EMORY UNIVERSITY SCHOOL OF MEDICINE – DEPARTMENT OF EMERGENCY MEDICINE

EMERGENCY DEPARTMENT CLINICAL DECISION UNIT

EMORY MIDTOWN HOSPITAL
EMORY UNIVERSITY HOSPITAL
EMORY SAINT JOSEPH HOSPITAL
EMORY JOHNS CREEK HOSPITAL
GRADY MEMORIAL HOSPITAL

2019
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EXECUTIVE SUMMARY

What: Observation services are provided to selected emergency department patients specifically “to determine the need for inpatient admission”, where an inpatient is a patient whose care is expected to cross “two midnights”.

Who: Observation patients are usually emergency department patients requiring 6 – 24 hours of care, with an average length of stay of 15 hours. Of observation patients, 70-90% should be discharged from observation. They are of low severity of illness and limited intensity of service.

Where: Observation services are provided in protocol driven observation units. Emergency department units are called “Clinical Decision Units” (CDU) and are staffed by emergency providers.

Why: There is a growing body of evidence which finds that care of observation patients in a protocol driven observation unit is associated with improved outcomes relative to traditional care. These outcomes include: improved patient and provider satisfaction, less diagnostic uncertainty for high risk conditions, shorter hospital length of stays, comparable or better clinical outcomes, improved hospital flow and resource utilization, and lower costs for patients, hospitals, and payers.

How: Guidelines for common conditions drive protocols (i.e. power plans) and are based on best evidence, local practice, and expert consensus. Each guideline includes: inclusion and exclusion criteria for the CDU, potential interventions in the ED and CDU, and criteria for discharge or admit from the CDU. Physicians are assigned to cover the CDU by shift. They round at the beginning of their shift with APPs and staff to confirm or modify plans and are available as needed 24/7 while working in their respective areas outside of the CDU. Clinical practice, documentation, coding, and billing is based on national guidelines. Utilization and quality measures are followed monthly and used to modify practice. Additional information is provided for operational issues and to describe common conditions, such as chest pain.

Contact Information

Chief of Service - Observation Medicine
Michael Ross, MD

CLINICAL DECISION UNITS:

<table>
<thead>
<tr>
<th>University</th>
<th>CDU PHONE:</th>
<th>Medical Director</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emory University</td>
<td>404-712-2908</td>
<td>George Hughes, MD</td>
</tr>
<tr>
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</tr>
<tr>
<td>Emory University - Midtown</td>
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</tr>
<tr>
<td></td>
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</tr>
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<td>Emory Saint Joseph</td>
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</tr>
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<td></td>
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<tr>
<td>Emory Johns Creek University</td>
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<tr>
<td></td>
<td></td>
<td><a href="mailto:maross@emory.edu">maross@emory.edu</a></td>
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GENERAL GUIDELINES FOR CDU OPERATIONS

Mission statement – The observation units strive to provide excellent patient care to those patients needing further management to determine their need for inpatient admission or discharge. The units accomplish this by providing active management of specific conditions using protocols based on the best available clinical evidence. We provide this in a setting which is both efficient for health care providers and pleasant for our patients. We strive for the units to be nationally recognized centers of excellence in patient care, teaching, and research in Observation Medicine.

Scope of Observation Unit Services –

The “Clinical Decision Unit”, or CDU, is an emergency department (ED) observation unit which provides physician and hospital “observation services” as defined by the Center for Medicare and Medicaid Services (CMS), the American Medical Associations Current Procedural Terminology Manual (AMA-CPT), and the American College of Emergency Physicians’ (ACEP) policy on the management of observation units. The CDU is staffed and managed by the Department of Emergency Medicine.

These units provide services to emergency patients who require care that goes beyond their initial evaluation and management in the emergency department or clinic to determine the need for inpatient admission. The scopes of these services are outlined in this document.

Management – The CDU is administratively part of the emergency department (ED) and therefore it is under the ED nursing and medical administration.

Nursing Leadership – The charge nurse for the CDU is supervised by the ED nursing director.

Physician Leadership – The Chief of Service for Observation Medicine shall provide oversight of Observation Services at Emory (Emory Healthcare and Grady) Observation Units. Each specific CDU shall have a CDU site director who shall work under the direction of the Chief of Service of Observation Medicine. CDU Associate Provider leaders will work under the direction of the CDU site director on CDU issues. Physician coverage is provided 24 hours a day, and 7 days per week as assigned by shift.

Other disciplines: Other health care team members involved in patient care includes, physicians (non-OU), respiratory therapy, pharmacy, dieticians, physical therapy, social workers, laboratory services, environmental services, clergy, utilization review, and other support services.

Physician accountability

CDU: The ED PHYSICIAN WILL ACT AS THE "GATEKEEPER" FOR ALL ADMISSIONS TO THE CDU. THE PHYSICIAN ASSIGNED TO COVER THE CDU IS THE “ACCOUNTABLE” PHYSICIAN FOR ALL CDU PATIENTS. This means that admission to and discharge from the unit can only be made by the ED physician (or His or Her designee). Other services may not “bypass” the ED physician and admit directly to the CDU. However, they may admit their patients for observation services to hospital inpatient beds as dictated by hospital policy. Consultants and Private Attending’s may recommend discharge or admission to or from the CDU; however, the final disposition order must come from the ED physician.

Associate Providers (NP or PA):

CDU - The CDU associate provider (AP) works under the direct supervision of the ED attending physician assigned to cover the CDU. The AP will facilitate patient care in the CDU as detailed below. Work activities outside the CDU may vary by setting and will occur following completion of CDU activities.

Unit operation - Patients are managed in the OU based on the guidelines detailed in this manual. These guidelines are developed through research and internal consensus. Their goal is to facilitate optimal patient care and consistency. Guidelines detail what is felt to be reasonable care for most patients with the specified condition most
of the time, with the understanding that appropriate exceptions may occur. Prudent judgment may allow care outside these guidelines. There will be a monthly meeting to review unit utilization, quality, clinical and operational issues – attended by the OU medical director, AP, and nursing representative.

**Unstable patients** – As detailed below, clinically unstable ED patients are excluded from the CDU based on general unit guidelines and condition specific guidelines. If a patient becomes unstable while in the CDU then the patient should be evaluated by the CDU attending physician and/or CDU Associate Provider. Unstable patients should be moved back to the ED for acute stabilization and admission. If a CDU patient experiences a cardiac or respiratory arrest, the staff will notify ED staff immediately (either press the code button in the patient’s room which in turn will notify ED staff or place an overhead page to the ED for “Doctor to the CDU STAT”).

**Patient Selection**

**Overview**

The observation units manage patients for up to 18-24 hours, after which time a disposition should be made. Care beyond this time frame may occasionally occur if it is clear that as short term disposition is likely to occur (i.e. stress test in the morning). The goal is to provide accelerated care while decreasing inappropriate ED discharges. Patients will first have been managed in the ED and found to need further management to determine their need for inpatient admission or discharge home. If a patient can be discharged within 4-6 hours then placement in the CDU is discouraged. Based on clinical judgment, and the best scientific evidence, patients should have at least a 70% probability of discharge within 18 hours - if managed actively. Patients will be managed in the unit using the guidelines and principles detailed in this document.

In determining the need for inpatient admission, the “2-Midnight Rule” definition of an inpatient will be used. This definition is most consistent with CPT and CMS policies. The 2-Midnight benchmark states that if a physician expects a patient’s hospital care to span two midnights then the patient may be admitted as an inpatient. This timeframe starts on hospital arrival (i.e. into the ED). Time in the ED and as an observation patient may count toward the first midnight. If an observation patient cannot be discharged on the second day then inpatient admission should be considered before the third day.

**General principles of CDU patient selection**

**Focused patient care goal** - The Physician’s note should document the specific reason for admission to the CDU. Generally there should be only one specific problem that requires acute management. When multiple problems require acute management, the likelihood of discharge is much lower. “Focused Goals” fall into three broad categories:

- Diagnostic evaluation of critical symptom – i.e. chest pain, syncope, etc.
- Short term treatment of an emergency condition – i.e. asthma, dehydration, etc.
- Management of psychosocial needs – i.e. need for home support services or placement (if feasible)

**Limited intensity of service and severity of illness** – based on available resources, such as nurse to patient ratios, higher acuity patients will need to be placed in the hospital for management. This is defined for each condition for several conditions in this document, however conditions outside this list may be observed if they meet the general principles outlined here.
General EXCLUSIONS from the CDU

PATIENTS WITH AN INCOMPLETE CHART
A missing or poorly documented ED history, physical, and medical decision making, a single concise diagnosis, a clear plan, and appropriate orders. This makes it very difficult to efficiently and safely manage the patient.

HIGH SEVERITY OF ILLNESS
Such as patients requiring more nursing care than can be offered in the unit. For example, patients with acutely unstable vital signs, unstable cardiac, pulmonary, or neurological conditions. These patients should be managed in the initial Emergency Center treatment area until deemed to be stable for at least one hour or admitted.

HIGH INTENSITY OF SERVICE
Such as patients that are too unstable or ill to be observed. For example difficult intoxicated or suicidal psychiatric patients, patients requiring frequent vital signs or treatments. This includes patients on intravenous vasoactive drip infusions of nitroglycerin, labetalol, Cardizem (diltiazem), dopamine or dobutamine, epoprostenol (flolan), or treprostinil (remodulin).

PATIENTS FOR WHOM INPATIENT ADMISSION IS CLEARLY NEEDED
If the ED physician identifies the need for a traditional inpatient admission, the patient should not be admitted to the CDU. However, when appropriate, patients that are “holds” may be temporarily boarded in the unit based on criteria below.

AGE LESS THAN 15 YEARS OLD
Younger patients will be managed in a pediatric CHOA hospital based on general pediatric transfer practices. Pediatric CDU patients over the age of 15 should NOT have significant underlying illness or co-morbidities (such as underlying heart disease, sickle cell disease, etc.) requiring skilled pediatric nursing care. Children in the CDU should have a legally responsible adult stay with them while in the CDU.

OBSTETRIC PATIENTS OVER 20 WEEKS PREGNANT
These patients should be managed on the Labor and Delivery unit according to hospital and ED practices. If they have already been evaluated and cleared by the obstetric service (either on L & D and sent back to ED, or cleared by an obstetrician) for CDU management of a non-obstetrical condition (i.e. asthma), then they may be managed in the CDU.

PATIENTS AT RISK OF SELF HARM
Specifically suicidal patients, acutely psychotic patients, or patients with significant inebriation due to alcohol or illicit drugs. As a setting, the observation unit is not physically designed to closely monitor these patients for their safety. Patients determined to be at risk of self-harm should have their clothing held and be moved to the ED for safer psychiatric observation (consistent with ED practices).

ANTICIPATED CDU LENGTH OF STAY LESS THAN 4 HOURS OR OVER 24 HOURS
The work of transferring, admitting, and discharging patient whose stay is under 4 hours is not the best use of these resources. On the other hand, patients whose care is expected to cross two midnights are more likely to be admitted. Reasons for staying beyond 18 hours should be documented in the chart. Medicare patients whose observation stay exceeds 24 hours will be provided the CMS “MOON” document as outlined by CMS policies and hospital practices.

PATIENTS WITH (1) AN ACUTE GAIT DISTURBANCE (2) OVER AGE 65 WITH BACK PAIN, (3) TRANSPLANT PATIENTS (except stable kidney transplants on chest pain protocol), (4) HEMODIALYSIS PATIENTS ON DIFFERENT (non-HD) PROTOCOL
These patients have been found to have a very high admit rate and often require more than 24 hours of care.
Physician CDU Rounding principles:

Round at the beginning of each shift - CDU rounds are comparable to having a patient signed out at shift change. At the beginning of a shift get “sign out” from the departing provider, examine the patient, add or change orders, and make dispositions. The compelling question should be “why is this patient still here?” Patients who have not clinically “declared themselves” within 15-18 hours are less likely to leave, so a disposition should be made. Morning rounds are busiest, afternoon are lightest (average census is lowest) and evening rounds may be chart review only unless a patient is likely to be discharged or needs to be seen.

1. **Who to round on**
   Round on all patients that have not had a completed final disposition made.

2. **What to do**
   Review the chart (i.e. ED H/P, transfer of care paperwork, labs, x-ray reports, consults, test results), take report from the CDU nurse / AP, examine the patient (focused on why they are in the CDU), and document / communicate your findings and plan with the CDU team. Discharge / admit patients as needed (with AP if present).

3. **CDU (observation) discharge summary**
   The attending physician will provide all four CPT (99217) elements:
   a. Clinical course in the unit – working with CDU staff who will facilitate care
   b. A final examination (focused)
   c. Instructions for continuing care - outpatient or inpatient depending on the disposition
   d. Preparation of discharge (or admission) records – depending on disposition
ED Attending - ensures suitability for the CDU, identifies specific reason for observation, approves the decision to admit patient to CDU
2. ED Attending / AP / Resident places a BED REQUEST, initiates the appropriate CDU protocol order set (orders observation status / CDU admission) and calls relevant consultants
3. ED attending / AP/ Resident – makes sure the initial H & P is complete and on the chart, including the patient’s reason for observation and a brief CDU management plan (CDU synopsis).
4. ED attending / AP/ Resident – contact the appropriate CDU APP or physician to communicate a transfer of care synopsis of the patient.
5. ED nurse to arranges transfer of patient to CDU

1. CDU nurse or AP – receives transfer of care information, confirms the patient’s suitability for the CDU and records the patient’s reason for observation and plan on the CDU form (paper or “power form”).
2. CDU nurse – orients the patient to the room and provides a “CDU Patient Information Sheet”. Obtain vital signs and provide patient care as per protocol. Update CDU physician / AP on changes in patient’s condition, significant results, and review times.
3. CDU nurse - Complete “rounding sheet” prior to scheduled CDU rounds for all to use. Round with physician and AP on morning and afternoon rounds.
4. CDU nurse -Request for disposition when protocol endpoint is reached, when patient needs to be admitted or discharge, or when LOS reaches 18hrs.

1. Facilitate shift change rounds with the attending ED physician.
2. Review patient medications and CDU orders on new patient arrival and before initial rounds.
3. Expedite patient management and disposition in the CDU.
4. Perform relevant diagnostic tests (i.e. Lexiscan), screen ECGs, serial examinations as needed (i.e. TIA, abdominal pain, asthma, CHF)
5. Keep CDU physician informed of significant patient management issues – including those suggested by consultants.
6. Prepare discharge instructions, make follow-up phone calls, and write prescriptions.
7. Make admission phone calls, orders and bed assignments.
8. Dictate discharge summaries guided by physician input.

