INDEX:

General Principles 2
Prerequisites 2
Members of the Healthcare Team 3
Clinical Structure of the 2-Team Model 4
Daily Activities 4
ICU Clinical Duties 5
Teaching Activities 9
Evaluation Process 10
Clinical Trials 11
Clinical Practice Guidelines 11
Organization of Resident Call 11
Resources 12
Issues surrounding Level of Care 12
E-board Access Guide (PLC Specific Function) 13

Appendix 1: Nursing Presentation Format 15
Appendix 2: Respiratory Therapy Overview 16
Appendix 3: Suggested Format for Transfer Summary and Discharge Note 18
Appendix 4: Checklist for Notification of Medical Examiner 19
Appendix 5: Learning Objectives for ICU Curriculum 20
Appendix 6: Orientation Course Schedule 33
Appendix 7: Topics Covered in Core and Advanced Lecture Series 34
Appendix 8: Resident Evaluation Form 35
Appendix 9: Level of Care Policy 36
Appendix 10: Acute Pain Management Guide 38
Appendix 11: ICU Patient Transport Decision Scorecard 50
A. General Principles

The intensive care unit provides you with an opportunity to care for patients with many concurrent illnesses in a closely supervised setting. You should hone the following skills, knowledge and behaviors during your rotation. Your evaluation will be based on them.

- Ability to make decisions and direct the care of patients whose status may be changing on a minute to minute basis.
- Ability to organize information and establish goals and priorities for the care of individual patients and, if necessary, for groups of patients.
- Ability to separate important from trivial information.
- Ability to work effectively with all members of a multi-disciplinary team.
- Ability to identify personal limits and consult appropriately.
- Ability to interact with patients and families.
- Ability to maintain a succinct, useful medical record. Transfer summaries should be brief and capture information important to ensure continuity of care upon transfer.
- Ability to critically appraise medical literature, preceptors, and consultants. This means reading around patient problems and actively participating in morning rounds by asking questions and challenging others.
- You are expected to assume responsibility commensurate with your specialty and level of training.
- The patient is your responsibility! Make sure there is continuity of care at all times.

B. Prerequisites

1) ACLS training that is current.
2) TDS training - the hospital ordering system.
3) PACS training - the diagnostic imaging review system
4) IMPAX training – the diagnostic imaging review system (ICU specific)

If you have not been trained in #2, #3 or #4 of the above, arrangements will be made during your first week of the rotation.
C. Members of the Healthcare Team

Intensivists:
An Attending physician is available 24 hours a day, seven days a week either in person or over the telephone to answer questions and provide guidance. If they are not in-house, they are within 15 minutes of the hospital in case of emergencies.

Unit Director: Dan Zuege – CCM/Pulmonary
Resident Coordinator: Luc Berthiaume – CCM/Pulmonary
Consultants: Kevin Laupland – CCM/Infectious Diseases
Colin Bands – CCM/Anesthesia
Luc Berthiaume – CCM/Pulmonary
Sid Viner – CCM/Pulmonary
Terry Hulme – CCM/Pulmonary
Carla Chrusch – CCM
Ann Kirby – CCM/Internal Medicine
Jason Lord – CCM/Emergency Medicine
Juan Posadas – CCM/Internal Medicine

Outreach MDs: Victor Fadayomi
Victor Agoha
Tayo Dawodu

Critical Care Fellows:
When a Fellow is on service, they will essentially take the role of the attending physician. Therefore, if possible, address all issues and plans with the Critical Care Fellow first, then proceed to involve the attending.

Registered Nurses:
The RN’s can be an invaluable resource to you during your rotation.

Patient Care Manager: Patty Wickson
Assistant PCM: Becky Eldridge
Nurse Clinicians: Each is responsible for their team of nurses (ie Charge Nurses)
Bedside nurses: Typically responsible for one or two critically ill patient at a time.

Respiratory Therapists:
RT’s are an invaluable resource for the daily management of the ventilators and patient’s respiratory issues.

Unit Clerks:
The unit clerks are excellent resources that can help make your life easier. From adding blood work on to previously collected samples, to tracking down old reports, to having other physicians paged, the unit clerks are there to help you.

Our multidisciplinary team also has members from each of the following groups:
D. **Clinical Structure of the 2-Team Model**

The PLC ICU operates a capacity of 16 beds. Patients within the ICU will be admitted to one of two teams identified as the ‘A’ team and ‘B’ team. Each team will be coordinated by separate attending physician. All rotating residents and fellows will be assigned to care for patients under the ‘A’ team. This team will look after the more acutely-ill patients and will be capped at a maximum of 12 patients. The attending physician on the ‘B’ team will care for up to 4 less acutely-ill patients, without resident assistance. It will be the responsibility of the ‘B’ team attending physician to review all Code Blues, consults and Code 66 patients with the resident during the day. This will allow the ‘A’ team attending to concentrate on completing daily rounds. During evening and weekend hours, the resident-on-call will be responsible for medical issues on the ‘A’ team. The Outreach physician-on-call will cover the medical issues for the ‘B’ team. In the event that no Outreach physician is scheduled, the rotating resident on call will care for all patients in the ICU.

E. **Daily Activities**

1. **Sign over:**

   It is expected that important overnight events from the ‘A’ team be signed over from the post-call resident to the resident responsible for those patients during the day. This should only take a few minutes. The Outreach physician will sign over the issues of the ‘B’ team directly to the attending physician responsible for those patients.

2. **Review Patients:**

   In preparation for morning rounds, examine your patients, review lab work and most importantly, develop a comprehensive problem list and plan for each of your patients.

3. **Didactic Sessions:**

   Lectures are held every day of the week starting at 08:00, except Wednesdays when they start at 08:30. See below under Educational Activities for more details.

4. **Patient Rounds**

   Start at 09:00 with the following format:

   (a) Review Code Blues from past 24 hours and “homework” assignments
   (b) Start with patients who were admitted in the past 24 hours, or the most critically ill patients.
   (c) For new patients:

   **Resident** - presents brief synopsis
   **Nurse** - presents assessment (see Appendix 1: RN format)
RT - presents assessment (see Appendix 2: RT format)
Resident - presents a problem- or system-orientated plan of management

Don't "lose" the problems
Don't repeat RN's presentation unless you disagree

(d) For existing patients:
   - as above, but initial resident synopsis is limited to any changes overnight.

(e) To optimize patient care and time management, orders must be written/entered during rounds.

(f) Daily goals are utilized to identify the plan of care. Please summarize these goals at the end of the patient care discussion so all members of the healthcare team are aware of the management plan for the next 24 hours.

5. Afternoon:

Complete tasks left over from rounds (procedures, notes, etc) and see new consults

6. Evening Sign-out Rounds

Monday – Friday at 17:00. Variable start time on the weekend.

(a) Sign-out to on-call resident and Attending (‘B’ team patients will be signed over to the Outreach physician by the attending physician)
(b) Review new developments of that day.
(c) Review goals for the evening.
(d) Order any bloodworm or investigations for the morning.

F. ICU Clinical Duties

1. Consults

Consults must be seen immediately, except preoperative consults for elective surgery, which must be seen on the same day. If you are busy and unable to see the patient immediately, ask another resident (or Fellow or Attending). Once you have had the opportunity to assess the patient, contact the ICU Fellow or ‘B’ team Attending Physician so that the patient can be reviewed, and a disposition decision can be made. If the patient is unstable, call within 5 minutes of your arrival. If a patient is deemed an ICU candidate, he/she should be transferred promptly and should be accompanied by a physician.

2. Admissions

(a) ICU Attending must be notified within ONE hour of all ICU referrals or admissions.
(b) Once the decision has been made to admit the patient, it is necessary to contact the Nurse Clinician to allow for preparation of a bed and adequate nursing coverage.

(c) Notify the unit clerk of resident coverage for patients so it can be recorded on the "patient coverage" board.

(d) Unless prior arrangements have been made, patients who may require ICU admission from the OR should generally be assessed in the Recovery Room. Any patient, either going to or coming from the OR, requires sign over between the anesthetist/surgeon and the ICU resident.

(e) Requests for patient transfer from another hospital should be directed immediately to the ICU attending physician.

(f) Declined admissions:
Call Attending to discuss. Then speak with consulting physician or designate. If he/she disagrees with decision not to admit to ICU, speak with ICU Attending again or have the referring physician speak to with the ICU Attending.

3. Daily responsibilities

(a) Notes
An ICU admission note is required on all new patients. Use History and Physical sheet if patient newly admitted to the hospital. Use progress notes if the patient is a transfer from within the hospital.

Daily notes are compulsory and should be brief (1-1½ pages) and outline active problems and plans.

(b) Role in patient management:
You are expected to assume the role of the physician primarily responsible for each of the patients assigned to you during your rotation. You will be expected to:

- obtain the relevant history
- perform a physical examination daily before rounds
- review laboratory and diagnostic imaging results daily
- develop a management plan for each patient (which may be modified depending on discussions held during rounds.)
- write cogent, legible, complete notes every day on each patient
- ensure orders are entered on each of the patients
- perform all necessary procedures
• order tomorrow’s appropriate lab work and investigations prior to leaving today

If you feel that you are not being adequately involved in the decision-making process, please speak to your Attending physician or Fellow.

(c) Post-call resident:

If you are post-call, ensure that you transfer responsibility (ie verbal sign-over including plan for the day) to another resident prior to going home. The resident(s) accepting responsibility will be expected to act as that patient’s primary resident for the rest of the day. The post-call resident must leave the hospital at 10:00.

(d) Nursing expectations:

• When paged by staff in the ICU, a response is required promptly
• When paged STAT, immediate response to the unit is required
• After placing a call or paging someone, inform the unit clerk and let them know where you will be
• Communicating where you will be and checking with the Nurse Clinician for outstanding issues before you leave the unit will help avoid numerous nuisance calls

4. Procedures

The ICU Fellow or Attending should supervise any procedure done your first time in our ICU. Discuss all invasive procedures with Fellow or Attending prior to doing procedure, if not already discussed on rounds. Never hesitate to ask for help regardless of time of day.

