

The Jewish Hospital Internal Medicine Housestaff Manual

2008-09 Edition

Cross Coverage Commandments

1. **When in doubt, ask for help!**
2. **Vitals are vital! Always check them and take them seriously when they're awry.**
3. **Document, document, document!**

Disclaimer

This handout is meant as a guide, not a substitute for thinking and customizing care to individual patients.

“IMPORTANT HOSPITAL POLICIES TO MAKE EVERYONE’S LIFE EASIER”

MEDICAL RECORDS

1. **Legibility** – Physicians must sign their name and print their name with pager number unless a legible ink stamp of the physician’s full name is used.
2. **Dates and Times** – All orders and entries dated and timed.
3. **Informed Consents** – Must be witnessed and signed appropriately. Be sure to use Interpreter when appropriate. Make sure to use informed consents for procedures and blood products.
4. **Timeliness of Documentation** – All reports and notes must be completed in a timely manner: History & Physicals – 24 hours; Progress Notes – daily; Discharge summaries – ASAP after discharge.
5. **Signing Orders** – Verbal orders – must be signed immediately; Phone orders – within 24 hours
6. **Pain assessments** (use 1-10 scale); Reassessments (for patients previously identified as having pain; use the same pain scale and document an appropriate intervention)
7. **Utilization Management** – Indicate patient’s need for continuing hospitalization; avoid terms such as “status quo,” “looks good,” or “home soon.” Good example “The patient requires continued acute hospitalization for evaluation and management of severe hypoxemia.”
8. **“Range Orders”** – (e.g. 1-2 tabs q 4-6h hrs) not permitted; “prn” medication orders must include both frequency and indication.
9. **Patient Confidentiality** – avoid patient care discussions in public areas; do not take confidential patient information home with you.
10. **Conscious Sedation/Restraints** – use and fully complete the hospital forms. The forms are located at all clinical work stations.

PATIENT SAFETY

1. **Communication** – Do not use unapproved abbreviations.
2. **Patient Identification** – remember to use a “Time Out” before all invasive procedures or administration of blood products. The “Time Out” must be documented in the medical record.
3. **Fire Safety** - Please review the nearest fire alarms, extinguishers and exits; understand “RACE” and “PASS.” Pull the pin at the top of the extinguisher, Aim the nozzle at the base of the fire, Squeeze the trigger, Sweep from side to side with the nozzle. Rescue people, Activate the alarm, Contain or confine the fire, Extinguish the fire if possible, Evacuate if fire can’t safely be extinguish. Turn off the oxygen.
4. **Preventing Infections** – Remember to wash your hands before and between patient contacts.
5. **Read Backs** – Nurses should read back to physicians any verbal or phone orders given; lab or nursing staff should request the housestaff to repeat the critical results back to them.
6. **Risk Management** – Please promptly report medication and other medical errors by completing an “Event Notification Form.”
7. **Housestaff Supervision** – All procedures should be performed under the supervision of Attendings or supervising residents, unless previously deemed “competent” to perform procedure at hand by Program Director.

OTHER

Autopsies – Autopsies provide valuable training and feedback regarding patient care. Please obtain consent for autopsy when appropriate.

INPATIENT MEDICINE ADMISSION POLICIES

Interns must not be assigned more than 5 new admissions and an additional 2 in-house transfers for a TOTAL of 7 per admitting day. Interns must not be responsible for the ongoing care of more than 12 patients.

Residents must not be assigned more than 10 new admissions and an additional 4 in-house transfers for a TOTAL of 14 per admitting day. Residents must not be responsible for the ongoing care of more than 24 patients.

If there are major disparities of patient census or work load among the various teaching services, the resident, chiefs or attendings may elect to redistribute the patients.

Resident Duty Hours

Duty-hours are defined as all clinical and academic activities related to the residency program, i.e., patient care (both inpatient and outpatient), administrative duties related to patient care, the provision for transfer of patient care, time spent in-house during call activities, and scheduled academic activities such as conferences. Duty hours do not include reading and preparation time spent away from duty site.

Duty hours are limited to 80 hours per week, averaged over a four week period, including the on-call activities. Furthermore, residents are provided with 1 day in 7 free from all educational and clinical responsibilities, averaged over a four week period, inclusive of call.

Admitting and other Policies

Which attendings do we admit for on the wards?

A list of active teaching attendings is available.

The ICU covers all patients on medical service, regardless of admitting attending.

Which patients are followed by the Teaching Service?

Teaching service is defined as those patients whom internal medicine residents routinely provide care, i.e., regular admissions, medicine clinic and non-insurance patients with an acute care internal medicine diagnosis are followed. Surgery patients and other subspecialty problems should be admitted to their appropriate subspecialty regardless of the insurance. Your resident should contact the attending if a non-medicine patient is assigned to you by the E.R.

What about psychiatric patients?

Patients with NO medical problems requiring psychiatric care should be admitted to a psychiatric unit (not available at our hospital) under the care of a psychiatrist. Residents should help facilitate transfer. Psychiatric cases with medical issues can be admitted to medicine with psychiatry as a consultant.

Who is responsible for transfers from the floor to the ICU?

The medicine ward team is responsible for evaluating and deciding on transfers to the ICU. The ICU team is responsible for orders and the transfer note. However, it is expected that the ward team helps with both of these tasks unless extremely busy with other admissions, or other urgent patient care needs.

Who is responsible for transfers from the ICU to the floor?

The ICU team is responsible for evaluating and deciding on transfers to the floor. The ICU team is responsible for orders and a transfer note for all patients admitted >48hours. However, it is expected that the patient will transfer on that day, please coordinate with hospital administration before calling ward team.

Psychiatric Consultation at Jewish Hospital

Revised 7/9/08

If a patient is in clear need of inpatient psychiatric admission

(i.e. actively suicidal, homicidal or psychotic to the point that they are a danger to themselves) consult the regular social worker to initiate transfer.

- Waiting for a psychiatric consult only slows the process.
- If there is question as to whether the patient needs inpatient transfer, then proceed with the consult process below.
- If the patient is being transferred to University Hospital, a psychiatric consult is always required for admission.

If the referral is for:

- **Differential diagnosis** or to rule out a psychological cause
- **Suicide risk assessment**
- **Aftercare** recommendations (inpatient vs. outpatient)
- **Behavioral management** suggestions for treatment planning

Call Dr. Sontag first, and if she is not available call the Psychiatric Consult Service – see below. If they cannot come in a timely manner, contact Dr. Kotwal.

If the referral is for:

- **Medication management** - Dr Kotwal should be contacted.

If the referral is for:

- **Competency evaluation**-call Dr. Sontag first: if she is not available, contact Dr Kotwal.
- Note: *The psychiatric consult team is not available for this purpose.*

Please note a clear reason for referral when contacting the consultants.

CONTACTS

Dr. Lyn Sontag Psy.D., ABPP (Clinical Psychologist for the Stem Cell Transplant program) is only available during the following hours (pager 209-1451, voicemail 686-5237) for psychiatric consultation:		
Mondays 8:00-4:00	Tuesdays, Wednesday 8:00-4:30	Thursdays Fridays hours vary 7:30-11:30
Her availability may be amended due to vacation or urgent needs of the Stem Cell Transplant Program.		
If Dr. Sontag is not available, contact the Psychiatric Consult Service at 648-1968 and leave a voicemail message. The mental health clinician will call you back very soon and will assess the patient within 24 hrs. One of the following mental health clinicians are available for psychiatric consultation: Jonathan Fleishman, LISW or Judith Feiman, Phd.		
If a psychiatrist is needed to prescribe medication or if the consultants above are not available, the following people can contact Dr. Renu Kotwal MD at 260-7388:		
Hospitalists	2nd and 3rd year Medical Residents	Clinical Nurse Supervisor
Surgery Chief Residents	Director of Social Work	Above mentioned consultants

All of the above options can be utilized for ED patients, however, the time frame for response may not meet the urgent needs of the patient in that setting. ED patients who do not need to be admitted to Jewish Hospital to be medically stabilized will continue to be treated and/or transferred to an appropriate psychiatric facility.

Coverage at Jewish Hospital

Ward patients:

- **Regular working days:** Sign out at 3:00pm.
- **Weekends/Holidays:** Arrive no later than 8am. Sign out after your work is done and you've checked out with your resident or the covering resident.

ICU patients:

- **Regular working days:** sign out at 3:00pm.
- **Weekends:** Arrive no later than 8am. Sign out after work is done and you've checked out with your resident or the covering resident.

Non-housestaff patients:

- As a courtesy, ward interns address problems at nights on the floors at the request of the attendings. This includes fall evaluations and unstable patients and urgent or emergent issues. Housestaff should assist whenever needed, communicate with the attending, and document your interventions.

Code Blue:

- ICU calls are not announced overhead but via pager, so the ICU residents/interns, and Ward resident/interns need to respond.

Questions:

- For problems at night, start with resident on-call. If for whatever reason they don't respond to your page, call the ICU resident. Next level: your attending. If further help is needed call the house physician or chiefs.

Never hesitate to call for help!

Jewish Hospital Phone Numbers

Jewish Hospital Main 686-3000
 Call Park 4 digit #

Department of Internal Medicine

Pam 686-5441
 Teresa 686-5473
 Fax 686-5443

Kenwood Hospitalist 244-9070
 Midwest Hospitalist 619-7907
 House Physician 269-8825

Dr. Bloomer 791-4490
 Dr. Brook 686-4840
 Dr. Brownstein 589-0012
 Dr. Cohen 841-0222
 Dr. Dortin 985-9800
 Dr. Feibel 702-1056

Dr. Goodman 624-0999
 Dr. Henderson 221-4848
 Dr. Jonas 936-0700
 Dr. Kotwal 260-7388
 Dr. Lang 563-6883
 Dr. Rorick 936-5360
 Dr. Santag 209-1451
 Dr. Sigmond 249-0136
 Dr. Schneider 791-1516
 Dr. Wayne 985-0741
 Psychiatric Consult Service 648-1968

Floors

2 South CVSU 63212
 2 South OHRR 65100
 2 East 65671
 3 East Ortho 65888
 3 North ICU 63207 / 63208
 Fax 65120
 3 South BMU 65250
 4 South 65380
 4 West 65730
 5 South 65630
 6 South 64660

Stroke Team 844-7686
 Tumor Registry 65017
 UH Transfer 584-2337

Jewish Clinic 686-6860
 Fax 686-6868
 Hoxworth Clinic 584-4061

Anesthesia 65155
 Breast Center 63109
 Cardiology/EKG 63137
 Cath Lab 65147
 Cholesterol Center 585-7800
 Dialysis 65195
 Emergency Dept 63204 / 63236
 Endoscopy 63181
 Quest Diagnostics 353-6000
 Lab 65367

Chemistry 12622
 Hematology 12622
 Micro 56792
 Blood Bank 65463
 Path Reports 65455
 Inpatient reports 65367
 Library 65173
 Medical Records 63190
 Patient Registration 63244
 Admit 63166
 Pharmacy 65050 / 65051
 TPN 65053
 PICC pager 65069 / 269-0048

Radiology
 CT Scan 63285
 Desk 63261 / 64591
 Dictation 64526-16497-DOB
 Film Room 63261 / 63259
 MRI 65807 / 63337
 Nuclear Med 63258
 U/S 65111
 Radiologist 63054
 Nighthawk 866-241-6635
 Christ Read Room 52126
 Social Work 65341
 Spiritual Care 65370
 Volunteer Office 65330
 Wound Care 230-2861

Internal Medicine Residents

Chief Residents	Pager	Phone Number
Andrew Castellanos (4)	366-1011	686-5442
Leon Rovner (3)	366-1022	686-5434
House Physician	269-8825	
Resident Lounge	65327 / 65494	
Intern Call Room	65477 / 65478 / 65475	
AOD / AON	230-7147	686-5190
ICU Resident	230-8145	686-5519
Ward Intern phone		686-5191
ICU Intern phone		686-5183

Residents

Waqas Ahmed (2)	366-1020
Yousef Al Hallaq (3)	366-1052
Ivan Bedoya (2)	366-1029
Alex Brown (3)	366-1054
Kerwin Chan (2)	366-1085
Malini Juyal (2)	366-1051
Brian Keegan (3)	366-1037
Carrie Loftiss (2)	366-1076
Murralli Maddipati (2)	366-1067
George Nadakav (3)	366-1044
Imran Naqvi (2)	366-1015
Jay Patel (2)	366-1045
Bishal Rawal (3)	366-1061
Michael Wu (3)	366-1075

Interns

Anthony Alvarado	366-1074
Puteetpal Bains	366-1053
Pooia Fattahi	366-1038
Fatima Gangotena	366-1026
Madan Gowda	366-1065
Nicholas Godby	366-1012
Naseer Khan	366-1062
Harsha Nalabolu	366-1039
Tushar Nayar	366-1027
Amit Patel	366-1082
Anand Pathak	366-1057
Cameron Price	366-1023
Dan Riherd	366-1089
Adeel Shaikh	366-1063
Paim Shanehsaz	366-1017
Joseph Zacharias	366-1016

Entry Codes

Cafeteria Scrub Room	1234*
Cath Lab	417*
ED	1234*
ICU	911* (back) / 871* (front)
Intern Call Rooms, 5 th floor	12448*
Internal Medicine Office, 3 rd floor	12448*
Library	2580*
Radiology Side Entrance, 1 st floor	417*
Resident Lounge, 4 th floor	12448
Surgeon Lounge	5472*

Daily Schedule

Welcome to your Jewish hospital Ward/ICU rotation! Below is a brief outline of the minimum responsibilities for your daily work. Other details are at the discretion of your Program Director, Attendings and Chiefs.