1. AP or ED attending – complete discharge paperwork, observation discharge summary, disposition (i.e. bed request).
2. Nurse – Make patient disposition, remove from board, complete paperwork for discharge or admission.
### CDU Rounds
(Shifts designated by an asterisk in Tangier)

<table>
<thead>
<tr>
<th>Time/ Hospitals</th>
<th>Grady Memorial 404-616-6448</th>
<th>Emory Midtown 404-686-3154</th>
<th>Emory University 404-712-2908</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Morning Shifts</strong></td>
<td>7AM – 3PM RME attending. Round from 7A-9A with CDU APP and Nurse. (1st 2 hours of shift), then goes to ED (BZ).</td>
<td>8AM – 5PM Green Pod attending. First hour rounds with 6am – 6pm APP and CDU nurse. (Gold Pod attending covers CDU APP between 6:30A-8A)</td>
<td>7AM – 4PM Blue Zone (BZ) attending. First hour rounds with 6am–6pm APP and CDU nurse, then goes to ED.</td>
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<td><strong>Afternoon Shifts</strong></td>
<td>3PM- 11AM RME attending. Rounds in ED then rounds in CDU with CDU APP. Signs out CDU to 11P-7A RME attending.</td>
<td>4PM – 1A Green Pod attending (2:30P-11:30 Gold on weekends) takes sign-out from 6AM – 6PM APP/Doc. Sign out to 10:30P-6:30A attending, and 6P-6A APP.</td>
<td>3PM – 12AM BZ attending. Round in CDU after ED sign-out 6AM – 6PM AP. Gives sign out to BZ doc before they leave at 6P. Signs out to 10P-7A BZ attending.</td>
</tr>
<tr>
<td><strong>Night Shifts</strong></td>
<td>11P-7A RME attending. Takes sign out from afternoon attending and CDU APP.</td>
<td>10:30PM – 6:30AM Gold Pod attending to get sign-out from afternoon attending. Signs out to the 6:30AM attending and 6A-6P APP.</td>
<td>10PM – 7AM BZ night attending to get sign-out from 3P-12A attending. Signs out to the 7AM attending and 6AM – 6PM AP.</td>
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Guidelines for “holds” or “boarders” in the CDU

General principle
A “Hold” applies to a patient who is awaiting a prearranged action such as inpatient admission, transfer to another facility, surgery, discharge home, etc. This is in contrast to a patient whose status is “observation” – where a patient is actively managed to determine the need for inpatient admission. “Holds” are often a manifestation of hospital overcrowding, or inefficiencies of patient care (i.e. prolonged waits to go to the O.R. or a bed). They have no limit on length of stay, acuity, or clinical condition. The CDU helps to address the problem of “holds” by avoiding admission, which keeps inpatient beds open. Alternatively, filling the CDU with holds will only exacerbate a bed shortage and enables inefficiencies of care to continue.

Guidelines for “holds” in the CDU
- A patient who is awaiting admission to an inpatient bed or transfer may be held in the CDU provided that:
  1. All efforts have been made to expedite inpatient admission or transfer (i.e. charge nurse has spoken with pre-op waiting, etc.). All other options have been explored.
  2. It is estimated that the bed or procedure will not be available for 3 hours or more. It is otherwise not worth the work of transferring twice in less than 3 hours.
  3. “Holds” may not constitute more than half of the CDU bed capacity. The last available CDU bed may not be used for a hold.

CDU low census staffing

Principle: The CDU provides services to selected ED patients needing observation services. As a “service”, each ED/CDU always has a capacity according to the local CDU size (i.e. an 8-bed capacity at EUHM). The unit is generally staffed with two RNs for eight beds. With variations in CDU nurses or CDU patients, some flexibility is required to maximize resource utilization. Using an 8 bed unit as an example:

- **When the CDU has less than 4 patients, AND the ED needs nursing support**
  A CDU nurse may be flexed to assist in the ED. HOWEVER, the CDU capacity remains at 8 patients, and patients will continue to be assigned to the CDU regardless of this staffing shift. When the number of CDU patients reaches 5, then the “flexed” CDU nurse will return to the CDU promptly to assume patient care. This threshold of 5 can be reached by either having 5 patients in the CDU, or a total of 5 patients in the CDU plus patients in the ED awaiting a CDU bed (i.e. CDU admit order appears on the tracking board).

- **When the CDU has no patients, AND the ED needs nursing support**
  If both CDU nurses are flexed then the CDU nurse will return to the CDU when there are two admit orders on the tracking board for CDU patients in the ED. The ED charge nurse has 30 minutes to transition the ED patient assignment permitting the CDU nurse to return to CDU.

- **When the CDU has less than 2 nurses (which may occur for portions of a shift due to staffing issues)**
  ED nurse may be flexed to cover the CDU until the CDU has 2 nurses. If there is not a nurse available to assist CDU staffing then patients assigned to the CDU will be held in the ED until staff are available.

Guidelines: CDU nurse can be flexed to the triage area to assist with First Medical and Exit. The CDU nurse should actively seek potential CDU patients and make suggestions to ED attending for CDU admissions. Exceptions to this will be communicated to the CDU nursing director.
CDU Quality Assurance and Utilization Review

The CDU committee for each hospital will meet on a monthly basis to review CDU utilization, CDU quality reports, clinical and administrative issues. Meetings will ideally be attended by the site director of the CDU and leadership representatives of CDU and ED nursing, CDU Associate Providers, ED pharmacy, and an administrative assistant.

Utilization Review Monitors – to be reviewed by month and for prior 12 months (as available)

1. **Case mix for CDU** (see below) – a rank order list by diagnosis, reporting census, percent of all CDU patients, inpatient admit rate, ED LOS, and CDU LOS. If possible boarding time (CDU order to CDU arrival) and “D2D” (disposition to departure) will also be tracked.

2. **Unit occupancy** – monthly patients/bed/day (goal 0.9), and by hour of day (when available)

3. **As needed:**
   - a. **Arrival and departure volumes** - by hour of day
   - b. **CDU LOS by time of arrival in the CDU** – by hour of the day

Quality Assurance Monitors – to be reviewed monthly – when available or needed

1. **Concerns** - voiced by staff, patients, or consultants - Reviewed monthly.

2. **Chest Pain / HEART Score** – score distribution, admit rate by score, and % with score <3 (goal <11%)


4. **Return to ED or hospital within 14 days of CDU discharge** – Reviewed when available.

5. **As needed:**
   - a. Length of stay over 36 hours.
   - b. Protocol compliance
   - c. Protocol failure characteristics
   - d. Documentation and transfer of care compliance
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<th>Rank</th>
<th>Protocol Category</th>
<th>#</th>
<th>% Census</th>
<th>ED LOS</th>
<th>CDU LOS</th>
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* Conditions managed in the ED rather than the CDU
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GUIDELINES FOR STRESS TESTING OBSERVATION UNIT CHEST PAIN PATIENTS

The purpose of stress testing CDU chest pain patients is to identify those patients with severe coronary artery stenosis or unstable angina (USA). Initial ECG and serial cardiac markers in this population do not adequately detect USA when it is present. Sub-endocardial myocardial infarction, or “NSTEMI” must first be ruled out before a stress test can be performed safely. This is done with ECGs and serial cardiac marker testing.

Chest pain protocol is based on 3 national guidelines (Amsterdam, Wenger et al. 2014, Peacock, Beckley et al. 2014, Rybicki, Udelson et al. 2016) – Low risk “chest pain” patients are those with a non-diagnostic EKG and troponin, and symptoms suggestive of an acute coronary syndrome (broadly defined as “chest pain”). Patients are “low risk” by Reilly criteria, but have HEART score of 3 or greater. Following negative serial troponins (drawn 3 to 6 hours from first lab draw) stress imaging (nuclear, echo, MRI, coronary CTA) is done and interpreted by those trained and credentialed to interpret each respective modality. For selected low risk patients, it is acceptable to discharge them with arrangements for an outpatient stress test within 72 hours. When this occurs, patient instructions should be given for when to return to the ED, along with aspirin therapy if not contraindicated.

EHC CDU Stress Testing and Cardiac Imaging Selection Algorithm: September, 2016

Abbreviations:
- CAD - Coronary artery disease; MI - myocardial infarction
- PET - Positron Emission Tomography using Lexi-scan as a stress agent
- BMI - Body Mass Index
- DSE - Dobutamine stress echocardiography
- ExE – Exercise stress Echo
- Lx - Lexi-scan (stress agent)
- MIBI – Sestimibi (imaging isotope) using SPECT (single photon emission computed tomography) imaging modality
- cCTA – Coronary CT Angiography

If HEART score <3, re-consider the need for stress imaging.

EMORY UNIVERSITY HOSPITAL CDU

Weekend stress test (Sat-Sun)?

a. Yes? => Lx MIBI (stress portion done by CDU APP)

b. No? => Prior MI or BMI >35?
   i. Yes? => PET
   ii. No? => Female under age 50?
      1. Yes? => DSE (if possible)
      2. No? => Able to run on a treadmill for > 12 minutes?
         a. Yes? => Exercise MIBI or Lx MIBI or cCTA
         b. No? => Lx MIBI or cCTA
Abbreviations:
CAD - Coronary artery disease; MI - myocardial infarction
PET - Positron Emission Tomography using Lexi-scan as a stress agent
BMI - Body Mass Index
DSE - Dobutamine stress echocardiography
ExE – Exercise stress Echo
Lx - Lexi-scan (stress agent)
MIBI – Sestimibi (imaging isotope) using SPECT (single photon emission computed tomography) imaging modality
cCTA – Coronary CT Angiography

If HEART score <3, re-consider the need for stress imaging

EMORY UNIVERSITY MIDTOWN HOSPITAL CDU

Weekend stress test (Sat-Sun), prior MI, or BMI >35?
  a. Yes => PET
  b. No? => Female under age 45?
     i. Yes? => DSE or ExE (if possible)
     ii. No? => Able to run on a treadmill for > 12 minutes?
        1. Yes? => Exercise MIBI or Lx MIBI or cCTA
        2. No? => Lx MIBI or cCTA

EMORY JOHNS CREEK HOSPITAL

Weekend stress test (Sat-Sun), Prior MI (or heart disease), or BMI >35?
  a. Yes? => Lx MIBI
  b. No? => Female under age 50?
     i. Yes? => Stress echo (DSE or ExE) – if available
     ii. No? => Normal ECG, Able to run on a treadmill for > 12 minutes?
        1. Yes? => Exercise MIBI or ExE
        2. No? => Lx MIBI

GRADY HOSPITAL CDU

Weekend stress test (Sat-Sun), severe asthma or COPD?
  a. Yes? => Lx MIBI (stress portion done by CDU APP)
  b. No? => Prior MI or BMI >35?
     i. Yes? => Adenosine MIBI
        1. No? => Able to run on a treadmill for > 12 minutes?
           a. Yes? => Ex ST, Exercise MIBI, or Adenosine MIBI
           b. No? => Adenosine MIBI
ABDOMINAL PAIN

A. **TRANSFER CRITERIA**
   - Stable VS
   - Ancillary Signs / Symptoms - anorexia, N&V, fever, elevated WBC
   - Negative pregnancy test
   - Non-surgical abdomen
   - High likelihood (~70%) of discharge within 15 hours

B. **EXCLUSION CRITERIA**
   - Unstable VS (HR >110, SBP<100, RR > 22)
   - Immunocompromised patient (T-cells < 200, chemo, transplant)
   - Pregnant patient
   - Confirmed bowel obstruction (even partial) or ileus
   - Cholecystitis (sonographic Murphy, pericholecystic fluid, GB wall thickening>4mm, or dilated CBD)
   - Surgical abdomen - free air, rigidity, rebound tenderness
   - Hx of frequent ED visits for abdominal pain – suspected habitual patient / narcotic abuse

C. **POTENTIAL INTERVENTIONS**
   - Analgesics
   - NPO, IV hydration, repeat CBC
   - Imaging studies as indicated (i.e. CT abd / pelvis, ultrasound, MRI)
   - Serial VS
   - Serial exams Q2-4 hours while awake and as indicated
   - Surgical or GI consultation as needed

D. **DISPOSITION**
   I. **Home**
      - Pain and / or tenderness resolved or significantly improved
      - VS acceptable
      - No diagnosis requiring hospitalization
   II. **Admit**
      - Persistent vomiting
      - Pain not resolving or worsening
      - Unstable VS
      - Clinical condition or positive testing that merits hospitalization
      - Consultant preference
      - Surgical abdomen
ALLERGIC REACTION

A. TRANSFER CRITERIA
   • Response to therapy in the ED
   • Erythroderma, urticaria, or angioedema present
   • If airway angioedema present, the need for surgical airway judged to be highly unlikely
   • Minimum 2-hours of stability or improvement in ED after treatment

B. EXCLUSION CRITERIA
   • Hypotension (SBP <100), tachycardia > 110
   • O2 saturation consistently < 94% on room air
   • Suspicion of acute coronary syndrome
   • Stridor, respiratory distress, hoarseness, or deemed high risk for airway compromise
   • IV vasopressors required

C. POTENTIAL INTERVENTIONS
   • IV fluids as needed
   • Frequent rechecks and documentation of clear airway
   • Antihistamines, corticosteroids
   • Cardiac monitoring (if indicated)
   • Inhaler or nebulizer treatments (if indicated)
   • Pulse oximetry
   • Repeat doses of SQ epinephrine

D. DISPOSITION
   I. Home
      • Resolution or improvement in clinical condition
      • Stable VS
   II. Hospital
      • Delayed worsening of allergic symptoms
      • Persistent wheezing or stridor
      • Inadequate response to therapy during observation
      • Inability to take oral medications
      • Abnormal vital signs: SBP < 100mm or RR > 24/min or hypoxia
A. **TRANSFER CRITERIA**
   - Alert and oriented, acceptable VS
   - Intermediate response to therapy - improving but still wheezing
   - PEFR (peak flow) 40-70% predicted (or personal best) after β2 agonists
   - β2 agonist nebs (2 treatments or 10 mg albuterol) + steroids given in ED
   - Chest X-ray with no acute findings (pneumonia, pneumothorax, CHF)

