

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

EMORY
HEALTHCARE



2022

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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 these patients, 70-90% should be discharged from observation status. They are of low severity of illness and limited intensity of service.

Where: Observation services are ideally 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 large body of evidence showing 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., order sets) and are based on the best available evidence, local practice and resources, and expert consensus. Each guideline includes inclusion and exclusion considerations 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 are available while working in their respective areas outside of the local CDU; coverage continues 24/7 with other physicians in the emergency department. Clinical practice, documentation, coding, and billing are also based on national guidelines. Utilization and quality measures are followed monthly and used to modify practice.

Contact Information

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GENERAL GUIDELINES FOR CDU OPERATIONS

Mission statement –The observation units will provide excellent care to determine an observation patient’s need for inpatient admission. They will provide active management based on evidence-based guidelines and protocols. The units will be efficient and pleasant for our patients. We aspire to manage 85% of discharged observation patients in each hospital to optimize quality and resource utilization. These units will 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 Association’s 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, to determine their need for inpatient admission. The scopes of these services are outlined in this document.

Administrative management – The CDU is administratively part of the emergency department (ED) and therefore it is under the ED nursing and medical administration. Most observation patients come through the ED, making this an optimal administrative model.

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 with the Chief of Observation Medicine. CDU Advanced Practice Provider (APP) leaders will work under the direction of the CDU site director on CDU administrative 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, dietitians, 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 EMORY CDU PATIENTS. This means that admission to and discharge from the unit can only be made by the ED / CDU 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 attendings may recommend admission to and/or discharge from the CDU; however, the final decision must come from the ED / CDU physician.

Advanced Practice Providers (Nurse Practitioner or Physician’s Assistant):

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

Unit operation- Patients are managed in the CDU based on the guidelines detailed in this manual. These guidelines are developed based on current evidence, available resources, and internal consensus. Their goal is to consistently provide high quality patient care. These guidelines detail 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 CDU utilization, quality, clinical and operational issues – attended by the CDU medical director, APP leadership, and CDU nursing representative.

Unstable patients –As detailed below, clinically unstable ED patients are excluded from the CDU based on unit or condition specific guidelines. If a patient becomes unstable while in the CDU, then the CDU attending and / or CDU APP should be notified immediately. Depending on the patient’s condition a “Code Blue” or “Code Met” call should be placed through the hospital operator. Code Blue and Code Met procedures will be followed as outlined for each hospital. Unstable patients should be moved to either the appropriate inpatient unit or moved back to the ED for stabilization and disposition. If inpatient ICU space is limited, then prolonged “shelter in place” might occur as defined by hospital Code MET or Code Blue guidelines.

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 a 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 care initiated in the ED and found to be appropriate for the CDU. If a patient can be discharged within 4-6 hours, then placement in the CDU is discouraged. Based on clinical judgment and available evidence, patients should have a “greater than 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. A list of condition specific guidelines (below) captures the most common CDU conditions. However, conditions which fall outside that list may be observed, if they meet the general principles detailed below.

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 (or second midnight).

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 observation management. If a patient has an observation eligible condition (i.e. TIA), and another condition that would normally be discharged from the ED (i.e. a mildly elevated blood glucose), then that patient might also be appropriate for the CDU. If multiple problems require acute management (i.e. TIA plus moderate DKA), then the likelihood of discharge is much lower and inpatient placement may be more appropriate. “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, hyperglycemia, etc.
- Management of psychosocial needs – i.e. psychiatric evaluation and/ 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 several conditions in this document.

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 manage the patient efficiently and safely.

HIGH SEVERITY OF ILLNESS - Such as patients that are too unstable or ill to be observed. For example, patients with unstable vital signs, unstable cardiac, pulmonary, or developing/changing neurological condition. These patients should be managed in the Emergency Department for at least one hour and deemed to be stable or admitted.

HIGH INTENSITY OF SERVICE - Such as patients requiring more nursing care than can be offered in the unit. For example, patients that require specific nursing training protocols or inpatient hospital settings. **This includes patients on intravenous vasoactive drip infusions of nitroglycerin, labetalol, Cardizem (diltiazem), dopamine or dobutamine, epoprostenol (flolan), or treprostinil (remodulin) or with LVAD devices.**

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 (as an inpatient) based on criteria below.