Monday to Friday:

7:00am: Be in the Unit or on the Wards no later than this time.

By 7:30am: Discuss all overnight admissions with NS/AON or resident on-call. *All* prerounding should be completed by this time and discussed with the team. Overnight patients will be presented by the AON/NS first, who must leave by 8am.

7:30am – 11:45am: Morning report for the Wards. Teaching rounds with teaching attending for the Wards. Discuss management with attendings. Bedside work rounds (times may vary).

12:00 – 1:00pm: Noon conference. Daily, timely attendance is *mandatory*. Exceptions include urgent patient care, codes or admissions. It's everyone's responsibility to make sure all post-call interns leave by 1pm.

1:00 -2:45pm: Finish work.

3:00pm: Check-out rounds – Residents supervise interns in providing efficient sign-outs, verbally sign-out *all* the patients.

3:30-4:00pm: (Thursdays) Intern Report in Internal Medicine Conference room.

Weekends/Holidays:

Arrive no later than 8am. Check in with the overnight residents. Round with the team and cover off interns patients. There are no formal bedside rounds with attendings on the weekends, but your resident will be rounding with you in the AM. Check in with your resident, when your work is done so you can sign out and leave for the day unless you are on-call. If you are post-call on the weekend, sign out before 1pm.

Medical Student Expectations

Pre-round/Rounds

- Write a SOAP note
- Assist the team with all the patients, notes, etc.
- Be concise, present in a SOAP note format

Afternoon

- Check on your patient during the day and present any problems to the team.

On Call

- You will be on call every sixth night with an assigned intern (5 nights/month)
- Spend time with the intern on-call, go to the ER with them, write H&P, and call attendings

Expectations

Arrive at work promptly at 7 am

- If late, expect extra work
- Check out should be succinct

80 hr work week:

- Expect 24 hrs off on average per week
- Expect to leave by 1 PM post call
- Expect to work an avg of 80 hrs per week
- Work hard during your 80 hrs – be prompt, seek out study results and report them
- Help out and make sure all your work is finished

Floor work:

- The majority of floor work falls to the intern.
- Discharge sheets and Rx should be on the chart – in anticipation of discharge
- If anything is amiss, notify your Seniors promptly (lab draws, patients doing poorly)

Vacation/Call schedule changes:

- Call schedule changes need to be submitted and approved prior to switching
- Vacation requests need to be submitted to the Chiefs and to Pam at least one month prior on the first of the month.
- All changes must be submitted in writing and approved prior to proposed date change

Floor work

A few questions to ask yourself when rounding

1. Can I wean supplemental oxygen?
2. Can the patient get out of bed today, do they need help (PT/OT)?
3. Can the foley come out?
4. Can NG, JPs or drains come out?
5. Can I advance the diet?
6. Has the patient passed flatus, had a bowel movement?
7. Can I switch the patient to IV maintenance fluid or discontinue it all together?
8. Can I stop the perioperative antibiotics?
9. Can any IV medications be changed to PO? (pain meds, H2 blockers, antibiotics)
10. Are there any medications I can stop entirely?
11. Do I need to check drug levels? (digoxin, vancomycin)
12. Did I look at the wound?
13. Is it time for the sutures or staples to come out?
14. Why does the patient still need to be in the hospital?
15. Do I need to talk to the social worker?
16. Is the discharge paperwork up to date, NH form filled out, scripts written?

Cafeteria Dining Hours

Hours	Weekdays	Weekend/Holidays
Breakfast	0630-0930	None
Lunch	1030-1400	1100-1400
Dinner	1515-1830	1630-1830

COUNSELING SERVICES FOR RESIDENTS

Resident training can be very stressful and, often times, residents are in need of services to help them deal with the stress. This section of the housestaff manual is designed to introduce you to several mechanisms whereby you can seek confidential services for stress or mental health problems. The below contacts are not involved in providing treatment but do provide information about resources and venues where physicians can receive evaluation and treatment. Physicians can self-refer if they feel that a problem exists; we can also receive calls from concerned colleagues. These calls will be held in strict confidence if that is the wish of the caller.

Contact the Program Director or Chiefs for assistance

Alliance Employee Assistance
The Jewish Hospital
Medical Office Building
4750 E. Galbraith Rd.
(513) 585-6100

Chaplain Services

Volunteer Services

Conferences

Attendance

Residents are expected to attend all Noon Conferences per week when not post-call; Grand rounds are *mandatory*. Sign-in sheets will be available. You will not receive credit for the conferences you have attended if you do not sign-in.

Grand Rounds Information

Each year every Sr. resident gives a grand rounds conference. You are responsible to choose a topic, clear that topic with Dr. Goldberg or a chief resident 6-8 weeks in advance, find a staff member to assist you with the topic and give a formal presentation to the medical staff when assigned a date. You will need to fill out the Grand Rounds Approval form and return to Pam NO LATER than 3 weeks prior to your presentation.

Presentation:

- 45-50 minute lecture on your topic
- PowerPoint presentation
- Wear a clean white lab coat and dress professionally
- Print off a copy of your slide show as a handout. If you need the office staff to print your handouts, please give the handouts to Pam or Teresa by at least noon of the day prior.

Choosing a topic:

- Choose something appropriate to your level of training, something you are interested in or something you've seen that you wanted to read more about.
- Check with the Chiefs regarding topic choices, you cannot repeat a topic done recently
- Ask staff, sometimes there is a topic they want to hear about.
- If you have any questions, ask other residents who have done this before. A word of advice is to start early, learn from our past mistakes, it's no fun giving a 60 minute lecture as "an expert" on a topic and be half comatose from staying up all night typing.

Practice Based Learning Environment (M & M)

A yearly schedule will be provided. M & M s must be turned in to the Chiefs by 4 pm on the Friday before the scheduled conference for review. If you can find an article about your topic, please photocopy it and bring it along to conference – we can all learn something. Check with the Chiefs regarding cases if you can not find one. Encourage consultants involved in the care to attend, so plan ahead.

Journal Club

A yearly schedule will be provided. Journal Clubs must be turned in to the Chiefs by 4 pm on the Friday before the scheduled conference for review. The conference is on a relevant article or interesting article that would impact our practice. Check with the Chiefs regarding articles. Encourage consultants to attend, so plan ahead.

Cancer Conference

A yearly schedule will be provided. Cancer Conference must be turned in to the Chiefs by 4 pm on the Friday before the scheduled conference for review. The conference is scheduled for the second Tuesday of the month. The topic is flexible but can not be repeated throughout the year. Contact the Chiefs or Tumor Board Registrar X65017 for assistance with a case selection. Encourage consultants involved in the care to attend, so plan ahead.

For Grand Rounds and Cancer Conference each resident must submit a topic and list three objectives to the Chiefs 2 weeks prior to your lecture. The list below provides starters for your objectives.

A learning objective (which describes how the learner is supposed to behave after instruction) offers the ready possibility of assessing the degree to which the learner can actually behave that way. Concrete terms which can form the basis of specific learning objectives are listed below

to explain	to apply	to create
to identify	to employ	to predict
to describe	to illustrate	to evaluate
to integrate	to use	to defend
to contrast	to interpret	to assess
to sort	to categorize	to distinguish
to solve	to discriminate	to diagram
to relate	to formulate	to report
to recall	to organize	to restate
to list	to prepare	to review
to name	to arrange	to classify
to recognize	to construct	to translate

Admit Orders

Admit: Wards / Tele / Observation

Attending:

Resident and Intern: Name and pager numbers

Diagnosis:

Condition:

Vitals: per routine (or other freq/measurements)

Call MD for: 35.5 <T>38.5, 60 <P>100, 90 <SBP> 180, 10 <RR> 30, UOP<30cc/hr, O2 sats <90%

Allergies

Activity: (ad lib, bed rest, bathroom privileges, OOB to chair qid)

Nursing: (i.e. athrombics, incentive spirometer, accu checks, foley, NG)

Diet

IVF: Heplock or specify fluid type, rate and duration

Medications: Complete Medication Reconciliation list, pain meds, antibiotics, and Ulcer/DVT prophylaxis

Labs

Miscellaneous (i.e. dressing changes, PT/OT, old charts, consults, X-rays, social work)

Code Status!

History and Physical

H&P will need to be dictated for any Teaching Service patient being admitted, except when patient care takes priority or busy with multiple admissions all at once. All overflow patients need H&P dictated within 24 hours. Teaching Service patients are all patients being followed by resident coverage on a teaching service.

History

Chief complaint

History of the present illness (HPI) should contain the following statements:

“I have taken the history and examined the patient under the supervision of Dr. _____ (Ward attending name). This is _____ (first, second, etc.) admission for this ___ (age) years old ___ (race) ___ (sex) to Jewish hospital.”

Pertinent studies in the past (last colonoscopy, EGD, CT scan)

Past medical history

Past surgical history

Review of Systems (ROS)

Medications

Allergies

Social history (tobacco, ETOH, illicit drugs, living situation - nursing home, etc.)

Family history

Physical exam:

Labs/X-Rays/EKG

Assessment and Plan:

Problem-based

Signatures – both resident and attending signatures required.

ICU Notes

ICU day # Hospital day # Post-op day #

Temp (max/current) BP (range) HR (range/rhythm) Resp
Changes over last 24 hours:

Pulmonary:

Vent settings (mode, FiO₂, Rate [set and spont], TV, PS, PEEP)

ABG:

Cardiac / Heme:

CVP Cardiac output / index SVR Wedge

Blood products

F/E/N: MIVF (content/rate) pt weight

Total input: Total output:

UOP, NG, JP, Chest tube, colost, ileost, fistula...

Tube feeds (type, strength, rate, ? free water boluses, ? at goal)

TPN (type, rate, ? at goal)

ID: Cultures, Antibiotics (name and day#)

Medications:

Drips (gtt): List drips and rate (dopamine, epi, dobutamine, levophed, neo, etc.)

Sedation (gtt): List drips and rate (ativan, versed, fentanyl, diprivan, etc.)

Physical Exam:

Labs:

X-Ray Studies:

Assessment/Plan for next 24 hours by problem-based:

Procedure Note

Obtain written consent, and explain risks of complications

Include reason for procedure, pertinent labs (platelets, coags), and briefly describe procedure

- For Swan-Ganz catheters include the length at which the swan is wedged (call surgery)
- For ETT include length at which it was tied off at the mouth
- For Central lines include length at which it was sutured
- Each procedure fill-out New Innovations Procedure logs after each procedure (www.new-innov.com)

Pre-Op Check List / Note / Orders

Procedure patient scheduled for

Consent obtained

Review labs (CBC, electrolytes, coags)

Obtain labs, Type & Screen/Crossmatch as needed

Check pregnancy test (women <60 w/o hysterectomy)

Pre-op medications: Antibiotics

Bowel prep

Thoracic/Cardiac patients consider PFTs, ABG, pre-op wt

NPO

Hold blood thinners (ASA, heparin, coumadin), adjust diabetic meds, NSAIDS

IVF

Chest XR

EKG

Anesthesia to see patient

Writing a good sign out

“Do unto others as you would have done unto you.”

Include:

- Your name and beeper
- Patient’s name, location, and medical record number
- Attendings involved and possibly their phone numbers
- Problem list
- Important meds
- Issues that may arise and what to do about them
- Code status
- Whether to work up a fever
- Bumpability
- NEVER LEAVE AN UNSTABLE PATIENT

In general, do not sign out a patient that you haven’t reasonably tucked in (still unstable, still needing lab tests and things that can be done soon and easily by yourself).

Death Notes

A nurse will call you to “pronounce” a patient if he/she cannot find BP or pulse. Check the following: unresponsive to stimuli, pupils fixed and dilated, no carotid or femoral pulses, no heart tones, no respiratory effort or breath sounds.

If the patient is indeed dead, speak to the family if they are available and give them time with the patient if desired. Take note of any autopsy wishes. If family members are unavailable, the nurses will usually contact them for you. They may also want to contact the PMD to notify them of the patient’s death. Otherwise, you are responsible for notifying the PMD.