B. **EXCLUSION CRITERIA**
   - Unstable VS or clinical condition - severe dyspnea, confusion, drowsiness
   - Poor response to initial ED treatment:
     - Persistent use of accessory muscles, RR>40, or excessive effort
     - If ABG done, Elevated pCO2 (>50) plus decreased pH
     - O2Sat < 92% on room air, unless documented chronic hypoxia
     - PEFR* < 40% predicted or personal best
   - Suspicion of ACS, new onset CHF, pneumonia

C. **POTENTIAL INTERVENTIONS**
   - Serial treatments with nebulized β2 agonist Q2-4hr and ipratropium Q6hr
   - IV Magnesium Sulfate as needed.
   - Frequent reassessment. BNP if needed.
   - Systemic steroids (PO or IV) if not given in the ED
   - Pulse oximetry, ABG, and oxygen with cardiac monitoring as needed

D. **DISPOSITION**
   I. **Home** (on steroids, nebs, with follow-up and smoking cessation)
      - Acceptable VS – HR <100, RR <20 after ambulation (if able)
      - Pulse Ox >95% on RA (or return to baseline)
      - Resolution of bronchospasm or return to baseline status
      - PEFR > 70% predicted (or 70% personal best) – if reliable reading

   II. **Hospital**
      - Progressive deterioration in clinical status or VS
      - Failure to resolve bronchospasm within 15 hours
      - Persistent PEFR < 70% of predicted (if reliable)
      - Hypoxic despite therapy, if not chronic state
ATRIAL FIBRILLATION – ACUTE ONSET

A. TRANSFER CRITERIA
- Onset clearly less than 48 hours
- Stable BP, HR under 110 consistently for one hour (with treatment)
- No chest pain when rate controlled
- Normal chest X ray
- No evidence of acute comorbidities - ACS, CHF, PE, CVA, etc.
- Cardiologist agrees with plan to observe (if notified)

B. EXCLUSION CRITERIA
- HR > 110 despite ED meds
- IV vasoactive drips required (i.e. diltiazem)
- Hemodynamically unstable – i.e. BP
- Ongoing ischemic chest pain after rate control
- Onset over 48 hours, or unknown from history
- Acute comorbidities - Evidence of Acute MI, CHF, PE, Sepsis, CVA / embolic event,
- Recent comorbidities - Stroke/TIA within 3 months, Acute MI within 4 weeks.
- Chronic Atrial Fibrillation.
- Cardiologist or ECP chooses inpatient admission

C. POTENTIAL INTERVENTIONS
- Rhythm conversion drugs given prior to CDU (i.e. propafenone 450mg PO if no CHF)
- Cardiac monitoring, pulse oximetry
- Vitals Q 2 hours for 6 hours, then Q4 hours
- Anticoagulate if not contraindicated - PO ASA (325 mg ) or subQ heparin (LMWH or UFH)
- Rate control Options - Oral Cardizem, Verapamil, or beta blockers
- Testing - Serial Troponin and ECGs at 3 and 6 hour from 1st ED blood
- TSH, 2D Echocardiogram if indicated
- Educate patient on cardioversion (medical or electrical) if initial obs treatment fails within 12 hours.
- Electrical cardioversion to occur outside of the CDU
- NPO at 12 hours from arrival in Observation Unit if not spontaneously converted

D. DISPOSITION PARAMETERS
I. Home
- Patient converts and remains in NSR for over one hour
- Negative diagnostic testing
- Stable condition
- Discuss home medication therapy with cardiologist

II. Hospital
- Failure to maintain control of rate under 100
- Positive diagnostic testing (as indicated for MI, PE, CHF, etc.)
- Unstable condition
A. **TRANSFER CRITERIA**
   - Inability to adequately control pain in ED with analgesics
   - Normal neurological function
   - No risk of metastatic disease or vertebral or epidural abscess
   - Back pain without severe trauma
   - Normal imaging (if obtained)
   - Inability to ambulate because of pain

B. **EXCLUSION CRITERIA**
   - Frequent ED visits for back pain – suspected habitual patient / narcotic addicted
   - Age over 65 years old
   - Acute motor deficit  (i.e. foot drop, loss of extension of foot or 1st toe, loss of control of bowel or bladder)
   - Abnormal x-rays if obtained (burst fracture, spine canal involvement)
   - High suspicion of cord compression, metastatic disease, epidural bleed or abscess, discitis.
   - Fever

C. **POTENTIAL INTERVENTIONS**
   - Analgesics – Narcotic, NSAIDs as appropriate
   - Serial exams
   - Physical therapy assessment
   - Consultation as needed – PMR, Ortho / spine, social service
   - Imaging (CT or MRI) if acute surgical disease or cancer is suspected

D. **DISPOSITION CRITERIA**
   I. **Home**
      - Ability to ambulate and care for self at home with oral analgesics
      - Pain at a tolerable level for discharge home
      - No worsening in neurologic exam

   II. **Hospital**
      - Inability to tolerate pain on oral medications
      - Inability to ambulate or care for self at home
      - Worsening neurological exam
      - Abnormal imaging warranting inpatient admission
**CELLULITIS**

**A. TRANSFER CRITERIA**
- Serial exams needed to exclude rapidly progressive cellulitis
- Cellulitis which requires > 1 dose antibiotics in the ED
- Temp < 40°C, WBC < 16,000 and WBC > 4,000.
- Cellulitis with a drained abscess which requires a brief period of observation and wound care

**B. EXCLUSION CRITERIA**
- Septic or toxic patients – clinical appearance, evidence of severe sepsis (Temp > 40, SBP < 100, RR > 22, HR > 100, acute organ dysfunction, lactate > 4 mmol/L)
- Immunocompromised patients – neutropenia, HIV, transplant patients, ESRD/hemodialysis patients, patients on immunosuppressant or chemotherapy, post-splenectomy patients.
- High risk infections – diabetic foot infections; infections proximate to a prosthesis, percutaneous catheter or indwelling device; infections of the orbit or upper lip/nose, neck; infections of >9% TBSA; extensive tissue sloughing; suspicion of osteomyelitis or deep wound infection.
- Poorly controlled diabetes
- Patient unable to care for self at home
- Patient who can be discharged after 1 dose of antibiotics in the ED

**C. POTENTIAL INTERVENTIONS**
- Mark edges of cellulitis with indelible marker to monitor progression
- Antibiotics based on contemporary local guidelines and sensitivities
- Antibiotics - pharm consult for renal impairment
  - Non-purulent –
    - Cephalexin 500mg PO Q6hr
    - Ceftriaxone 2gm IVPB Q24hr
  - Purulent (or PCN allergy) –
    - Doxycycline 100mg IVPB (or PO) Q12hr
    - Sulfamethoxazole-trimethoprim 800mg/160mg - 2 tablets PO q12hr
- Pertinent labs (CBC, glucose, blood or wound cultures PRN)

**D. DISPOSITION**

I. **Home**
- Improvement or no progression of cellulitis
- Improved and good clinical condition (i.e. No fever, good VS) for 8 hrs.
- Able to perform cellulitis care at home and take oral medications

II. **Admit**
- Increase in skin involvement
- Clinical condition worse or not better (i.e. rising temp, poor vitals)
- Unable to take oral medications
- Unable to care for wound at home, home care unavailable
A. **TRANSFER CRITERIA**
   - ACS risk is low based on Reilly chest pain criteria
   - HEART score >2
   - Chest discomfort is potentially due to cardiac ischemia
   - No acute ischemic ECG changes, negative initial troponin (<0.04 or <0.12 if very low suspicion of ACS)
   - Acceptable vital signs

B. **EXCLUSION CRITERIA**
   - Moderate to high risk criteria by Reilly / Goldman criteria (Pain worse than usual angina or like prior MI, recent revascularization, SBP<110, rales above both bases).
   - HEART score <3 or chest pain is clearly non-cardiac
   - New ECG changes consistent with ischemia
   - Positive troponin (>0.12) not known to be chronic
   - Stress test or cardiac imaging needed - but NOT available while in the CDU
   - Recent normal cardiac catheterization (no coronary stenosis)

C. **POTENTIAL INTERVENTIONS**
   - Continue saline lock, cardiac monitor, daily aspirin, nitrates prn, and NO CAFFEINE if stress test is planned, NPO six hours before stress test.
   - Serial Troponin I and ECGs at 3 and 6 hour from first ED blood draw
     - No 6-hour level needed if negative provocative test done after 3hr draw
     - 6-hour lab needed for any troponin rise between the 1st two labs (0 - 3hr)
   - Repeat EKG based on symptoms or monitor alert – show to CDU / ED physician STAT
   - Stress testing and cardiac Imaging - if initial and 3 hour TnI is negative:
   - EHC / GMH - Stress test based on test selection algorithm If no stress test is available – admit if indicated, otherwise discharge on appropriate medications (i.e. aspirin, ntg) with short term follow up and instructions.

D. **DISPOSITION**
   I. **Home**
      - Acceptable VS, stable symptoms, no serious cause of symptoms identified
      - Normal serial cardiac markers and EKGs
      - Negative cardiac imaging for ACS – no ischemic or reversible defects identified.
   II. **Hospital**
      - Unstable VS
      - Positive cardiac markers or EKGs
      - Positive provocative test – ischemic or reversible perfusion defect
      - CDU or personal physician discretion
      - Serious alternative diagnosis, e.g. PE, aortic dissection
COPD EXACERBATION

A. **TRANSFER CRITERIA**
   - Good response to initial therapy (β-agonists, ipratropium, steroids).
   - No acute process on chest X-ray (required)
   - Acceptable VS (PO2>90, HR<100, RR<24, SBP>100)
   - Alert and oriented
   - No indication of impending respiratory fatigue

B. **EXCLUSION CRITERIA**
   - Concurrent acute co-morbidities - Pneumonia, CHF, cardiac ischemia
   - Unstable VS or clinical condition
   - Acute confusion / lethargy or other evidence of CO2 narcosis; uncompensated pCO2 rise
   - Poor response to initial therapy
   - O2 sat < 85 on 2 L O2 after 5 mg aerosolized Albuterol
   - Persistent use of accessory muscles, RR>28 after initial treatment
   - Estimated likelihood of discharge from observation unit is less than 70%

C. **POTENTIAL INTERVENTION**
   - Serial treatments: β-agonists Q2-4hr, ipratropium Q6hr, and steroids
   - Hydration, antibiotics if indicated
   - Pulse oximetry (continuous or q4hr), ABG if indicated
   - Supplemental oxygen as indicated
   - Reassessment Q4 hours
   - Cardiac monitoring, cardiac markers, ECGs, and BNP - as needed

D. **DISPOSITION**
   I. **Home**
      - Acceptable VS
      - Resolution of exacerbation or return to baseline status
      - Pulse-ox > 90% on room air or home FIO2, back to patient’s baseline
   
   II. **Hospital**
      - Progressive deterioration in status, Unstable VS
      - Failure to resolve exacerbation within 18 hours
      - Co-existent pneumonia or CHF
      - Uncompensated pCO2 Retention
      - O2 sat < 90 % on room air or home FIO2
DEHYDRATION OR VOMITING /DIARRHEA

A. TRANSFER CRITERIA
- Acceptable VS
- Mild to moderate dehydration
- Self-limiting or treatable cause not requiring hospitalization
- Mild to moderate electrolyte abnormalities
- Evidence of dehydration – vomiting / diarrhea, high BUN/Cr ratio, orthostatic changes, poor skin turgor, high urine specific gravity, hemoconcentration, etc.

B. EXCLUSION CRITERIA
- Dehydration is not clearly present
- Unstable VS (hypotension, tachycardia, severe dehydration)
- Cardiovascular compromise
- Severe (>15%) dehydration
- Severe electrolyte abnormalities
- Associated cause not amenable to short term treatment: bowel obstruction, appendicitis, bowel ischemia, DTs, sepsis, etc.

C. POTENTIAL INTERVENTION
- IV hydration (D5LR if starvation ketosis present or for hyperemesis gravidarum)
- Serial exams, monitor intake and output, vital signs
- Antiemetic
- Advance diet as tolerated

D. DISPOSITION
I. Home
- Acceptable VS
- Resolution of symptoms, able to tolerate oral fluids
- Normal electrolytes (if done)

II. Hospital
- Unstable VS
- Associated cause found requiring hospitalization
- Inability to tolerate oral fluids despite observation protocol
A. Transfer Criteria

- Acceptable VS
- Cause of electrolyte disturbance does not require hospitalization
- No co-morbidity requiring more prolonged hospitalization
- Mild and rapidly correctable electrolyte abnormality
  1. Hypokalemia > 2.5 mEq/L, with no ventricular ectopy on ED monitoring for >1 hour.
  2. Hyponatremia > 120 mEq/L with normal mentation and a reversible etiology (e.g. dilutional, drug-induced, gastroenteritis, hyperemesis). Not psychogenic polydipsia, SIADH
  3. Hypernatremia < 155 mEq/L with normal mentation and rapidly reversible etiology (e.g. NH patient with infection)
  4. Hypercalcemia < 7.0 mEq/L (ionized) rapidly correctible etiology
  5. Hypocalcemia > 1.0 mEq/L (ionized), e.g. renal failure
  6. Hypomagnesemia >1.0 mEq/L associated with other electrolyte abnormalities

B. Exclusion Criteria

- Unstable VS or cardiovascular compromise
- Severe dehydration or severe electrolyte abnormalities (K >6.0, K <2.5, Na >155, Na <120, iCa >7.0, iCa <1.0, Mg <1.0)
- Mental status changes, seizure, lethargy, neuro deficit, or other sign of cerebral edema
- Associated cause not amenable to short term treatment: bowel obstruction, appendicitis, bowel ischemia, DTs, DKA, sepsis, some drug effects, etc.
- Unlikely to be corrected within 15 hours
- More than two acute electrolyte disturbances

C. Potential Interventions

- Cardiac monitoring
- IV therapy (Normal saline for most) therapy targeting the specific disorder
- Electrolyte replacement / correction by respective protocols (Powerplans)
- Repeat labs
- Serial vital signs and repeat clinical examination

D. Disposition

I. Home

- Acceptable VS
- Resolution of symptoms, able to tolerate oral fluids
- Improved electrolytes