AGE LESS THAN 15 YEARS OLD - Younger patients will be transferred to an appropriate pediatric 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 or FREQUENT BEHAVIORAL DISTURBANCE – Specifically: suicidal patients, acutely psychotic patients, or patients with significant inebriation due to alcohol or illicit drugs. As a setting, the CDU is not physically designed to closely monitor these patients for their safety. Patients determined to be at risk of self-harm may be further managed as an observation patient in the ED using safety behavioral assessment procedures and “ED psychiatric observation” order sets.

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. **(4) MULTIPLE (>1) PROTOCOLS** (i.e. chest pain + blood transfusion) have high failure rates.

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?” or “what remains to be done for a safe discharge or admission?” 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. How to Round

In an effort to standardize rounds, we have created a recommended format for rounds with your team.

- Reason patient is coming to the CDU
 - a. “Patient is under chest pain protocol.”
- Age, comorbidities, pertinent HPI
- ED course
 - a. In the ED the following was accomplished: Lab results, EKG, imaging results, meds given, IVF received, improvement/deterioration?
- Consults called in the ED
- Overnight CDU course
 - a. What has happened for the patient in the CDU thus far? IVF, meds, response?
- Pending plan for the CDU
 - a. Eg: PET stress, MRI, Neuro consult etc
 - b. Division of work; remote physician aids in calling consults, ordering meds, admitting in real time or after rounds completed

2. What to do

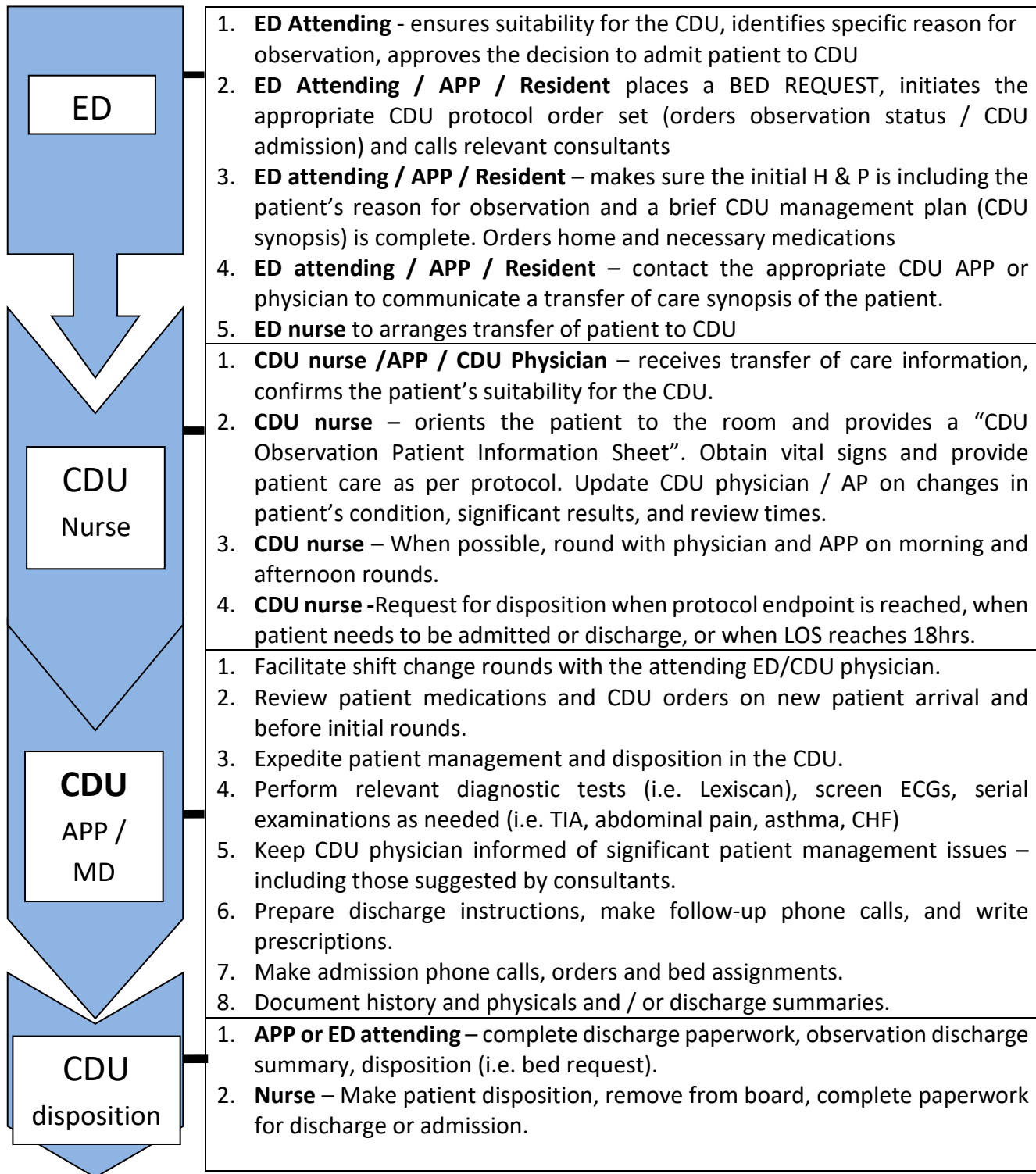
Review the chart (i.e., ED H/P, transfer of care paperwork, labs, x-ray reports, consults, test results), discuss plan as above, examine the patient (focused on why they are in the CDU), and document / communicate your plan. Discharge / admit patients as needed).