Please enter the procedure into the QS system so that an accurate record of the number and type of your procedures will be available at the end of your rotation for your records.

5. Discharge

(a) Accepting Physician (Discharge planning)

Prior to transfer, contact the accepting physician or his/her designate and speak with him/her directly.

(b) Orders

Enter transfer orders early (ideally before rounds). This includes reviewing all of the current orders, renewing those orders that will be continued on the ward and discontinuing all old orders. The order to “transfer responsibility” should be entered at the time of transfer out of the ICU. Ask the unit clerk to page the
accepting service when the patient is leaving the ICU.

(c) ICU Transfer/Discharge Summary

Write a transfer/discharge summary in the chart as well as dictate the summary. **This must be done before the patient leaves the ICU.** Discharge summaries are for those patients who die, are discharged directly home from the ICU or who are transferred to another hospital. See Appendix 3 for examples. Please record the job ID # given at the end of dictations in the chart.

Send copies to the physicians involved i.e. the accepting and referring physicians, intensivists and any other consultants involved **as well a copy to Dr. Dan Zuege (very important!).**

(d) Deaths

- In every patient that dies, consider approaching the family regarding tissue donation. Please refer to SAOTDP website for more information. Nearly every patient is a candidate for tissue donation.
- Call Medical Examiner where required. See Appendix 4.
- Request permission for autopsy where appropriate (even if the patient is a medical examiners case).
- Complete authorization and history form for autopsy.
- Dictate a Hospital Discharge Summary and record the number in the chart.

6. Acute Physiological Collapse/ Cardiac Arrest ("Code Blue")

The ICU provides the Code Blue/Resuscitation Team for all areas of the hospital excluding the Operating Room and the Emergency Room. It is important that clear direction be given during a code. The ICU resident should act as Code Team leader and direct the resuscitation. Delegate tasks (ie procedures) to other residents on the code team. More discussion on code blues will occur at the Orientation Course.

For codes that occur in the GI unit on the main floor, follow the code team. The access door is invariably locked and protected by a code. The code team will be able to get in.

Pediatric Arrest

The Code Team responds to any arrest on the pediatric ward. The ER physician is also called and runs the code. Anesthesia is also supposed to respond. Make sure that they have been notified. The equipment and drugs for resuscitation are on the resuscitation cart as well as the dosages of the drugs.

Code 31

A new process termed 'code 31' will be initiated Feb 1 at PLC. Essentially this is a code 66 type response for paediatric patients with ER nurses and a ER doc the responding team. It does not involve ICU. Code 31 will be announced overhead. If things
deteriorate, then 'paediatric code blue' may be initiated and, as per current practice, the ICU code blue team does respond to bring equipment (crash cart and peds resuscitation bag) and people (us) to the scene. The ER doc still leads the resuscitation.

7. **ICU Outreach Team – Code 66**

The ICU Outreach Team was developed to assist in the timely management of patients at risk of developing critical illness. Any staff member in the hospital has the ability to call a Code 66 for patients they are concerned about or that meet specific physiologic criteria. The intent is to intervene before the patient becomes so unstable that a Code Blue must be called.

Once a Code 66 has been activated, it is expected that the team (Outreach MD, ICU resident or Attending, ICU RN and RT) will arrive within 5 – 15 minutes. During the day (0800-1700), seven days per week, the ICU resident will act as first responder to all Code 66 calls. Once there, you will treat the patient as you would any ICU consult; if they require ICU admission, discuss the case with the ICU attending physician. If after discussion with the ICU attending it is felt that the patient can be managed on the ward, return care to the admitting service with the appropriate recommendations regarding work-up and management. The Outreach RN and RT will follow-up with the patient to assess response to interventions.

The PLC has hired 4 dedicated physicians to this team (Kizza Muwanguzi, Victor Fadayomi, Tayo Dawodu and Victor Agoha). They are responsible for this service 7 days/week from 1700-0800. During these times, they will act as first responders to all Code 66 calls. You are encouraged to participate in the consults if you are not otherwise occupied in the ICU or on a consult. In the event that no Outreach MD is scheduled for call, the ICU resident will act as the physician leader for the team.

8. **QS (Quantitative Sentinel) System**

QS is a clinical database which records nursing notes, clinical information, vital signs, laboratory data, and procedures and can be accessed from all computers in the ICU. Orders must still be entered in the traditional format. You will be given an access code and an inservice on how to use it on the first day of your rotation. **All procedures performed on patients must be entered into QS using your username and password.**

9. **Diagnostic Imaging:**

All diagnostic images are digital and are stored and viewed via the PACS or IMPAX system. Those who have not received training on these systems will be orientated early on in your rotation.

G. **Teaching activities**

The ICU learning environment is based on a list of objectives that can be found in Appendix 5. These can be used to guide your reading during your rotation.
(b) ICU Orientation (Crash) Course:
- Held on the first Monday of every block from 08:00 to 17:00 in the PLC ICU Classroom
- Attendance is mandatory. Residents completing two or three block rotations should only attend during their first block. Residents that are returning to the ICU and have completed the Crash Course should report to the unit where they are starting their rotation.
- The purpose is to review the basics that every resident should know for their first week in an ICU. (See Appendix 6 for a list of topics)

(c) Formal Didactic Rounds:
- The core lecture series reviews the common clinical presentations that are encountered within an ICU; these lectures are mandatory for all residents in their first block of ICU. The advanced lecture series explores the core topics to a more in-depth level and introduces new concepts; these lectures are mandatory for residents that have already completed one block of ICU, and are optional for those in their first block. (See Appendix 7 for a list of topics)

- Lecture schedule:
  
  Monday:  08:00 – 08:30  Advanced lecture series
  Tuesday:  08:00 – 08:30  Core lecture series
  Wednesday:  08:30 – 09:30  ICU Grand Rounds
  Thursday:  08:00 – 08:30  Core lecture series
  Friday:  08:00 – 08:30  Advanced lecture series

- Check the Intranet for an up to date schedule listing the topics for each day of your rotation. The lectures will be broadcast via telehealth to the ICU Classroom (Rm 2050). ICU Grand Rounds will be held in the ICU Classrooms 2042.1 and 2042.2.

(d) Morning rounds daily:
- During patient rounds, informal educational sessions will take place.

(e) Afternoon discussion topics:
- Time permitting, informal teaching sessions will be held on topics as determined by the residents and the attending physician that week.

(f) Infection Prevention Session:
- There will be a hand hygiene & infection prevention session for residents from 08:30 to 09:00 at each site on the first Friday of every block. This is an interactive session with the infection prevention and control practitioners.

(g) Ventilation, nutrition and sepsis sessions:
- Times will vary. Please check the resident’s schedule.
H. **Evaluation Process**

The evaluation process has four components:

1. **Resident evaluation of the rotation:**
   - At the end of their rotation, each resident is required to complete an online evaluation of the rotation. The form will be emailed to the resident.

2. **Resident evaluation of the preceptors:**
   - At the end of each block, the resident is required to complete an online evaluation of each of the attending physicians and fellows with whom they worked. This form will also be emailed to the resident.

Feedback provided by residents is anonymous and is considered extremely valuable in helping us improve the rotation for future residents. You are required to complete these evaluation forms prior to the end of your rotation.

3. **Subjective evaluation of the resident:**
   - The goal is to provide feedback as appropriate on a day-to-day basis. At the end of each block, a formal evaluation is undertaken. (See Appendix 8) Input is sought from all Attendings who have worked with the resident and from nursing staff. The PLC Resident Education Coordinator (or delegate) will review the final evaluation with you in person on the last day of the rotation. In between formal evaluations, please remember that you should bring any concerns to the attention of the Attending physician (or Education Coordinator – Dr. Luc Berthiaume) as soon as possible.

I. **Clinical Trials**

The Attending will discuss current clinical trials with you.

J. **Clinical Practice Guidelines (CPG)**

Regional and unit specific guidelines have been developed to assist physicians and other health care providers in providing care, improve quality of care and/or decrease costs. These are available on the Critical Care website and can be accessed via the bedside computers.

K. **Organization of Resident Call**

Call frequency will not be more than 1 in 4.

Bedside physicians are intermittently on call weeknights and weekends. Should this happen during the week, please notify the Attending and Unit Clerk as to which ICU resident will be responsible for new consults between 08:00 and 17:00. On Thursdays, residents are expected to cease clinical activities at 12:00 in order to attend their program’s academic teaching activity. Coverage on Thursday afternoons will be
provided by a bedside physician or the ICU Attending.

Vacation is discouraged if you are only doing one month of ICU as the experience will be limited and we will not be able to provide a thorough evaluation. Please submit your requests at least two months prior to the start. Requests submitted less than two months prior to the rotation may not be granted. Requests are considered on a first come first serve basis.

Call rooms are located just outside of the main doors to the ICU. Card keys will be distributed to residents on the first day of the rotation.

Please also notify Nolaine (ICU secretary 943-4308) and the ICU attending if any STAT days are going to be taken, preferably in writing and in advance.

L. **Resources**

**Intranet:**

The Critical Care Medicine web page can be accessed from any of the computers within the Alberta Health Services. ([http://iweb.calgaryhealthregion.ca/clin/icu/](http://iweb.calgaryhealthregion.ca/clin/icu/)). From here, click on “Education/Research” on the left-hand side of the page to link to many useful educational resources:

- (a) Powerpoint slides for each of the presentations in the lecture series.
- (b) PDF’s of the landmark articles pertinent to Critical Care Medicine.
- (c) A link to Critical Care Medicine Tutorials.
- (d) Videos outlining how to complete various invasive procedures. (In progress)

The intranet home page also provides many links to other useful resources including:

- (a) call schedules
- (b) clinical practice guidelines
- (c) medication information
- (d) active research protocols

**ICU Library**

The ICU library has a number of books as well as a binder with reference articles. There is also a computer with Internet access. Worthwhile sites are posted in the library. You are given a key to access the library which must be returned at the end of your rotation. We ask that you respect this facility and its contents. If articles are photocopied, please return the article to the binder. Please do not leave any books lying around outside of the library.