II. Hospital

- Unstable VS
- Associated cause found requiring hospitalization
- Inability to tolerate oral fluids
A. **ADMISSION CRITERIA**
- History of dark stool (not bright red) in last 24-48 hours
- No more than 2 episodes of bright red blood
- GI or surgery consulted for evaluation (or endoscopy) within 24 hr
- Normal PT/INR, Hgb >10, normal Cr.
- Rectal exam for guaiac and orthostatic vitals done in the ED

B. **EXCLUSION CRITERIA**
- Unstable VS (HR>100, SBP<100, RR>22) or fever (T>38)
- Significant orthostatic changes (↓ SBP>20); standing pulse >110
- More than 2 episodes of bright red bleeding
- Bowel prep and endoscopy cannot be completed within 18-24 hours (i.e. both EGD and colonoscopy planned).
- Active bleeding = fresh voluminous hematemesis, multiple episodes of melena on day of arrival, or a significant amount of bright red bowel movement per rectum
- Hgb <8.0, or a drop of Hct >10 in 4 hours (if repeated in the ED)
- History of end stage liver disease, coagulopathy, portal hypertension, esophageal varices, on Coumadin or Factor X inhibitors (NOAC / DOACs such as elequist, xaralto, etc.)
- EKG Changes
- Social issues = inadequate home support

C. **POTENTIAL INTERVENTIONS**
- Serial Hct / Hgb Q6 hr
- Guaiac stools / emesis prn.
- IV Hydration, PPI or H2 blockers IV
- Frequent VS – Q2 hours X3, then Q4hrs
- NPO, I & O, clotting studies
- GI Consult for endoscopy

D. **DISPOSITION**

I. **Home**
- Normal or stable serial exams
- Stable VS
- No deterioration in clinical condition
- If endoscopy - no active bleeding, and follow-up arranged on PPI

II. **Hospital**
- Continual decrease in Hct/Hg
- Recurrence of bleeding
- Deterioration in clinical condition
- Active bleeding by endoscopy
HEART FAILURE

A. TRANSFER CRITERIA
   • Previous history of CHF
   • Acceptable VS: SBP >100, R < 32, HR <130
   • Pulse-ox >90 on room air after initial treatment, correctable to > 92 on Oxygen by NC.
   • High likelihood of correction to baseline status within 24 hours with good home support
   • No acute co-morbidities

B. EXCLUSION CRITERIA
   • New onset CHF
   • Acute cardiac ischemia (EKG changes, positive troponin, ongoing ischemic chest pain, unstable angina) or new arrhythmias
   • Unstable VS after treatment (HR>130, SBP<85 or >180, RR>32, Pox<92 on O2 by NC)
   • Acute co-morbidities - sepsis, pneumonia, new murmur, confusion
   • Abnormal labs to consider (not strict exclusion) - Severe anemia (Hgb<8), renal failure (BUN>40 or Cr>3), Na<135, BNP > 1,000
   • Patient requiring vasoactive drips, invasive or noninvasive ventilation (bipap)
   • Evidence of poor perfusion (confusion, cool extremity, weakness, N/V)
   • Patients requiring provocative stress tests

C. POTENTIAL INTERVENTION
   • Cardiac monitoring, strict Intake/Output, vital signs Q4hr, weight on arrival
   • Oxygen per respiratory guidelines with pulse oximetry (continuous)
   • Serial EKGs, and cardiac markers (TnI) - 3 and 6hrs from 1st lab draw.
   • Repeat electrolytes q6 hours and prn
   • Medication as indicated – IV diuretics (2X home dose) q6hr, nitroglycerine paste, ASA
   • Echocardiography (if not done within 30d) and cardiology consultation - as indicated
   • CHF, smoking cessation, and low salt diet education – social worker consult as needed

D. DISPOSITION
   I. Home
      • Subjective improvement – no chest pain, orthopnea, or exertional dyspnea above baseline
      • Acceptable VS (O2 sat at baseline or >94%, RR <20HR<100, SBP >100 or baseline,).
      • Negative serial ECGs and cardiac markers, good electrolytes, acceptable echo if done
      • Evidence of adequate diuresis – 1L urine, decrease in weight, decrease in JVD
      • CHF discharge checklist (ACEi, β-blocker, HF/ diet/ smoking education, close follow-up)

   II. Hospital
      • New ischemic EKG changes, arrhythmia, cardiac markers, or evidence of cardiac ischemia
      • Persistent hypoxia, rales, dyspnea
      • Poor response to therapy - Failure to improve subjectively
      • Poor home support
      • Physician judgment
A. **TRANSFER CRITERIA**
- Persistent pain in tension or migraine headache
- Hx of migraine with same aura, onset, location and pattern
- Drug related headache
- No focal neurological signs
- Normal CT scan (if done)
- If LP is needed, then it must be done and normal (unless failed attempt and IR consult for LP arranged in ED BEFORE transfer to CDU, and low risk patient)
- Neurology, Neurosurgery, Neuro-ophthalmology consult completed in ED for complicated cases

B. **EXCLUSION CRITERIA**
- Focal neurologic signs
- Meningismus or high suspicion of meningitis, encephalitis, or subarachnoid hemorrhage
- Elevated intraocular pressure as cause (i.e. glaucoma)
- Abnormal CT scan
- Abnormal LP (if performed)
- Hypertensive emergency (diastolic BP > 120 with symptoms)
- Suspected temporal arteritis
- Blocked VP shunt
- Frequent ED visits – suspected habitual patient, narcotic seeking behavior

C. **POTENTIAL INTERVENTIONS**
- Serial exams including vital signs,
- Neuro checks: level of alertness, speech, motor function
- Analgesics, analgesics appropriate for a headache. Consider:
  - Compazine (10mg) or Reglan (10mg) with Benadryl (25mg) IV
  - Toradol (15-30mg), Solumedrol (125mg q8hrX3)
  - Valproic acid (500mg q8hrX3)
- Neurology consult as indicated
- MRI/MRA/MRV Imaging as indicated
- Retina scan if available

D. **DISPOSITION**
I. **Home**
- Resolution of pain
- Other to take patient home
- No deterioration in clinical course

II. **Hospital**
- No resolution in pain
- Deterioration in clinical course
- Rule in of exclusionary causes
HEMODIALYSIS – URGENT*

A. INCLUSION CRITERIA
- NO active pathology (cardiac chest pain, sepsis, respiratory distress) or clinician suspicion
- Acceptable vital signs: BP <200/100, HR <120
- Requiring less than 4L 02 nasal
- Potassium < 6.5
- NO Acute EKG changes (peaked t waves, etc.)
- NO Graft and fistula access issues that would require Interventional Radiology or Vascular. If they JUST need Cathflo, they are OK

B. EXCLUSION CRITERIA
- Acute comorbid condition (cardiac chest pain, sepsis, resp distress) **or need for a 2nd CDU protocol**
- Hypertension requiring continuous vasoactive medications
- Significantly abnormal vital signs (BP>200/100, HR>120, febrile, Pox requiring >4LNC O2)
- Potassium >6.5, Acute ECG changes
- Concomitant febrile illness
- No indication for urgent dialysis (i.e. not dyspneic, near-normal electrolytes)

C. POTENTIAL INTERVENTIONS
- ED –
  - Screening exam, electrolytes, ECG
  - Contact Nephrologist and Dialysis Team to confirm CDU and HD availability
  - Initiate Hemodialysis or General CDU powerplan
  - Order essential home meds, especially BP meds
- CDU
  - Consult Social Services for dialysis transport / access issues if needed
  - Continuous monitoring for arrhythmias due to electrolyte abnormalities
  - Serial exams and vital sign monitoring
  - Supplemental oxygen as needed
  - Complete dialysis within 6-10 hours of unit arrival
  - Confirm medication changes with nephrology team (MD or APP)
  - Second run - only if can be completed within 18-24 hours and stable

D. DISCHARGE CRITERIA
  **Home**
  - Hemodialysis session has taken place
  - Repeat electrolytes show near normal values - if done
  - Next session of hemodialysis arranged by either discussion with patient or by nursing

  **Admit**
  - Altered mental status
  - New information suggesting that patient has no home dialysis clinic and will need placement into such clinic
  - Development of fever, unstable vital signs, deterioration in condition, consultant recommendation
  - Difficulties of vascular access during dialysis session or hypotension precluding completion

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HYPEREMESIS GRAVIDARUM

A. TRANSFER CRITERIA
   • Dehydration (mild to moderate)
   • Ketonuria
   • < 20 weeks pregnant
   • Stable vital signs
   • Ob/Gyn service or attending contacted & agrees
   • Minimally abnormal lab values that are correctable by IV fluids

B. EXCLUSION CRITERIA
   • Pregnancy > 20 weeks
   • Unstable vital signs, severely abnormal lab values
   • Severely dehydrated as evidenced by acute renal failure
   • Urinary tract infection in pregnancy
   • Suspected ectopic or molar pregnancy

C. POTENTIAL INTERVENTIONS
   • IV – D5LR or D5NS at 250 cc/hr until urine ketones clear, then 150 cc/hr
   • Diet - ice chips advanced to clear fluids, dry diet when tolerate fluids
   • Antiemetics (in order of preference)
     o Doxylamine 10mg/pyridoxine 10mg (Diclegis) 2 tabs PO qHS
     o Metoclopramide (Reglan) 10mg PO or IV q8hr prn nausea/vomiting
     o Ondansetron (Zofran) 4mg PO or IV q6hr prn nausea/vomiting
   • Dietary counseling

D. DISPOSITION - RAPID FOLLOWUP WITH OBGYN
   I. Home
      • Stable vital signs, normal labs, urine ketones cleared
      • Taking oral fluids
      • Absence of significant nausea, no vomiting
   
   II. Hospital
      • Unstable vital signs
      • Uncorrected or worsening lab values
      • Unable to tolerate oral fluids
      • Private attending or EDP chooses admission
HYPERGLYCEMIA / MODERATE DIABETIC KETOACIDOSIS*

A. INCLUSION CRITERIA
- Non-compliance with insulin - no other identifiable cause for DKA
- Mild-Moderate DKA: pH 7.15-7.3, HCO3 10-15 mmol/L, Serum or Urine ketones present, anion gap(AG) >10
- Hyperglycemia requiring treatment beyond ED visit

B. EXCLUSION CRITERIA
- Persistently abnormal vital signs after 2L NS (SBP<100, HR >130, RR>24; MAP<60)
- Severe DKA defined as pH < 7.15, anion gap >17, HCO3 < 10
- Mental status changes
- New onset DM
- Acute co-morbidity / precipitant (infection, MI, surgery, trauma)
- Hemodialysis patients

C. POTENTIAL INTERVENTIONS
A. ED
- Hydration - ED / hyperglycemia - 1-2L NS, then NS at 250cc/hr.
- Novalog
  o DKA ED Initial dose = 0.2 u/kg initial
  o Hyperglycemia (without DKA) – sliding scale insulin
- Labs – use flowchart - Venous BG, beta hydroxybuterate (BHB), glucose+electrolytes (BMP), Mg+
B. CDU
- Hydration - CDU DKA – NS at 250cc/hr. until BS<250, then start D5NS at 125cc/hr
- Novalog
  o DKA CDU repeat doses = 0.2 u/kg Q2hour until BS<250 then 0.1u/kg Q2hr
  o Hyperglycemia (without DKA) – sliding scale insulin
- Labs – use flowchart - POC Glucose=on arrival then Q2hr; BMP, BHB, VBG = Q4hr; Mg+ as needed
- Electrolyte replacement protocols for –potassium, magnesium
- Diabetes nurse educator - Arrange diabetic education / follow up with clinic
- When labs normalize (BS <250; pH >7.3; AG <14; HCO3>18):
  o Change CDU labs to - POC glucose QAC and HS
  o Stop IV fluids
  o Transition to subQ home dosing:
    ▪ Feed a meal
    ▪ Give home dose of long acting insulin along with 0.1u/kg novalog subQ

D. DISPOSITION
I. Discharge
- Labs normalized: BS <250; pH >7.3; Anion gap normal (<14); Bicarbonate normal (>18)
- Normal mentation and vital signs, no acute co-morbid condition
- Follow-up within 1-2 days
- Discharged on insulin
II. Admit
- Unable to correct within 18-24 hours
- Worsening clinical picture or anion gap in OU
- Acute comorbid / precipitating condition identified in OU
- Unable to tolerate PO
- Significantly abnormal vital signs
HYPOGLYCEMIA

A. TRANSFER CRITERIA
   - Blood sugar below 40 mg% pre Rx (if obtained) and >80 post treatment
   - Symptoms resolved with administration of glucose
   - Type I or Type II Diabetes
   - Etiology determined (e.g. missed a meal)

B. EXCLUSION CRITERIA
   - Intentional over dosage of hypoglycemic medications
   - Major Comorbid condition causing hypoglycemia – liver failure, insulinoma, sepsis, etc.
   - Insufficient change in symptoms with administration of glucose
   - Fever, hypothermia (T < 35C or T > 38C)
   - D10 drip required to maintain euglycemia

C. POTENTIAL INTERVENTIONS
   - Serial lab - repeat POC glucose Q2-4hr and as indicated
   - Dietary food tray
   - Serial exams and vital signs
   - IV hydration, K+ administration or electrolytes as indicated
   - IV D-50 (or oral juice if alert) for hypoglycemia and confusion – notify physician
   - Diabetic counseling as needed

D. DISPOSITION
   I. Home
      - Resolution of symptoms
      - Capable adult supervision
      - Bedside glucose over 80 mg%
      - Resolution of precipitating factor
      - Follow up with primary care
   
   II. Hospital
      - Deterioration of clinical signs
      - Persistent deficits in neurological or mental status
      - Bedside glucose repeatedly < 80 despite trial of diet and IV glucose
MINOR TRAUMATIC BRAIN INJURY*

A. TRANSFER CRITERIA
- Meets BIG 1 criteria (see table in supplemental materials)
- Normal neurological exam
- Pt has spine cleared (or in Aspen Collar) and is able to ambulate without assistance
- No other traumatic injuries that need continued evaluation or treatment. Splinted extremities are acceptable provided the patient is able to ambulate
- Pt not having intractable pain/vomiting
- Consultation in ED by Trauma Surgery and Neurological Surgery teams as deemed appropriate by ED attending

B. EXCLUSION CRITERIA
- Failure to meet even 1 aspect of BIG 1 criteria
  - Evidence of clinical intoxication
  - Any anticoagulation (including Aspirin, Clopidogrel, Warfarin, Enoxaparin or DOACs)
  - Presence of skull fracture, Epidural Hematoma or intraventricular hemorrhage
  - More than trace Subarachnoid Hemorrhage
  - Subdural or Intraparenchymal hemorrhage > 4mm
- Other injuries requiring admission
- Inability to ambulate
- Intractable pain/vomiting
- Unstable vital signs (persistent tachycardia; tachypnea; hypotension)

C. POTENTIAL INTERVENTION
- Serial neurologic exams every 2 hours
- Advance diet as tolerated
- Antiemetic/analgesics
- Repeat CT scan as indicated
- STAT repeat CT head and call to neurosurgery and trauma residents on call for
  - Decreased mental status; Seizure; Focal neurologic deficits
- STAT trauma evaluation for:
  - Development of abnormal vital signs; Intractable pain; Inability to ambulate

D. DISPOSITION
I. Home
- Acceptable VS
- Normal serial neurologic exams
- Tolerating diet
- Able to ambulate and perform ADLs without assistance
- Acetaminophen, tramadol first choice for pain. Avoid NSAIDs and narcotics.