Document as follows:

“Called by RN to see pulseless and apneic patient. Pt was found to have fixed, dilated pupils. Pt was unresponsive, apneic, pulseless, and without heart tones. Patient was pronounced dead at ____am/pm on day/month/year. Family was notified/or present at bedside. Family desires/refuses autopsy.”

Paperwork

- Death note as above
- Death summary should be dictated by the resident or PMD
- Ask the nurses if any other paperwork needs to be filled out, particularly if autopsy planned
- Death certificate will be filled out by the PMD, who needs to have an OH license
- The rest of the paperwork (what to do with the remains, funeral home, etc.) is handled by the nurses.

Digital Dictation Instructions

To dictate from a telephone

1. Please dial 57028 (585-7028)
2. Please enter the last 5-digits of your OH Medical License #
3. Please enter the 2-digit work type
 - a. History and Physical 01
 - b. OP / Procedure Note (Kenwood) 02
 - c. Attending Discharge Summary 03
 - d. Consultation 04
 - e. OP / Procedure Note (Evendale) 05
 - f. STAT Discharge Summary 06
 - g. Resident Discharge Summary 11
 - h. ED Admission 16
 - i. ED treated and Released 17
 - j. Resident End-of-year Summary 50
4. Please enter the patient's 9-digit Lastword account number preceded by a zero to complete a 10-digit field (i.e. 0213...) Please dictate at the tone

Keypad Functions:

- 1 – Listen
- 2 – Dictate
- 3 – Short rewind
- 4 – Pause
- 5 – End document
- 6 – Go to end of dictation
- 7 – Fast forward
- 8 – Go to beginning
- 9 – System disconnect
- * - Clear

Radiology “Listen Line”

1. Please Dial 59898
2. Log in ID – Lastword ID#
3. DOB – MM/DD/YYYY
4. press 8 to skip report

Discharge Summary Dictation

All D/C summaries need to be dictated for Teaching Service patients being discharged. Teaching Service patients are all patients being followed by resident coverage on a teaching service.

Identify yourself, Patient Name, Hospital medical record number

Service

Date of admission

Date of discharge

Admitting physician

Resident physician(s)

Consult(s): Cardiology, GI, PT/OT, Pulmonary, Surgery ...

Admitting diagnosis: #1, #2...

Principle discharge diagnosis: (If diagnosis includes malignancy, include stage, if known.)

Additional diagnoses: including complications

Procedures and/or studies: (with date; with results, if known.) (Include transfusions.) Surgery, PICC line, chest tube, central line, etc. (If diagnosis includes malignancy, comment on extent found and/or resected.)

Admitting H&P summary: CC, HPI, PMH, PSH, Meds allergies, labs and studies, and pertinent exam.

Brief Hospital Course: Reason patient appeared to require acute hospitalization, important features of hospital stay, discharge planning.

Disposition: Home, NH

Condition at discharge

Discharge instructions and special precautions given (list): Medications, diet, activity, smoking cessation counseling, Pneumococcal vaccination, Influenza vaccination, Weight monitoring for heart failure patients.

Outpatient Follow-up plans:

Copies requested: Consults, Primary MD, yourself, clinic...

Date of dictation, repeat patient name and medical record number and repeat your name

Goldman's Cardiac Risk Index

Risk	Points
S3 gallop or jugular venous distention on preoperative physical exam	11
Transmural or subendocardial myocardial infarction in the previous 6 months	10
Premature ventricular beats, more than 5/min documented at any time	7
Rhythm other than sinus or presence of premature atrial contractions on last preoperative EKG	7
Age over 70	5
Emergency operation	4
Intrathoracic, intraperitoneal, or aortic site of surgery	3
Evidence of important valvular aortic stenosis	3
Poor general medical condition	3

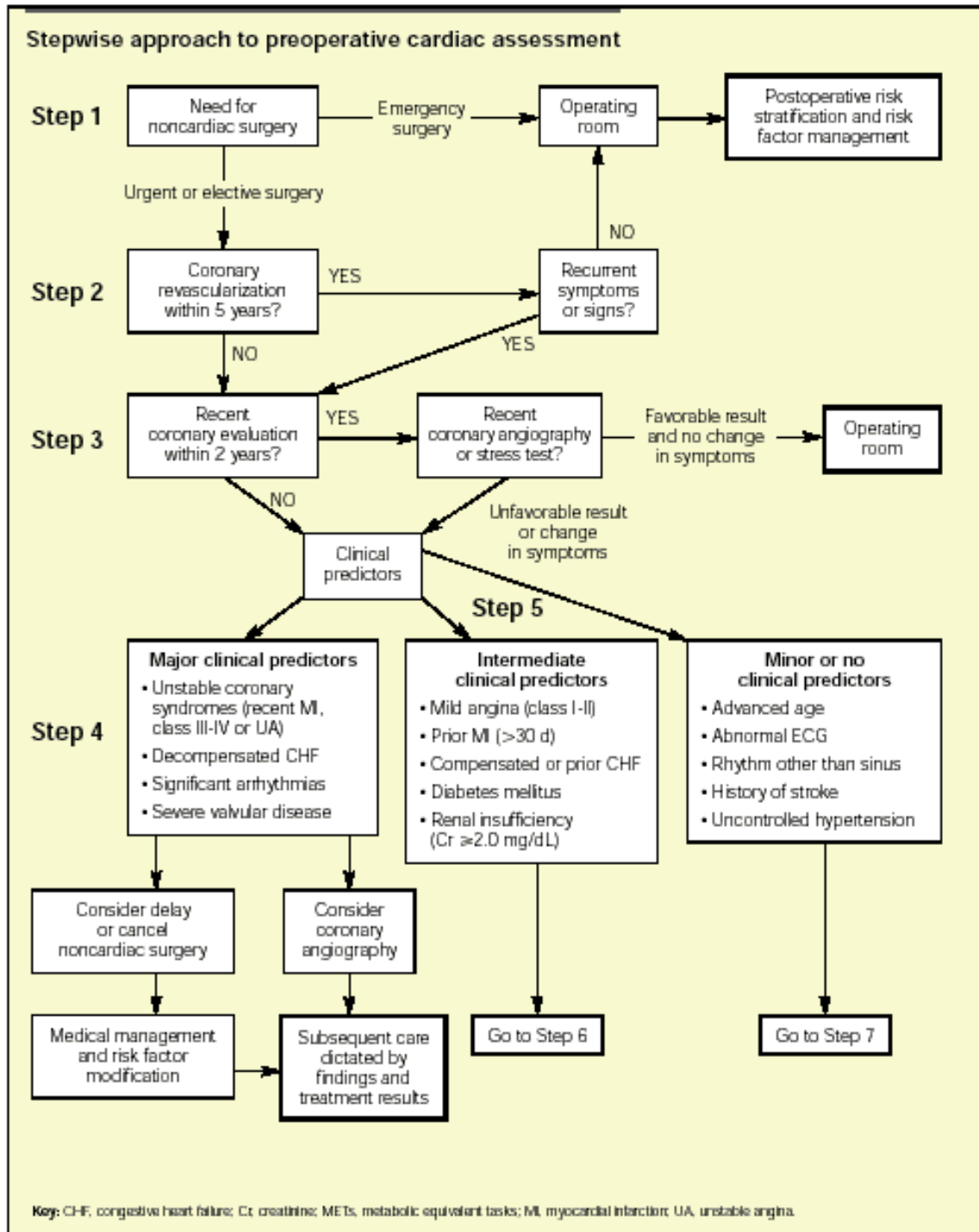
Risk of cardiac complications based on index score:

Class I (0-5 points):	1%
Class II (6-12 points):	5%
Class III (13-25 points):	11%
Class IV (>25 points):	22%

Factors that predispose to life-threatening cardiac events in perioperative period:

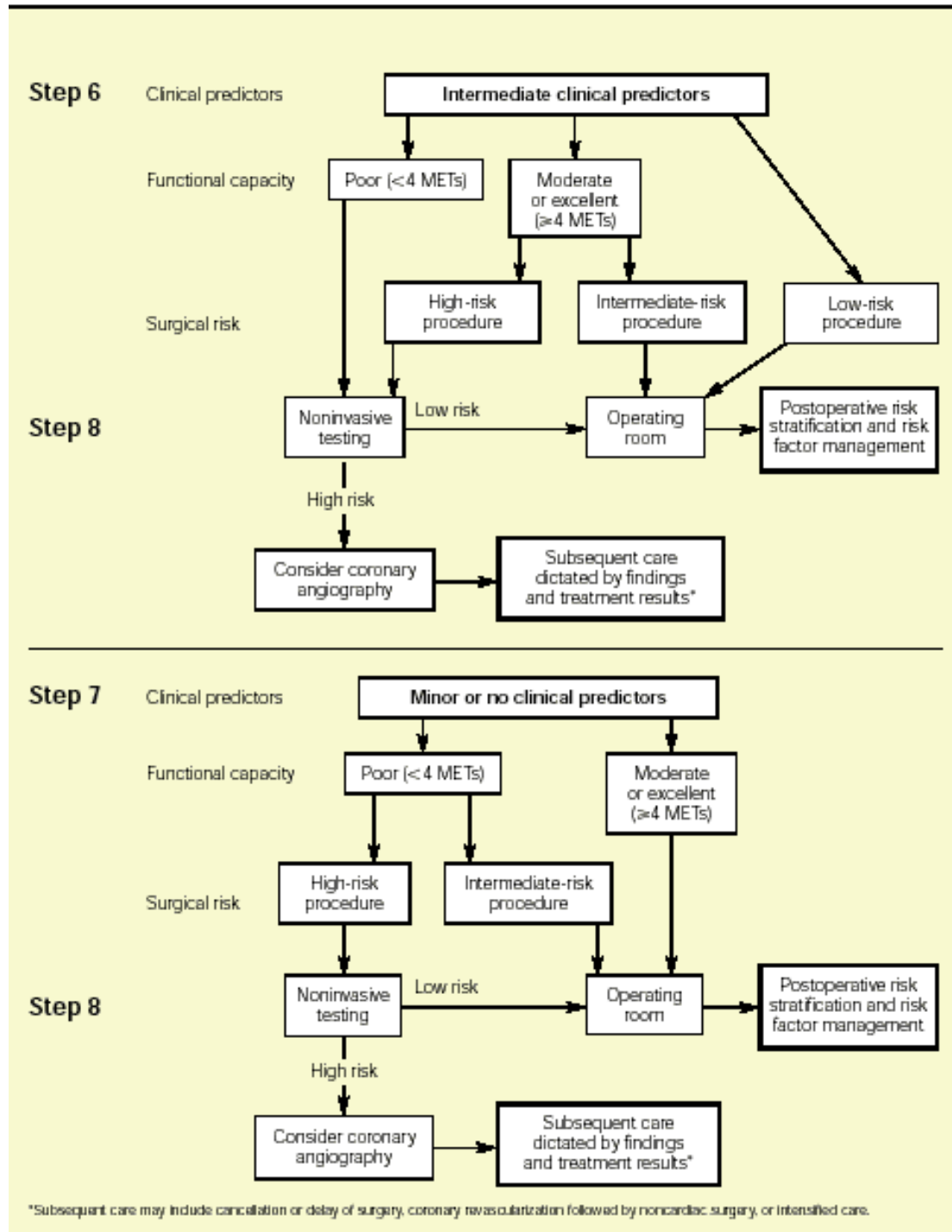
1. Infarction within 6 months
2. Congestive heart failure
3. Arrhythmias
4. Aortic stenosis
5. Emergency or major surgery
6. Age > 70 yrs
7. Poor medical condition

Preoperative Evaluation



Reprinted from Eagle KA, Berger PB, Calkins H, et al. ACC/AHA guideline update for perioperative cardiovascular evaluation for noncardiac surgery: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Committee to Update the 1996 Guidelines on Perioperative Cardiovascular Evaluation for Noncardiac Surgery). *J Amer Coll Cardiol*. 2002;39:542-553. Copyright 2002, with permission from the American College of Cardiology Foundation.

Preoperative Evaluation(con't)



**THE JEWISH HOSPITAL
DEPARTMENT OF PATIENT SERVICES
POLICY AND PROCEDURE MANUAL**

TITLE: Rapid Response Team

PURPOSE: To improve the evaluation of patients, who demonstrate rapid deterioration of their clinical status. The goal of the team is to avoid delays in treatment and further deterioration of the patient.

POLICY: The Rapid Response Team (RRT) will be a small experienced team, emergently available, to assist in the assessment and short-term care (30 minutes or less) of unstable patients. The team will consist of the arrest pager nurse, respiratory therapist and the house physician on-call. The patient populations are individuals who have acutely developed changes in their vital signs, which suggest a decline or potential for decline. The team is available 24/7 and can be accessed by any member of the healthcare team or patient and/or family through the operator using the 66# emergent number. The Critical Care Committee will review the management and performance of this team.