3. CDU (observation) discharge summary

The APP and attending physician will provide all four CPT (99217) elements in discharge summary:

- a. Clinical course in the unit
- 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

Patient care flow



CDU Rounds

(Shifts designated by an asterisk in QGenda)

Time/ Hospitals	Grady Memorial 404-616-6448	Emory Midtown 404-686-3154	Emory University 404-712-2908	Emory Johns Creek 678-474-5154	ESJH 678-843-7770
Morning Shifts	7AM – 3PM FLT attending. Reports to CDU at 7AM. Board rounds with off-going and oncoming APP. In person rounds from 7A-9A with CDU APP and Nurse , then goes to ED.	6AM – 4 PM APP prerounds and completes telemedicine rounds with CDU Attending; approx 8:30 AM – 10:30 AM	6 AM–4 PM APP prerounds and completes telemedicine rounds with CDU Attending; approx 7:00 AM – 8:30 AM	6 AM–4 PM APP prerounds and rounds with ER / CDU Attending; approx 8:00 – 9:00 AM unless staffing is four physician coverage then rounds approximately 7:00 – 8:00 AM	6 AM-4PM APP prerounds and completes rounds with CDU Attending; approx. 6:30-7:30. Signs out to 2P-MN ED APP.
		6:30AM – 7AM Zone 1 Attending available for emergent issues	6 AM – 7 AM BZ Attending available for emergent issues		
Telemedicine CDU MD Shift		7 AM – 4 PM – CDU Attending rounds virtually with each observation unit in AM; generally Emory University from 7 AM – 8:30 AM, and Emory Midtown 8:30 AM – 10:30 AM. Helps with CDU care of patients; afternoon rounds from 2 – 4 PM to help plan care for new patients or disposition of morning patients.			
Afternoon Shifts	3PM- 11PM FLT attending. Check in with CDU APP at beginning of shift. Pay attention to patients who will need disposition during shift.	4PM – 2 AM APP accepts admissions, finalizes dispo, manages patients Gives sign out to XXX before they leave.	1:30 PM – 11:30 PM APP accepts admissions, finalizes dispo, manages patients Gives sign out to Gold Zone APP (8 PM Shift) before they leave..	3 PM – 1 AM APP takes signout from morning CDU APP, accepts admissions, finalizes dispo, manages patients. If there is no 3 PM APP then the 4 PMER attending takes this role	4PM-MN 2-MN ED APP takes signouts from 6A-4P CDU APP. Staffs any patient admitted or discharged during shift. Signs out to Night ED APP.
	Signs out CDU to 11P-7A FLT attending.	2:30PM – 10:30PM Zone 1 attending available for emergent issues	4 PM – 10 PM BZ attending available for emergent issues.		4PM-MN ED 2P MD available for emergent issues.
Night Shifts	11P-7AM FLT attending. Takes sign out from afternoon attending. Staffs any patients admitted or discharged overnight as needed.	2 AM – 6 AM Zone 1 APP available for CDU issues / inpatient admissions.	11:30 PM – 6 AM GZ APP available for medical questions, discharges.	10 PM – 6 AM ER attending available for emergent issues and to help manage patients	MN-6A Night ED APP takes signouts from 2P-MN ED APP. Staffs any patient admitted or discharged during shift.
		10:30PM – 6:30 AM Zone 1 attending available for emergent issues	10PM – 6 AM BZ attending available for emergent issues.		MN-6:30 AM Night ED MD available for emergent issues.