II. Hospital
- Deterioration in clinical condition
- Development of any exclusion criteria —over read of initial HCT to BIG 2 or 3 criteria
PAPILLEDEMA*

A. **INCLUSION CRITERIA**
   - Patients at moderate risk for IIH or venous thrombosis based on clinical profile (obese, papilledema, headache, and/or visual symptoms)
   - Patients with unexplained papilledema
   - Hemodynamically and neurologically stable patients

B. **EXCLUSION CRITERIA**
   - Febrile patients
   - Patients in whom SAH, meningitis, encephalitis is a concern
   - Rapidly progressing visual loss
   - Patients with an altered mental status or acute neurological deficits
   - Inability to complete protocol within 15-24 hours, or if patient declines needed LP/MRI
   - Patients whose testing can/should be done electively as an outpatient
   - Chronic pain or opioid over use patients with low clinical suspicion of an acute process

C. **POTENTIAL INTERVENTIONS**

   A. **ED**
      - Initial ophthalmological and neuro exams by ED provider
      - CBC, platelets, PT/INR if LP under fluoroscopy is planned
      - Retina camera pictures using ED equipment if available
      - Head CT without contrast
      - Neurology consult/notification – clearance for CDU protocol
      - LP if indicated emergently

   B. **CDU**
      - Pain medications as needed
      - Serial neurological examinations q4 hours
      - Ophthalmology (or Neuro-ophthalmology) consult
      - Brain venous imaging – MRI/MRV Brain, with and without contrast (or CTV if unable to tolerate MRI/MRV)
      - LP (unless indicated otherwise) – to be performed after venous imaging by Neurology or Diagnostic Neuroradiology for opening pressures and CSF analysis (routine CSF plus cryptococcal antigen, TB/AFB/fungal culture, VDRL)
      - Visual fields as indicated by ophthalmology/ neuro-ophthalmology
      - Completion of neurology consult

D. **DISPOSITION**

   I. **Admit**
      - Evidence of acute neurological process – tumor, ischemic infarct, venous thrombosis, infection
      - Symptom management which has failed in the CDU
      - Visual loss from papilledema (which may require emergent surgical treatment)
      - Inability to complete time-sensitive testing within 15-24 hours

   II. **Home**
      - Negative diagnostic testing
      - Identification of conditions which may be treated as an outpatient
      - Adequate symptom control

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A. **TRANSFER CRITERIA**
   - History, exam, and CXR consistent with acute pneumonia
   - PORT score class <3
   - O2 saturation >92% on room air at the time of CDU admission
   - Able to return to previous living environment when discharged (outpatient support is present)
   - Initial dose of antibiotics given in the ED

B. **EXCLUSION CRITERIA**
   - Persistently abnormal vitals – after ED treatment (O2 saturation <92% on RA, HR >120, SBP<100, RR >30, T<35 or >40 C)
   - Significantly abnormal ABG – if done (pCO2>45, pH<7.35)
   - Potential respiratory failure
   - Multi-lobar pneumonia
   - Unlikely to be discharged in 24 hours, poor candidate for outpatient therapy
   - Immunocompromised patients: AIDS, PCP pneumonia, chemotherapy, chronic corticosteroid use, active cancer, sickle cell disease, asplenic patients.
   - High risk patients: Nursing home patient, cancer, cirrhosis, ESRD, altered mental status, nosocomial etiology, aspiration risk (i.e. bulbar stroke)
   - High suspicion of – DVT/PE, SARS, H1N1, or TB (HIV/AIDS, institutionalized, recent prison, native of endemic region, history of pulmonary TB, apical disease on CXR)

C. **POTENTIAL INTERVENTIONS**
   - Antibiotics based on contemporary hospital guidelines for pneumonia:
     - CAP – Azithromycin or Doxycycline
     - CAP with comorbidities, failed outpatient antibiotics, or immunocompromised – levofloxacin or amoxicillin-clavulanate
   - Supplemental oxygen and bronchodilator therapy as needed. Steroids and indicated.
   - Analgesics as needed for pain, myalgia, or cough/sputum
   - Serial vital signs, cardiac and oxygen saturation monitoring (continuous or intermittent)
   - Assistance with activities of daily living as needed

D. **DISPOSITION**
   I. **Home**
      - Subjective and clinical improvement during CDU stay
      - Acceptable vital signs during observation period
      - Patient able to tolerate oral medications and diet
   II. **Hospital**
      - Patient not subjectively improved enough to go home
      - Lack of clinical progress or clinical deterioration.
      - Unable to safely discharge for outpatient management
      - Physician discretion
A. **TRANSFER CRITERIA**
   - Active emotional illness
   - Patients with one or more simple goals of observation – i.e. electrolyte abnormality for clearance, MAT for placement, awaiting sobriety for reassessment

B. **EXCLUSION CRITERIA**
   - Cause of psychiatric complaint not functional – i.e. CNS lesion, persistent hypoglycemia, etc.
   - Obtunded patients not awake and alert
   - Patients with acute new medical disease, or those patients requiring surgical management, or neurologic diagnostics/management
   - Patients eligible for admission / observation to inpatient psychiatry service
   - Likelihood of clearance or disposition to outside facility within 24 hours less than 80%

C. **POTENTIAL INTERVENTIONS**
   - Manage in a safe supervised environment (i.e. ED secluded room)
   - Use of a “sitter” (employee) to monitor patient and maintain safety as needed
   - If intoxicated then document serial CIWA-Ar and initiate the alcohol withdrawal protocol
   - Completion of medical clearance if needed (electrolytes, etc.)
   - Check levels (i.e. lithium)
   - Trial of therapy for psychiatric condition
   - Scheduled evaluations / reassessment by psychiatry
   - Mobile Assessment for placement when appropriate
   - Identify safe environment in community for discharge
   - If patient is neurologically unstable, notify provider and consider admission

D. **DISPOSITION**
   I. **Home:**
      - Safe discharge environment identified/established
      - Completion of diagnostic evaluation
      - Completion of psychiatric consultation / assessment
      - Not on 1013
   
   II. **Admit:**
      - Pt requiring hospitalization with no imminent transfer to psychiatric facility after 24 hours of observation
      - Intoxicated patients:
         o If patient’s CIWA-Ar score > 13
         o If patient has had an alcohol withdrawal related seizure this admission
         o If patient is neurologically unstable, notify provider and consider transfer
A. **TRANSFER CRITERIA**
- Acceptable vital signs and normal mentation
- Clinical evidence of pyelonephritis (flank pain, urgency, frequency, dysuria)
- UA evidence of pyelonephritis (significant pyuria, nitrates, and/or leukocyte esterase)
- Not suitable for discharge from the ED
- Urine cultures obtained

B. **EXCLUSION CRITERIA**
- Male patients
- Pregnant females
- Abnormal VS after ED treatment (SBP <90, HR >120, T<35 or >40 C)
- Mental status changes
- Significant comorbidities – diabetes, renal failure, sickle cell disease
- Immunosuppressed patients - HIV, transplant patients, chronic high dose steroids, asplenic
- Urinary tract anatomic abnormality (solitary kidney, reflux, or indwelling device)
- Urethral or ureteral obstruction (i.e. obstructing kidney stones, urinary retention)
- Poor candidate for outpatient treatment of pyelonephritis (i.e. poor home support)

C. **POTENTIAL INTERVENTIONS**
- IV hydration, antiemetic, antipyretic
- IV antibiotics based on contemporary guidelines for pyelonephritis, options:
  - Ceftriaxone – 2gm IVPB q24hr
  - Tobramycin (single dose) – 5mg/kg IVPB (consult pharmacy for dosing)
- Advance to oral antibiotics, antiemetic, and analgesics – as tolerated
- Imaging as needed (CT or ultrasound)

D. **DISPOSITION CRITERIA**
I. **Home**
- Resolution or improvement of systemic symptoms
- Ability to take po medications
- Stable vital signs
- PCP follow up within 72 hours for culture results and repeat exam.

II. **Hospital**
- Clinical deterioration or lack of adequate improvement
- Inability to tolerate oral meds or hydration
- Unstable vital signs or evidence of septic shock
- Abnormal imaging (ureteral obstruction or emphysematous pyelonephritis, solitary kidney)
RENAL COLIC

A. TRANSFER CRITERIA
   • Diagnosis of renal colic established by helical CT, IVP or ultrasound
   • Uncomplicated stone
   • Persistent pain or vomiting despite medication
   • Acceptable VS
   • Urology resident notified

B. EXCLUSION CRITERIA
   • Unstable VS
   • Clinical evidence of a UTI (fever, significant pyuria on a Cath specimen)
   • Solitary kidney
   • Relative large proximal stone (>6 mm) with high grade obstruction
   • Acute renal failure

C. POTENTIAL INTERVENTION
   • IV Hydration
   • As needed - IV narcotics, IV ketolorac, IV antiemetic
   • Medical Expulsive therapy as indicated (i.e. Flomax / tamsulosin, steroids)
   • Diagnostic tests as needed - Delayed IVP films, ultrasound, CT
   • Serial exams and vital signs
   • Strain urine for stone capture and analysis, U/A if not yet done
   • Urology consultation as needed.

D. DISPOSITION
   I. Home
      • Acceptable VS
      • Pain and nausea resolved or controlled
      • Passage of stone
   II. Hospital
      • Persistent vomiting or uncontrolled pain after 14 hours
      • Diagnosis of coexistent infection or significant abnormality
      • Change in diagnosis requiring further therapy or workup
SEIZURES

A. **TRANSFER CRITERIA**
   - Past history of seizures with breakthrough seizure or sub-therapeutic anticonvulsant level
   - No seizure in last 2 hours
   - New onset seizures with a normal neuro exam, normal head CT, and neurology agreement
   - Blood work: electrolytes, blood glucose, anticonvulsant levels (if appropriate), and UDS / tox labs (as indicated).

B. **EXCLUSION CRITERIA**
   - Ongoing seizures or postictal state
   - Persistent focal neurological findings (e.g. Todd’s paralysis)
   - Clinical suspicion of meningitis or new stroke
   - Delirium of any etiology, including alcohol withdrawal syndrome / DTs
   - Seizures due to toxic exposure (e.g. theophylline or carbon monoxide toxicity) or hypoxemia
   - Pregnancy beyond first trimester / eclampsia
   - New findings on head CT
   - New EKG changes or significant arrhythmias

C. **POTENTIAL INTERVENTIONS**
   - Neurology consultation (phone or in person) to guide the following:
     - Appropriate anticonvulsant therapy
     - EEG
     - MRI with and without contrast
   - Seizure precautions
   - Serial (q 2-4hours) neuro checks and vital signs
   - Cardiac and oximetry monitoring
   - Toxicological testing PRN
   - NPO or liquid diet as indicated

D. **DISPOSITION**
   I. **Home**
      - No deterioration in clinical status
      - Therapeutic levels of anticonvulsants (if indicated)
      - Correction of abnormal labs
      - Resolution of post-ictal or benzodiazepine-related sedation
      - Appropriate home environment
   
   II. **Hospital**
      - Deterioration of clinical status, mentation, or neuro exam
      - Rule in for exclusionary causes
      - Inappropriate home environment
      - Recurrent seizures or status epilepticus
      - Not sufficiently alert for discharge after 18 hours observation
A. TRANSFER CRITERIA
   • Pt. requires assisted living arrangements, i.e. home care
   • Family requires assistance with home care needs
   • High probability of care arrangements within 18 hour time frame
   • Social service consult available within 4 hours
   • Patient’s condition does NOT require extensive nursing care

B. EXCLUSION CRITERIA
   • Inpatient admission criteria are met
   • Social worker unable to provide timely consult
   • Inability to place pt. within 18 hour time frame
   • Clinical or physical condition requires stabilization in an inpatient bed
   • Patients' condition requires a higher intensity than CDU nursing can provide
   • Patient requires restraints or a sitter

C. POTENTIAL INTERVENTIONS
   • Consult Social Services, Case Managers, Care Coordination as needed
   • Work with family, patient, primary care physician, and nursing services to coordinate best outpatient care
   • Monitor vital signs, labs

D. DISPOSITION
   I. Home
      • Home assistance arranged
      • Family refuses placement
      • N.H. not available and family willing to take pt. home

   II. Hospital
      • Unable to obtain N.H. placement or home assistance and the patient is not safe for discharge home within 18 hours
      • Clinical deterioration
      • Need for inpatient admission identified
SYNCOPE

A. **TRANSFER CRITERIA**
   - Intermediate risk syncope patient
   - Minimum ED interventions: ECG, monitor, stool guaiac, orthostatic vitals, IV, labs
   - No acute dyspnea or history of CHF
   - No acute ECG changes, bundle branch block, or significant arrhythmias
   - Vital signs normal
   - No new neurologic deficits

B. **EXCLUSION CRITERIA**
   - Abnormal or unstable vital signs (HR <50 or >100, SBP<100 or >200, pO2<94%, RR>24)
   - ECG: BB blocks (LBBB; RBBB+LAFB; RBBB+LPFB - esp. with 1st degree heart block); Prolonged QTc (>500mS), new ECG ST/T wave changes
   - Significant cardiac arrhythmias (v. tach, a fib, bradycardia, etc.)
   - Serious cause suspected – ACS, PE, GI Bleed, sepsis, AAA, ICA bleed, etc.
   - History of CHF, major valvular disease, family history of sudden death (<50)
   - Significant injury (e.g. fracture, subdural). Lacerations acceptable.
   - New CT or lab abnormalities (if done)
   - Unsafe home environment or need for inpatient admission

