated GFR less than 20mL/min (obtain MD order for renally adjusted protocol)

ADM

ATN

KCL Replacement
Unmonitored Beds
Protocol
Rev. 9-08 Form 1248

Page 1 of 1

YAKIMA VALLEY MEMORIAL
AWARD WINNING HOSPITAL

PO0001

STAT ☐
PEDS ☐

Potassium Replacement Protocol: ECG Monitoring Required

(Not to be used for patients less than 15 years of age or dialysis patients)

Guidelines for Implementation:

1. Obtain order from physician for protocol: ☐ until discontinued ☐ x 48 hours
2. Serum potassium (if unknown). Creatinine level (unless done within the past 24 hours).
   - If calculated GFR less than 20mL/min, contact physician for the renal function adjusted protocol
3. Evaluate urine output. Must be greater than 30 mL / hour for past two (2) hours prior to using this protocol. (Notify physician if urine output less than 30 mL/hour)
4. Obtain magnesium level if potassium level is less than 2.5. Contact physician for replacement orders if the magnesium level is less than 1.8.
5. Key Points:
   - **Never** give potassium via iv push. (Risk of bradycardia, ventricular fibrillation, cardiac arrest)
   - Potassium scleroses veins so oral / enteral route is always preferred. If patient is unable to take orally / enterally, preferred IV route is via a central line or PICC line.
   - All potassium-containing solutions will be prepared by pharmacy and will be diluted in D5W or NS.
   - Potassium infusions must be administered using an IV pump.
   - Central / PICC: max. concentration = 20 mEq / 100 mL (40 mEq / 250 mL, 60 mEq / 500mL) max. rate of administration = 20 mEq / hour
     (Separate MD orders required for greater central line concentrations)
   - Peripheral / Midline: max. concentration = 10 mEq / 100 mL, max. rate of administration = 10 mEq / hour

Potassium Level	PO / NG / OG *Preferred route*		Central / PICC Preferred IV route if unable to take po / ng / og	-IV-	Peripheral / Midline Least preferred route	Recheck Potassium level
4.0 - 5.5	-	-	-	-	-	NEXT AM
3.5 - 3.9	20 MEQ	OR	20 MEQ OVER 1 HOUR	OR	20 MEQ OVER 2 HOURS	NEXT AM
3 - 3.4	40 MEQ	OR	40 MEQ OVER 2 HOURS	OR	40 MEQ OVER 4 HOURS	4 HOURS AFTER DOSE
2.5 - 2.9	40 MEQ NOW THEN 20 MEQ ONE (1) HOUR LATER	OR	60 MEQ OVER 3 HOURS	OR	60 MEQ OVER 6 HOURS	2 HOURS AFTER DOSE
2.4 OR LESS	**CALL MD** AND GIVE 40 MEQ PO + CENTRAL: 20 MEQ OVER 1 HOUR OR PERIPH: 20 MEQ OVER 2 HOUR	OR	**CALL MD** AND GIVE 60 MEQ OVER 3 HOURS	OR	**CALL MD** AND GIVE 60 MEQ OVER 6 HOURS	1 HOUR AFTER DOSE

If patient experiences pain upon adminstration, you may:

- Hot pack
- Further dilute infusion by running maintentance IVF in same line
- Slow infusion rate

Notify the physician for:

- New runs of ventricular tachycardia
- New or persistent Bigeminy
- Potassium level less than 2.5
- Potassium level greater than 5.5
- Calculated GFR less than 20mL/min (obtain MD order for renally adjusted protocol)

DISCONTINUE THIS PROTOCOL WHEN PATIENT NO LONGER HAS ECG MONITORING

ADM

ATN

K+ Replacement
ECG Monitoring Required
Protocol
Rev. 9-08 Form 1247

Page 1 of 1

YAKIMA VALLEY MEMORIAL
AWARD WINNING HOSPITAL

PC0001

STAT ☐
PEDS ☐

Potassium Replacement Protocol: Renal Function Adjusted

For GFR <20mL/min and/or urine output less than 30mL/hour

(Not to be used for patients less than 15 years of age or dialysis patients)

Guidelines for Implementation:

1. Obtain order from physician for protocol: ☐ until discontinued ☐ x 48 hours
2. Serum potassium (if unknown). Creatinine level (unless done within the past 24 hours).
   - If calculated GFR greater than 20mL/min, contact physician for the standard protocol
3. Evaluate urine output. Notify physician if urine output greater than 30mL/hour.
4. Obtain magnesium level if potassium level is less than 2.5. Contact physician for replacement orders if the magnesium level is less than 1.8.
5. Key Points:
   - Never give potassium via IV push. (risk of bradycardia, ventricular fibrillation, cardiac arrest)
   - Potassum scleroses veins so oral / enteral route is always preferred. If patient is unable to take orally / enterally, preferred IV route is via a central line or PICC line.
   - All potassium-containing solutions will be prepared by pharmacy and be diluted with D5W or NS
   - Potassium infusions must be administered using an IV pump.
   - Central / PICC: max. concentration = 20 mEq / 100 mL, (40meq/250mL or 60mEq/500 mL) max. rate of administration = 20 mEq / hour
     (Separate MD orders required for greater central line concentrations)
   - Peripheral / Midline: max. concentration = 10 mEq / 100 mL, max. rate of administration = 10 mEq / hour.