**Hospital Library**

Access after hours is possible by contacting security.

“**OR Scrubs**”
There are OR scrubs available at the Linen Distribution Room – Level O Room 0213 – for the ICU residents.

M. **Advanced Care Planning (Goals of care)**

Determination of goals of care is a difficult problem and must only be done in conjunction with the ICU Attending. The patient’s wishes are paramount, expressed either in written form or verbalized (as long as the patient is orientated and aware of the consequences of the decision). If the patient is not able to make a decision, then the level of care is determined by the patient’s condition and expectations of a meaningful recovery after discussing the situation with the family and other consultants if necessary. The patients’ best interests are always kept at the forefront.

See Appendix 9 for details.

N. **E Board Access Guide PLC**
The **PLC ICU Unit 28 e-Board** is an electronic version of the unit whiteboard where staff assignments are posted. The e-Board can be viewed in QS with the following steps:

**Step 1:** Log in to the QS system

**Step 2:** Click the **e-Board** icon in the lower left side of the screen

Figure 1. e-Board icon
APPENDIX 1:

NURSING PRESENTATION FORMAT

NURSING REPORT

1. Vital signs: temp, heart rate, and blood pressure
2. Consciousness and current sedation (including 24 hour totals)
3. Hemodynamic data: MAP, PAWP, CVP. SaO₂, SvO₂, current inotropes
4. Respiratory: further comments on RT’s report
5. Nutrition and GI prophylaxis
6. DVT prophylaxis, extremity/wound care i.e. splints, special dressings
7. Fluid balance: total for 24 hours, recent urine output, current IV fluids
8. Lines: site, type, and duration
9. Family and communication concerns
10. Medications
11. Concerns
APPENDIX 2:

RESPIRATORY THERAPY OVERVIEW

1. **RT – Resident Interaction:**
   - Communication needs to occur on an ongoing basis.
   - A team approach optimizes efficiency, effectiveness and overall patient care.

   The RTs should be used as a resource for respiratory therapy.
   - RTs will set a patient up on mechanical ventilation and will assist you with set up of parameters, e.g. F, VT, FiO₂, PEEP and mode of ventilation.
   - A review of ventilatory modes will be provided at the ICU Crash Course.
   - Orders for ventilator and ABGs should be written in Physicians’ Orders by the resident.
   - RTs can write verbal orders and will update orders at the end of their shift.
   - If a minor change is to be made on the ventilator, then we will make the change and notify you when convenient.

2. **Titration Orders:**
   - FiO₂ will be titrated according to what SaO₂ is adequate for patient (generally sats > 90%, sometimes > 85%). Write guidelines as an order.
   - Respiratory Rate can be adjusted to maintain either a normal PaCO₂ of 35 – 40 mmHg or hyperventilate to PCO₂ – 30 mmHg, or give desired range for pH.
   - Weaning modes should be discussed with RTs. Various options available, i.e. pressure support/CPAP, T-piece, Flow-By, SIMV/pressure support, MMV.
   - RTs will notify you if ABGs are deteriorating, or if there are any major changes in ventilation or oxygenation.

3. **Codes:**
   - RTs at codes are certified to procure femoral or radial arterial blood gases, and analyze gases.
   - There are generally two RTs at codes.

4. **ABGs:**
   - RTs draw ABGs throughout the institution, and we analyze all ABGs.
   - RNs in ICU obtain ABGs from arterial lines.

In AM we start at 0700 hours and are quite aggressive in obtaining weaning parameters, weaning and extubation. If this is done early, then transfers can occur promptly.
RESPIRATORY REPORT

1. Present ventilator parameters
2. Compliance/ventilating pressures
3. Non-invasive monitoring (pulse oximetry, capnography, transcutaneous, etc)
4. Pulmonary examination
5. Arterial/mixed venous blood gases
6. Suction passes
7. Weaning parameters where appropriate
8. Problems with ventilation/oxygenation
9. Suggestions in ventilator management
APPENDIX 3:

TRANSFER SUMMARY EXAMPLE (code 55)
Call 944-4444 to access dictation service. You will need your Alberta College of Physicians and Surgeons ID# to complete the dictation.

The transfer summary is meant to give the accepting physician an overview of the patient, focusing on their ICU course.

1) Patients name/ID #
   Site identifier: 93
   The Attending you are dictating for.
2) Copies to: Intensivist
   Admitting and accepting physicians
   Any involved consultants
   Dr. Dan Zuege
3) Admission/transfer dates
4) Most responsible diagnosis for ICU admission
5) Secondary diagnoses
6) Brief summary of the patient at presentation to the ICU and co-morbidities
7) Course in ICU
8) Problem list with plan for each problem – this is the most important information.
9) List of medications/treatments the patient is on

DISCHARGE SUMMARY EXAMPLE (code 20)
Call 944-4444 to access dictation service. You will need your Alberta College of Physicians and Surgeons ID# to complete the dictation.

1) Patients name/ID #
   Site identifier: 93
   The Attending you are dictating for.
2) Copies to: Intensivist
   Admitting physician
   Any involved consultants
   Dr. Dan Zuege
3) Admission/discharge dates
4) Most responsible diagnosis
5) Secondary diagnoses
6) Summary of the patients’ need for hospitalization and course prior to presentation to the ICU. Co-morbidities.
7) Course in ICU. For long admissions, it is helpful to organize this section in separate paragraphs for each item on the problem list.
8) List of medications/treatments the patient is on. Plan for follow up if patient is discharged from ICU.
APPENDIX 4:

CHECKLIST FOR NOTIFICATION TO MEDICAL EXAMINER

1. Unexplained deaths
2. Unexplained deaths when the deceased was in apparent good health or death when not expected under the care of a physician.
3. Deaths as a result of violence, accident, suicide or poisoning
4. Deaths as a result of improper or negligent treatment
5. Deaths that occur within 10 days of an operative procedure or while under or during recovery from anesthesia
6. Deaths while in custody of any person
7. Deaths resulting from any disease, ill health, injury or toxic substance arising from a person’s occupation at any time.
8. Death of a formal patient of any mental health facility or any other institution defined in regulations under this act.
9. Death of a young person under child welfare custody
10. Organ donation

Telephone 297-8123
APPENDIX 5:

Faculty of Medicine
Critical Care Medicine

Intensive Care Unit Rotating Resident Curriculum

Goals:

By the end of their rotation in the Intensive Care Unit, every resident will be able to:

1. Rapidly identify an unstable or critically ill patient, and subsequently initiate resuscitation and investigations.
2. Define and describe the ten common clinical presentations as outlined in the Learning Objectives.
3. Discuss end-of-life issues and demonstrate methods to help family members of critically ill patients cope.
4. Work effectively in a multidisciplinary team environment.
5. Demonstrate effective and ethical decision-making skills.

Learning Objectives:

Medical expert:
Given the large number of potential medical and surgical clinical problems that a resident may be exposed to in the intensive care unit, educational efforts are focused on ten of the most common and life-threatening clinical presentations. This is by no means an exhaustive list, and therefore, it is the responsibility of the resident to demonstrate effective adult learning strategies when faced with a patient presenting with a clinical problem not directly covered by this curriculum.

Ten Clinical Presentations:

1. Acute Respiratory failure
2. Shock
3. Cardiac dysrhythmias
4. Cardiac arrest
5. Derangements of serum electrolytes and osmolality
6. Acid/base disorders
7. Decreased level of consciousness and seizures
8. Drug intoxication and withdrawal
9. Sepsis
10. Traumatic injury
For each of the ten clinical presentations listed above, by the end of their ICU rotation, each resident will be able to:

1. Describe the epidemiology and etiology of the presentation.
2. Describe the physiology and pathophysiology that is clinically relevant to the presentation.
3. Describe, and in the relevant clinical setting demonstrate, the appropriate initial and ongoing investigations pertinent to the presentation.
4. Demonstrate successful completion of any of the skills listed in Part 2 that may be applicable to the presentation. In addition, the resident will need to demonstrate effective interpretation of any relevant results that are obtained from these procedures.
5. Describe, and in the relevant clinical setting demonstrate, the appropriate initial and ongoing management required for the presentation. In addition, interpret and act on the patient's response to these therapeutic interventions.
6. Describe the potential complications associated both with the clinical presentations and with the therapies that are typically used in each setting.
7. Describe prognosis, taking into consideration patient co-morbidities.

**Communicator:**

By the end of their ICU rotation, each resident will be able to:

1. Demonstrate the ability to succinctly, coherently and accurately communicate information to the members of the entire health care team, patients and their families via both written (chart/consult notes) and verbal (daily rounds, patient presentations and family meetings) methods.
2. During interactions with the patient and their families, create a relationship based on trust, honesty and openness through effective listening and communication skills.
3. Develop an appreciation for different methods of obtaining code level status, withdrawal of care and end-of-life issues by attending and participating in family conferences with different critical care medicine attending physicians.

**Scholar:**

By the end of their ICU rotation, each resident will be able to:

1. Demonstrate the principles of life-long learning by actively reading around patients' clinical issues, attending all scheduled educational activities and participating actively in daily bedside rounds.
2. Incorporate the principles of evidence-based medicine into their patient management strategy.
Manager:

By the end of their ICU rotation, each resident will be able to:

1. Demonstrate the ability to use their time effectively by appropriately prioritizing tasks, delegating as required and ensuring adequate time for extracurricular activities is maintained.
2. Recognize the finite nature of health care resources and, in the setting of patient-centered care, will prioritize investigations and treatments appropriately.