Procedure:

1. The RRT will be called when one or more of the following triggers have been met and an attempt to reach the resident has been unsuccessful:

Triggers:

- a. Nurse is uncomfortable with patient condition or senses a problem that is not included in the below triggers.
- b. Respiratory rate greater than 28 or less than 6.
- c. SpO2 values less than 92%.
- d. Systolic BP less than 90 mmHg.
- e. Heart rate greater than 130 or less than 50 (new onset).
- f. Acute change in level of consciousness.
- g. New onset of chest pain and no cardiology consult.
- h. Signs and symptoms of a new stroke:
 - F= face numbness or weakness, especially one side
 - A = arm numbness or weakness especially one side
 - S= speech slurred, difficulty speaking or understanding
- i. Patient and/or family have identified that the patient has acutely developed changes in their condition (behavior, symptoms, vital signs), which suggest a decline or potential for decline.

2. Contraindication for calling the RRT: Patient who is not receiving aggressive treatment, DNR with comfort care only.

3. Activation of the team will be through the 66# emergency notification system. Nurse, patient and/or patient's family will request a Rapid Response Team for the patient in Room XXXX. The nurse will also place a call to the attending physician or resident to notify them of the change in condition.

4. When a patient and/or family calls 66#, they will tell the operator that this is a family RRT call. The operator will then make a "Family Rapid Response" page. Only the Arrest Pager Nurse will respond initially. The Arrest Pager Nurse will assess the patient/situation and determine what actions are needed.

5. The operator will notify the arrest pager nurse and respiratory therapist via voice pager. A 911 page is made to the house physician by the operator. The operator will then notify the physician of the request for a rapid response team and give the room number.

6. Goal for response will be within 10 minutes of the page

7. Team members will:
 - a. Assess clinical situation focusing on stabilization of the airway and respiratory status.
 - b. Assess for hemodynamic stability.
 - c. Treat emergent conditions.
 - d. Stabilize the patient within 30 minutes or transfer patient to a higher level of care.
 - e. Notify the attending physician of assessment and planned interventions.
 - f. Document the assessment and treatment on the Rapid Response Team documentation record.
 - g. If family initiated RRT, notify Patient Representative at ext. 6-3399.
8. Team members' responses, treatment and outcomes will be evaluated every other month in the Critical Care Committee.
9. For family initiated rapid response, a patient representative will follow-up with the patient and family the next business day. The purpose of the follow-up is to assess the nature of the call, could something have been done to prevent the call and what can be done differently to avoid the issue in the future. A report will be submitted to the Critical Care Committee.

AUTHORS: Dr. D. Dortin

POLICY AND PROCEDURE MANUAL

Rapid Response Team

Dr. Ali

Dr. Neuss

Lesley Meiman, RN

Nancy Rowley, RN

DISTRIBUTION: To All Units

EFFECTIVE DATE: August, 2007

SIGNATURES:

Medical Director

Linda Miller, Vice President, Patient Services

New : 12/06

Revised : 8/07

Code Basics

Carry the code pager when you are on-call

Respond to ALL codes

If you arrive first, begin running the code

If it is a surgery patient, offer assistance for lines, intubation, chest compressions, etc.

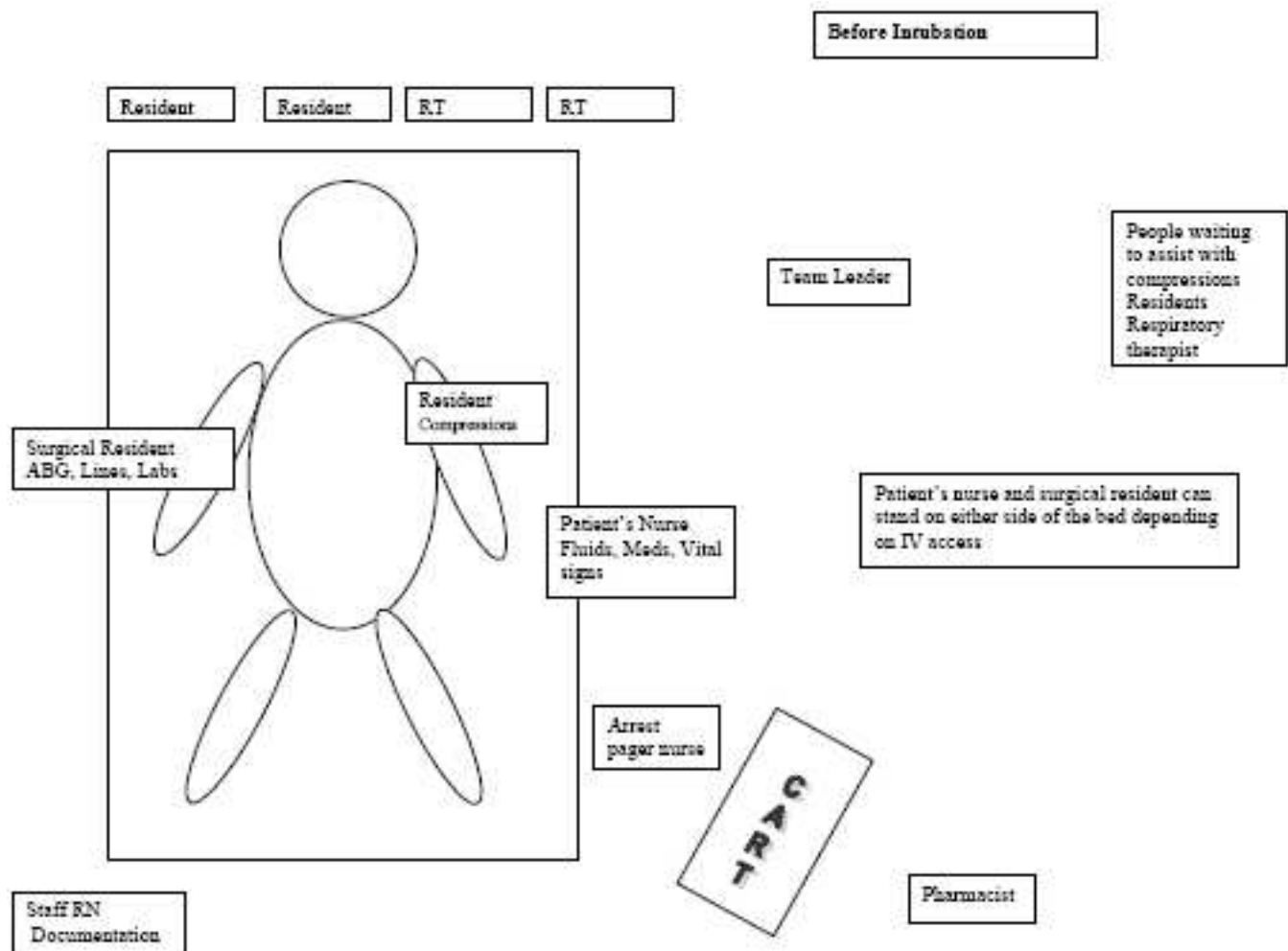
Surgery residents run the code, if you are not needed you may leave

If it is a medicine patient, run the code

Call the attending immediately (have a nurse, intern or med student call – do not leave the pt)

Remember to hand off the code pager to the resident on-call, the operators sometimes have a spare code pager if needed

IT IS NOT ACCEPTABLE to say you didn't have the code pager and you missed a code, find the resident or pager.



SELECTED ACLS MEDICATIONS

DRUG	DOSAGE	INDICATIONS
Adenosine	Initial bolus 6mg IV rapidly over 1-3 seconds followed by 20mL NS bolus. Second dose increased to 12mg IV x2	Stable narrow-complex PSVT; unstable narrow-complex reentry tachycardia; wide complex regular tachycardia thought to be reentrant SVT
Amiodarone	Cardiac arrest: 300 mg IV/IO push diluted in 20-30 mL D ₅ W in cardiac arrest followed by ONE 150 mg IV push over 3-5 minutes. Maximum dose 2.2 g IV/24 hours	Life-threatening, recurrent ventricular arrhythmias: recurrent VF, hemodynamically unstable VT
Atropine Sulfate	Asystole/PEA: 1 mg IV/IO push; may repeat q3-5 minutes; max of 3 doses Bradycardia: 0.5 mg IV q3-5 minutes, max 0.04 mg/kg (total of 3 mg)	Symptomatic bradycardia, AV nodal block with ventricular asystole
β Blocker	Labetolol: 10 mg IVP over 1-2 minutes, repeat q10 minutes to max of 150 mg Atenolol: 5 mg IV slowly over 5 minutes, repeat 5 mg in 10 minutes	Suspected MI and USA in absence of contraindications; convert to NSR or slow ventricular response in SVT's
Calcium Chloride	500mg – 1000 mg IV	Correct hyperkalemia, calcium channel blocker OD
Digoxin	Loading dose: 10-15 mcg/kg IV, repeat no sooner than 4 hours	Slow ventricular response in AF or atrial flutter; alternate for reenter SVT
Diltiazem	Rate control: 0.25 mg/kg over 2 minutes, may repeat in 15 minutes at 0.35 mg/kg over 2 minutes	Slow ventricular rate in AF, atrial flutter
Dobutamine	2-20 mcg/kg/minute IV infusion	Pump problems: CHF, pulmonary congestion; hypotension without S&S of shock
Dopamine	2-20 mcg/kg/minute IV infusion	Second line for symptomatic bradycardia, hypotension with S&S of shock
Epinephrine	Cardiac arrest: 1 mg IV q3-5 minutes	Cardiac arrest, VF, pulseless VT, asystole, PEA
Isoproterenol	2-10 mcg/minute, titrate to heart rate	Refractory symptomatic bradycardia; torsades de pointes
Lidocaine	Initial dose: 1-1.5 mg/kg IV/IO; repeat 0.5-0.75 mg/kg to maximum dose of 3 mg/kg	Alternative to Amiodarone in cardiac arrest with VF/VT; stable VT
Magnesium Sulfate	Cardiac arrest: 1-2 grams in 10 mL IV over 5-20 minutes; torsades: 1-2 grams IV in 50 mL over 5-60 minutes	Cardiac arrest with torsades de pointes or suspected hypomagnesemia; dig toxicity with life-threatening ventricular arrhythmias
Morphine Sulfate	2-4 mg IV over 1-5 minutes	Chest pain in ACS unresponsive to nitrates, acute cardiogenic pulmonary edema
Naloxone Hydrochloride	0.4-2 mg IV slowly	Respiratory and neurologic depression due to opiate intoxication
Norepinephrine	0.5-1 mcg/min up to 30 mcg/min	Severe cardiogenic shock and hemodynamically significant hypotension
Vasopressin	40 units IV/IO in place of first or second epinephrine dose	Alternate pressor to epinephrine in adult shock-refractory VF. Alternative epinephrine in asystole and PEA

Nutrition

Nutrition Tutorial

Basal Energy Expenditure (BEE) / Harris-Benedict equation:

BEE (men) = $66 + [13.7 \times \text{wt (kg)}] + [5 \times \text{ht (cm)}] - [6.8 \times \text{age (yr)}]$ kcal/day

BEE (women) = $655 + [9.6 \times \text{wt (kg)}] + [1.8 \times \text{ht (cm)}] - [4.7 \times \text{age (yr)}]$ kcal/day

-the actual caloric need may be more in metabolically stressed patients, most stressed patients require 25-35 kcal/kg/day

Visceral Protein Markers

	Normal	½ life (days)
Albumin	>3.5 g/dL	20
Transferrin	>200 mg/dL	8.5
Prealbumin	20-30 g/dL	1.3
Retinol-Binding Protein	4-5	0.4

Estimated Nutritional Requirements:

Energy: Maintenance 25-35 kcal/kg
 Anabolism 30-40 kcal/kg

Protein: Normal, healthy adult 0.8 gm/kg
 Mild-Moderate stress 1.2 gm/kg
 Severe Stress 1.5 gm/kg

Indirect Calimetry

-Measurement of VCO₂ and VO₂ over a period of time

-VCO₂ production and VO₂ consumption vary with substrate being oxidized as expressed by Respiratory Quotient (RQ = VCO₂ / VO₂)

- 0.7 = fat metabolism
- 0.8 = protein metabolism
- 1 = carbohydrate metabolism
- greater than 1 = lipogenesis or hyperventilation

Diets

Clear Liquid

-Water, jell-o, juice, applesauce, chicken/beef broth

Full Liquid

-Milk based soups, juice, ice cream, jello

Soft

-Applesauce consistency

Usual diet first and second day of feeding after surgery

Regular

ADA (give kcal i.e. 1800, 2000 American diabetic association diet)