Potassium Level	PO / NG / OG *Preferred route*		Central / PICC Preferred IV route if unable to take po / ng / og	-IV-	Peripheral / Midline Least preferred route	Recheck Potassium level
4.0 - 5.5	-	-	-	-	-	NEXT AM
3.5 - 3.9	10 MEQ	OR	10 MEQ OVER 1 HOUR	OR	10 MEQ OVER 1 HOUR	NEXT AM
3 - 3.4	20 MEQ	OR	20 MEQ OVER 2 HOURS	OR	20 MEQ OVER 2 HOURS	4 HOURS AFTER DOSE
2.5 - 2.9	40 MEQ	OR	40 MEQ OVER 4 HOURS	OR	40 MEQ OVER 4 HOURS	2 HOURS AFTER DOSE
2.4 OR LESS	CALL MD AND GIVE 40 MEQ PO	OR	CALL MD AND GIVE 40 MEQ OVER 4 HOURS	OR	CALL MD AND GIVE 40 MEQ OVER 4 HOURS	1 HOUR AFTER DOSE

If patient experiences pain upon adminstration, you may:

- Hot pack
- Further dilute infusion by running maintentance IVF in same line
- Slow infusion rate

Notify the physician for:

- Potassium level less than 2.5
- Potassium level greater than 5.5
- Calculated GFR greater than 20mL/min - contact physician for regular replacement protocol

ADM
ATN

K+ Replacement
Renal Function Adjusted
Protocol
Rev. 9-08 Form 1246

Page 1 of 1

YAKIMA VALLEY MEMORIAL
AWARD WINNING HOSPITAL

Magnesium Replacement Protocol key points

1. This protocol is found in ZYNX by searching for Magnesium
   Make sure not to select the post-partum order set by accident!
2. It can be used anywhere in the hospital. See protocol for specific patient exclusions.
3. The format might look a little funny because all the order sets are being converted over in preparation for CPOE, and that means no more tables. If a table version were possible, here's how it would look:

Magnesium level	Oral replacement dose		IV replacement dose	Recheck Mg&BMP
Greater than 5	**Notify physician urgently!**			
1.8 - 4	(no replacement needed)			In AM
1.5-1.7	MagOx 400mg BID x 5 days	**OR**	Magnesium Sulfate 2 grams in 100mL D5W IV over 2 hours	In AM
1.2-1.4	MagOx 400mg TID x 5 days	**OR**	Magnesium Sulfate 4 grams in 250mL D5W IV over 4 hours	In AM
0.8-1.1			Magnesium Sulfate 6 grams in 250mL D5W IV over 6 hours	4 hours after dose is infused
Less than 0.8			Magnesium Sulfate 8 grams in 250mL D5W IV over 8 hours	2 hours after dose is infused

4. Magnesium can be given faster than this, however you risk losing a significant portion of the dose to excretion. These are the recommended infusion rates to maximize absorption.
5. Unlike the potassium protocol, oral is not necessarily the preferred route. This is because oral magnesium can cause diarrhea (think Mag Citrate!) See special considerations section for more details.

•

Allergies: _____ Page 1 of 1

Magnesium Replacement Protocol
(For use in CCU/Med Surg)

Exclusions
- Renal Insufficiency (Serum Creatinine greater than 2.5, creatinine clearance less than 30 mL/minute)
- Patient less than 15 years of age

Guidelines for Implementation
- Obtain order from physician for protocol
- Obtain baseline serum magnesium, if unknown (Normal adult range: 1.8 - 2.3)
- Obtain baseline serum creatinine, unless done within the past two days

Key Points
- Magnesium infusions must be administered using an IV pump
- All magnesium-containing solutions will be prepared by pharmacy

Special Considerations
- Initial therapy is usually empiric since serum levels of primarily intracellular ions may not accurately reflect total body stores
- Rapid administration may result in much of the dose being excreted
- Use cautiously in patients with SBP less than 100 mmHg or HR less than 50
- If diarrhea occurs with oral treatment change to IV

If diarrhea occurs with oral treatment or if diarrhea would be detrimental to the patient, use IV replacement.

Magnesium Level greater than 5
- Notify physician urgently

Magnesium Level 1.8 - 4
- Recheck Mg & BMP in a.m.

Magnesium Level 1.5 - 1.7
- ☑ PO/NG/OG (If asymptomatic: No seizures or tetany): MagOx 400 mg BID x 5 days
- ☑ IV: Magnesium Sulfate 2 grams IV in 100 mL D5W over 2 hours
- Recheck Mg & BMP in a.m.

Magnesium Level 1.2 - 1.4
- ☑ PO/NG/OG (If asymptomatic: No seizures or tetany): MagOx 400 mg TID x 5 days
- ☑ IV: Magnesium Sulfate 4 grams in 250mL D5W over 4 hours
- Recheck Mg & BMP in a.m.