Collaborator:

By the end of their ICU rotation, each resident will be able to:

1. Demonstrate respect for and interact effectively with all members of the health care team.

Health Advocate:

By the end of their ICU rotation, each resident will be able to:

1. Demonstrate clinical decisions and professional attitudes that are consistent with the patient's best interests.

Professional:

By the end of their ICU rotation, each resident will be able to:

1. Demonstrate the principles of ethical decision making and maintain a professional demeanor in all interactions with patients, their families and members of the health care team.

Procedural Objectives:

By the end of the rotation, the resident will have gained experience with and be able to perform the following procedures, either independently or with minimal supervision:

1. Bag-mask ventilation
2. Endotracheal intubation
3. ECG and rhythm strip interpretation
4. Central venous catheter insertion
In addition, when the opportunity arises, the resident will be expected to undertake the following procedures, either with supervision or independently:

1. Arterial line insertion
2. Pulmonary artery catheter insertion and hemodynamic monitoring
3. Chest tube insertion
4. Thoracentesis
5. Paracentesis
6. Joint aspiration
7. Interpretation of simple spirometry
8. Lumbar puncture
9. Bone marrow biopsy and aspiration
10. Pericardiocentesis

In regards to the skills listed above, by the end of the rotation the resident will be able to:

a. List indications, contraindications and potential complications for each procedure.
b. Confirm appropriate placement of catheters and tubes when presented with a post-procedure chest x-ray.
Specific Knowledge Objectives:

This section of the objectives is not required reading, but is supplied for those residents who wish more guidance on the expectations for depth and breadth of knowledge for the ten clinical presentations.

1. Acute Respiratory Failure

Given a critically ill patient presenting with respiratory failure, by the end of the rotation the resident will be able to:

1.1. Describe the five basic mechanisms that can lead to hypoxemia:
   1.1.1. Low partial pressure of oxygen
   1.1.2. V/Q mismatch
   1.1.3. Right-to-left shunt
   1.1.4. Decreased diffusion
   1.1.5. Hypoventilation

1.2. For each of the mechanisms listed above, list two representative clinical examples.

1.3. Describe the four basic mechanisms that can lead to hypercapnia:
   1.3.1. V/Q mismatch
   1.3.2. Decreased diffusion
   1.3.3. Hypoventilation
   1.3.4. Right-to-left shunt

1.4. For each of the four mechanisms listed above, list at least two representative clinical examples.

1.5. Rank as important the fact that more than one of the above mechanisms may be simultaneously involved in a case of respiratory failure.

1.6. Describe the concepts of compliance, elastance and resistance as they apply to the normal respiratory system.

1.7. Describe the normal physiology of gas exchange at the level of the alveolus.

1.8. Based on results of the history, physical exam, chest x-ray and arterial blood gas, present a focused differential diagnosis for the potential etiology of the respiratory failure.

1.9. List signs and symptoms suggestive of impending respiratory failure.

1.10. For the following conditions describe the epidemiology, etiology, pathophysiology, clinical presentation, pertinent investigations and initial management:
   1.10.1. Severe community-acquired pneumonia
   1.10.2. Nosocomial pneumonia (including ventilator-acquired)
1.10.3. Aspiration pneumonitis/pneumonia
1.10.4. Status asthmaticus
1.10.5. COPD exacerbation
1.10.6. Thromboembolic disease
1.10.7. Pneumothorax, including tension pneumothorax
1.10.8. Endotracheal tube migration
1.10.9. Massive pleural effusion
1.10.10. Empyema
1.10.11. Extrapulmonary causes of respiratory failure:
   1.10.11.1. etiologies related to central nervous system dysfunction
   1.10.11.2. etiologies related to peripheral nervous system dysfunction
   1.10.11.3. etiologies related to neuromuscular junction dysfunction
   1.10.11.4. etiologies related to musculoskeletal system dysfunction

1.11. Describe, and in the appropriate clinical context demonstrate, the appropriate management of a patient in severe respiratory distress.

1.12. List at least 6 findings on clinical examination that can be used to predict a potentially difficult airway.

1.13. Define Acute Respiratory Distress Syndrome (ARDS) and Acute Lung Injury (ALI)

1.14. List the 4 diagnostic criteria for ARDS.

1.15. Describe the epidemiology of ARDS.

1.16. List at least 5 clinical disorders that can potentially trigger ARDS under each of the major categories of direct lung injury and indirect lung injury.

1.17. Describe the pathophysiology of ARDS, including the three phases of ARDS.

1.18. In the setting of ARDS, define low tidal volume ventilation and be able to calculate the appropriate target tidal volume when given the ideal body weight.

1.19. Describe the rationale for using low-tidal volume mechanical ventilation in patients with ARDS.

1.20. List at least 6 potential complications for patients with ARDS.

1.21. Describe the following modes of ventilation, and give a clinical example of when it would be appropriate to use each mode in the ICU:
   1.21.1. Pressure support ventilation (PSV)
   1.21.2. Controlled mandatory ventilation (assist-control ventilation) (CMV/AC)
   1.21.3. Pressure control ventilation (PCV)
   1.21.4. Synchronized intermittent mandatory ventilation (SIMV)
   1.21.5. Mandatory minute ventilation (MMV)
   1.21.6. Non-invasive ventilation
      1.21.6.1. Continuous positive pressure ventilation (CPAP)
      1.21.6.2. Bi-level positive airway pressure ventilation (BiPAP)

1.22. Define positive end-expiratory pressure (PEEP).

1.23. List and describe the indications for initiation and discontinuation of mechanical ventilation.

1.24. List and describe the indications for initiation and discontinuation of non-invasive ventilation.

1.25. List and describe the contraindications for non-invasive ventilation.

1.26. Interpret an arterial blood gas.

1.27. On a chest x-ray, identify:
   1.27.1. consolidation
   1.27.2. atelectasis
   1.27.3. pleural effusion
   1.27.4. pneumothorax
   1.27.5. pulmonary edema
1.27.6. free air in the abdomen
1.27.7. traumatic injuries
1.27.8. appropriate placement of tubes and lines or complications associated with their insertion

2. Shock

Given a critically ill patient presenting in shock, by the end of the rotation the resident will be able to:

2.1. Define shock.
2.2. Name the four broad categories of shock, and give at least two etiologies for each.
2.3. Describe the pathophysiology of the different categories of shock.
2.4. Be able to differentiate, based on clinical examination or from the parameters obtained from a pulmonary artery catheter, the different broad categories of shock, using the following table as a guide:

<table>
<thead>
<tr>
<th>Category of shock</th>
<th>Central venous pressure</th>
<th>Pulmonary capillary wedge pressure</th>
<th>Cardiac index</th>
<th>Systemic vascular resistance index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiogenic</td>
<td>↑</td>
<td>↑</td>
<td>↓</td>
<td>↑</td>
</tr>
<tr>
<td>Hypovolemic</td>
<td>↓</td>
<td>↓</td>
<td>↓</td>
<td>↑</td>
</tr>
<tr>
<td>Obstructive</td>
<td>↑</td>
<td>↓</td>
<td>↓</td>
<td>↑</td>
</tr>
<tr>
<td>Distributive</td>
<td>↓ or ↔</td>
<td>↓ or ↔</td>
<td>↑ or ↓ or ↔</td>
<td>↓</td>
</tr>
</tbody>
</table>

2.5. Describe the clinical manifestations of end-organ dysfunction for the cardiovascular, renal and central nervous systems.
2.6. Describe initial investigations that would be undertaken to determine the etiology of the shock.
2.7. Demonstrate the ability to rapidly and correctly diagnose, investigate and initiate management of a patient with shock.
2.8. Demonstrate or describe a logical approach to the components of resuscitating a patient in shock. (Based on the principles of preload, contractility, rate, rhythm and afterload)
2.9. Know the formula for oxygen delivery and describe how it is useful to help guide resuscitation of a patient in shock.
2.10. Describe the major mode of action, indications, contraindications and complications of the following vasoactive medications:
   2.10.1. dopamine
   2.10.2. norepinephrine
   2.10.3. epinephrine
   2.10.4. dobutamine
   2.10.5. milrinone
   2.10.6. vasopressin
   2.10.7. phenylephrine
2.11. List at least five parameters that can be used to determine adequacy of resuscitation.
2.12. Recognize when the situation cannot be handled by the resident alone, and call for help in a timely fashion.
2.13. In general terms, describe the prognosis of the different types of shock.
3. Cardiac Dysrhythmias

Given a critically ill patient presenting with a cardiac dysrhythmia, by the end of the rotation the resident will be able to:

3.1. Correctly identify the following rhythms when given an ECG tracing:
   3.1.1. sinus tachycardia
   3.1.2. sinus bradycardia
   3.1.3. atrial fibrillation
   3.1.4. atrial flutter
   3.1.5. atrioventricular re-entrant tachycardia (AVRT)
   3.1.6. atrioventricular nodal re-entrant tachycardia (AVNRT)
   3.1.7. ventricular fibrillation
   3.1.8. ventricular tachycardia
   3.1.9. first degree atrioventricular block
   3.1.10. second atrioventricular block
   3.1.11. third atrioventricular block

3.2. List potential precipitating causes for each of the above rhythms.

3.3. Describe the immediate management of a stable and unstable patient for each of the above rhythms.

4. Cardiac Arrest

Given a patient presenting in cardiac arrest, by the end of the rotation the resident will be able to:

4.1. Rapidly and accurately recognize a patient who is in cardiac arrest.
4.2. Lead the cardiac arrest team, with the aid of a critical care medicine fellow or attending physician if required.
4.3. Describe the initial management of a patient in cardiac arrest.
4.4. Correctly interpret the ECG rhythm strip, recite and execute the appropriate ACLS algorithm and order the appropriate investigations for the following dysrhythmias:
   4.4.1. ventricular fibrillation
   4.4.2. ventricular tachycardia
   4.4.3. torsades des pointes
   4.4.4. asystole
   4.4.5. pulseless electrical activity (PEA)
   4.4.6. severe bradycardia
   4.4.7. supraventricular tachycardia

4.5. Initiate appropriate management and investigations simultaneously.
4.6. List the 10 most common etiologies of a PEA arrest.
4.7. State that the most common contributing factor to cardiac arrests in Canada is coronary artery disease.
4.8. As outlined in the skills objectives, successfully perform bag-mask ventilation, endotracheal intubation, external chest compressions, DC cardioversion, defibrillation and central venous catheter insertion as required.
4.9. List confounding factors that merit prolonged resuscitative efforts, such as young age, hypothermia and barbiturate overdose.
4.10. In general terms, describe the prognosis of patients suffering a cardiac arrest.
4.11. In consultation with the critical care medicine fellow or attending physician, demonstrate the ability to terminate resuscitative efforts when the situation has become futile.