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 contrasts with 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 and attempted.
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. 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 at times of a low CDU census HOWEVER, the CDU capacity as a service remains the same (i.e. 11 patients at EJCH), 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 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 a CDU nurse will return to the CDU when there are two ED patients waiting to go to the CDU. 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, according to the size of the CDU service at that hospital

Guidelines: CDU nurse can be flexed to the triage area or to assist with low acuity patients. 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 monthly 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 Advanced Practice 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, including 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). Include shortfall when this benchmark is not reached.
3. **ED to CDU report** – the daily census for ED, CDU, and percent of ED patients going to CDU. Days that drop below half of benchmark may be flagged and investigated.
4. **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
 - c. **CDU occupancy by hour of the day** – if available

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%)
3. **Death, cardio-respiratory arrest in the unit, ICU admits** – Reviewed monthly.
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

CY 2021 Clinical Decision Unit – EUH, EUHM, ESJH, EJCH

Protocol Category	#	% Census	ED LOS	CDU LOS	Admit Rate
Chest Pain	2,895	18%	6.1	17.6	14%
Psych Obs	1,662	10%	6.2	10.4	10%
TIA	1,327	8%	5.7	19.1	19%
Abd pain	1,264	8%	7.1	20.0	28%
HD Obs	1,084	7%	5.7	10.8	6%
Dehydration/vomiting	1,073	7%	7.5	18.6	21%
Other	961	6%	7.1	17.7	25%
Syncope	629	4%	6.1	18.7	14%
Back pain	518	3%	6.7	21.5	31%
Vertigo	444	3%	5.8	19.2	11%
Transfusion of blood/products	434	3%	5.6	16.0	13%
Cellulitis	412	3%	6.5	17.9	24%
Electrolyte abnormality	407	2%	6.4	17.6	16%
CHF	388	2%	7.2	20.6	34%
Pyelonephritis	288	2%	7.0	21.3	31%
GI bleed	287	2%	6.7	22.4	30%
Headache	278	2%	6.9	17.8	13%
COPD exacerbation	215	1%	7.0	19.4	35%
Renal colic	192	1%	6.2	15.6	25%
Asthma	175	1%	7.0	19.4	25%
IR/Procedure	170	1%	6.7	17.0	15%
Hyperglycemia	160	1%	6.9	18.9	18%
Papilledema	156	1%	7.0	22.3	28%
Atrial fibrillation	143	1%	6.0	17.8	23%
COVID	116	1%	8.2	10.4	13%
Seizures	83	1%	6.7	18.1	18%
PE/DVT	79	0%	7.6	14.9	15%
Vaginal bleeding	73	0%	7.3	14.7	10%
Allergic rxn	72	0%	6.0	15.9	8%
Pneumonia	63	0%	8.1	17.8	44%
Hypoglycemia	48	0%	5.7	18.0	25%
Social admission	41	0%	9.9	19.7	17%
Head injury	41	0%	6.1	15.8	12%
Grand Total	16,332	100%	6.5	18.2	19%