Magnesium Level 0.8 - 1.1
- ☑ IV: Magnesium Sulfate 6 grams in 250mL D5W over 6 hours
- Recheck Mg & BMP 4 hours after dose infused

Magnesium Level less than 0.8
- ☑ IV: Magnesium Sulfate 8 grams in 250mL D5W over 8 hours and call MD
- Recheck Mg & BMP 2 hours after dose infused

Nurse:_____ Date/Time:_____ Physician: _____ Date/Time: _____

YAKIMA VALLEY MEMORIAL
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ADM:

ATN:

Magnesium Replacement Protocol (For use in CCU/Med Surg)
Revised: 4/28/2009 Form OS 1232

General Nursing Policy and Procedure Manual
Treatment
Care and Treatment of Patient with Alcoholism, Chemical Dependency, or Substance Use

YAKIMA VALLEY MEMORIAL
AWARD WINNING HOSPITAL

PURPOSE:

To provide uniform treatment of patients with alcohol/substance use, and/or dependency and make appropriate referrals for screening/ assessment and discharge planning.

POLICY:

1. All inpatient units with YVMH assess or screen for alcohol or substance use in the initial nursing admit assessment.
2. Substance abuse issues that are identified as a focus problem are added to the master problem list and appropriate interventions are listed. Appropriate interventions may include:
   A. Alcohol withdrawal protocol
   B. Urine drug screen, BAL
   C. Laboratory studies
   D. Referral to CD assessment counselor for assessment and recommendations for ongoing care in and out patient. Referrals can be made via CRM.
   E. Fall precautions
   F. Medication as ordered i.e. antipsychotics, anxiolytics, antipyretics
   G. Fluids as ordered (PO/IV)
   H. Social Work assessment of discharge considerations

PERSONNEL:

MD, RN, CRM, Pharmacy, CD Counselor

POINTS OF EMPHASIS:

1. Substance use and effects of substance abuse are vast and varied.
2. Substance use and abuse affects physical status, mental status, emotional and social function.
3. Alcohol withdrawal protocol may be individualized for each patient according to level of withdrawal i.e., change IV meds to IM or PO.

Effective Date:	08/16/2005		
Prepared by:	Cindy Stuntebeck, RN Nurse Manager Psychiatry		
Approved by:	Nursing Policy and Procedure Committee	Date:	08/16/2005
Reviewd by:		Date:	
Revised by:		Date:	
Approved by:		Date:	

STAT ☐
PEDS ☐

ALCOHOL WITHDRAWAL ORDERS

Allergies _____

- Complete the Clinical Institute Withdrawal Assessment for Alcohol-Revised (CIWA-Ar) scale.
- Medication should be given in doses sufficient to **achieve and maintain light somnolence** as the recommended therapeutic end point. **Light somnolence is characterized by a state in which the patient is awake but tends to fall asleep unless stimulated or is sleeping but easily aroused.**
- Maintain a quiet environment for these patients.

***Use these guidelines with caution if the patient is receiving narcotics.**

ASSESSMENTS: Assess CIWA-AR score upon initiation of guidelines.
Monitor level of somnolence before and after each dose of Lorazepam and document in DAR notes.

Initial CIWA-Ar Score_____

	Schedule A CIWA-AR Score 8 or Less MILD	Schedule B CIWA-AR Score > 8 but < 15 MODERATE	Schedule C CIWA-AR Score 15 or > SEVERE
Day 1 & 2	No Lorazepam but reassess CIWA score every 8 hours X 6. If score becomes > 8, initiate Lorazepam according to the appropriate schedule (notify pharmacy).	Lorazepam PO every 4 hrs while awake **(not prn)** ***2mg or ___ (range 2-4mg)***	Lorazepam IV every 1 hr while awake **(not prn)** ***2 mg or ____(range 1-4 mg)*** When patient becomes lightly somnolent, change dosing interval to every 2 hrs (notify pharmacy
Day 3 & 4		Lorazepam PO every 4 hrs while awake **(not prn)** ***1mg or ____ (range 1-2mg)***	Lorazepam IV every 2 hrs while awake **(not prn)** ***1 mg or ____(range 1-2 mg)***
PRN		Lorazepam ***1 mg or _____*** PO every 2 hrs prn up to 5 days (to achieve/maintain light somnolence)	Lorazepam ***1 mg or ____ IV*** every 30 minutes prn up to 5 days (to achieve/maintain light somnolence)

Lorazepam dosing may need to be modified upon provider judgment and patient response to treatment. The duration of therapy varies greatly and may require less or more days than intervals suggested. Changes to dosage and/or duration of treatment will be entered on standard physician order forms.

- **Notify provider** if Lorazepam use is necessary and light somnolence is still not achieved.
- **Notify provider** if **excessive** sedation occurs, hold **scheduled** dose of Lorazepam.
- **Notify provider** if two *consecutive doses of scheduled* Lorazepam are held within 24 hrs for Schedule B or within *8* hrs. for Schedule C.
- **Notify provider** if greater than 4 doses of every 30 minutes Lorazepam are given in 12 hours.
- **Notify provider** if protocol is needed greater than 5 days.

Laboratory

☐ CBC ☐ CMP (Comprehensive Metabolic Panel) ☐ Serum Magnesium

IV Fluids/MEDICATIONS

- 5% dextrose/0.45%NaCl with 20 K+ or _____mEq/L to run at 100 ml/hour or _____ml/hour.

- To the first bag of IV fluid, add folic acid 1 mg, thiamine 100 mg, magnesium sulfate 2gm, and one ampule of MVI

Beginning Day 2

- Thiamine 100 mg IV or PO daily for 2 more days
- Multivitamin with folate 1 tab PO daily.