4.12. Demonstrate care and compassion when discussing with the patient’s family the outcome of an unsuccessful resuscitation of a cardiac arrest.

5. Derangements of Serum Electrolytes and Osmolality

Given a patient presenting with a life-threatening derangement of serum electrolytes or osmolality, by the end of the rotation the resident will be able to:

5.1. For the following electrolyte disturbances describe the potential etiologies, clinical manifestations, investigations, management and potential complications for patients in the ICU:
   5.1.1. Hypo/hypernatremia
   5.1.2. Hypo/hyperkalemia
   5.1.3. Hypo/hypercalcemia
   5.1.4. Hypo/hypermagnesemia
   5.1.5. Hypo/hyperphosphatemia

5.2. Specifically, the resident will be able to:
   5.2.1. Describe the relative concentrations of each of the major anions and cations in the intracellular and extracellular spaces
   5.2.2. Describe the handling of sodium, potassium and water at the level of the kidney.
   5.2.3. Calculate the sodium or free water deficit in a patient with hyponatremia or hypernatremia, respectively.
   5.2.4. Define the desired maximum rate of serum sodium concentration change per hour in a patient with hypo or hypernatremia, and describe the potential complications associated with rapid correction of sodium above this rate.
   5.2.5. Describe the appropriate management of hyperkalemia.
   5.2.6. Define the concentration of sodium in mmol/L in the following solutions: D5W, 0.45% saline, 0.9% saline, 3.0% saline, lactated ringer’s.
   5.2.7. Identify the components used to calculate an osmolal gap, and when given the appropriate clinical information, calculate the osmolal gap.

6. Acid-base Disorders

Given a patient presenting with an acid-base disorder, by the end of the rotation the resident will be able to:

6.1. discuss etiology
6.2. diagnosis and management of
   6.2.1. metabolic acidosis
       6.2.1.1. anion gap
       6.2.1.2. non-anion gap
   6.2.2. metabolic alkalosis
   6.2.3. respiratory acidosis
       6.2.3.1. acute respiratory acidosis
       6.2.3.2. chronic respiratory acidosis
   6.2.4. respiratory alkalosis
       6.2.4.1. acute respiratory alkalosis
6.2.4.2. chronic respiratory alkalosis

6.3. Describe the effect of acid-base abnormalities on the following organ systems:
6.3.1. Central nervous system
6.3.2. Cardiovascular system
6.3.3. Respiratory system
6.3.4. Renal system
6.3.5. Hematologic system (specifically hemoglobin)
6.3.6. Musculoskeletal system
6.3.7. Gastrointestinal system

6.4. Identify the components used to calculate an anion gap, and when given the appropriate clinical information, calculate the anion gap.

7. Decreased level of consciousness (LOC) and Seizures

Given a critically ill patient presenting with decreased LOC or seizures, by the end of the rotation the resident will be able to:

7.1. Recognize the importance of obtaining collateral history from family, friends, first responders and previous medical documentation.
7.2. Describe the pathophysiology of coma.
7.3. Demonstrate or describe the key findings on physical examination that would help guide investigations and management.
7.4. Describe initial management of a patient with decreased LOC, specifically components of the initial resuscitation including airway and cardiovascular system management.
7.5. Describe the typical clinical presentation, investigations required to confirm the diagnosis, initial management and potential complications for the following etiologies of decreased LOC:
   7.5.1. shock
   7.5.2. sepsis
   7.5.3. meningitis/encephalitis
   7.5.4. seizure, including status epilepticus
   7.5.5. hepatic failure
   7.5.6. renal failure
   7.5.7. hypercarbic respiratory failure
   7.5.8. hypo/hyperglycemia
   7.5.9. hypo/hyponatremia
   7.5.10. hypothyroidism
   7.5.11. medication intoxication
7.6. List at least 5 common precipitants for seizures.
7.7. List the appropriate investigations needed to diagnose seizures and to determine the underlying cause of the seizures.
7.8. Describe the management of a patient presenting with seizures:
   7.8.1. initial stabilization of an actively seizing patient
   7.8.2. pharmacologic management of a patient with new onset seizures
7.9. In regards to a patient presenting with status epilepticus:
   7.9.1. state a definition for status epilepticus
   7.9.2. list potential precipitants
   7.9.3. describe immediate management
8. Drug Intoxication and Withdrawal

Given a patient presenting with a suspected or confirmed acute drug intoxication or withdrawal syndrome, by the end of the rotation the resident will be able to:

8.1. Describe typical clinical presentation, investigations required to confirm the diagnosis, management, including any potential antidotes, and potential complications for a patient presenting with a toxic syndrome related to each of the following substances:
   8.1.1. ethanol
   8.1.2. methanol
   8.1.3. ethylene glycol
   8.1.4. aspirin
   8.1.5. acetaminophen
   8.1.6. tricyclic antidepressants
   8.1.7. opioids
   8.1.8. amphetamines
   8.1.9. isopropyl alcohol

8.2. Recognize the importance of timely gastric decontamination in a patient with suspected overdose.

8.3. Describe how drugs are absorbed from the gastrointestinal tract.

8.4. Describe the pathophysiology, timing of onset, clinical manifestations, differential diagnosis and appropriate treatment for a patient presenting with suspected alcohol withdrawal.

9. Sepsis

Given a patient presenting with suspected or confirmed systemic inflammatory response syndrome (SIRS), sepsis or severe sepsis, by the end of the rotation the resident will be able to:

9.1. Define SIRS, sepsis, severe sepsis and septic shock.
9.2. Describe the incidence, prevalence and mortality rate for sepsis and septic shock
9.3. List the five most common pathogenic organisms responsible for sepsis in North America.
9.4. Describe the role that microbial factors (endotoxin, LPS) and host factors (immune response) play in the host response to sepsis.
9.5. Describe the effects of sepsis on the microcirculation of the patient and how this manifests clinically.
9.6. Describe the potential effects that sepsis has on each of the following body organs:
   9.6.1. Heart and vasculature
   9.6.2. Lungs
   9.6.3. Kidneys
   9.6.4. Gastrointestinal tract
   9.6.5. Central and peripheral nervous system
   9.6.6. Muscles
9.7. List at least four risk factors for the development of sepsis.
9.8. List at least six physical exam findings that would support a diagnosis of sepsis.
9.9. Be aware that in certain populations (eg immunocompromised patients), there may be few clinical manifestations of sepsis, and therefore a high index of suspicion is required to make the diagnosis.
9.10. Describe potential abnormalities on the following investigations that may be seen in a patient with sepsis:
  9.10.1. CBC
  9.10.2. Electrolytes
  9.10.3. Glucose
  9.10.4. Creatinine/BUN
  9.10.5. Liver studies
  9.10.6. INR/PTT

9.11. Discuss, using examples from their own clinical experience, the importance of rapidly locating and eradicating the source of infection.

9.12. Demonstrate the ability to rapidly and correctly diagnose, investigate and initiate management of a patient with sepsis.

9.13. List indications for endotracheal intubation and mechanical ventilation in a patient with sepsis or septic shock.

9.14. Describe the rationale for the use of, indications for, timing of initiation of, appropriate endpoints for and, in the appropriate clinical setting, demonstrate the appropriate use of the following potential components of therapy:
  9.14.1. "early goal-directed therapy"
  9.14.2. antimicrobials
  9.14.3. fluids
  9.14.4. vasoactive agents
  9.14.5. recombinant activated protein C
  9.14.6. steroids
  9.14.7. insulin

9.15. Describe the prognosis of sepsis.

10. Trauma

Given a critically ill patient presenting with a traumatic injury, by the end of the rotation the resident will be able to:

10.1. Respond in a timely fashion to the trauma room for all Level One traumas.
10.2. Actively participate in the resuscitation of the trauma patient under the direct guidance of the Trauma Team Leader.
10.3. Describe the ATLS protocol for initial resuscitation of the trauma patient.
10.4. Given the appropriate parameters, calculate a Glasgow Coma Scale (GCS) score.
10.5. In the ICU, complete a thorough secondary survey to identify any injuries that may have not previously been identified.
10.6. List the initial investigations, management and potential complications for traumatic injuries to the following body areas:
  10.6.1. Head and neck
  10.6.2. Chest
  10.6.3. Abdomen
  10.6.4. Spine
  10.6.5. Extremities
10.7. Specifically for the patient with traumatic brain injury:
  10.7.1. List the initial physiologic goals (MAP, temperature, pH, PaCO₂, and glucose) for a patient with a traumatic brain injury and elevated intracranial pressure.
  10.7.2. List the indications for an ICP monitor.
  10.7.3. Define cerebral perfusion pressure.
  10.7.4. List factors that cause secondary brain injury, and describe methods that can be used to prevent or treat them.

10.8. Discuss the rationale for using crystalloids versus colloids in the resuscitation of a patient with traumatic injuries.

10.9. List the potential acute and long-term complications (approximate incidence per unit transfused) of transfusions of red blood cells, platelets and fresh frozen plasma.