Low concentrated carbohydrate

Mechanical Soft

Low residue – Crohns, Diverticulitis

Low fat – Cholecystitis or s/p Lap chole x 2 wks

Cardiac – Low sodium – Pt w/ CAD



Tube Feeding Formulary

Product	Specialty Formulas						Elemental		
	Standard w/Fiber HN	Isotonic HN	Calorie Dense 2.0	ISOSOURCE VHIN	SUPLENA	NOVASOURCE RENAL		NUTRIHEP	IMPACT
Calories/ L	1200	1200	2000	1000	2000	2000	1500	1000	1000
Calories/ ml	1.2	1.2	2	1	2	2	1.5	1	1
CHO gm/ L	160	160	220	130	255	200	290	130	164
PRO gm/ L	53	53	90	62	30	74	40	56	50
FAT gm/ L	39	39	88	29	95.6	100	21	28	17.4
Osmolality	490	490	790	300	600	700	690	375	320
Nonprotein Calories:Nitrogen	115:1	115:1	116:1	77:1	393:1	140:1	209:1	71:1	115:1
Na/K mEq/ L	52/51	48/49	35/39	60/46	34/28.6	39/21	14/34	48/36	74/21
Ca/P mg/ L	1000/1000	1200/1200	1100/1100	800/800	1430/730	1300/650	1000/1000	800/800	670/670
Calories for 100% RDI's	1398 kcals	1398 kcals	1896 kcals	1250 kcals	2000 kcals	2000 kcals	1560 kcals	1500 kcals	1500 kcals
Vol. For 100% RDI	1165 ml	1165 ml	948 ml	1250 ml	947 ml	1000 ml	1000ml	1500 ml	1500 ml
Free H2O	81.0%	81.8%	70%	84.7%	71%	71%	76%	85%	83%
Fiber gm/l	10	none	none	10	none	none	none	none	none
Fiber Type	Guar Gum	none	none	Guar Gum	none	none	none	none	none
Lactose/Gluten Free	yes	yes	yes	yes	yes	yes	yes	yes	yes
Vit K ug	80	80	84	64	85	80	120	67	53
Description	<ul style="list-style-type: none"> Moderate protein, isotonic (fiber containing) formula for general tube feeding needs. Contains dietary fiber to normalize bowel function (constipation, diarrhea) Readily absorbable fat & MCT oil. 	<ul style="list-style-type: none"> Used for increased risk of protein/calorie malnutrition, pressure ulcers or high protein requirements without increased caloric needs. Fat blend: 29% MCT & canola oil. 	<ul style="list-style-type: none"> Calorically dense, low residue formula indicated for those who require reduced volume or fluid restriction. Fat blend: 39% MCT & canola oil. 	<ul style="list-style-type: none"> Isotonic high protein and fiber containing tube feeding to support wound healing. Intended use for those with pressure sores, surgical wounds, burns and trauma. Fat Blend: 25% canola & MCT oil. 	<ul style="list-style-type: none"> Feeding designed for patients w/ protein, electrolyte & fluid restrictions. Meets 100% RDI in 947 ml, except Phosphorus and Vitamins A & D. Fat Blend: 43% total fat with combination of high oleic safflower and soy oils. Ross Formula 	<ul style="list-style-type: none"> Calorically dense oral and tube feeding formula designed for patients on hemodialysis and those requiring limited electrolytes (sodium, potassium, phosphorus and fluid). Vitamins A & D content limited for use with the renal patients. 45% higholeic sunflower oil, corn oil & MCT oil. 	<ul style="list-style-type: none"> Calorically dense formula designed for hepatic patients. 50% BCAAs with low aromatic and ammonia forming amino acids. Vitamins A & D. 66% fat is MCT. Nestle Nutrition Formula. 	<ul style="list-style-type: none"> Immuno-enhancing high protein, isotonic tube feeding formulated with arginine, fish oils & nucleotides. Appropriate for burns, sepsis, gut, pancreatitis and transilloning from TPN to oral diet. Fat blend: 15% (50% MCT oil, 50% soybean oil) Unflavored, orange vanilla and chocolate almond flavors. Contains 3.7 gm/l of glutamine. 	
Use	Tube	Tube	Tube/Oral	Tube	Tube	Tube/Oral	Tube	Tube	Tube
Relative Cost	\$	\$	\$	\$	\$\$	\$\$	\$\$\$	\$\$\$	\$\$\$

Electrolyte Basics

Phosphate: Keep patients >2

If NPO can replace by placing in MIVF

Replace as mmol Na phos or K phos

Usually 30 mmol added to 1 liter of MIVF is enough, recheck in am

PO replacement

Neutra-phos 250-500 mg (contains 8-16 mmol phos)

Each 250 mg tablet of Neutra-phos contains 7 mmol each of K and Na

Hypophosphatemia

Definition: $PO_4 < 2.0$

Signs/symptoms: muscular weakness, including respiratory muscles, hemolysis if PO_4 around 1.0

Replacement options:

IV	Content	Phosphate level		
		<1.0	1.0-1.5	1.6-2.5
NaPhos	3mMol/ml	0.5mMol/kg IBW over 6-8hrs	0.3 mMol/kg IBW over 6-8hrs	0.15mMol/kg IBW over 4-6hrs
KPhos	3mMol/ml+4.4mEq K	0.5mMol/kg IBW over 6-8hrs	0.3 mMol/kg IBW over 6-8hrs	0.15mMol/kg IBW over 4-6hrs

Mix in 250cc NS, usual doses about 9-30mMol, infuse slowly to avoid Ca/Phos binding

PO

Neutraphos 250 mg (8.1mMol) Phos + 7.1 mEq K per pack, take 1-2 packs PO tid

Neutraphos K- has 2x more K than standard Neutraphos

Magnesium: Keep patients >2

If K is not replacing appropriately, check Mg level

If taking PO, MgOxide 400-800mg PO BID

Hypomagnesemia

Definition: $Mg < 2.0$

Mg depletion may make it difficult to replace Ca and K

Give 2-4g $MgSO_4$ in 250-500 ml NS or D5W over 3 or more hours IV

Do not replete Mg in renal failure patients unless severe hypoMg, and reduce dose drastically
burns at infusion site

Potassium: Keep patients >4

Hypokalemia

Definition $K < 4.0$

- In general, we keep $K > 4.0$ in medicine patients. This is especially true of cardiac patients receiving Lasix or Digoxin.
- Rule of Thumb: For each 10 meq will increase K by 0.1.
- If the patient has renal insufficiency $Cr > 2.5$, reduce the KCl dose significantly, you may not want to replete K at all, or reduce dose by at least half.
- Options for repleting K^+
 1. Oral KCl (elixir or tablets)
 - 20-40 mEq PO, repeat q2 hrs to desired dosage
 - Disadvantages: tastes nasty, GI upset
 - Advantages: no fluid load, safer than IV, cheaper
 2. KCl IVPiggyBack
 - Maximum concentration is 10 mEq per 100 cc of fluids
 - Maximum rate of repletion is 10 mEq/h if no cardiac monitor, 20 mEq/h if monitored
 - Via central line, you can increase concentration to 20 mEq/h
 - Disadvantages: burns @ IV site, IV fluid load, limited infusion rate, can't open IV wide
 - Advantages: okay if NPO, avoids nasty taste of PO KCl
 - **Never IV push KCl!** This leads to cardiac arrest!!
 3. Add KCl to maintenance IV fluids
 - Maximum concentration is 60 mEq/L
 - Disadvantages: slow repletion rate, may forget to remove KCl when no longer needed
 4. Use KPhos instead of KCl
 - Useful when PO_4 is low also (< 2.0), See Hypophosphatemia section
 - Disadvantages: slow repletion rate, hypocalcemia if run too fast

Hyperkalemia

Definition for cross coverage purposes $K > 5.0$ (without hemolysis)

- Signs & symptoms
 - Arrhythmias, muscle weakness, paresthesias
 - EKG changes: peaked T waves, PR prolongation > 0.20 , widened QRS > 0.12 , absent P,
 - Ventricular arrhythmias
- What to do
 - Draw repeat Chem 7, avoiding hemolysis, Stop any K containing IVs or POs
 - Stat EKG
 - If $K < 6.5$ and no EKG changes (peaked T waves are ok)
 - give Kayexalate 30 gm PO and makes sure lytes are included in AM labs
 - If $K > 6.5$ or EKG changes (other than peaked T waves)
 - Cardiac monitor
 - Give calcium gluconate (10%) 10 cc IV over 3 min (stabilizes myocardium x 30 min)
 - Give 1 amp $NaHCO_3$ (shifts K intracellular)
 - Give 1 amp D50 with 10 U regular insulin IVP (shifts K intracellular)
 - Give Kayexalate 30 gm PO (causes K loss via GI tract)
 - Can give Kayexalate 50 gm in 200 cc sorbitol as retention enema if NPO
 - If renal failure, dialyze ASAP, repeat lytes in 4-8 hrs

Calcium

Replace in gram doses IVPB

Check albumin level if persistently low

- A fall in serum albumin of 1gm/dL decreases serum Ca approx. 0.8mg/dL
- Ionized Ca is not affected by albumin

Calcium preparation	Dosage	Elemental Ca content
Ca Gluconate	1 gm(10ml) IV	93 mg (4.6 mmol)
Ca Chloride	1 gm (10ml) IV	272 mg (13.6 mmol)
Ca Carbonate	1 tablet	500 mg

Hypocalcemia

Definition- $Ca < 8.5$ (correct Ca by adding 0.8 for every drop of 1 in albumin below 4.0)
or ionized $Ca^{++} < 1.1$ mM/L

Causes- magnesium depletion (fix Mg first), alkalosis, sepsis, renal failure, pancreatitis, hypoPTH...

Signs/Symptoms- neuromuscular excitability (tetany, hyperreflexia, seizures), long QT, hypotension

Treatment:

IV preparations	Content	Ca <8.0	Ca >8	Comments
Ca Chloride (10%)	272 mg Ca^{++} /10 cc vial	1gm over 1hr	Give Ca gluconate	3x amt of Ca than gluconate
Ca Gluconate (10%)	90 mg Ca^{++} /10cc vial	2 gm over 15 min, then 1-3 gm over 1-3 hours	1-2 gm over 1-2 hrs	Preferred IV agent, less irritating

Hyponatremia

Definition: Na <135

Generally no cross coverage action required until Na < 130

*However, rate of Na change more important than actual lab value.

Na <129 may give altered mental status

Na <120 may cause seizures/arrhythmias

Assess patient for pseudohyponatremia caused by very high glucose

Correct Na 1.6 for every 100 increase in glucose over normal

Treat hyperglycemia

No need to treat Na if it corrects to normal

Assess fluid status clinically (JVD, mucous membranes, rales, edema, h/o CHF, cirrhosis, fluid loss)

Euvolemic: Water restrict (for ex. 1000 cc/day)

If Na <120, consider giving saline plus Lasix

For ex. NS 100-150 cc/hr + Lasix 20 mg IV q6h

or 3% saline 40-50 cc/hr + Lasix 20 mg IV q6h

Stop or slow down rate when you reach your goal Na (see below)

Do not correct faster than 0.5-1 mEq/L per hour or risk central pontine myelinolysis!

Once you reach Na 120, you are out of danger range and can slow down correction

Correct underlying cause: SIADH, adrenal insufficiency, hypothyroidism, polydipsia, pain, meds (amitriptyline, carbamazepine, chlorpropramide, phenothiazines...)

Hypervolemic: CHF, cirrhosis, renal failure, nephrotic syndrome

Water restrict (for ex. 1000 cc/day)

Avoid giving IV fluid

2 gm Na diet???

Lasix diuresis

Dialysis if anuric or unable to diurese

Hypovolemic: N/V/D, third spacing, thiazide diuretics, adrenal insufficiency

Give NS IV

Usually do not diurese

If severe (Na <120), can give saline + Lasix once volume repleted (see euvolemic above)

Hypernatremia

Definition: Na >148

Almost always reflects free water depletion and hypovolemia, often in patients who can't access H₂O

1st GIVE NORMAL SALINE to correct hypotension and hypovolemia, then work on the Na problem

Calculate free water deficit = $0.6 \times \text{usual weight (kg)} \times (\text{Na}/140 - 1)$

The deficit reflects how much free water will eventually need to be given in the form of

D5W, or oral or G-tube water.

If you use ½ NS, you will need twice as much because its only 1/2 as much free water as D5W

Remember this calculation is an approximation only and may need adjustment based on response

Give about ½ the free water deficit back over the first 24 hrs and the rest afterwards

For ex: Free water deficit = 6L

First day will replete 3L, or 3000 ml over 24 hrs = 125 ml/hr D5W or 250 ml/hr ½ NS

Do not correct too quickly or brain edema may result!