☐ Nicotine replacement protocol
☐ Case Management Consult to consider alcohol abstinence program.

Physician Signature: _____ Date/ Time: _____

The Clinical Institute Withdrawal Assessment Revised for Alcohol
CIWA-AR Scoring Guidelines

Date/Time Nurses initials					
Nausea and Vomiting					
As. Do you feel sick to your stomach?˜ ^Have you vomited?˜ observation **0** = No nausea and no vomiting **4** = Intermittent nausea with dry heaves **1** = Mild nausea with no vomiting **7** = Constant nausea, frequent dry heaves & vomiting					
Anxiety					
Ask: ^Do you feel nervous?˜ observation ((inner feelings) **0** = No anxiety, at ease **1** = Mildly anxious **4** = Moderately anxious, or guarded **7** = Equivalent to acute panic state as seen in severe delirium or acute schizophrenic reactions					
Paroxysmal Sweats					
Observation **0** = no sweat visible **4** - beads of sweat obvious on forehead **1** = barely perceptible sweating, palms moist **7** = drenching sweats					
Headache, Fullness in Head					
ASK: ^Does your head feel different? Does it feel as if there is a band around your head?˜ Do not rate for dizziness or lightheadedness. Otherwise rate severity **0** = Not present **4** = Moderate **1** = Very Mild **7** = Severe to continuous					
Visual Disturbances					
Ask: ^Does the light appear to be too bright? Is its color different? Does it hurt your eyes? Are you seeing anything that is disturbing you? Are you seeing things that you know are not there?˜ Observation **0** = Not present **4** = Moderate visual disturbance/hallucinations **1** = Mild sensitivity to light or color **7** = Severe to continues visual disturbances/hallucinations					
Tremor					
Arms extended and fingers spread apart. Observation **0** = No tremor **4** = Visible, with patients arms extended **1** = Not visible, but can be felt finger tip to finger tip **7** = Visible, even with arms not extended					
Agitation					
Ob. vation (behavior) **0** = Normal Activity **4** = Moderately fidgety and restless **1** = Somewhat more than normal activity **7** = paces back and forth during most of interview, or constantly thrashes about					
Orientation and clouding of Sensorial					
Ask: ^What day is this?˜ ^Where are you?˜ ^Who am I?˜ **0** = oriented and can do serial additions **1** = Cannot do serial additions or is uncertain about date **2** = Disoriented for date by no more then 2 calendar days **3** = Disoriented for date by more than 2 calendar days **4** = disoriented for place and/or person					
Tactile disturbances					
Ask: Do you have itching, pins, and needles sensation, burning sensation, numbness or do you feel bugs crawling under your skin?˜ Observation **0** = None **1** = Itching, pins, and needles, burning or numbness **5** = Moderately severe sensation of crawling **7** = Severe or continuous sensation of crawling					
Auditory Disturbances					
Ask: ^Are you more aware of sounds around you? Are any harsh? Do they frighten you? Are you hearing anything that is disturbing you? Are you hearing things you know are not there? Observation **0** = Not present **1** = Very mild harshness or ability to frighten **5** = Interment auditory disturbances/hallucinations **7** = Continuous auditory disturbances/hallucinations					
Total Score					

Signature: _____ Signature: _____ Signature: _____

ADM

ATN

Alcohol Withdrawal Orders
Rev. 2-06 Form 0399-2

YAKIMA VALLEY MEMORIAL
AWARD WINNING HOSPITAL

PO0001

You are entering your patient's room to assess her – she is two days post C-section. Over the past 12 hours her behavior has become quite bizarre compared to the behavior she exhibited on admit.

Patient is anxious with rapid speech. States she has seen dead babies in her room.

Please review the information listed and complete a CIWA score on this patient and fill out the Alcohol Withdrawal Order sheet.

CIWA - Questions	Patient Responses
Do you normally drink alcohol?	Initially patient states "no", after persistent questions the patient tells them "only a little bit"
How much do you drink?	"A few cans of beer each night....and a couple of shots of whiskey"
CIWA: Do you feel sick to your stomach?	"Yes, I'm nauseated all of the time"
CIWA: Have you vomited?	"I vomited a couple of times today. It was smelly and green."
CIWA: Do you feel nervous? CIWA: Observe for sweating/palms moist	Yes! "I am afraid that all of these dead babies are going to take my baby away from me forever."
CIWA: Does your head feel different?	No. After further questions states "I always have a HA like this"
CIWA: Does the light hurt your eyes? Are you seeing visions?	"My vision is blurry. I'm afraid to close my eyes because I'm afraid the dead babies will take my baby."
CIWA: Ask about and note any tremor	"My hands keep shaking. It is making it hard for me to eat."
CIWA: Agitation	Patient has rapid, pressured speech and is preoccupied with the safety of her baby
CIWA: What day is this?	"St Patrick's day—where is the green beer?"
CIWA: Where are you?	"I'm in alcohol treatment"
CIWA: Who am I?	"I don't know you. Are you here to take my baby? "
CIWA: Is your skin bothering you?	"I feel like my skin is on fire" when asked how often, patient states "only after I breastfeed."
CIWA: Do you hear any harsh noises, are they disturbing you?	"The dead babies are never quiet. They are continuously crying and trying to take my baby."