10.10. List the clinical indications for the transfusion of red blood cells.

10.11. List the coagulation factors contained in fresh frozen plasma and cryoprecipitate.

10.12. List the complications of massive transfusion.

10.13. State the incidence and prevalence of deep vein thrombosis (DVT) in patients admitted to the ICU.

10.14. List the appropriate DVT prophylaxis regime for the following patient populations:
  10.14.1. multi-trauma
  10.14.2. acute spinal cord injury
  10.14.3. neurosurgical patient

10.15. Describe the appropriate investigations for ruling in or out a suspected DVT or pulmonary embolism (PE).

10.16. Describe the appropriate management of confirmed or suspected pulmonary embolism in the following patient populations:
  10.16.1. stable multi-trauma patient
  10.16.2. hemodynamically unstable multi-trauma patient
  10.16.3. actively bleeding multi-trauma patient
  10.16.4. severe traumatic brain injury patient
APPENDIX 6:

ORIENTATION (CRASH) COURSE TOPICS

Held on first Monday of every block 0800 – 1700 in PLC ICU Classroom

All Residents
0745 – 0800  Distribution keys, pagers QS codes
0800 – 0900  Infection Control Practitioner (Hand Hygiene session)
0900 – 0915  Break
0915 – 0945  Introduction to the ICU
0945 – 1015  Principles of Crisis Resource Management – Cardiac Arrests
1015 – 1030  Break

Group A                                      Group B

1030 – 1115  Intubation                      Ventilation
1115 - 1200  Ventilation                     Intubation
1200 – 1230  Lunch/SCM/QS                   Lunch/SCM/QS
1230 – 1330  Simulation                      Central Line Insertion
1330 – 1430  Central Line Insertion         Simulation
1430 – 1445  Break                          Break
1445 – 1545  Simulation                      Shock/Vasoactive Agents
1545 – 1645  Shock/Vasoactive Agents        Simulation
1645 – 1700  Wrap Up                        Wrap Up
APPENDIX 7:

TOPICS COVERED IN CORE CONTENT AND ADVANCED LECTURE SERIES

Core content lecture topics:

1. Acute respiratory failure
2. Cardiac dysrhythmias
3. Derangements of serum electrolytes and osmolality
4. Acid-base disorders
5. Coma and seizures
6. Drug intoxication and withdrawal
7. Sepsis
8. Trauma

Advanced lecture series topics:

1. Advanced acute respiratory failure
2. advanced electrolyte disorders
3. Advanced drug intoxication and withdrawal
4. acute renal failure
5. acute defects in hemostasis
6. Peri-operative management of the ICU patient
7. Patient safety in the ICU
8. Nutrition in the ICU
9. Surrogate decision making and withdrawal of care
10. GI bleeding and hepatic dysfunction
11. Traumatic head injury
APPENDIX 8:

```
<table>
<thead>
<tr>
<th>University of Calgary Critical Care</th>
<th>Evaluated By: evaluator's name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluating: person (role) or mentor's name (if applicable)</td>
<td>Dates: start date to end date</td>
</tr>
</tbody>
</table>
```

"*indicates a mandatory response

**Calgary Health Region Intensive Care Unit Rotating Resident Evaluation**

This evaluation is a:

- [ ] Weekly evaluation
- [ ] Interim evaluation
- [ ] Final evaluation

In order to provide an accurate assessment of this resident, please use the performance of a typical resident from the same specialty and year of training as a frame of reference when completing this evaluation. Please check the appropriate box for each of the following questions:

<table>
<thead>
<tr>
<th></th>
<th>1 Unacceptable</th>
<th>2 Below expectations</th>
<th>3 Meets expectations</th>
<th>4 Above expectations</th>
<th>5 Outstanding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fund of clinical knowledge</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Problem formulation/problem-solving</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Competence with procedures</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Communication skills (oral and written)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Professional attributes (reliable, responsible, has insight)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Enthusiasm for learning</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Collaboration with multidisciplinary team</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Management of time and resources</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Overall performance when compared to typical resident from the same training program and year of training</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
# APPENDIX 9: AHS POLICY ON LEVELS OF CARE

## PURPOSE
To outline the process of notifying patients, families, agents, if a Personal Directive is in effect, and health care professionals when cardiopulmonary resuscitation (CPR) is not indicated.

## POLICIES:

### R. Medical Care and Interventions Including Resuscitation Followed by Intensive Care Unit

**Goals of Care and Interventions**
- Review the patient's goals of care as outlined in the patient's medical record.
- Notify the patient, family, agent, or legal guardian if the patient is in an ICU or high-risk hospital setting.
- Resuscitation includes interventions such as ventilation, medication administration, and invasive procedures.

### S. Medical Care and Interventions Excluding Resuscitation

**Goals of Care and Interventions**
- Review the patient's goals of care as outlined in the patient's medical record.
- Notify the patient, family, agent, or legal guardian if the patient is in an ICU or high-risk hospital setting.
- Resuscitation includes interventions such as non-invasive procedures, medication administration, and monitoring.

### T. Medical Care and Interventions Excluding Resuscitation

**Goals of Care and Interventions**
- Review the patient's goals of care as outlined in the patient's medical record.
- Notify the patient, family, agent, or legal guardian if the patient is in an ICU or high-risk hospital setting.
- Resuscitation includes interventions such as non-invasive procedures, medication administration, and monitoring.

### M. Medical Care and Interventions, Focused on Cardiac Care

**Goals of Care and Interventions**
- Review the patient's goals of care as outlined in the patient's medical record.
- Notify the patient, family, agent, or legal guardian if the patient is in an ICU or high-risk hospital setting.
- Resuscitation includes interventions such as invasive procedures, medication administration, and monitoring.

### C. Medical Care and Interventions, Focused on Critical Care

**Goals of Care and Interventions**
- Review the patient's goals of care as outlined in the patient's medical record.
- Notify the patient, family, agent, or legal guardian if the patient is in an ICU or high-risk hospital setting.
- Resuscitation includes interventions such as invasive procedures, medication administration, and monitoring.

---

2. When indicated by clinical circumstances, the physician is to discuss resuscitation status with the patient or in the patient's absence, the patient's available family/legal guardian or agent if a Personal Directive is in effect.

3. In circumstances, where there is difficulty in making a decision or there are diverse opinions, it is advisable to obtain a second physician's opinion and/or consult the Ethics Committee.

4. Valid personal directives should be followed in classifying patients in the appropriate goals of care category.

5. A Resuscitation Level Order is to be written and signed by the physician on the patient's order sheet or entered into the hospital computer system. In the outpatient clinics when deemed appropriate to establish a resuscitation level, it is to be documented on the Progress
Notes. Information to support this Resuscitation Level Order is to be documented on the patient’s health record and should include the nature and content of discussion(s) with the competent patient or if the patient is incompetent the patient’s family/ legal guardian/ or agent if designated in a Personal Directive.

6. On admission of patients from another facility, staff is to review the patient’s health record and determine if there is a pre-established resuscitation status.

8. Goals of care should be clarified at each admission.

9. A Resuscitation Level Order is to be reviewed if there is a significant or unexpected change in the person’s condition. The outcome of any review is to be documented on the patient’s health record.
Pain

What is it ??
Everyone knows what pain is or do you ???

“Pain is a subjective experience” comprising both noxious sensation and suffering which is best understood in terms of the patient’s description of that experience. The patient’s experience of pain is expressed within the context of the illness, family, social network, community, culture and spiritual orientation. The patient’s pain affects this matrix of relationships and is in turn altered by them. Appropriate assessment and management must be sufficiently comprehensive to encompass these complexities.”

Calgary Regional Health Authority Institutional Standards for Pain Management, 1996

Pain is whatever the experiencing person says it is existing whenever he says it does (McCaffery, 1968)

The Acute Pain Service (APS) at the Peter Lougheed

The service is available for:
♦ consultation for pain management of patients with complicated ACUTE pain. ALL analgesics, sedatives and antiemetics are then ordered by APS only. We assess the patients at least once per day. Once pain is under control, we will transfer pain management back to the primary physician. We can be re-consulted prn.
♦ consultation for an opinion only
♦ answering your questions re: pain management
♦ Contacts: APS physician on call - pager 3774
  Chairman of the APS - Dr. Mark Kostash 291-8850 (operating room)
  Coordinator, APS - Jeanne Lamb, RN, BN - pager 3761
♦ When requesting a consultation, please write a brief note stating the reason for the consultation

We believe:
• The single most reliable indicator of the existence and intensity of acute pain - and any resultant affective discomfort or distress - is the patient’s self-report
• pain prevention is better than treatment
• lack of adequate pain management usually has significant adverse consequences
• if there is uncertainty whether a behavior indicates pain, and if there is reason to suspect pain, an analgesic trial can be diagnostic as well as therapeutic
• use of opioids for the management of acute post-operative or medical pain does not cause addiction. Neither is addiction a consideration in managing oncologic pain with opioids.
• A pain history should be taken on admission and pain reassessed and documented regularly as appropriate. * See Calgary Regional Health Authority Institutional Standards for Pain Management, 1996 for details.
HELPFUL HINTS
For Effective Pain Management

♦ Do not use placebos to assess the nature of pain

♦ Do not label a patient “addicted” (psychologically dependent), if you merely mean physically dependent or tolerant to opioids

Individualize the route, dosage and schedule

Routes of administration:

PO
♦ All clinical practice guidelines state that the oral route is preferred.
♦ Even severe pain can be relieved with oral analgesics in most patients if:
  patient can swallow and/or take oral meds (not NPO)
  nausea & vomiting can be controlled,
  preventative approach is used,
  a high enough dose is used
♦ peak drug effect occurs 1 1/2 to 2 hours after PO administration for most opioids (sustained release excepted). Therefore, patients may take a second opioid dose safely 2 hours after the first dose if side effects are mild at the time. (APS Guidelines, 1992)

IM/SC
♦ repeated IM administration should rarely be used (APS Guidelines, 1992).
♦ disadvantages include painful administration, wide fluctuations in absorption, and rapid falloff of action compared to oral administration

IV bolus
♦ Should be reserved for rescue analgesia, for painful procedures of short duration (<1 hr), or for rapid control of severe pain.
♦ most rapid onset of effect. peak about 15-30 minutes for morphine,
♦ duration is often only 45 - 60 minutes.
♦ Nurses are required to monitor pain level, sedation score and resp rate q 15 minutes for duration of infusion and for at least 30 minutes after its completion
♦ For initial dosing in acute pain, use 1/2 of IM dose. If severe pain persists but side effects are minimal at the time of expected peak effect, another bolus may be given. (APS Guidelines, 1992)
♦ If repeated doses are required IV PCA is recommended. (see PCA)

Other routes- rectal, stomal, vaginal, transdermal, transmucosal.
Dosage:

- Be aware that optimal analgesic dose varies widely among patients. There is enormous variability in doses of opioids required to provide relief even among opioid-naive patients with identical surgeries or conditions.
- **Titrate to effect! Forget the milligrams and look at the effect on the individual patient.** The only safe and effective way to administer analgesics, especially opioids, is to watch the individual's response to the drug.
- Age appears to greatly influence duration of action. The younger the patient, the shorter the duration of action tends to be.
- Administer analgesic doses regularly (not PRN) if pain is present most of the day.
- When **changing to a new opioid or different route**, first use the equianalgesic doses to estimate the new dose, then, titrate as necessary.