C. **POTENTIAL INTERVENTIONS**
   - Serial vital signs, cardiac monitoring
   - Postural BP (if not done in ED)
   - Serial TnI at 0, 3, and 6 hours
   - Appropriate IV hydration and diet
   - Additional selective workup (based on patient):
     - Cardiac workup – possible 2-D echo, stress imaging, tilt testing, holter event monitor, pacemaker evaluation, EP or cardiology consult
       - 2-D echo not needed if: no heart murmur, normal ECG, and no history of heart disease.
     - PE work up – possible D-dimer, CT chest, venous Doppler
     - Neuro workup – serial neuro checks, HCT, neurology consult, possible EEG

D. **DISPOSITION**
   I. **Home**
      - Benign CDU course, stable vital signs
      - No arrhythmia documented on review of cardiac monitor history screens
      - Acceptable home environment
      - Follow up with possible holter event monitor as needed

   II. **Hospital**
      - Deterioration of clinical course
      - Significant testing abnormalities
      - Unsafe home environment
TOXICOLOGY OBSERVATION

A. TRANSFER CRITERIA
   • Non-suicidal Patients
   • Stable VS and mental Status
   • Accidental overdose of the following compounds: phenytoin, oral sulfonylureas, acetaminophen, warfarin
   • Snakebites or black widow envenomation not requiring anti-venom
   • Toxicology consult obtained in ED and observation recommended

B. EXCLUSION CRITERIA
   • Any suicidal ingestion
   • Unstable vital signs, altered mental status, combative or disruptive patients
   • Evidence of organ dysfunction as a result of ingestion (liver, active bleeding)
   • Toxicology not consulted

C. POTENTIAL INTERVENTIONS
   • IV fluids
   • QT monitoring
   • Serial labs (i.e. chemistry, glucose, INR, drug levels)
   • Repeat doses of activated charcoal as indicated
   • Symptomatic treatment

D. DISPOSITION
   I. Home
      • Stable VS
      • Asymptomatic patients with no physical or laboratory evidence of continued toxicity
      • Patient cleared for discharge by toxicologists.

   II. Hospital
      • Unstable VS
      • Persistent symptoms (vomiting, ataxia, hypoglycemia, AMS)
      • New lab abnormalities (LFTs, CPK, electrolytes)
      • Admission recommended by toxicology
      • Acute psychiatric conditions requiring admission identified
A. **TRANSFER CRITERIA**
   - Symptomatic anemia or thrombocytopenia
   - Deficiency correctable by transfusion
   - Stable vital signs with recent labs verifying need for transfusion

B. **EXCLUSION CRITERIA**
   - Unstable vital signs
   - Active bleeding present unless transfusing platelets for thrombocytopenia and patient stable
   - End stage renal failure, dialysis patients
   - Pregnant patients
   - Hgb <5

C. **POTENTIAL INTERVENTIONS**
   - IV started, Pre-medicate and IV hydration as needed
   - Type and Cross match sent if not previously done
   - Transfuse only leukocyte-reduced red cells or platelets per nursing protocol – repeat CBC at least 2 hours following transfusion.
   - Obtain and record vital signs according to blood bank policy:
     - Within 30 minutes prior to the transfusion (baseline)
     - 15 minutes after the start of the transfusion:
     - 1 hour after the start of the transfusion
     - Post transfusion

D. **DISPOSITION**
   I. **Home**
      - Stable vital signs
      - Symptoms improved
      - No fever for 1 hour after 1 unit PRBC's or 1 dose of platelets for 2 hours after 2 units PRBC's
      - No evidence of fluid overload or CHF
      - No evidence of transfusion reaction per Nursing protocol
      - Satisfactory increase in hemoglobin following transfusion
   II. **Hospital**
      - Transfusion reaction
      - Unstable vital signs
      - Fluid overload, CHF
A. **TRANSFER CRITERIA**
- Transient ischemic attack – resolved acute deficit, not crescendo TIAs.
- Sub-acute stroke (onset >72hr; NIHSS≤3; seen by neurology in the ED)
- Negative HCT (unless prompt MRI planned; with a normal exam and not high risk for bleed)
- Workup can be completed within ~18hrs

B. **EXCLUSION CRITERIA**
- Head CT imaging positive for bleed, mass, or acute infarction.
- Known extra-cranial embolic source – history of atrial fibrillation, cardiomyopathy, artificial heart valve, endocarditis, known mural thrombus, or recent MI.
- Known carotid stenosis (>50%)
- Any persistent acute (<72 hour) neurological deficit or crescendo TIAs
- Non-focal symptoms – i.e. confusion, weakness, seizure, transient global amnesia
- Hypertensive encephalopathy
- Unable to ambulate independently, perform self-care, and pass ED dysphagia screen
- Severe headache or evidence of cranial arteritis
- Acute medical or social (poor home support) issues requiring inpatient admission
- Prior large stroke - making serial neurological examinations problematic
- Pregnancy

C. **OBSERVATION UNIT INTERVENTIONS**
- Neuro checks Q-2hr – to detect stroke, crescendo TIA, etc.
- Neurology consult – to detect occult stroke.
- Fasting lipid panel, HgA1c
- Carotid imaging with MRI/MRA - to detect surgical carotid stenosis (>50%) and micro-infarct
  - If contraindications to MRI/MRA and good renal function, then CTA of head and neck vessels
  - If contraindications to MRI/MRA and poor renal function, then Doppler of neck vessels
- 2-D Echocardiography as indicated by neurology - to detect a cardio-embolic source.
- Cardiac monitoring – for at least 12 hours for paroxysmal atrial fibrillation
- Appropriate antiplatelet therapy (Aspirin ⇒ If on ASA then Plavix OR Aggrenox)
- Stroke preventive educational materials (lipids, smoking, DM, HT, obesity, alcohol, stroke)
- Subacute strokes - rehab evaluation and outpatient treatment planning

D. **DISPOSITION**
I. **Home**
- No recurrent deficits, negative workup
- Clinically stable for discharge home (on Asa – 81mg/day)

II. **Hospital**
- Recurrent symptoms / deficit
- Evidence of treatable vascular disease - i.e. >50% stenosis of neck vessels
- Evidence of embolic source requiring treatment (i.e. heparin / Coumadin) - i.e. mural thrombus, Paroxysmal atrial fibrillation
- Unable to complete workup or safely discharge patient within timeframe
- Physician judgment
A. **TRANSFER CRITERIA**
   - Heavy dysfunctional uterine bleeding, progestin ordered in ED
   - Bleeding in early pregnancy (quant HCG < 6000) with ultrasound showing no ultra-sonographic evidence of intrauterine or ectopic pregnancy
   - Threatened abortion with ongoing bleeding
   - First trimester missed or inevitable spontaneous abortion - OBGYN input REQUIRED
   - CBC results available, blood bank tube sent

B. **EXCLUSION CRITERIA**
   - Unresolved hemodynamic compromise in ED (HR>110, SBP<90, HR rise >30 on standing)
   - Hematocrit < 20
   - EGA > 12 weeks
   - Coagulopathy (prolonged PT, PTT, thrombocytopenia)

C. **POTENTIAL INTERVENTIONS**
   - Serial vital signs and bleeding intensity checks (pad count)
   - IV saline infusion
   - RhoGam for pregnant Rh-negative patients
   - Repeat hematocrit
   - Blood transfusion as indicated for Hgb <7

D. **DISPOSITION**
   I. **Home**
      - Bleeding decreased
      - Vital signs stable
      - Repeat hematocrit acceptable
      - Uterine evacuation performed if indicated, patient recovered from procedure
      - Follow up to OB for 1st trimester pregnant patients with bleeding
      - Follow up to GYN arranged for endometrial biopsy within 10 days in pts requiring progestin/hormone treatment who are at higher risk for endometrial CA (older age)
      - Follow up to PCP or GYN for repeat H/H and US if suspect DUB, fibroids
   
   II. **Hospital**
      - In-patient procedure required
      - Vital signs unstable
      - Bleeding intensity does not slow or increases
A. **INCLUSION CRITERIA**
   - Likely peripheral vertigo
   - Acceptable vital signs
   - Normal cerebellar exam (heel - shin, or finger nose testing)
   - Normal cranial nerve exam (corneal reflex, EOM intact)

B. **EXCLUSION CRITERIA**
   - Note: If suspected TIA then use the TIA guideline and protocol
   - Acute hearing loss, double vision, neuro deficits
   - Severe headache or head trauma associated with vertigo
   - Significant vital sign abnormalities
   - Fever (Temp of 38 C oral or greater)
   - High clinical suspicion of central vertigo or stroke

C. **POTENTIAL INTERVENTIONS**
   - Medication - Benzodiazepines
   - Anticholinergics (e.g. Antivert, Benadryl)
   - Antiemetic (e.g. Phenergan, Compazine)
   - Appropriate IV hydration
   - Further testing when indicated, e.g. blood work, head CT, Brain MRI
   - Consultation as indicated
   - Advance diet and ambulate as tolerated

D. **DISPOSITION**
   I. **Home**
      - Acceptable vital signs
      - Able to ambulate and care for self safely in home environment
      - Able to take PO medications
   
   II. **Hospital**
      - Unacceptable vital signs or clinical condition (e.g. stroke)
      - Significant lab or X-ray abnormalities
      - Unable to take PO meds or care for self in home environment
      - Unable to ambulate as well as before vertigo
A. **INCLUSION CRITERIA**
- PE confirmed by radiology (preliminary read by resident is okay) with PESI score ≤65 (class I)
- DVT
  - Common femoral DVT cleared by vascular surgery
  - Femoral/popliteal DVT with need for pain control
  - Upper extremity DVT needing replacement of PICC line
- Adequate home and outpatient support for safe discharge from CDU on anticoagulants

B. **EXCLUSION CRITERIA**
- Abnormal vital signs - Pulse > 110/min; SBP < 100mg Hg; Pulse Ox < 90% with ambulation
- Active co-morbid condition requiring hospital admission
- Currently on therapeutic anticoagulation
- Currently Pregnant
- History of ESRD or cancer currently on chemo, radiation or palliation
- Creatinine clearance < 30mL/min
- BMI > 40 (DOACs contraindicated)
- **Contraindications to anticoagulation** – Coagulopathy (platelet count <75,000, severe liver disease), neuro or ophthalmologic surgery within 6 weeks, non-cutaneous surgery within 2 weeks, GI bleed within 6 weeks, intracranial hemorrhage within 3 months, frequent falls
- **PE exclusions** - evidence of right heart strain: RV strain on CT scan or Echo; elevated troponin or BNP, ischemic changes on EKG, extensive or saddle PE on CT
- **DVT exclusions** - Phlegmasia (severe swelling/pain/skin discoloration), iliac or common femoral DVT, upper extremity DVT due to AICD/pacer or vascular device that can’t be replaced in 24 hours by IR

C. **POTENTIAL INTERVENTIONS**
- Vital sign and cardiac monitor for at least 12 hours for bleeding or thromboembolic complications
- Pain control as needed – avoid NSAIDs
- Echocardiogram / venous Doppler’s as needed
- Pharmacy consult for medication selection and 30-day supply
- Initiate appropriate therapy in CDU and VTE / anticoagulant education
- Schedule outpatient follow-up visits: Anticoagulation Clinic, Primary Care, VTE clinic

D. **DISPOSITION**

I. Home
- Acceptable VS
- Uncomplicated CDU course (i.e. no thromboembolic or bleeding events)
- Pt able to ambulate without significant pain and with normal vital signs
- Able to obtain 30-day course of selected anti-coagulant
- Patient / caregiver clearly understand their diagnosis and return precautions for anticoagulant therapy

II. Admission
- Failure of the above
- Bleeding or thromboembolic complications (consult PE attending on call if high-risk features occur)
Observation Policies - CMS

Observation Policies: Medicare Claims Processing Manual
Chapter 4 - Part B Hospital (Including Inpatient Hospital Part B and OPPS; (Rev. 3750, 04-19-17)

290.1 - Observation Services Overview
(Rev. 1760, Issued: 06-23-09; Effective Date: 07-01-09; Implementation Date: 07-06-09)

Observation care is a well-defined set of specific, clinically appropriate services, which include ongoing short-term treatment, assessment, and reassessment, that are furnished while a decision is being made regarding whether patients will require further treatment as hospital inpatients or if they are able to be discharged from the hospital. Observation services are commonly ordered for patients who present to the emergency department and who then require a significant period of treatment or monitoring in order to make a decision concerning their admission or discharge. Observation services are covered only when provided by the order of a physician or another individual authorized by State licensure law and hospital staff bylaws to admit patients to the hospital or to order outpatient services.

Observation services must also be reasonable and necessary to be covered by Medicare. In only rare and exceptional cases do reasonable and necessary outpatient observation services span more than 48 hours. In the majority of cases, the decision whether to discharge a patient from the hospital following resolution of the reason for the observation care or to admit the patient as an inpatient can be made in less than 48 hours, usually in less than 24 hours.

290.2.2 - Reporting Hours of Observation - Excerpts from document:

• Observation time begins at the clock time documented in the patient’s medical record, which coincides with the time that observation care is initiated in accordance with a physician’s order.
• General standing orders for observation services following all outpatient surgery are not recognized.
• Similarly, in the case of patients who undergo diagnostic testing in a hospital outpatient department, routine preparation services furnished prior to the testing and recovery afterwards are included in the payments for those diagnostic services.
• Observation services should not be billed concurrently with diagnostic or therapeutic services for which active monitoring is a part of the procedure (e.g., colonoscopy, chemotherapy). In situations where such a procedure interrupts observation services, hospitals may determine the most appropriate way to account for this time.
• Observation time ends when all medically necessary services related to observation care are completed.
• Observation time may include medically necessary services and follow-up care provided after the time that the physician writes the discharge order, but before the patient is discharged. However, reported observation time would not include the time patients remain in the hospital after treatment is finished for reasons such as waiting for transportation home.