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PEDS ☐

Allergies: _____

Adult Anti-Emetic Protocol

Antiemetics - For use in medical or surgical patients with nausea/vomiting.

- Agents on protocol are listed in order of preference.
- Consider etiology of nausea/vomiting, risk for adverse effects, and contraindications when selecting an agent.
- Therapy should be changed to another agent listed if there is lack of effect (after one to two doses) or adverse effects occur.

Prochlorperazine (Compazine) - Do not use if history of extrapyramidal side effects (EPS)

- 10 milligram intravenously every 6 hours as needed for nausea/vomiting
- 10 milligram orally every 6 hours as needed for nausea/vomiting
- 25 milligram rectally every 12 hours as needed for nausea/vomiting

Metoclopramide (Reglan) - Recommended for opiate induced nausea/vomiting; avoid use in patients with suspected bowel obstruction

- 10 milligram orally every 6 hours as needed for nausea/vomiting
- 5 milligram intravenously every 6 hours as needed for nausea/vomiting (Recommended dosing for elderly or reduced renal function)
- 10 milligram intravenously every 6 hours as needed for nausea/vomiting

Ondansetron (Zofran)

- 4 milligrams intravenously for nausea - may redose one time at 4 hours
- In surgical patients given Anzemet/Zofran/Kytril in OR/PACU with continued nausea/vomiting, an alternative agent may be more effective.
- Cumulative doses over 16 milligrams in 24 hours may not provide additional benefit due to saturation of 5HT3 receptors.
- Chemotherapy induced nausea/vomiting recommend 8 milligrams intravenously or 16 milligrams orally prior to chemotherapy infusion

Promethazine (Phenergan) - Vesicant!!! Discontinue intravenous administration immediately if patient complains of pain.

- 25 milligram tablet orally every 6 hours as needed for nausea/vomiting
- 25 milligram suppository rectally every 6 hours as needed for nausea/vomiting
- 6.25 milligram intravenously diluted in 10 mL of normal saline administered over 2 minutes every 6 hours as needed for nausea
- 12.5 milligram intravenously diluted in 10 mL of normal saline administered over 2 minutes every 6 hours as needed for nausea

Antidote for extrapyramidal side effects (EPS)

DiphenhydrAMINE (Benadryl)

- 25 milligram intravenously every 6 hours as needed for EPS
- 25 milligram orally every 6 hours as needed for EPS

Nurse:_____ Date/Time:_____ Physician: _____ Date/Time: _____

ADM:

ATN:

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Adult Anti-Emetic Protocol
Revised: 5/6/2009 Form 0031

STAT PEDS

Pediatric Anti-emetic Protocol

Allergies_____

Weight: _____ kg Height: _____

Antiemetics - For use in medical or surgical pediatric patients with nausea/vomiting.

Agents on protocol are listed in order of preference.
Use oral form when possible.
Consider etiology of nausea/vomiting, risk for adverse effects, and contraindications when selecting an agent.
Therapy should be changed to another agent if ineffective (after one to two doses) or adverse effects occur.

Ondansetron (Generic form of Zofran®)
Can be given up to every 6 hours as needed for nausea/vomiting
- Weight <10kg: 0.1 mg/kg IV or 1mg PO (1.25 mL)
- Weight 10-20 kg: 1 mg IV or 1mg PO (1.25 mL)
- Weight 20-30 kg: 2 mg IV or 2 mg PO (2.5 mL)
- Weight 30-40 kg: 3 mg IV or 3 mg PO (3.75 mL)
- Weight >40 kg: 4 mg IV or PO (1 ODT tablet)
- NOTE: Dose is 0.1 mg/kg, rounding to above doses.

Metoclopramide
0.15 mg/kg IV or PO ever 6 hours as needed for nausea/vomiting; maximum: 10 mg per dose

DiphenhydrAMINE
IV, IM or PO every 4 hours as needed for nausea/vomiting adjuvant
- Age 2 to <6 years: 6.25 mg; maximum: 37.5 mg/day
- Age 6 to <12 years: 12.5-25 mg; maximum: 150 mg/day
- Age >12 years: 25-50 mg; maximum: 300 mg/day

Physician Signature:_____Date/Time: _____

Bowel Protocol

DO NOT USE IF COLITIS, DIVERTICULITIS OR BOWEL OBSTRUCTION SUSPECTED

Adult Bowel Regimen

- Suggested treatment regimen: therapy should be individualized based on patient need
- If patient has not been on a bowel regimen, start with step 1, otherwise continue current/equivalent regimen
- If there is no response in 24 hours advance to next step
- At any time, if there has been no BM for 3 or more days, a sodium phosphate enema should be administered, followed by a tap water enema if there are no results
- When an effective regimen is found it should be continued
- If diarrhea or cramping develops, hold laxatives until symptoms resolve then restart protocol at step 1.
- Rectal administration contraindicated for bowel surgeries, neutropenia and thrombocytopenia.
- Avoid Milk of Magnesia in patients with renal insufficiency

Step 1

- Senokot S 1 - 2 tablets twice daily
- Docusate 240 mg 1 - 2 capsules orally twice daily as needed

Step 2

- Senokot S 1 - 2 tablets twice daily
- Milk of Magnesia 30 mL orally twice daily if needed