CY 2021 Clinical Decision Unit – GMH

CDU Protocol	#	% Census	% Admit	ED LOS	CDU LOS	Total LOS
OBSERVATION	754	20%	10%	6.9	18.8	25.7
CHEST PAIN	715	19%	14%	6.2	21.6	27.8
MINOR CVA	283	7%	16%	5.6	21.8	27.4
TIA	273	7%	17%	6.3	21.1	27.4
SYNCOPE	246	6%	8%	5.7	19.9	25.6
HYPERGLYCEMIA	188	5%	6%	6	19.1	25.1
DEHYDRATION	174	5%	19%	7.6	19.3	26.9
HEART FAILURE	174	5%	33%	6.2	22.7	28.9
ABDOMINAL PAIN	166	4%	27%	9.1	19.9	29
CELLULITIS	137	4%	23%	6.7	20.3	27
ASTHMA	122	3%	34%	5.8	22.6	28.4
COPD	122	3%	33%	6.7	25.4	32.1
OPIOID DISORDER	76	2%	7%	5.7	19.6	25.3
TRAUMA: BLUNT ABDOMINAL TRAUMA	56	1%	11%	5.6	19.7	25.3
MINOR TBI	51	1%	8%	6	17.9	23.9
BACK PAIN	44	1%	34%	6.8	19.5	26.3
PAPILLEDEMA	41	1%	20%	9.2	26.3	35.5
TRAUMA: GENERAL TRAUMA OBSERVATION	40	1%	17%	7	16.2	23.2
PYELONEPHRITIS	37	1%	11%	8.2	17.9	26.1
GI BLEED	24	1%	25%	6.6	20.9	27.5
TRAUMA: BLUNT CHEST TRAUMA	19	0%	16%	7.7	21.4	29.1
HYPOGLYCEMIA	18	0%	11%	5.9	16.2	22.1
TOXICOLOGY	15	0%	0%	4.8	16.8	21.6
TRAUMA: TRAUMATIC CERVICAL RADICULOPATHY	11	0%	9%	7.4	23.6	31
VERTIGO	9	0%	11%	7.6	24.6	32.2
PNEUMONIA	8	0%	12%	7.2	19.7	26.9
VTE	8	0%	0%	7.6	13.9	21.5
ATRIAL FIBRILLATION	5	0%	20%	6.1	17.6	23.7
HYPERTENSION	4	0%	0%	7.7	22.3	30
Total CDU Observation patient	3,820	100%	16%	5.3	20.5	25.8
Admit holds	3,842	50%	87%	13.3	11.1	24.4
Admit holds + CDU Observation patients	7662	100%				25.1