Pharmacology

Antidotes

Toxin	Antidote / Treatment
Acetaminophen	N-acetylcysteine
Antidepressants	Bicarbonate
Arsenic, mercury	Dimercaprol (BAL)
Benzodiazepine	Flumazenil
Beta blockers	Glucagon
Calcium channel blockers	Calcium chloride, glucagon
Cyanide	Lilly cyanide kit
Digoxin	Dig immune Fab
Ethylene glycol	Fomepizole
Heparin	Protamine
Iron	Deferoxamine
Lead	EDTA, succimer
Methanol	Fomepizole
Methemoglobin	Methylene blue
Narcotics	Naloxone (narcan 0.4 mg)
Organophosphates	Atropine + pralidoxime
Warfarin	Vitamin K, FFP
Dopamine infiltration	Regitine subQ

Corticosteroids

	Approx equiv. Dose (mg)	Relative anti-inflamm potency	Relative mineralcorticoid potency	Biologic ½ life (hours)
Betamethasone	0.6-0.75	20-30	0	36-54
Cortisone	25	0.8	2	8-12
Dexamethasone	0.75	20-30	0	36-54
Hydrocortisone	20	1	2	8-12
Methylprednisolone	4	5	0	18-36
Prednisolone	5	4	1	18-36
Prednisone	5	4	1	18-36
Triamcinolone	4	5	0	18-36

Heparin gtt

Initiating a heparin gtt

80 units/kg bolus followed by 18 units/kg infusion

Heparin dose adjustment guideline (rounded to the nearest 50 units)

RN to adjust heparin based upon the following sliding scale:

<u>HPTT Level</u>	<u>IVP Bolus Dose</u>	<u>Infusion Rate Change</u>
Less than 36 seconds	80 units/kg = ___ units and	Increase 4 units/kg/hr = ___ mL/hr
36-89 seconds	40 units/kg = ___ units and	Increase 2 units/kg/hr = ___ mL/hr
90-155 seconds	None and	NO CHANGE
156-200 seconds	None and	Decrease 2 units/kg/hr = ___ mL/hr
Greater than 200 seconds	Hold Heparin inf. for 1 hr and	Decrease 3 units/kg/hr = ___ mL/hr

Check CBC prior to initiating gtt and daily

Check HPTT 6 hours after any dose change

Stool for guaiac every other day while on gtt

Insulin

	<u>Preparation</u>	<u>Onset (h)</u>	<u>Peak (h)</u>	<u>Duration (h)</u>
Rapid-acting:	Insulin aspart (Novolog)	¼	¾	3-5
	Insulin lispro (Humalog)	0- ¼	½-1 ½	6-8
	Regular	½-1	2 ½-5	6-8
Intermediate-acting:	NPH	1-1 ½	4-12	24
	Lente	1-2 ½	7-15	24
Long-acting:	Ultralente	4-8	10-30	>36
	Insulin glargine (Lantus)	Slow, prolonged absorption		

Glucose Goals

Preprandial 80-120 mg/dL

Bedtime 100-140 mg/dL

Insulin sliding scale:

Blood glucose (mg/dL)	Regimen 1	Regimen 2	Regimen 3	Regimen 4	Physician Defined
Less than 70*	25mL of Dextrose 50% -OR- 120mL of Orange Juice Call physician	25mL of Dextrose 50% -OR- 120mL of Orange Juice Call physician	25mL of Dextrose 50% -OR- 120mL of Orange Juice Call physician	25mL of Dextrose 50% -OR- 120mL of Orange Juice Call physician	___mL of Dextrose 50% -OR- ___mL of Orange Juice Call physician
100-149	0 units	2 units	0 units	3 units	___ units
150-199	2 units	4 units	3 units	6 units	___ units
200-249	4 units	6 units	6 units	9 units	___ units
250-299	6 units	8 units	9 units	12 units	___ units
300-349	8 units	10 units	12 units	15 units	___ units
350-400	10 units	12 units	15 units	18 units	___ units
Greater than 400	12 units & Call physician	14 units & Call physician	18 units & Call physician	21 units & Call physician	___ units & Call physician

*For blood sugar less than 70 mg/dL or less than 100mg/dL with symptoms of hypoglycemia, give either juice or high glucose beverage orally as indicated on selected regimen. If unable to take oral, administer Dextrose IV as indicated on selected regimen.

* Use appropriate sliding scale and adjust for renal failure patients.

Drugs Commonly Used By Us

Analgesics

IV

Morphine 2-4mg IV q2h prn

Demerol 25-75 mg IV/IM q3h prn (last resort)

Fentanyl 25-100 mcg q 1h ICU patients. Drip start at 50-100 mcg

Toradol 15-30 mg IV/IM q6h x 48h (May cause bleeding and ARF, use with caution in patients with renal insufficiency and in the elderly - Dr.

Fegelman does not like)

Oral

Percocet 5/325 (Specify dose on Rx) 1-2 tabs q4-6h prn

Roxicet Elixir 5-10ml q4-6h prn

Vicodin 5/500 1-2 tabs q4-6h prn

Lortab Elixir 10-15 ml q4-6h prn

Tylenol 650 mg PO/PR q4-6h prn pain/temp

Darvocet N-100 1-2 tabs q4-6h prn

Ultracet 1-2 tabs q4-6h prn

Antiemetics

Compazine 10mg IV q6h

Reglan 10mg IV/PO q6h prn or scheduled

Zofran 4mg IV q8h prn (must renew q24h)

Antibiotics

IV
Kefzol/Acef 1gm IV q8h
Cefotetan 1-2gm IV q12h
Cipro 400mg IV q12h
Flagyl 500mg IV q8h
Zosyn 3.375gm IV q6h (Don't forget to renal dose)
Unasyn 1.5-3 gm IV q6h

Oral
Keflex 500mg po bid
Cipro 500mg po bid, 750mg bid
Flagyl 500mg po tid
Augmentin 875mg po bid

Sleepers

Ambien 5-10mg po qhs prn
Benadryl 25-50mg IV/PO qhs prn

Antihypertensives

Vasotec 1.25mg IV q6h prn SBP>160-180 (do not give if
Renal insufficiency)
Hydralazine 10mg IV q6h prn SBP>160-180

Prophylaxis

Pepcid 20mg IV q12h, or 40mg in a bag of TPN
Protonix 40mg IV/PO q24h (Serious GI bleed 80mg IV bolus,
8mg/h continuous infusion for 48h)
Heparin 5000 units SQ q8h
Fragmin 5000 units SQ q24h
* Don't forget IS and athrombic boots

GI

MOM 30 ml po qd-bid
Colace 100mg po bid
Pericolace 1-2 tabs po daily
Senekot 1-2 tabs po bid
Kondremul 15-30ml po daily
Dulcolax suppository 1 pr

Sedation

Haldol 2-5mg IV/IM q2-4h prn seems to be reasonable. Good sedative
For elderly. Can give as often as q5min until desired effect.
Ativan 0.5-1mg IV q6h prn seems to be a good starting point on floor
Versed 1-2mg IV q1h prn (on ICU patients) or as 1mg an hour gtt.
*Ask yourself why is the patient agitated or confused. Are they
hypoxic? Are confused patients adequately restrained?

Please specify prn reason

Starting Doses for Opioid Agonists in Opioid Naïve Patients (Average Adult Weight)

For Moderate to Severe Pain	IV starting Dose	Oral Starting Dose
Morphine	3-5mg. Q2H	MSIR 30mg Q3H
PCA		
Concentration	1.0mg/ml	
Bolus	1mg/6 min.	
MS Contin (SR)	Not available	90-120mg Q12H
Oxycontin (SR)	Not available	10mg Q12H
Dilaudid (hydromorphone)	0.75-1mg Q2H	4-6mg Q3H
PCA		
Concentration	0.2mg/ml	
Bolus	0.2mg/6min	
Fentanyl	25-50mcg Q2H	None

For Mild to moderate pain	IV starting Dose	Oral Starting Dose
Meperidine (last choice) (Short-term therapy only 48-72 hours)	25-50mg Q2H	100-150mgQ3H
PCA		
Concentration	10mg/ml	
Bolus	5-25mg/6 min.	
Hydrocodone	None	5-10mg Q3-4H
Oxycodone	None	5-15mg Q3-4H

	Opioid Content	Acetaminophen Content
Vicodin	Hydrocodone 5mg	500mg
Vicodin ES	Hydrocodone 7.5mg	750mg
Percocet	Oxycodone 5mg	325mg
Darvocet N-50	Propoxyphene napsylate 50mg	325 mg
Darvocet N-100	Propoxyphene napsylate 100mg	650mg
Tylenol #2,3,4	Codeine 15,30,60mg	325mg

Opioids with Acetaminophen **DO NOT EXCEED** 4GM a day

Critical Care

Arterial and Mixed Venous Blood Gas Values

Blood Gas Values	Abbreviation	Normal Values
Arterial O ₂ tension	PaO ₂	80-100 mm Hg
Arterial O ₂ saturation	SaO ₂	95-99 %
Arterial O ₂ content	CaO ₂	18-20 mL/dL
Mixed venous O ₂ tension	PvO ₂	33-53 mm Hg
Mixed venous O ₂ saturation	SvO ₂	65-75%
Mixed venous O ₂ content	CvO ₂	13-16 mL/dL
Arterial CO ₂ tension	PaCO ₂	36-44 mm Hg
Arterial pH	pH _a	7.4

Oxygen Transport Values	Abbrev.	Formula	Normal value
Arterial-venous O ₂ difference	C(a-v)O ₂	C(a-v)O ₂ = CaO ₂ - CvO ₂	4-5.5 mL/dL
O ₂ extraction rate	O ₂ Ext	O ₂ Ext= C(a-v)O ₂ / CaO ₂	22-30 %
O ₂ delivery index	DO ₂	DO ₂ = CaO ₂ x 10 x CI	520-720 mL/min/m ²
O ₂ consumption index	VO ₂	VO ₂ = CI x 10	100-180 mL/min/m ²
Alveolar-arterial O ₂ gradient	D(A-a)O ₂	D(A-a)O ₂ = PAO ₂ -PaO ₂	0-100

Expected Compensation for simple acid-base disorders

Primary disorder	Initial change	Compensatory response	Expected compensation
Metabolic acidosis	HCO ₃ ⁻ ↓	PCO ₂ ↓	PCO ₂ dec = 1.2 x (dec in HCO ₃)
Metabolic alkalosis	HCO ₃ ⁻ ↑	PCO ₂ ↑	PCO ₂ inc = 0.7 x (inc in HCO ₃ ⁻)
Respiratory acidosis	PCO ₂ ↑	HCO ₃ ⁻ ↑	Acute: HCO ₃ ⁻ inc= x (PCO ₂ inc) Chronic: HCO ₃ ⁻ inc = 0.35 x (PCO ₂ inc)
Respiratory alkalosis	PCO ₂ ↓	HCO ₃ ⁻ ↓	Acute: HCO ₃ ⁻ dec = x (PCO ₂ dec) Chronic: HCO ₃ ⁻ dec =0.5 x (PCO ₂ dec)

Ranson's Early Prognostic Signs of Acute Pancreatitis

Criteria for Pancreatitis Not Due to Gallstones

At admission

Age over 55 yrs
WBC > 16,000
Blood Glucose > 200
Serum LDH > 350
AST > 250

During initial 48 hours

HCT fall > 10 % pts
BUN elevation > 5 mg/100ml
Serum Calcium fall to < 8
Arterial PO₂ < 60 torr
Base deficit > 4 mEq/L
Estimated fluid sequestration > 6L

Criteria for Gallstone Pancreatitis

At admission

Age over 70 yrs
WBC > 18,000
Glucose > 220
Serum LDH > 400
AST > 250

During initial 48 hours

HCT fall > 10 % pts
BUN elevation > 2 mg/100ml
Serum Calcium fall to < 8
Base deficit > 5 mEq/L
Estimated fluid sequestration > 4L

Morbidity and mortality rates correlate with the number of criteria present:

0-2	2%	mortality
3-4	15%	mortality
5-6	40%	mortality
7-8	100%	mortality

Cardiac Parameters and Formulas

Cardiac output (CO) = heart rate x stroke volume

Cardiac index (CI) = CO / BSA

MAP (mean arterial pressure) = [(SBP-DBP)/3] + DBP

SVR (systemic vasc resistance) = (MAP - CVP) x (80) / CO

PVR (pulm vasc resistance) = (PAM - PCWP) x (80) / CO

QTc = QT / square root of RR

Right atrial pressure (central venous pressure)

Pulmonary artery systolic pressure (PAS)

Pulmonary artery diastolic pressure (PAD)

Pulmonary capillary wedge pressure (PCWP)

Normal

4-8 l/min

2.8-4.2 l/min/m²

80-100 mmHg

800-1200 dyne/sec/cm

45-120 dyne/sec/cm

0.38-0.42

0-8 mmHg

20-30 mmHg

10-15 mmHg

8-12 mmHg

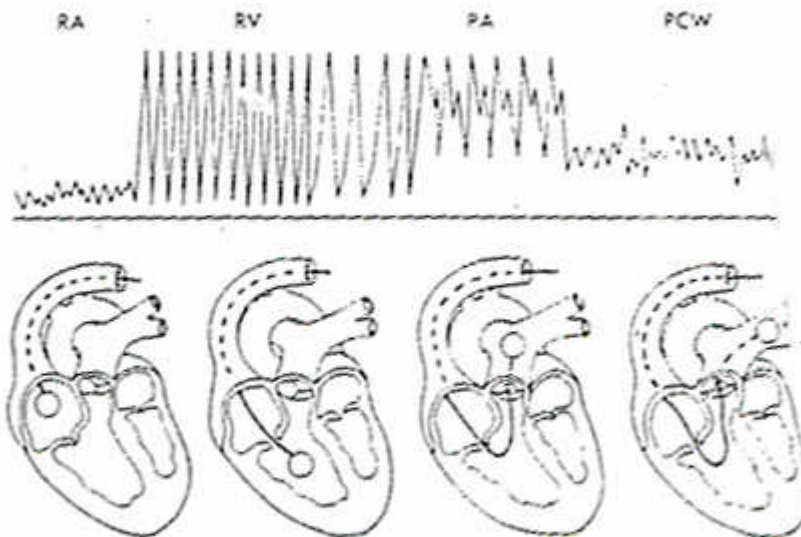


FIGURE 12-12. Pressure waveforms seen as the pulmonary artery catheter is advanced. RA = right; right ventricle; PA = pulmonary artery; PCW = pulmonary capillary wedge. (Reproduced, with permission, from Rosen P et al (editors): *Emergency Medicine: Concepts and Clinical Practice*. Mosby, 1993).