Step 3

- Senokot S 1 - 2 tablets twice daily
- Milk of Magnesia 30 mL orally twice daily if needed
- Bisacodyl 5 mg 1 - 2 tablets orally daily as needed
- Bisacodyl 10 mg suppository rectally daily as needed

Step 4

- Senokot S 1 - 2 tablets twice daily
- Miralax: 17 gram packet dissolved in 8 oz water orally daily or Lactulose: 15 mL orally twice daily
- Sodium phosphate enema: 135 ml rectally once
- Milk of Magnesia 30 mL orally twice daily if needed

ADM: ATN:	Bowel Protocol Rev. 11-08 Form 0773 Page 1 of 1	 PO0001

STAT ❑
PEDS ❑

Adult Therapeutic Heparin Orders

Acute Coronary Syndrome
Atrial Fib. and Treatment for DVT/PE

Allergies _____

1. Obtain baseline APTT (normal range 22-35 seconds), and CBC with platelet count.
   - Notify MD if platelet count is low (< 50 K/UL) or high (> 800 K/UL)
2. Patient's weight: _____ kg
3. Draw **Anti Xa Heparin Assay** every six hours after initiating therapy and following any dose change until 2 consecutive measurements are therapeutic, then obtain a daily am Anti Xa Heparin Assay as long as heparin is infusing
4. Obtain Hemogram in am daily while on Heparin
5. Guaiac all stools while on heparin, call any positive results to the attending physician.
6. Recommended Heparin Dose:

Atrial Fib/Treatment of DVT/PE and Other	Acute Coronary Syndromes (ACS)
Bolus: 80 Units/kg x _____kg = _____Units IV Other: ____ Units/kg x _____kg = _____ Units IV **Maintenance:** 17 Units/kg/hr x _____kg = _____Units/hr IV Other: __ Units/kg/hr x _____kg = _____Units/hr IV	❑ ACS **Bolus:** (Maximum 5000 units) 70 Units/kg x _____kg = _____ Units IV **Maintenance:** (Maximum 1000 units/hr) 15 Units/kg/hr x ____kg = ____Units/hr IV

For all heparin dosing round dose up to nearest 50 units

7. Heparin titration:
   Adjust the heparin infusion rate according to the nomogram on back
   - The goal anti-Xa level is 0.3 -0.7 units/mL
8. Change bag every 24 hours
9. Notify MD if the Anti Xa Heparin Assay is not therapeutic after first 24 hours
10. If bleeding, notify MD for further heparin orders and Anti Xa Heparin Assays
11. Obtain STAT platelet count, d/c heparin, and contact prescriber if patient develops acute inflammatory (fever, chills) or cardiorespiratory symptoms (HTN, tachy, SOB, CP) within 30 minutes of heparin bolus.

Physician's Signature: _____Date/Time: _____

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HEPARIN NOMOGRAM

For full therapeutic anticoagulation:

Anti Xa Heparin Assay	Stop Infusion (min)	Bolus Dose & Rate Change	Repeat Anti Xa Heparin Assay
<0.2	0	Repeat Bolus Increase150 units/hr	6 hours after rate change
0.2-0.3	0	Repeat ½ bolus Increase 100 units/hr	6 hours after rate change
0.31-0.7	0	No change	6 hours or next AM*
0.71-0.8	0	Decrease 50 units/hr	6 hours after rate change
0.81-0.9	30 minutes	Decrease 100 units/hr	6 hours after restarting infusion
>0.90	60 minutes	Decrease 150 units/hr	6 hours after restarting infusion

* After two consecutive therapeutic values may obtain daily am Anti Xa Heparin Assay

* Discontinue daily am Anti Xa Heparin Assay when heparin is stopped or if drawing more frequently

ARGATROBAN ORDER SET FOR HEPARIN-INDUCED THROMBOCYTOPENIA (HIT) - PAGE 1 OF 3

Allergies _____

Indication: Treatment of heparin-induced thrombocytopenia with thrombosis syndrome (HITTS) or thrombosis prophylaxis in patients with history of HIT and contraindications for first-line therapies.

Pre-administration criteria:
- ❑ Thrombocytopenia (PLT < 100K or >50% decrease from baseline)
- ❑ Evidence of heparin or LMWH exposure within the last 100 days
- ❑ History of Heparin-Induced Thrombocytopenia (HIT) or allergy to heparin
- ❑ Clinical presentation of HIT with Thrombotic Syndrome (HITTS) i.e. DVT or PE

Suspected or Confirmed HIT:
- Discontinue ALL heparin products: IV, SC, flushes, heparin-coated catheters
- Place **NO HEPARIN** signs on door to room and on all IV lines and remove any heparin flushes from the patient's room.
- ❑ **Line maintenance regimen:** _____
- Request heparin-free catheters from Central Supply
- Document specific reaction in medical record and document allergy

Baseline Labs:
- CBC, aPTT, and INR/PT
- HIT panel if not done during this hospitalization
- U/A
- Liver Function Tests if not done within the previous 24 hours

Baseline aPTT: _____seconds	Target aPTT : 44-88 seconds (1.5 - 3 x control)

Treatment:

Actual Body Weight _____ KG

- ❑ **Initial dosing:** 2 mcg/kg/min — **Rate:_____ mcg/min**
- ❑ **Hepatic impairment:** 0.5 mcg/kg/min — **Rate:_____ mcg/min**
- ❑ **Critically ill with Multi-organ failure:** 0.2 mcg/kg/min — **Rate:_____ mcg/min**
- Initial dose of argatroban based on actual body weight at time of initiation of therapy.
- **MAXIMUM RATE: 10 mcg/kg/min & MAXIUMUM DOSE: 220 mcg/min**
- Titrate according to corresponding table on page 3.