Meperidine,

- when used in high dose for several days may result in buildup of metabolites such as normeperidine that can cause excitation, hallucinations and seizures.
- **Maximum** recommended dose is 600 mg/24 hours (in any form - IM/IV/PO).
- **Absolutely contraindicated** in patients taking MAOI antidepressants.
- **Contraindicated** in patients with impaired renal function.

Leritine

- is also metabolized to normeperidine, but in smaller amounts.
- Keep this in mind if you have a jittery, hyper-reflexic patient on large doses.

Morphine

- when used **intravenously** has a peak effect in 15 - 20 minutes and a duration of approximately one hour.
- IM/SC morphine has a longer duration.
- 10 mg of IV morphine is not equivalent to 10 mg IM/SC with respect to onset, intensity or duration.
- Oral morphine comes in three forms: morphine syrup (MOS), immediate release tablets (MS tabs) and sustained release (MS Contin, M-Eslon).
- Also available in a rectal suppository.

M-Eslon

- is the sustained release formula now available at CRHA.
- Duration of action is 8 - 12 hours.
- It is used to provide background levels of narcotics, to smooth out the peaks and valleys of narcotic concentrations in the blood.
- 60 mg of M-Eslon bid would be equivalent to 20 mg of regular morphine tablets or syrup given every four hours.
- M-Eslon comes in the following dosages: 10, 15, 30, 60, 100 and 200 mg.
- M-Eslon capsules may be opened and the contents sprinkled on food.
Hydromorphone (Dilaudid)
♦ an effective, potent analgesic which is available for SC/IM/IV and PO administration.
♦ is about five-times as potent as morphine.
♦ a good alternative for patients requiring a large dose of narcotics when the patient is allergic to, or cannot tolerate morphine.

Fentanyl
♦ is only used intravenously. Peak effect occurs in 5 - 10 minutes.
♦ Duration of effect IV is only one half to one hour.
♦ Transdermal fentanyl has not been approved for post-surgical use.

Sustained release opioids available at PLC
♦ M-Eslon (morphine) 10, 15, 30, 60, 100, 200 mg
♦ Oxycontin (oxycodone) 10, 20 mg
♦ Hydromorph contin (hydromorphone) 3, 6, 12 mg
♦ codeine contin (codeine) 50, 100, 150, 200 mg

---

**DO NOT ROUTINELY administer benzodiazepines for hs sedation in postoperative patients or other patients being treated with opioids for acute pain.**

*There have been deaths when Ativan was given to "help settle" a patient.*

*The combination of narcotics, benzodiazepines and residual anesthetics may cause severe respiratory depression. Antihistamines such as Benadryl or Gravol are effective alternatives for hs sedation. These are the active ingredients in most over-the-counter sleep medications.*

*There will be occasional exceptions to this rule. For example, if the patient has been taking a benzodiazepine on a daily basis at home, it may be specifically indicated, and this should be documented in the orders. However, it is still advisable to avoid these medications in the first 24 hours postoperatively, if at all possible.*
Recognize and treat side effects

Sedation, constipation, nausea, itching and respiratory depression are the most common side effects of opioids

Hints for treatment of side effects:
- change the dosing regimen or route of the same drug aiming for relatively constant blood levels
- try a different opioid
- add another drug that counteracts the adverse effect
- use a route of administration that minimizes drug concentrations at the site producing the side effect

Antinauseants

dimenhydrinate (Gravol) 25 - 50 mg IV/IM/PO q4h prn (max 400 mg/24 hr)
metoclopramide (Maxeran) 5 - 10 mg IV /IM/PO q4-6h prn
ondansetron (Zofran) 4 mg IV q6h X 2 doses

NOTE: Due to its cost, ondansetron may only be ordered by anesthesia.

Antipruritics

(itching very common, especially with spinal/epidural morphine)
diphenhydramine (Benadryl) 25 - 50 mg IV /PO q4h prn
nalbuphine (Nubain) 2.5 - 5 mg IV/IM/SC q4-6h prn

Naloxone (Narcan)

0.1 mg IV or 0.2 mg IM/SC - repeat as necessary for clinically significant respiratory depression or excessive sedation (maximum dose 4.0 mg total)
Onset of action for IV naloxone is ≈ 2 minutes, only 2-5 min IM/SC
Duration of action is less than opioids

Sedatives

dimenhydrinate (Gravol) 25 - 50 mg IV/IM/PO qhs prn
diphenhydramine (Benadryl) 25 - 50 mg IV /PO qhs prn
chloral hydrate 500 - 1000 mg PO qhs prn

NOTE: Benzodiazepines are strongly discouraged !!!
Respiratory depression and death are significant risks!!!
**Anti-inflammatories**

**NSAID’s** have significant analgesic effect. 650 mg of Aspirin or acetaminophen is equivalent to 2 - 3 mg of IM morphine, or 50 mg of oral meperidine.

**All anti-inflammatories have analgesic effects.**
- When added to a narcotic, they decrease total narcotic requirement without sedating or worsening respiratory depression.
- They are **contraindicated** under the following circumstances:
  - peptic ulcer disease
  - gastric pain with administration (patient's history)
  - asthmatics whose asthma is exacerbated by ASA (rare)
  - bleeding disorders, anticoagulants (prolonged SC heparin?)
  - renovascular disease
  - uncorrected hypovolemia or dehydration

Restrictions on perioperative NSAID administration are easing up as new studies support their safety. A good screening question to ask is if the patient can tolerate aspirin or any other over-the-counter anti-inflammatories. Ideally, NSAID’s should be ordered one to two hours preoperatively in an oral form. If taking these medications at home, the patient should be instructed to take their usual morning dose. However, if you have concerns about the safety of NSAID’s, especially in very elderly patients, wait 24 hours after surgery before ordering, and limit their use to 24 - 72 hours.

**Recommended doses**
(usually round-the-clock dosing, not prn)
should be taken with meals

- ibuprofen (Motrin) 1200 - 2400 mg PO total divided into QID doses
- naproxen (Naprosyn) 250 - 500 mg PO TID
- indomethacin (Indocid) 50 - 100 mg PO or PR q8-12h
- *ketorolac (Toradol) 20 - 30 mg IV/IM followed by 10 mg IV/IM BID - QID

*NOTE: ketorolac should be administered for maximum of 3-5 days only
Due to its cost, ketorolac is only to be used when oral and rectal routes are not available (NPO or rectal surgery). Oral ketorolac is not available at the Peter Lougheed Centre
Ketorolac is not HPB approved for IV use in Canada, but is in USA & Europe - Pharmacy, Nursing, and Anesthesia have agreed to allow IV use at PLC*
Guidelines for Ordering IV PCA

Patient Controlled Analgesia (PCA) refers to the concept where the patient takes pain medications when they feel the need for them. An example is when patients are sent home with a prescription for Tylenol #3 and instructions to "take two when it hurts". This concept has been applied to parenteral narcotics by designing a computer that injects a narcotic when the patient pushes a button. We call this a PCA pump. Fortunately, the pump and the people who designed it are smart...they programmed in safety mechanisms to help prevent overdoses. The first safety device is called the "lockout period", which is the time delay when the pump will not give a second dose if the button is pushed. Thus, if the patient panics and pushes the button 10 times, they only receive one dose. The bolus dose is approximately one-tenth the intramuscular or subcutaneous dose. It begins working in 5 to 10 minutes and lasts about an hour with most narcotics. The older and frailer the patient, the lower the bolus and the longer the lockout should be. The more intense the pain or tolerant the patient (i.e.: on narcotics at home) the more liberal the doses. Formal Nursing protocols are in place outlining monitoring of patients on PCA to ensure safety and confirm effectiveness.

PCA is suitable for patients expected to have moderate to severe pain, and who are likely to be unable to take oral medications for at least 24 - 48 hours.

<table>
<thead>
<tr>
<th>Opioids available for PCA machines and Recommended settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>morphine 5 mg/mL</td>
</tr>
<tr>
<td>1 - 3 mg bolus</td>
</tr>
<tr>
<td>5 - 15 minute lockout</td>
</tr>
<tr>
<td>hydromorphone (Dilaudid) 0.5 mg/mL</td>
</tr>
<tr>
<td>potency 5X that of morphine</td>
</tr>
<tr>
<td>0.2+ mg bolus</td>
</tr>
<tr>
<td>5 - 15 minute lockout</td>
</tr>
<tr>
<td>fentanyl 25 ug/mL</td>
</tr>
<tr>
<td>potency 100X morphine</td>
</tr>
<tr>
<td>10 - 25 ug bolus (NOTE units - also mcg)</td>
</tr>
<tr>
<td>5 - 15 minute lockout</td>
</tr>
<tr>
<td>meperidine (Demerol) 10 mg/mL</td>
</tr>
<tr>
<td>(Maximum recommended is 600 mg/24 hr)</td>
</tr>
<tr>
<td>10 - 25 mg bolus</td>
</tr>
<tr>
<td>(&amp; contraindicated in patients c impaired renal)</td>
</tr>
<tr>
<td>5 - 15 minute lockout</td>
</tr>
</tbody>
</table>

Physician’s order sheet for PCA – sample here
Epidural Analgesia for Surgical Patients

Many patients have epidural catheters placed for postoperative pain management. Small doses of opioids +/- local anesthetics are infused through the epidural for several days postop through a dedicated pump. Unlike IV PCA, a background infusion is used +/- small bolus doses delivered when the patient activates the hand control PCEA (patient controlled epidural analgesia).