Procedures

Pearls and Pitfalls of Central Lines

Most common complication: Tachyarrhythmia

When choosing a location for a central line:

Choose the same side as:

Chest tube

Avoid side with:

s/p CEA

Broken / deformed collar bone

Be aware of IVC filters when using the guidewire

When changing a TLC to a swan / cordis you must (Consult surgery prior to placement)

Use a TLC guidewire for the length

Always get an x-ray after a subclavian or IJ attempt before moving sides

You can get a pneumothorax from placing an IJ line

When getting central line consults:

-The Surgery Residents must be notified

-Does the patient need a central line?

-Is it safe to put the line in? (i.e. INR-6, plt 20)

-Can you place a peripheral or external jugular IV?

Hypertension

Consider rechecking BP, using properly fitting manual cuff and doing it yourself

Urgency of treatment depends on

Degree of HTN

End-organ damage from HTN (cardiac ischemia, pulmonary edema, etc)

Coexisting medical conditions (MI, CHF)

Coexisting coronary artery disease and CHF may lower your threshold to treat and your target BP

In absence of end-organ damage or cardiac disease, mild inpatient HTN often does not require immediate treatment by cross coverage.

Evaluation

What's the baseline/recent BP? (look at recent vitals flowsheet)

Any coexisting cardiac disease?

Easily treatable causes of HTN? (pain, anxiety, drugs-amphetamines, EtOH withdrawal)

If acute end organ damage is of concern (usually when SBP > 190-200), check for

ROS: CP, SOB, HA, focal neuro sx, hematuria?

PE: neuro, fundoscopic, cardiac (JVD, S3, rales?)

Tests: EKG, Cr, UA +/- Head CT if indicated if acute end organ damage present, this is malignant HTN and an emergency that usually requires ICU care and parenteral antiHTN meds.

Goal BP

If stroke- SBP approx 190-210 or 25% reduction in SBP for 1st 24hrs (overaggressive Rx decreases cerebral perfusion)

If other acute end organ damage- lower SBP approx 25% in 1st 24 hrs

If coronary dz- SBP < 140 DBP < 90 usually

If none of the above- SBP < 180 usually is enough

Treatment options (a partial list, doses are for PRN coverage only)

If not on max dose, consider increasing their current Rx or additional doses consider contraindication to particular antiHTN Rx (DM, asthma..) PRN Meds (also consider increasing BP regimen to prevent spikes once controlled):

1. **Hydralazine** 25-50 mg PO q4hrs PRN or 5-10 mg IV q 20 min safe with low EF or pregnancy (we use lots of this, it is your friend at night!)
2. **Metoprolol** 25-50 mg PO q4hrs PRN, max 200mg/day or 5-15 mg IV q2 hrs PRN avoid in acute CHF, bradycardia < 60, heart block
3. **Labetalol** 20-80 mg IV q5-10 min up to 300 mg
Caution in acute CHF, bradycardia < 60, heart block, asthma/COPD/wheezing
4. **Enalapril** 5 mg PO q4hrs PRN or 1.25-2.5 mg IV q 6 hrs PRN
Safe in low EF or CHF, not in pregnancy
5. **Clonidine** 0.1 mg PO q20 min PRN, max 0.6-0.8 mg/day
Safe in CHF or low EF, can cause reflex tachycardia asthma/COPD/wheezing, good for CAD for malignant HTN (end organ damage),

* If inadequate response, consider IV **nitroprusside** gtt and ICU transfer

Hypotension

Definition: usually SBP < 90, but take into account pt's usual BP

History- Some pts with severe cardiomyopathy run SBP in the 80-90s normally and should not have their meds held when they are in their usual range. Young pts may have SBP in the 90s, particularly 2nd trimester pregnant pts and do not require treatment if asymptomatic.

Trendelenberg position

Ensure adequate IV access (one or preferably 2 large bore IVs)

Ensure adequate airway

Check pulse

Bradycardia <55 then go to ACLS protocol

Consider Stat EKG to r/o arrhythmia or ischemia

Bolus with NS wide open (500 cc at a time up to 2L or more total)

Use less IVF if old, CHF, rales, edema, JVD

Hold any contributing meds

If no response to 1-2L IV NS, (BP still < 85-90), then start a pressor and transfer to ICU

Pressor	Start Rate	Max Rate	Effects
Dopamine	5-10 ug/kg/min	20 ug/kg/min	alpha, beta1
Dobutamine	2-10 ug/kg/min	20 ug/kg/min	beta1>>alpha/beta2 *for cardiogenic shock
Norepinephrine	4 mcg/min	30+ ug/min	alpha, beta1
Phenylephrine	20-200 ug/min	360 ug/min	alpha

alpha – vasoconstriction
beta1 – increase HR, cardiac contractility
beta2 – vasodilation, bronchodilation

Figure out **why** the patient is hypotensive and treat the underlying cause!!!

Common etiologies:

Hypovolemia: GI bleed, V/D, overdiuresis, postop, third spacing

Cardiogenic: ischemia, MI, CHF, arrhythmia, valvular disease, tamponade

Sepsis: locate possible sources, pan culture, start antibiotics for likely sources

Overmedication: antihypertensives, narcotics, benzodiazepines. Hold meds

Endocrine: Addison's, myxedema, thyroid storm, call endocrine

Miscellaneous: PE, aortic dissection, auto-PEEPing (increased intrathoracic pressure)

Decreased Urine Output

Definition (adults) - less than 30 ml/hr

Key point: differentiate prerenal, renal, and postrenal in order to treat rationally

1) **Collect data:** BUN/Creatinine trend, blood pressure/pulse, I/O over the past several days

Physical Exam: mucous membranes, JVD, edema, distended bladder, rales

2) **Etiologies**

Prerenal: low perfusion of the kidneys results in low urine production

Causes - overdiuresis, hypotension, N/V/D, bleeding, sepsis, cardiac failure

Clues - Dry mucous membranes, poor skin turgor, tachycardia, I<<O, overaggressive diuresis, BUN/Cr ratio >20, pt is thirsty

Renal: intrinsic renal disease

Causes - glomerulonephritis, ATN, chronic kidney disease, hepatorenal syndrome, interstitial nephritis

clues - Long h/o high creatinine, liver failure, recent severe hypotension, exposure to meds that can cause ATN (long-term aminoglycosides, IV contrast) or interstitial nephritis (some antibiotics, NSAIDS, cimetidine, thiazides, allopurinol...), cellularity or cellular casts on UA (UA), urine eosinophilia (interstitial nephritis).

Postrenal: obstructive

Causes - foley obstruction, BPH, prostatitis, occas renal stones, huge pelvic mass

Clues - painful distended bladder, increased post void residual, prostate exam

3) **Management**

Post-renal:

Does pt have a Foley? Consider flushing it with 30 ml NS to see if it's plugged. Do post void residual-- Have pt try to void. Measure this amount, or try straight catheter w/ foley. If the amount obtained is >50ml, leave the Foley in place (postrenal). Otherwise d/c it (not postrenal). Try NS bolus 250-500 cc and see if UOP increases over next 1-2hrs.

Pre-renal:

If not, reevaluate fluid status. Make sure no rales/JVD or other signs of volume overload. If not, then try another IV bolus.

Exceptions:

1. CHF patients don't perfuse kidneys because of pump failure, but do not do well with IVF boluses! Try instead Digoxin, Lasix, and ACE inhibitor in situations with low EF.
2. Cirrhotic patients also behave like CHF patients (volume overloaded but intravascularly dry). You can try a little IV bolusing but be aware that they will instantly convert excess fluid into ascites & edema.
3. Significant hypotension overrides all these considerations-- usually give IVF wide open at first, then a pressor if needed (see Hypotension)

Renal:

Address the specific cause. You may want a renal consult if severe enough. The patient may tend to be volume overloaded. If so, try Lasix (below). Tips on diuresing a wet or euvoletic patient: IV form is about twice as strong as PO per mg effect lasts 2-6 hrs.

- Start at 20 mg IV or 40 mg PO if pt is not accustomed to Lasix
- Start at double the pt's usual dose if they are already on Lasix
- If no response in 1-2 hours, double the dose and try again
- Renal failure makes pts more Lasix resistant
 - At 120 mg Lasix + consider metolazone 5mg PO 30 min before Lasix.

Indications for emergent dialysis: Severe volume overload, electrolyte abnormalities (K+, Phos), metabolic acidosis, symptomatic uremia, toxin elimination (ethylene glycol).

*(Notice creatinine is not on this list!)

Tachycardia

1) **Sinus tachycardia**

Usually a physiologic response to stress in most cases, it is compensatory and necessary; do not take it away treat the underlying condition:

- Pain, anxiety, fever, hyperthyroidism, volume depletion, hypotension
- If hypotensive, see Hypotension section
- If pt has known coronary disease, you may want to slow the rate down with a beta blocker, provided there are no contraindications.

2) **Non-sinus tachycardia**

Clues: irregular, no P waves, too many P waves (per QRS), too few P waves, P waves not temporally related to QRS, abnormal (upside down) P waves.

- Get EKG stat to better clarify type of tachycardia
- If hypotensive or Vtach, go to ACLS protocol
- If not hypotensive, consider a cause and need to slow down HR or not
- Electrolytes (incl. Mg, Ca), oxygenation, ischemia, structural heart disease, medication effect (cocaine, pressors, theophylline...)

Bradycardia

1) **Sinus bradycardia** (HR<60)

asymptomatic with good bp—no treatment

hypotensive, dizzy, syncopal—begin ACLS bradycardia protocol, get stat EKG

2) **Heart blocks**

Any type- if hypotensive, get temporary pacemaker and begin ACLS protocol

1st degree - PR interval >0.20, 1 P wave for each QRS if stable BP, do nothing

2nd degree -

Mobitz I (Wenckebach)- lengthening PR interval then dropped QRS if stable BP, do nothing

Mobitz II- constant PR, periodic dropped QRS have temporary pacer/atropine ready figure out why block exists, consider cards consult

3rd degree - no relationship between P and QRS, generally quite bradycardic place temporary pacemaker on patient, figure out why block exists, call cardiology

Fever

Definition for workup: $T \geq 101.5$; if neutropenic or immunosuppressed $T \geq 100.5$

1) **Obtain vital signs**

If hypotensive, go to hypotension section and examine patient immediately

2) **Figure out** relevant medical conditions and the last time patient was “cultured.”

If the patient had cultures <24 hrs ago, it’s probably not necessary to repeat, unless the patient is now unstable or something else has changed

3) **Interview patient:** Cough? Dysuria? Headache? Stiff neck? Diarrhea? Pains? Sore throat?