Monitoring and Other Labs:
- Infuse using a micropump
- Repeat aPTT after start of infusion:
  - Normal liver function: every 4 hours
  - Hepatic impairment or critically ill: every 6 hours
- Check aPTT daily once in target range (see box above) for 2 consecutive checks.
- Resume aPTT checks after each dosage adjustment:
  - Normal liver function: every 4 hours until in range for 2 consecutive checks
  - Liver dysfunction or critically ill: every 6 hours until in range for 2 consecutive checks
- CBC daily while on Argatroban
- **No administration of IM or intrathecal mediations while on argatroban**
- Assess patient for signs of bleeding and notify physician immediately for:
  - Unexplained drop in blood pressure
  - Development of hematoma or gross bleeding.
  - Recheck aPTT in 4 hours.
- Argatroban-to-warfarin conversion guidelines are on page 2 of this protocol.

Physician's Signature: _____

ARGATROBAN ORDERS FOR HEPARIN-INDUCED THROMBOCYTOPENIA (HIT), PAGE 2 OF 3

Definition: Heparin-induced thrombocytopenia is an adverse drug reaction characterized by thrombocytopenia and a high risk for venous or arterial thrombosis. It is caused by heparin-dependent, platelet-activating antibodies that recognize a "self" protein, platelet factor 4 (PF4), bound to heparin. The resulting platelet activation is associated with increased thrombin generation.

CONSIDER HIT IF:

Platelet count drop occurs during or after heparin therapy

- Platelet count drops to <50% of baseline **OR** Platelet count <100,000/µL
- 30% decline in platelet count from baseline with concomitant thrombotic event
- Patient with previously documented HIT requiring anticoagulation
- New spontaneous large vessel arterial thrombus, or venous thrombus if multiple sites

ARGATROBAN PRECAUTIONS

1. Elevation of PT/INR during argatroban therapy is due to the synergistic effect of argatroban with warfarin and does not represent the patient's true coagulation status. DO NOT GIVE PLATELETS OR VITAMIN K
2. There are NO antidotes or reversal agents for argatroban.
3. Caution should be used in patients with severe hepatic impairment (LFTs > 3x normal).
4. Heparin Antibody Test should be used for confirmation of HIT only.
5. Use with caution if patient has history of stroke, bleeding ulcers, severe uncontrolled hypertension, recent major surgery or non-compressible large vessel puncture.

CONVERSION TO ORAL WARFARIN THERAPY

- Once patient is stabilized, check platelets. If within normal limits (>100K), initiate warfarin
- Continue 4 days of concurrent argatroban + warfarin combination therapy
- Measure daily INR:
  - If INR less than 4, continue concomitant therapy and consider increasing warfarin dose
  - If INR greater than 4, stop argatroban infusion, repeat INR in 4-6 hours
    - If INR is within range (INR = 2-3, unless otherwise specified), continue warfarin monotherapy
    - If INR is below range, resume argatroban + warfarin combination therapy. Repeat process with next INR.

ARGATROBAN PROTOCOL FOR HEPARIN-INDUCED THROMBOCYTOPENIA, PAGE 3 of 3

INFUSION FLOW CHART AND TITRATION TABLE

Argatroban Standard Concentration 125mg/125ml (1mg/ml)

Patient Weight (kg)	Standard (Normal liver function)		Hepatic Impairment		Critically Ill + Multi-organ Failure	
	Initial: **2 mcg/kg/min**	Titration: **0.5 mcg/kg/min** Increase or decrease infusion by this amount	Initial: **0.5 mcg/kg/min**	Titration **0.1 mcg/kg/min** Increase or decrease infusion by this amount	Initial: **0.2 mcg/kg/min**	Titration: **0.1 mcg/kg/min** Increase or decrease infusion by this amount
INFUSION RATE						
50 - 55 kg	6ml/hr	1.5ml/hr	1.5ml/hr	0.3ml/hr	0.6ml/hr	0.3ml/hr
55 - 60 kg	7ml/hr	2ml/hr	2ml/hr	0.4ml/hr	0.7ml/hr	0.4ml/hr
60 - 65 kg	7ml/hr	2ml/hr	2ml/hr	0.4ml/hr	0.7ml/hr	0.4ml/hr
65 - 70 kg	8ml/hr	2ml/hr	2ml/hr	0.4ml/hr	0.8ml/hr	0.4ml/hr
70 - 75 kg	9ml/hr	2ml/hr	2ml/hr	0.4ml/hr	0.9ml/hr	0.4ml/hr
75 - 80 kg	9ml/hr	2ml/hr	2ml/hr	0.5ml/hr	0.9ml/hr	0.5ml/hr
80 - 85 kg	10ml/hr	2.5ml/hr	2.5ml/hr	0.5ml/hr	1ml/hr	0.5ml/hr
85 - 90 kg	10ml/hr	3ml/hr	3ml/hr	0.5ml/hr	1ml/hr	0.5ml/hr
90 - 95 kg	11ml/hr	3ml/hr	3ml/hr	0.6ml/hr	1.1ml/hr	0.6ml/hr
95 - 100 kg	12ml/hr	3ml/hr	3ml/hr	0.6ml/hr	1.2ml/hr	0.6ml/hr
100 - 105 kg	12ml/hr	3ml/hr	3ml/hr	0.6ml/hr	1.2ml/hr	0.6ml/hr
105 - 110 kg	13ml/hr	3ml/hr	3ml/hr	0.6ml/hr	1.3ml/hr	0.6ml/hr
110 - 115 kg	13ml/hr	3ml/hr	3ml/hr	0.7ml/hr	1.3ml/hr	0.7ml/hr
115 - 120 kg	14ml/hr	3.5ml/hr	3.5ml/hr	0.7ml/hr	1.4ml/hr	0.7ml/hr
120 - 125 kg	15ml/hr	4mg/hr	4mg/hr	0.7ml/hr	1.5ml/hr	0.7ml/hr