290.5.1 Billing and Payment for Observation Services Additional excerpts from document:

• The beneficiary must be in the care of a physician during the period of observation, as documented in the medical record by outpatient registration, discharge, and other appropriate progress notes that are timed, written, and signed by the physician.
• The medical record must include documentation that the physician explicitly assessed patient risk to determine that the beneficiary would benefit from observation care.
Observation Policies: American College of Emergency Physicians (ACEP)

Policy statements and clinical policies are the official policies of the American College of Emergency Physicians and, as such, are not subject to the same peer review process as articles appearing in the journal. Policy statements and clinical policies of ACEP do not necessarily reflect the policies and beliefs of Annals of Emergency Medicine and its editors.

Emergency Department Observation Services

Revised and approved by the ACEP Board of Directors January 2008.

Emergency department (ED) patients frequently require services beyond their initial ED care to determine the need for inpatient admission. These distinct and reimbursable services may include but are not limited to: further diagnostic evaluation, continued therapy or management of acute psycho-social issues.

To promote quality of care and patient safety for ED observation patients, the American College of Emergency Physicians (ACEP) supports the following principles:

- Observation of appropriate ED patients in a dedicated ED observation area, instead of a general inpatient bed or an acute care ED bed, is a “best practice” that requires a commitment of staff and hospital resources.
- An emergency physician and emergency nurse should direct ED observation areas with clearly defined administrative responsibilities for the unit.
- Written policies and procedures for the ED observation area should be approved by appropriate ED and hospital medical staff representatives.

- ED observation area policies and procedures should address the following:
  - Patient criteria for admission into the unit, discharge from the unit, and admission to an inpatient bed;
  - A clear statement of which physician bears clinical responsibility for each patient in the area;
  - A clear delineation of emergency physician and nursing staff roles and responsibilities throughout the day – including how care will be transferred between providers;
- Circumstances that require notification of the physician who is responsible for the patient;
  - Maximum allowable length of stay in the unit and means to address outliers; and
  - A description of how utilization and relevant quality measures will be monitored and reported.

- ED observation areas should have adequate space, staffing, equipment, and supplies appropriate for the conditions being managed.

- Mechanisms should be in place to expedite the discharge or the transfer of patients to an inpatient bed, when appropriate.

Revised and approved by the ACEP Board of Directors January 2008.
This policy statement was prepared by the Emergency Medicine Practice Committee and replaces the statement “Emergency Department Observation Units,” approved by the ACEP Board of Directors January 1993 (Ann Emerg Med June 1995;25:863-864

As an adjunct to this policy statement, the ACEP Short Term Observation Section has prepared a Policy Resource and Education Paper (PREP) titled, “Management of Observation Units,” accompany this policy and can be obtained at www.acep.org
## Hospital, Stress Test, Location, and Supervision of Patient Condition During Test

### EUH

<table>
<thead>
<tr>
<th>Hospital</th>
<th>Test</th>
<th>Location</th>
<th>Coverage (MD and Associate Provider)</th>
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<tbody>
<tr>
<td>EUH</td>
<td>Lexi-scan Technectium SPECT&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Emory Clinic (Nuclear Medicine)&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Cardiology (Emergency)&lt;sup&gt;1&lt;/sup&gt;</td>
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<tr>
<td>EUH</td>
<td>Dobutamine Stress Echo</td>
<td>Emory Clinic</td>
<td>Cardiology</td>
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<tr>
<td>EUH</td>
<td>Adenosine MRI</td>
<td>MRI</td>
<td>Cardiology</td>
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<tr>
<td>EUH</td>
<td>Coronary CTA</td>
<td>Emory ED CT</td>
<td>ED and Radiology</td>
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1 - The Emergency Department Physician is responsible for patients during weekend SPECT<sub>½</sub>, at which time it is performed by the ED CDU Associate Provider in the Radiology department.

### EUHM

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<td>Cardiology</td>
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<tr>
<td>EUHM</td>
<td>Dobutamine Stress Echo or GXT</td>
<td>Cardiac Imaging</td>
<td>Cardiology</td>
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### GRADY

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<tbody>
<tr>
<td>Grady</td>
<td>Persantine / Lexi-scan Tc SPECT</td>
<td>Nuclear Medicine&lt;sup&gt;2&lt;/sup&gt; CDU</td>
<td>Cardiology&lt;sup&gt;2&lt;/sup&gt; ED - Associate Provider</td>
</tr>
<tr>
<td>Grady</td>
<td>Dobutamine or GXT Stress Echo</td>
<td>Echo / stress lab</td>
<td>Cardiology</td>
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<tr>
<td>Grady</td>
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<td>Nuclear Medicine</td>
<td>Nuclear Medicine</td>
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<tr>
<td>Grady</td>
<td>Coronary CTA</td>
<td>Emory Clinic</td>
<td>Cardiology&lt;sup&gt;2&lt;/sup&gt;</td>
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2 – Cardiology / nuclear medicine performs and supervises vasodilator stress and Tc injections when they have open slots. Otherwise vasodilator stress and Tc injections are done and supervised in the CDU, then the patient is sent to nuclear medicine for imaging. All SPECT (Tc) imaging is done and supervised in and by nuclear medicine.
**STRESS TEST SELECTIONS BACKGROUND MATERIALS**

**Stress imaging options:**
- Non-stress imaging (coronary “anatomy” testing) – Coronary CTA
- Stress Imaging (ischemia “physiology” testing) – a combination of:
  - A stress modality - 2 options:
    - Ischemia induction tests - exercise or dobutamine
    - Vasodilators – Lexi-scan, persantine, adenosine
  - An imaging modality:
    - Echo – rest/stress echo
    - Nuclear –
      - SPECT camera isotopes – technecium (as myoview or sestimibi)
      - PET camera isotope - Rubidium
    - MRI (seldom used)

The following variables are considered in choosing an appropriate stress test

1. **What test is available**
2. **Patient characteristics:**
   1. Initial probability of acute coronary ischemia in the patient (Bayes’ theorem) – higher probability of disease warrants a more sensitive test, lower probability patients benefit from a less sensitive test. Very low probability patients, defined as a HEART score ≤3, may not need advanced cardiac imaging or observation.
   2. The patients’ ability to exercise.
   3. Conditions to avoid with various stress tests
      1. Persantine - severe asthma
      2. cCTA - high BMI, CRF, CAD
      3. cCTA/MPI Radiation issues - Child bearing age females
3. **Test characteristics** - Sensitivity / specificity of the stress test
   1. PET – ideal for high BMI, known CAD/prior MI
   2. DSE or MRI – ideal for child bearing age females
4. **The cost** of the test
Hospital specific stress test selection

Based on the above, here is the breakdown of what is available and where -

**Emory University Hospital CDU**

- **Emory University Hospital CDU Weekdays**, 7AM – 5PM
  - Male any age, or Female >55; no renal failure:
    - BMI <30, no known CAD:
      - Lexi-scan technecium SPECT
      - Dobutamine stress echo
      - Exercise stress echo – if able to exercise
      - Coronary CTA
    - BMI>30, known CAD, or no available SPECT isotopes:
      - Lexi-scan Rubidium PET
      - Lexi-scan technecium SPECT
  - Female <55:
    - Dobutamine echo
    - Exercise Stress echo
    - Adenosine MRI
  - Severe Asthma / COPD; renal failure:
    - Dobutamine echo
    - Dobutamine SPECT (rest / stress sestimibi)
    - Lexi-scan Rubidium PET

- **Emory University Hospital CDU Weekends** until 2PM
  - Lexi-scan SPECT (rest / stress sestimibi) – by CDU Associate Provider
Emory Midtown Hospital CDU – 7/2011

- Emory University Midtown Hospital CDU **Weekdays** 7AM – 5PM:
  - Male any age, or Female >55:
    - BMI <30, no known CAD:
      - Lexi-scan technecium SPECT
      - Dobutamine stress echo.
      - Exercise stress echo - if able to exercise
    - BMI >30, known CAD, or no available SPECT
      - Lexi-scan Rubidium PET
      - Lexi-scan technecium SPECT
  - Female <55:
    - Dobutamine echo
    - Exercise Stress echo
    - Adenosine MRI
  - Severe Asthma / COPD, or Renal Failure:
    - Dobutamine echo
    - Dobutamine SPECT (rest / stress sestimibi)
    - Lexi-scan Rubidium PET

- Emory University Midtown Hospital CDU **Weekends** - Saturday 7AM -12 noon, Sunday until 2PM
  - Lexi-scan Rubidium PET
  - Lexi-scan technecium SPECT
Grady Memorial Hospital CDU – 2/2014

- Grady Memorial Hospital CDU **Weekdays** 7AM – 2PM:
  - BMI <30, no known CAD:
    - **Exercise Treadmill (ETT)** – if able to exercise
    - **Coronary CT Angiogram (cCTA)**
      - Must be currently in sinus rhythm (no Atrial fibrillation/flutter)
      - Resting HR <80 (must be below 60 after beta blockers)
      - Able to get IV dye
        - No dye allergy
        - GFR > 50
        - 18 or 20g AC or forearm IV
      - No Beta-blocker allergy
      - No active wheezing or history of COPD
      - No history of CHF (EF > 45%)
  - BMI >30, known CAD, or not candidate for cCTA or ETT
    - **Persantine or Adenosine Technetium SPECT**
      - **Persantine** if performed in CDU
      - **Adenosine** if performed in Stress lab
    - Consider **Cardiology consult** for recs on stress vs Cath/admission
  - Severe Asthma / COPD:
    - **Regadenoson (Lexi-scan®) technetium SPECT**

- Grady Memorial Hospital CDU **Weekends** - Saturday and Sunday until 2PM
  - **Persantine/Lexi-scan technetium SPECT**
HEART score – CDU bed request form

Emory CDU bed request: HEART Score

Vasodilator stress testing protocol
Vasodilator stress injections (dipyridamole or Lexi-scan) – may be performed by associate providers (NP or PA) who have completed training in this area and have performed at least 5 supervised injections. This includes compliance with persantine / Lexi-scan patient selection, monitoring and documenting patient condition during drug infusions, identifying and treating both minor and major vasodilator side effects, coordinating testing with other departments, understanding imaging results which are reported by nuclear cardiology. Credentialing in this area will be renewed each year based on performance skills and knowledge in this area. These injections will be supervised by the attending physician working with the associate provider.
CDU REGADENOSON (Lexi-scan) PROTOCOL:

Patient selection:
- Chest pain or symptoms suggestive of ACS – per CDU guideline criteria.
  - No methylxanthines (caffeine) for 12 hours before test, NPO 4 hours before test.

CDU Protocol:
- Negative serial ECGs and troponins (0,3 or 0, 3, 6 hours)
- If history of asthma / COPD (but no other persantine asthma/COPD exclusions)
  - Give: Albuterol 2.5 – 5 mg nebulizer prior to Regadenoson infusion.
- Equipment needed:
  - Cardiac monitor - blood pressure and HR to run every 1 minute during test.
  - 12 lead ECG – programmed to run every 1 minute during stress test period
  - Drugs –
    - Regadenoson (Lexi-scan) – 0.4mg in a syringe
    - Aminophylline (250mg in vial with syringe at bedside)
    - Saline flush syringes (2 or 3) at bedside
  - Staff - APP (NP or PA), nuclear medicine technician. Additional tech or nurse as needed.
- Actions:
  - CDU RN – coordinate getting staff (APP, nuclear medicine tech) and equipment ready. Send completed order forms to pharmacy and nuclear medicine. Call MD/AP when all is ready.
  - MD/AP – Make sure that Lexi-scan nuclear imaging is the appropriate test based on patient (HEART score) and test characteristics. Examine patient for exclusions (i.e. severe wheezing, heart failure, tight aortic stenosis). Cancel if needed.
  - MD/AP – monitor vitals, ECG, symptoms during test.
    - Severe symptoms (wheezing or ST elevation) – Immediately give Aminophylline (250 mg IVP over 3 min). This is very uncommon.
    - Minor symptoms (nausea, headache) – At least 5-10 minutes after isotope injection, give caffeinated drink or Aminophylline (100mg IVP over 1 min)
  - All - At baseline get ECG, HR, BP, and symptoms – then repeat every 1 minute throughout test
  - RN / APP – Inject Regadenoson
  - Nuclear Tech – Inject isotope (Tc) 3 minutes after Regadenoson is injected.
  - All - Continue to monitor ECG, HR, BP, and signs/symptoms for 3 more minutes following isotope injection.
  - All – after the test is completed, enter vasodilator stress testing data into electronic form
  - RN - Send patient to nuclear medicine for Regadenoson stress MPI (myocardial perfusion imaging)
    - If defect on stress (Regadenoson) MPI image, return to nuclear medicine for rest MPI ≥ two hours later.
    - If patient has a known history of MI or stent – complete rest MPI before stress MPI if possible.
  - MD / AP – disposition:
    - Normal stress / Regadenoson MPI (rest MPI not needed) –
      - May discharge
    - Reversible MPI defect (defect present on dipyridamole MPI, but absent on rest MPI) –
      - Admit for unstable angina pathway for medical management or possible coronary catheterization.
    - Fixed MPI defect (defect on dipyridamole MPI also present of rest MPI) –
      - Probably old MI or anatomic artifact, may discharge. Consult cardiology if uncertain.
    - Indeterminate image results or possible reversible defect => Consult cardiology.
**EUH CDU Coronary CTA (cCTA) checklist => in sequential order:**

1. Confirm cCTA order with physician / APP.
2. Gather 2 cCTA paper forms – cCTA Physician Screening Form, cCTA Nursing screen/med form
3. Complete Physician Screening Form – cCTA eligible? (see physician form), if okay:
4. Initiate Nurse cCTA forms (see form)
5. Confirm large bore IV access (ideally 18 g)
6. Contact ED CT tech to confirm study time => start beta blocker **one hour** before this time
7. Start time – oral metoprolol (see nursing form)
8. One hour later – if HR>60, give IV metoprolol (see see nursing form)
9. When HR <60, CDU nurse to take to CT for cCTA (call first) on monitor
10. Transfer to CT gantry / bed – check V.S., if okay:
11. Give 0.8mg NTG **when** CT tech states they are ready (see nursing form)
12. CT tech completes study
13. Recheck V.S., if okay:
14. Return to CDU
15. Cardiac monitor for one hour after cCTA and normal VS
16. cCTA reading is completed and entered in patient chart – physician / APP make disposition