There are few significant issues particular to epidural analgesia:

♦ When local anesthetics are used, sometimes leg weakness may occur limiting ambulation. If this happens, contact the APS physician (pager 774) or nurse (pager 761) so adjustments can be made. Changes in drug or drug concentration can improve leg strength without sacrificing patient comfort.

♦ All narcotics, sedatives and anti-emetics are to be ordered by the Acute Pain Service while epidurals are in place. Combinations of epidural narcotics with other parenteral narcotics or sedatives can cause severe respiratory depression. If changes are desired, contact the APS physician or nurse.

♦ Urinary retention is common in patients with epidurals - especially in elderly men with lumbar epidurals. If a thoracic epidural is in place, consider removing Foley catheters, but recatheterization may be required.

♦ Epidural catheters may remain in place for several days, as long as there is no evidence of superficial infection at the insertion site. Transparent dressings are used in order to inspect the insertion site daily. Generally, conversion from epidurals to oral medication will occur after 3-4 days, or after oral fluids are tolerated.

♦ Occasionally, epidural catheters are displaced out of the epidural space and pain occurs. If this happens, contact the APS and the patient will be converted to oral medications or IV PCA (if still NPO).

♦ Due to implications with anticoagulants, etc. only the APS can order an epidural removed. If the surgical team believes this is necessary, please contact the APS to assess the patient.
Conversion from parenteral to oral analgesics  
(or oral to parenteral)

If the patient is able to tolerate full fluids, it is likely they can tolerate oral analgesics

It is useful to order oral medications *early in the day* and to put PCA on *hold*. If analgesia is adequate after 6 - 8 hours, the PCA can be removed. This way, if the patient vomits, or the "wheels fall off" in any other way, the PCA is already available and set up. This avoids problems tracking you down to re-order parenteral analgesics.

**Guidelines for conversion**

- Check the patient’s chart - see what the last 24 hour total narcotic use was
- Using the equianalgesic chart, find the equivalent dose of the drug the patient has been receiving and the one you wish to change too.
- Divide the 24-hour total in appropriate doses based on the route of delivery and duration of action.

<table>
<thead>
<tr>
<th>24 hour morphine</th>
<th>Start with</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 20 mg</td>
<td>Tylenol #3 1-2 tab q4h regularly or prn</td>
</tr>
<tr>
<td>20 - 50 mg</td>
<td>Percocet 1-2 q4-6h prn or Lertine 25-50 q3h regularly or prn</td>
</tr>
<tr>
<td>&gt; 50 mg</td>
<td>po morphine or hydromorphone</td>
</tr>
</tbody>
</table>

These conversions are a starting point. Be ready to *titrate to individual patient response*.

If the patient is likely to have *prolonged or severe pain*, and can tolerate oral fluids consider giving part of narcotic requirements as *regular dose*.

*Example):* 

total 24-hour PCA morphine - 80 mg  
equivalent oral morphine \( \approx \) 250 mg  
give half to two-thirds as slow release morphine

*Orders:* 

M-Eslon (MS Contin) 75-mg PO q12 h  
MS / MOS (tabs or syrup) 20 - 30 mg PO q2-4h prn  
for breakthrough pain

**NOTE:** Recommendations for *breakthrough pain* are 1/6 to 1/10 of total daily dose.  
MS Contin is slowly released, therefore peak action is measured in hours.
## Opioid Equivalence Chart

<table>
<thead>
<tr>
<th>Drug</th>
<th>Brand</th>
<th>Equivalent Dose (mg)</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>morphine</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>meperidine</td>
<td>Demerol</td>
<td>75-100</td>
<td>300</td>
</tr>
<tr>
<td>codeine</td>
<td></td>
<td>120</td>
<td>200-300</td>
</tr>
<tr>
<td>Anileridine</td>
<td>Leritine</td>
<td>25</td>
<td>75</td>
</tr>
<tr>
<td>hydromorphone</td>
<td>Dilaudid</td>
<td>2</td>
<td>4-6</td>
</tr>
<tr>
<td>fentanyl</td>
<td>Sublimaze</td>
<td>0.1 (iv)</td>
<td></td>
</tr>
<tr>
<td>oxycodone + tylenol</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acetaminophen with codeine</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* IV doses are equivalent but onset, peak and duration are not.

## Equianalgesia - Oral Medications for Mild to Moderate Pain

<table>
<thead>
<tr>
<th>Analgesic</th>
<th>PO Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>aspirin</td>
<td>650 mg (24 hr. maximum 4 Gm)</td>
</tr>
<tr>
<td>acetaminophen</td>
<td>650 mg (24 hr. maximum 4 Gm)</td>
</tr>
<tr>
<td>codeine</td>
<td>30 -60 mg</td>
</tr>
<tr>
<td>meperidine (Demerol)</td>
<td>50 mg</td>
</tr>
<tr>
<td>oxycodone</td>
<td>2.5 - 5 mg</td>
</tr>
</tbody>
</table>

**Note:**
- Some patients are very sensitive to caffeine. They may require plain oral codeine instead of combinations.
- **2 tabs of Tylenol #3** is approximately equivalent to **3 mg IM/SC morphine**, therefore if the patients is requiring morphine injections in the hospital, they **likely will not get adequate relief** with a prescription for Tylenol #3 on discharge.

The Outpatient Pharmacy at PLC will fill (without a triplicate prescription) an opioid prescription for patients being discharged (RX must include staff physician’s name).
REFERENCES

Calgary Regional Health Authority Institutional Standards for Pain Management, 1996


Acute pain management: operative or medical procedures and trauma. Clinical practice guideline n0. 1 AHCPR Pub. No. 92-0032. 1992

ICU PATIENT Transport Decision Scorecard

Patient assessment at time of transport within the hospital

**IF IN DOUBT, ALWAYS ASK FOR HELP**

Instructions:
1. Bedside RN to make sure all disciplines review checklist & sign off any appropriate points.
2. Any significant change in patient status requires RN, RRT, and MD to re-assess the transport decision.
3. MD can include residents and fellows.
4. Original copy to go with patient. One copy sent to Dr. Terry Hulme at RGH ICU.

<table>
<thead>
<tr>
<th>System</th>
<th>Criterion</th>
<th>Green</th>
<th>Red</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESP</td>
<td>Spontaneous RR</td>
<td>10-24</td>
<td>&lt; 10 or &gt; 24</td>
</tr>
<tr>
<td></td>
<td>Oxygen</td>
<td>&lt; 40% or ≤ 6 Lpm</td>
<td>≥40% or &gt; 6 Lpm or increasing</td>
</tr>
<tr>
<td></td>
<td>PEEP</td>
<td>&lt;10 cm H₂O</td>
<td>≥ 10 cm H₂O</td>
</tr>
<tr>
<td></td>
<td>Difficult Airway</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>CNS</td>
<td>Riker</td>
<td>Goal met</td>
<td>Goal not met or Riker ≥ 5</td>
</tr>
<tr>
<td></td>
<td>Intubated/Trach</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td>C-spine fracture</td>
<td>Stable or N/A</td>
<td>Unstable</td>
</tr>
<tr>
<td></td>
<td>ICP</td>
<td>Controlled or N/A</td>
<td>Uncontrolled</td>
</tr>
<tr>
<td>CVS</td>
<td>Goals</td>
<td>Met</td>
<td>Unmet</td>
</tr>
<tr>
<td></td>
<td>Chest pain</td>
<td>Relieved or N/A</td>
<td>New pain or ECG changes</td>
</tr>
<tr>
<td></td>
<td>Dysrhythmia</td>
<td>Stable or N/A</td>
<td>New or unstable</td>
</tr>
<tr>
<td></td>
<td>Fluid resuscitation</td>
<td>No</td>
<td>Active</td>
</tr>
<tr>
<td>GI/GU</td>
<td>Serum potassium</td>
<td>3.8 to 5.5</td>
<td>&gt; 5.5 or &lt; 3.8</td>
</tr>
<tr>
<td></td>
<td>Glucose</td>
<td>≥ 3.5</td>
<td>&lt; 3.5</td>
</tr>
<tr>
<td>OTHER</td>
<td>Blood Product Administration</td>
<td>Complete or N/A</td>
<td>Actively transfusing</td>
</tr>
<tr>
<td></td>
<td>Lines/tubes</td>
<td>Secured</td>
<td>Multiple/unsecured</td>
</tr>
</tbody>
</table>

**ONLY GREEN CRITERIA MET, RN CAN PROCEED WITH TRANSPORT, RT TO ACCOMPANY WHERE APPLICABLE**

1. ANY RED CRITERIA MET, MD, RN AND RRT TO RE-ASSESS
2. RN, RRT TO ACCOMPANY PATIENT
3. RN, RRT, MD TO DETERMINE NEED FOR MD OR SECOND RN TO ACCOMPANY

Destination: ___________________ Date (dd/mm/yyyy): _______________ Time (00:00 hrs): _______________

During the trip patient experienced: ☐ Harm (document in chart and fill out critical incident form) ☐ No Harm

Did you have enough help? ☐ YES ☐ NO

Did Physician Accompany? ☐ YES ☐ NO

RN signature: _______________ RRT signature: _______________ MD signature: _______________

(form must be signed by all who assess the patient)

March 14, 2007

Ensure RN, RRT and MD have reviewed within 2 hours before transport.