PTT in seconds	Standard (Normal liver function)	Hepatic Impairment	Critically Ill + Multi-organ Failure
≤43	Increase rate by 0.5 mcg/kg/min	Increase rate by 0.1 mcg/kg/min	Increase rate by 0.1 mcg/kg/min
44 - 88	No change	No change	No change
89 - 100	Decrease rate by 0.5 mcg/kg/min	Decrease rate by 0.1 mcg/kg/min	Decrease rate by 0.1 mcg/kg/min
101 - 149	Hold infusion for 1 hour and decrease rate by 50%	Hold infusion for 1 hour and decrease rate by 50%	Hold infusion for 1 hour and decrease rate by 50%
≥150	Stop infusion, draw PTT every 4 hours until PTT less than 89 seconds, and contact MD for further orders	Stop infusion, draw PTT every 6 hours until PTT less than 89 seconds, and contact MD for further orders	Stop infusion, draw PTT every 6 hours until PTT less than 89 seconds, and contact MD for further orders

Medication Management

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Medication

Medication Errors and Adverse Drug Reaction Reporting

PURPOSE:

To define what constitutes a **medication** error or adverse drug reaction, also known as Adverse Drug Event (ADE), in order to allow for uniformity in reporting, establish accountability, provide guidelines for documentation and action when an ADE occurs, and identify system problems that can be changed to eliminate or minimize the error.

DEFINITION:

I. A medication error is any preventable event that may or may not cause harm or lead to inappropriate use while the medication is in the control of the health care professional, patient or family.

II. An adverse drug reaction is any unexpected, unintended, undesired, or excessive response to a mediation that:
- Requires discontinuing the drug
- Requires changing to a different drug therapy
- Requires modifying the dose
- Necessitates admission to a hospital
- Prolongs stay in a health care facility
- Necessitates supportive treatment
- Significantly complicates diagnosis
- Results in temporary or permanent harm, disability or death

DOCUMENTATION:

I. When an adverse drug event is noted, the patient care provider (nurse, physician or pharmacist) is to document all facts (drug(s) involved, dose, route, etc., and adverse effect) on the chart and immediately notify the physician. In addition, corrective actions (discontinuing the drug, antidotes, etc.) are to be documented in the chart.

II. The nurse, pharmacist or physician first noting the adverse drug event initiates a report utilizing the on-line intranet reporting system (Quantros) which is a comprehensive hospital quality assurance documentation tool.

III. The health care professional who notes the ADE shall notify the pharmacy in a timely manner to update the patient's allergy profile in the computer system, if appropriate.

IV. The FDA and drug manufacturer will be notified on the ADE if appropriate, based on the nature and severity of the reaction.

DEFINITION:

I. **Quantros System**

- Quantros is the on-line intranet reporting system for documenting any event involving patient, employee or visitor incidents on hospital premises. This includes **medication** errors and adverse drug reactions. Quantros is on the Memorial Intranet, through the Application link.

  ⇒ Click on Internet
  ⇒ Go to Applications
  ⇒ Scroll down to Quality Management
  ⇒ a password is required for training.
  ⇒ Click on Patient, Visitor or Employee. This refers to the person affected.
  ⇒ Click on the "What Happened drop down arrow and select "**Medication** event." A second field will appear, "Specify the event you want to report, click on the drop down arrow to select
  ⇒ Adverse Drug reaction or **Medication** Error
  ⇒ Proceed to answer questions as complete and detailed as possible.
  ⇒ Each answer you give brings forward different questions in the next page. Be sure to answer as accurately as possible so the end result will be complete.
  ⇒ While you are in the report, you can view on the right side the percentage completed. Each page you complete will raise that percentage until you are 100% complete.
  ⇒ You are assigned an event number for each report you begin. If you are not able to complete your report, you can save it and complete it at a future time by entering the event number in the "Complete My Event" area on the front page. You must have the event number to return to that event. You may leave and come back as many times as necessary until it is complete.
  ⇒ Once the report is completed and you click "Submit" you are not longer able to edit. Once the report is submitted, specific department managers and quality assurance staff will receive an automatic email that a report has been made.
  ⇒ You can return to your report to see the progress on you report by entering your event number in the "Track My Event" field on the main page.

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