4) **Examine patient:**

Post-op fever 5W’s

Wind – atelectasis, pneumonia

Water – UTI

Wound – you must look at the wound

Walking – DVT, pulmonary embolus

Wonder drug – drug fevers

Miscellaneous- meningitis, gastroenteritis, intraabdominal infection, sinusitis

5) **Culture patient:**

- Blood cultures x 2 sets (1 set equals 2 bottles (1 aerobic and 1 anaerobic)) consider drawing an extra set of BCx from any longstanding lines
- Consider fungal cultures if AIDS or fever w/prolonged antibiotics and risk factors for fungemia (diabetes, central lines, TPN, intraabdominal catastrophe, neutropenic)
- Consider AFB blood cultures if AIDS (for MAI)
- CXR if any pulmonary abnormalities
- UA +/- urine cx
- Sputum GS/culture if CXR infiltrate or significant pulmonary symptoms

6) **Decide if antibiotics are needed:**

- If hypotensive, cover likely sources discovered above and more broadly for possible sources, usually including gram negative coverage
- If neutropenic, cover likely sources discovered above and make sure includes double GN coverage (% segs + bands x WBC count = absolute neutrophil count <750-1000)
- If no clear source of infection and patient is stable and likely to stay stable, try to delay abx addition or changes until cultures return to guide selection of abx

Other cultural considerations:

Drainage catheters

Pleural effusions

Ascites

Blisters

Wounds

High likelihood sources

Central lines

Pulmonary

Foley catheter

Pulmonary emboli

Heparin locks/IV

Urinary tracts

Wounds

Heart valve

Altered Mental Status

Differential diagnosis:

Infection	Meningitis, encephalitis, systemic infections
Drugs	Benzodiazepines, opiates, H2 blockers, steroids, etc.
Metabolic	Hypoxia, ethanol withdrawal, hepatic encephalopathy, uremia, electrolyte imbalance, hypoglycemia, seizure
Cardiac	Hypotension
Neurologic	Intracranial bleed, stroke, tumor, seizure
Other	“Delirium - sundowning,” “ICU psychosis,” TTP, CNS vasculitis

Assessment:

Age of patient
Baseline mental status
Acuity of MS change
Recent medications
Vital signs
Basic physical exam
Complete neuro exam, esp level of consciousness

Labs to consider:

Pulse ox, accucheck, chem 7, Ca, urine tox, ABG, CBC, EKG, Head CT (with contrast if Possible: seizures or tumor), LP (check fundi, focality of neuro exam)

Management:

Treat underlying cause
Consider Narcan, D50/thiamine, flumazenil, oxygen
Hold sedating drugs if at all possible
Consider transfer to ICU if depressed consciousness or respiratory depression
Aspiration, seizure, and fall precautions as necessary
Soft restraints and Posey as necessary
Sedate only if necessary

Status epilepticus/Seizures

Status epilepticus: persistent or recurrent seizures without intervening period of recovery

- 1) ABC: protect airway. Ensure working IV.
- 2) Consider giving 1 amp D50/thiamine or Narcan 0.4 mg IV.
- 3) Check glucose, electrolytes (Na, Ca, Mg), pulse ox, anticonvulsant drug levels
- 4) Ativan 1-2 mg IV.
- 5) Load with Dilantin (if not already on Dilantin) 1000mg-1500mg IV slowly over 30 min (18-20 mg/kg). Monitor BP and EKG during infusion (can cause hypotension). Do not mix in D5 as this will precipitate the Dilantin.
- 6) If seizures persist, call neurology stat and consider phenobarbital 300 mg IV over 30 min. Repeat 2-3 times, observing for respiratory and cardiac depression.
- 7) If refractory after 60 min, consider pentobarbital coma (need anesthesia and neuro)
- 8) Intubate at any time during this protocol if airway protection or respiratory depression is an issue

Falls – you may be asked to do a “fall eval” for any patient in the hospital

Go to assess the patient.

1) **Why did the patient fall?**

- Ask the patient or witnesses
- Syncope or presyncope? (unstable vitals? Seizure or stroke?)
- Muscular weakness? Incoordination?
- Slippery floor or obstacles on the floor?
- Element of confusion, agitation, altered mental status?

2) **Assess the damage**

- How significant was the fall?...From what height? Assisted to the ground? Landing area?
- Is the patient complaining of anything?...Pain? Headache? Dizziness?
- Other factors that may increase the severity of the fall...therapeutic heparin or coumadin
- Are the vitals ok? Include orthostatics when able to
- Physical exam
 - Head and neck for trauma
 - Palpate any painful areas
 - Ensure range of motion intact for all extremities
 - Check integrity of skin
 - Quick neuro exam
 - Areas of special concern: head, hips, wrists

3) **Decide on actions**

- If unstable vitals, attempt to stabilize (see ACLS protocols or appropriate page in handout)
- If significant trauma
 - Need for suturing?
 - Need for Head CT? (usually limited to bad falls on anticoagulants / LOC or fractures)
 - Need for other xrays
 - Likelihood of falling again?
 - If so, consider restraints, fall precautions

4) **Document**

- Write brief addendum describing the above
- **Fill out incident report if required (ask nurses)**

Shortness of breath

How does the patient look? Comfortable, sick, or deathly ill? Pts baseline and comorbid conditions?

Differential dx:

- Cardiovascular- CHF, PE, tamponade, arrhythmias, ischemia
- Pulmonary- pneumonia, asthma/COPD (bronchospasm), pneumothorax, massive pleural effusion
- Less often atelectasis
- Miscellaneous- anxiety, upper airway obstruction, severe anemia, massive ascites, pregnancy...

Check vital signs

- Respiratory rate (check it yourself – the nurse will always say it's 20)
 - RR<12/min suggests central depression (stroke, narcotic/drug OD)
 - RR>20/min suggests hypoxia, pain, anxiety, bronchospasm...
- Heart rate
 - consider arrhythmias. Sinus tach is common and nonspecific
- Temperature
 - rule out infections (pneumonia, sepsis)
- Hypotension
 - CHF, sepsis, PE, tension pneumothorax

Check pulse ox (room air pulse ox is more informative, if the pt can tolerate it)

- Rule of thumb:

Pulse ox	Approximate pO ₂
90%	60
60%	30
- You generally want to keep pulse ox > 92-93%, except in some COPD patients

Examine patient

- Pulmonary status: wheezes, rhonchi, crackles, good air movement, dullness
- Cardiac status: JVD, edema, S3, crackles or other signs of fluid overload
- Mental status changes

Stridor indicates UPPER airway obstruction; get ready to intubate or trach.

Consider epinephrine 0.2-0.5 cc of 1:1000 solution SQ if anaphylaxis. Call resident.

Check ABG if pt may be tiring, retaining, or you need a more precise measure of oxygenation.

Consider stat portable CXR

Stat EKG if possibility of MI, arrhythmia, PE, ischemia

TREAT UNDERLYING CAUSE

- Albuterol nebs if wheezy or tight. Can repeat frequently PRN
- Oxygen NC or face mask to keep pulse ox \geq 92%. Watch for CO₂ retention if COPD.
- If you are needing to give 50-100% O₂ via FM or nonrebreather (NRB) to keep sats >92%,
 - be aware that you are very close to requiring intubation

Indications for intubation

- Patient looks terrible- clinically near respiratory failure
- Airway protection- drug overdoses, status epilepticus, preop, upper airway problems w/stridor
- ABG looks terrible- can't oxygenate well noninvasively
 - Evidence of respiratory fatigue (respiratory acidosis that is acute)
 - Severe acidosis (pH <7.20 as a ballpark figure, but consider any pH in the 7.2's)
 - (you must consider the pt's baseline ABG status—there are no sharp cutoffs for when you should intubate based upon ABG numbers, (especially for pCO₂, but remember: pO₂ < 60, and pH > 7.60 and < 7.20 is bad news for anyone.)

	CHF	PE	Pneumonia	Asthma/COPD
HISTORY				
Onset	gradual	sudden	Gradual	gradual or sudden
Other	PND/edema	DVT risk factors	cough/F/sputum	previous history
EXAM				
Temp	normal	nl or low-grade F	Febrile	normal
JVP	up	nl or up	Normal	normal
S3	yes	RV S3 (rare)	No	no
crackles	bibasilar	+/-	often unilateral	no
wheezing	+/-	+/-	+/-	yes
Other	pleural effusion	pleuritic CP	consolidation, bronchial bs	prolonged I:E
CXR	Pulmonary edema	Usually normal	Lobar/diffuse infiltrate	Hyperinflated
TREATMENT	IV diuresis, oxygen, afterload reduction	heparin, venous filter, oxygen	antibiotics, oxygen	bronchodilators, ?steroids, gentle O ₂ consider BIPAP

Chest Pain

Goal: Make your patient chest pain free and rule out serious causes of chest pain. You will almost always want to evaluate the patient in person.

Differential diagnosis:	<u>Urgent</u>	<u>Less urgent</u>
	Ischemia	Esophageal reflux/spasm
	PE	Anxiety
	Aortic dissection	Musculoskeletal
	Pericarditis	
	Pneumothorax	
	Pneumonia	
	Esophageal tear	

Unless you have another obvious cause for the CP, generally assume it's ischemic and proceed with the following:

- 1) **On the phone:**
 - Get the vital signs, tell the nurse to call for a stat EKG while patient is symptomatic
- 2) **Ask the patient about the chest pain**
 - Duration, quality, SOB/N/V/diaphoresis, activity when pain started
- 3) **Quick physical exam**
 - Heart, lungs, JVD, overall patient appearance
- 4) **Give SL NTG 0.4 mg q 5 minutes X 3 or until**
 - Pain resolves
 - SBP drops below about 90
- 5) **Give O2 to keep pulse ox >93%**
- 6) **Compare old EKG to new EKG for any changes**
 - T wave inversion, ST depression, pseudonormalization of a previous abnormality
 - ST elevations - consider TPA, emergent cath, call Cardiology
- 7) **Consider a trial of Mylanta if GERD is a possibility**
- 8) **If NTG doesn't relieve CP and you still think it could be cardiac:**
 - Consider NTG drip- 50 mg in 250 cc D5W, titrate to SBP>90<130 and to CP
 - Start O2 – titrate to O₂ sats > 92%
 - Transfer to ICU
 - Give ASA 325mg
 - Try morphine sulfate 2-4 mg IVP (may drop bp)
 - Consider heparin, B blockers
 - Consider Cardiology consult, especially if pain is ongoing
 - Consider getting serial EKGs q30 min or so to see if new changes are evolving
- 9) **When CP is relieved, obtain another EKG**
- 10) **Write a brief cross-coverage note:** including time, brief description of the pain, vital signs, significant exam findings, EKG changes, action taken, attending notification and duration of CP

**Worry more when pt has known CAD, there are EKG changes, or there are changes in vital signs.

GI bleed/ Dropping Hct

Key point: Hemodynamics!

- 1) **Check vitals:** including orthostatics and urine output
 - these will provide clues to amount of bleeding before Hct drops several hours later
- 2) **Patient history**
 - Red hematemesis is more worrisome than coffee grounds (fresher, more likely ongoing)
 - Maroon stool is worse than melena (lower or more brisk upper bleed)
 - Patient on heparin, aspirin, or coumadin?
 - Does the patient have a hx of previous bleed or liver disease
- 3) **Things to do:**
 - large bore IVs for access
 - Bolus with NS or LR if hypotensive or orthostatic
 - Monitor vitals frequently
 - Rectal exam (Important)
 - NG lavage (consider)
 - Lavage with water until clear, note how much it takes to clear, note appearance of fluid
 - All clear means no or minimal UGIB, lower GIB, or duodenal bleed below level of NGT
 - Pink fluid/coffee grounds which clear after lavage means UGIB that's stopped for now
 - Great red gushings that don't clear means ongoing bleeding- have GI come in!
 - If known to have large varices, consult with resident before placing NGT.
 - Blood draws
 - Stat Hgb/Hct, continue checking q 4 hrs
 - T+C 2-4 units
 - Chem 7 required only if concerned about renal failure
 - PT/PTT/INR
 - If there is a chance of significant bleed, call GI and maybe surgery
 - Make pt NPO in case of endoscopy or surgery
 - Stop heparin, coumadin, and ASA/NSAIDS unless absolutely necessary
 - Start Protonix 40mg IV bid or Protonix drip 80mg IV bolus then 8mg/hr
 - Consider FFP if PT/PTT prolonged and plt transfusion if plt<30-50
 - Transfer to ICU for any significant bleeding

Hypoglycemia

Definition glucose <70

- If taking POs, give juice
- If NPO, give 1 amp D50 IVP
- Consider holding pt's insulin and/or oral diabetic meds
- Recheck glucose in 1-2 hrs
- Consider starting D5 or D10 containing IV fluids if recurrent or persistent hypoglycemia, pt is NPO, pt has cirrhosis or liver failure
- Consider increasing frequency of accuchecks to q2-4 hrs

Hyperglycemia

Definition glucose >150

- remove glucose from IV fluids if possible
 - ADA diet (specify number of calories)
 - accuchecks qAC and qHS
 - insulin sliding scale (see sample in admission orders section)
 - if BS>300, consider checking UA for ketones or Chem7/acetone to r/o DKA
- diabetic educator and nutritionist to see patient when able

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