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**Beta Blocker Protocol**

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**Heart Rate < 60 bpm**
- **Yes**
  - No beta blockers needed; Continue with exam
- **No**
  - If contraindication to beta blocker, STOP. Perform CTA without beta blocker at TEC or EUHM. Otherwise perform alternative testing

**HR ≥ 60 bpm**
- **HR ≤ 70 bpm or currently using a beta blocker**
  - If no contraindication, 50 mg oral metoprolol 1 hour before exam
- **HR > 70 bpm and not currently on a beta blocker**
  - If no contraindication, 100 mg oral metoprolol 1 hour before exam

**HR < 60?**
- **Yes**
  - Continue with scan
  - **NO**
  - EUH / EJCH / Grady / MOT / ESJH (not EUHM or TEC): consider IV metoprolol
    - 5 mg metoprolol IV, wait 5 min; can give additional 5 mg IV dose each 5 min not to exceed 30 mg total
  - Consider alternative testing: scan can be attempted if HR <80 bpm at EUH / EJCH / Grady / MOT / ESJH or at higher HR at EUHM / TEC (Siemens) Consult with interpreting radiologist or cardiologist
## Mild – Moderate DKA Flowsheet

<table>
<thead>
<tr>
<th>Time</th>
<th>BS</th>
<th>pH</th>
<th>AG</th>
<th>HCO₃⁻</th>
<th>K⁺</th>
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MINOR TRAUMATIC BRAIN INJURY: Meets BIG 1 criteria (see table)

- Normal neurological examination
- Not clinically intoxicated
- Not on anticoagulation (including Aspirin, Clopidogrel, Warfarin, Enoxaparin or DOACs)
- Preliminary read of non-contrast head CT with
  - No skull fracture
  - No Epidural Hematoma or Intraventricular Hemorrhage
  - Subdural Hematoma ≤ 4mm
  - Intraparenchymal hemorrhage ≤ 4mm in 1 location only
  - Trace subarachnoid hemorrhage only

<table>
<thead>
<tr>
<th>Table 1. Brain Injury Guidelines (BIG)</th>
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<tbody>
<tr>
<td>Variable</td>
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<tr>
<td>LOC</td>
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<tr>
<td>Neurological examination findings</td>
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<tr>
<td>Intoxication</td>
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<tr>
<td>CAP</td>
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<tr>
<td>Skull fracture</td>
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<td>SDH, mm</td>
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<td>IPH</td>
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<td>SAH</td>
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<td>IVH</td>
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<tr>
<td>Therapeutic plan</td>
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Abbreviations: CAP, Coumadin (warfarin sodium), aspirin, and Plavix (clopidogrel bisulfate); EDH, epidural hematoma; IPH, intraparenchymal hemorrhage; IVH, intraventricular hemorrhage; LOC, loss of consciousness; NSC, neurosurgical consultation; RHCT, repeated computed tomography of the head; SAH, subarachnoid hemorrhage; SDH, subdural hematoma.

TBI (Traumatic Brain Injury) Discharge Instructions

You have been seen today for a traumatic brain injury (TBI). This handout has information about how to help you feel better after a TBI. Keep this information on hand to help with your recovery. Be sure to let a family member or friend know about your injury and types of symptoms to look out for. They may notice symptoms before you do.

When should I return to the Emergency Department?

Sometimes problems develop after a head injury. If you have symptoms that concern you or your family members, don’t delay. Call 911. Worrisome symptoms include

- a headache that gets worse and will not go away
- significant nausea and repeated vomiting
- unusual behavior, increased confusion or agitation
- extreme drowsiness and inability to wake up
- slurred speech, weakness, numbness or decreased coordination
-convulsions or seizures

-loss of consciousness

**Schedule a Follow-up Appointment with your Doctor or Nurse**

Be sure to schedule a follow up appointment with your regular doctor or nurse. Due to your injury, you may need to take time off from things like work or school. If so, ask your doctor or nurse for written instructions about when you can safely return to work, school, sports or other activities such as driving a car, riding a bike or operating heavy machinery.

**What is a concussion or TBI?**

A concussion is a type of TBI. It is caused by a bump, blow, or jolt to the head or body that causes the head and brain to move quickly back and forth. This sudden movement can cause the brain to bounce around or twist in the skull, creating chemical changes in the brain and sometimes stretching and damaging the brain cells. Sometimes this can also lead to a small amount of bleeding in the brain. Healthcare professionals sometimes refer to concussions as a “mild” traumatic brain injury because they are not life threatening.

**What are some of the symptoms I may experience?**

Below is a list of some of the symptoms people can experience following a concussion. Concussion symptoms are part of the normal healing process and generally NOT a sign of permanent damage or a serious health problem.

**Thinking/remembering:** Difficulty thinking clearly, feeling slowed down, difficulty concentrating, difficulty remembering information

**Physical:** Headache, fuzzy/blurry vision, sensitivity to noise or light, balance problems, nausea/vomiting early on, feeling tired

**Emotional:** irritability, sadness, more anxious, more emotional

**Sleep:** Sleeping more or less than usual, trouble falling asleep

**What should I expect when I am at home?**

Your symptoms will gradually improve over time and there are treatments that can help limit your symptoms. Most people have good recovery and feel better within 1-4 weeks. Some symptoms may appear right away while you may not notice other symptoms for hours or even days after the injury. You may not realize you have some symptoms until you try to do your usual activities again.

**Steps to help you feel better**

1. **Rest**
   a. Take it easy the first few days after the injury when symptoms are most severe
   b. Limit activities to avoid causing symptoms to worsen
   c. Avoid activities that put you at risk for another brain injury
   d. Sleep as much as possible at night
   e. Take daytime naps as needed
   f. Stay positive
2. **Light activity**
   a. As you start to feel better you can gradually return to your regular activities
   b. Find relaxing activities at home. Continue to avoid activities that put you at risk for another injury
c. Return to school or work on a gradual basis. Use your symptoms to guide your return to your activities. If they do not worsen during the activity then this activity is OK for you. If symptoms worsen, cut back on how much you do that activity until tolerated

d. Continue to get maximum nighttime sleep

e. Limit daytime naps

3. Moderate activity
   a. When symptoms are mild and nearly gone you can return to most of your regular activities
   b. Take breaks only if your symptoms worsen
   c. Return to regular work or school schedule

4. Back to regular activity
   a. Recovery from a concussion is when you are able to do all of your regular activities without experiencing any concussion symptoms caused by your injury

**What if I don’t feel like I am getting better?**

Talk with your doctor or nurse. Keep track of your concussion symptoms and share this information with them. This may be able to help them identify the best treatments for your concussion symptoms. You may also need to see a specialist who has experience treating brain injuries. Ask your doctor or nurse for names of brain injury specialists near you.

**When can I return to school or work?**

You may need to take a day or two off from work or school. Ask your doctor or nurse for written instructions about when you can safely return to work, school and other activities such as driving a car or operating heavy equipment. Getting written instructions can assist you in managing your return to work and school. For a short time you may need extra help or support after a concussion such as rest breaks, fewer hours at work or school, more time to take tests or complete tasks, less time spent reading, writing or on the computer.

**When can I return to sports and recreational activities?**

Do not return to sports or recreational activities on the same day of your injury. Waiting until you get the OK from your doctor or nurse. This is important as a repeat concussion that occurs before the brain has fully healed may slow your recovery or increase the chance for long term problems. This risk is especially a concern for teens and young adults. Returning to sports and recreational activities are a gradual process and should be carefully managed and monitored by your doctor or nurse. When available, be sure to ask work closely with your team’s certified athletic trainer. To learn more about how to safely return to sports, please visit [www.cdc.gov/HEADSUP](http://www.cdc.gov/HEADSUP)

**Where can I learn more?**

More information on concussion and TBI, tips to help you feel better and steps to safely return to activity can be found at: [www.cdc.gov/HEADSUP](http://www.cdc.gov/HEADSUP)
# CIWA – Ar

## Alcohol Withdrawal Assessment Scoring Guidelines (CIWA - Ar)

### Nausea/Vomiting - Rate on scale 0 - 7
- 0 - None
- 1 - Mild nausea with no vomiting
- 2
- 3
- 4 - Intermittent nausea
- 5
- 6
- 7 - Constant nausea and frequent dry heaves and vomiting

### Tremor - have patient extend arms & spread fingers. Rate on scale 0 - 7
- 0 - No tremor
- 1 - Not visible, but can be felt fingertips to fingertip
- 2
- 3
- 4 - Moderate, with patient’s arms extended
- 5
- 6
- 7 - Severe, even w/ arms not extended

### Anxiety - Rate on scale 0 - 7
- 0 - no anxiety, patient at ease
- 1 - mildly anxious
- 2
- 3
- 4 - moderately anxious or guarded, so anxiety is inferred
- 5
- 6
- 7 - Equivalent to acute panic states seen in severe delirium or acute schizophrenic reactions.

### Agitation - Rate on scale 0 - 7
- 0 - normal activity
- 1 - somewhat normal activity
- 2
- 3
- 4 - moderately fidgety and restless
- 5
- 6
- 7 - Paces back and forth, or constantly thrashes about

### Paroxysmal Sweats - Rate on Scale 0 - 7.
- 0 - no sweats
- 1 - barely perceptible sweating, palms moist
- 2
- 3
- 4 - beads of sweat obvious on forehead
- 5
- 6
- 7 - Drenching sweats

### Orientation and clouding of sensorium - Ask, “What day is this? Where are you? Who am I?” Rate scale 0 - 4
- 0 - Oriented
- 1 - cannot do serial additions or is uncertain about date
- 2 - disoriented to date by no more than 2 calendar days
- 3 - disoriented to date by more than 2 calendar days
- 4 - Disoriented to place and/or person

### Tactile disturbances - Ask, “Have you experienced any itching, pins & needles sensation, burning or numbness, or a feeling of bugs crawling on or under your skin?”
- 0 - none
- 1 - Very mild itching, pins & needles, burning, or numbness
- 2 - mild itching, pins & needles, burning, or numbness
- 3 - moderate itching, pins & needles, burning, or numbness
- 4 - moderate hallucinations
- 5 - severe hallucinations
- 6 - extremely severe hallucinations
- 7 - continuous hallucinations

### Auditory disturbances - Ask, “Are you more aware of sounds around you? Are they harsh? Do they startle you? Do you hear anything that disturbs you or that you know isn’t there?”
- 0 - not present
- 1 - Very mild harshness or ability to startle
- 2 - mild harshness or ability to startle
- 3 - moderate harshness or ability to startle
- 4 - moderate hallucinations
- 5 - severe hallucinations
- 6 - extremely severe hallucinations
- 7 - continuous hallucinations

### Visual disturbances - Ask, “Does the light appear to be too bright? Is its color different than normal? Does it hurt your eyes? Are you seeing anything that disturbs you or that you know isn’t there?”
- 0 - not present
- 1 - very mild sensitivity
- 2 - mild sensitivity
- 3 - moderate sensitivity
- 4 - moderate hallucinations
- 5 - severe hallucinations
- 6 - extremely severe hallucinations
- 7 - continuous hallucinations

### Headache - Ask, “Does your head feel different than usual? Does it feel like there is a band around your head?” Do not rate dizziness or lightheadedness.
- 0 - not present
- 1 - very mild
- 2 - mild
- 3 - moderate
- 4 - moderately severe
- 5 - severe
- 6 - very severe
- 7 - extremely severe

## Procedure:
1. Assess and rate each of the 10 criteria of the CIWA scale. Each criterion is rated on a scale from 0 to 7, except for “orientation and clouding of sensorium” which is rated on scale 0 to 4. Add up the scores for all ten criteria. This is the total CIWA-Ar score for the patient at that time. Prophylactic benzodiazepine medication should be started for any patient with a total CIWA-Ar score of 8 or greater (i.e. Start on withdrawal medication).
3. The CIWA-Ar scale is the most sensitive tool for assessment of the patient experiencing alcohol withdrawal. Nursing assessment is vitally important. Early intervention for CIWA-Ar score of 8 or greater provides the best means to prevent the progression of withdrawal.
Fast Track Dialysis (FTD) Pathway for Urgent HD at EUHM

General Inclusion Criteria
- NO active pathology (chest pain, resp distress sepsis, etc)
- Acceptable vital signs: BP <200/100, HR <120
- Requiring less than 4L/2 nasal
- Potassium < 6.5
- NO Acute EKG changes (peaked t waves, etc.)
- NO Graft and fistula access issues that would require Interventional Radiology or Vascular. If they JUST need Cathlab, they are OK

Exclusion Criteria
- Hypertension requiring IV drips
- Abn VS (BP>200/100, HR>120, febrile, Pox requiring >4 LNC O2)
- K>6.5, Acute ECG changes
- Concomitant febrile illness
- Acute comorbid condition (cardiac chest pain, sepsis, resp distress)
- Need for a 2nd CDU protocol
- No indication for urgent dialysis (i.e. not dyspnic, near-normal electrolytes)

First Contact Triage MD/Nurse
1. Hx, Exam. Order VBG or BMR EKG, Serum Labs, trop if applicable (note CXR is not required) (1)
2. "FTD" in Comments for Prompt Dx F/U
3. Request Triage RN complete secondary assessment (diagnosis alert) and medication reconciliation

Second Contact MD/APP
1. Complete H/P, note, orders.
2. Review K - less than 6.5?
3. Review EKG - no peaked T waves, widened QRS, or other acute changes?
4. Outpatient Dialysis needed?

1. Consult Nephrology APP under Renal on-Call
   In text page include MRN and FTD or "Fast Track Dialysis"
2. Complete "General" CDU Powerplan - include
   BP meds. Patient goes to CDU or HD from ED.

1. Nephrology APP contacts HD Charge Nurse and gets time for ED to call report/chair time
2. Nephrology APP places dialysis orders
3. Nephrology APP call ED provider with chair time and brief patient discussion

1. ER/CDU calls Dialysis Unit at 2-4618 to give report to dialysis nurse or HD Charge (2)
2. Pt transported to HD from acute ER or CDU
3. Completes HD with Nephrology Assessment
4. Ok with discharge?

1. Patient returns to CDU for re-assessed
2. CDU APP reads HD note for med changes. Communicates as needed

Discharge Home

(1) VGB with electrolytes may be most appropriate for the undocumented weekly dialysis patients
(2) Call report when HD CDU order placed; does not need to wait HD is ready; provide updates as needed