Chest Pain Protocol

Grady, EUH, EUHM, ESIH, EJCH

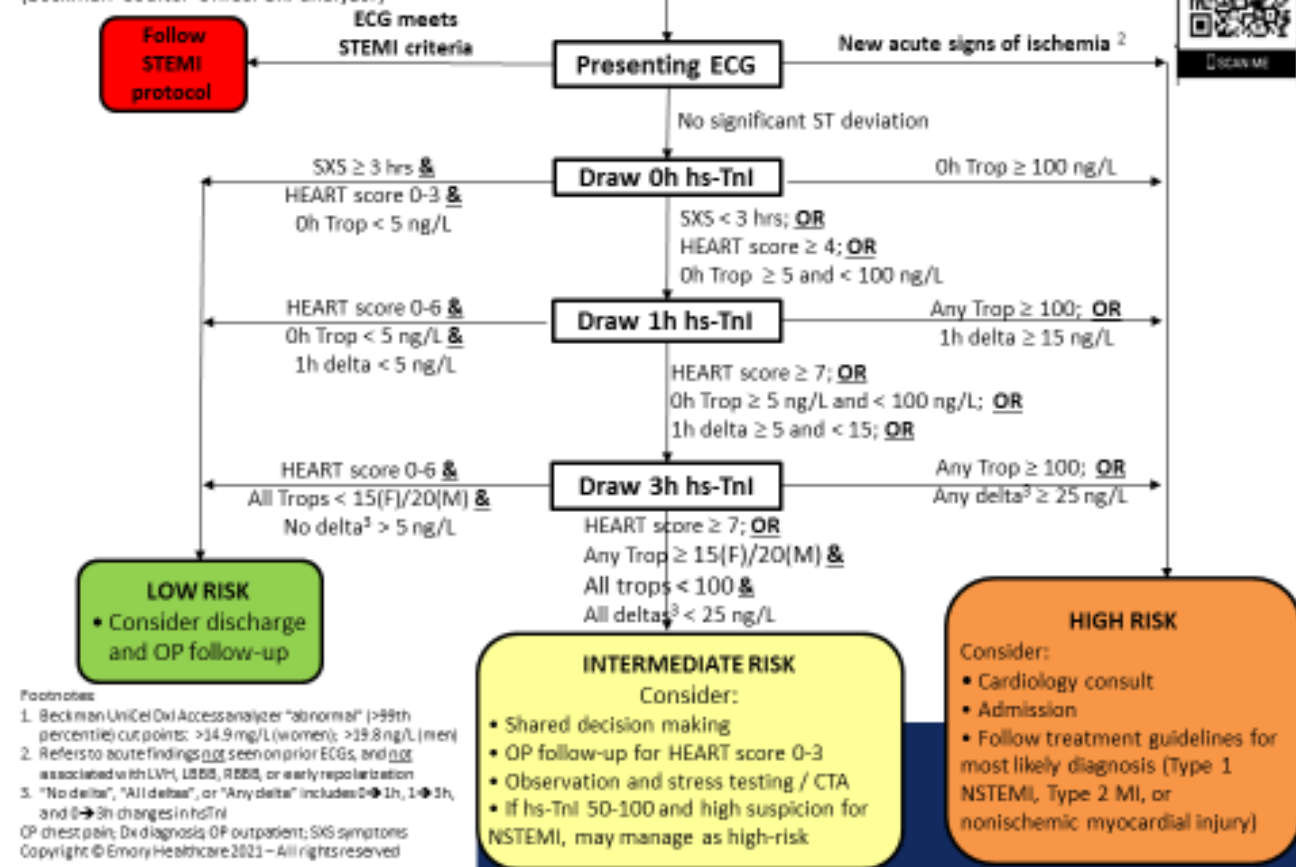
hs-troponin I clinical protocol

EMERGENCY DEPARTMENT ONLY

(Beckman Coulter UniCel Dxl analyzer)¹

Acute CP / ischemic equivalent

Version 9/2/21



Summary of chest pain ED disposition guideline:

Low Risk - ED Discharge:

- Symptoms >3hr, initial hsTn <5, HEART score <4
- Initial hsTn <5, 1hr delta <5, HEART score <7
- 0, 1, 3hr hsTn normal*, all deltas <5, HEART score <7
- Intermediate risk and shared decision making chooses home with outpatient follow-up

High Risk - ED Admit / consult:

- Usual indications (STEMI, etc.)
- Any hsTn delta >25
- Any hsTn >100 (T0hr, T1hr, or T3hr)
- hsTn of 50 – 100 (indeterminate range) with high suspicion for ACS

Intermediate risk - CDU and/or Shared Decision Making:

- hsTn between normal* and 50
- hsTn between normal* and 100 and low suspicion of ACS
- hsTn delta between 5 – 25 (5-15 at 1hr)
- HEART score >3 with clinical concern

* Normal = 99%ile, sex based = <15(F) / <20(M) ng/L. hsTn levels above are in ng/L

GUIDELINES FOR STRESS TESTING OBSERVATION UNIT CHEST PAIN PATIENTS

Low risk “chest pain” patients are those with symptoms suggestive of an acute coronary syndrome (broadly defined as “chest pain”) a non-diagnostic EKG and low risk troponin(s), and can be discharged from the ED.

Intermediate risk chest pain patients are defined by a combination of clinical features (HEART score >3) and serial hs-Troponin testing (detailed above). **The purpose** of stress testing CDU intermediate risk chest pain patients is to identify those patients with severe coronary artery stenosis and an increased risk of 30 day major adverse cardiac events (MACE). Initial ECG and serial cardiac markers in this population might not adequately detect this when it is present. Non-ST segment myocardial infarction, or “NSTEMI” must first be ruled out by serial hsTn testing before a stress test can be performed safely.

Chest pain protocol is based on the 2021 ACC/AHA chest pain guidelines:

- Gulati, M., et al (2021). 2021 AHA/ACC/ASE/CHEST/SAEM/SCCT/SCMR Guideline for the Evaluation and Diagnosis of Chest Pain: A Report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines." Circulation 144(22): e368-e454.
- <https://www.acc.org/Guidelines/Hubs/Chest-Pain>

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)

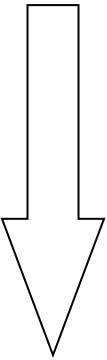
MIBI – Sestimibi (imaging isotope) using SPECT (single photon emission computed tomography) imaging modality

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

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

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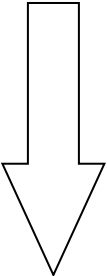
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If HEART score <3, re-consider the need for stress imaging

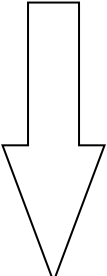
EMORY UNIVERSITY MIDTOWN HOSPITAL CDU

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

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)

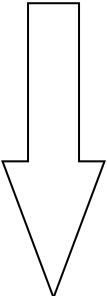
MIBI – Sestimibi (imaging isotope) using SPECT (single photon emission computed tomography) imaging modality

cCTA – Coronary CT Angiography

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

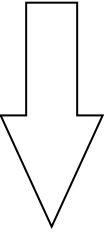
GRADY HOSPITAL CDU

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

EMORY SAINT JOSEPH'S HOSPITAL CDU

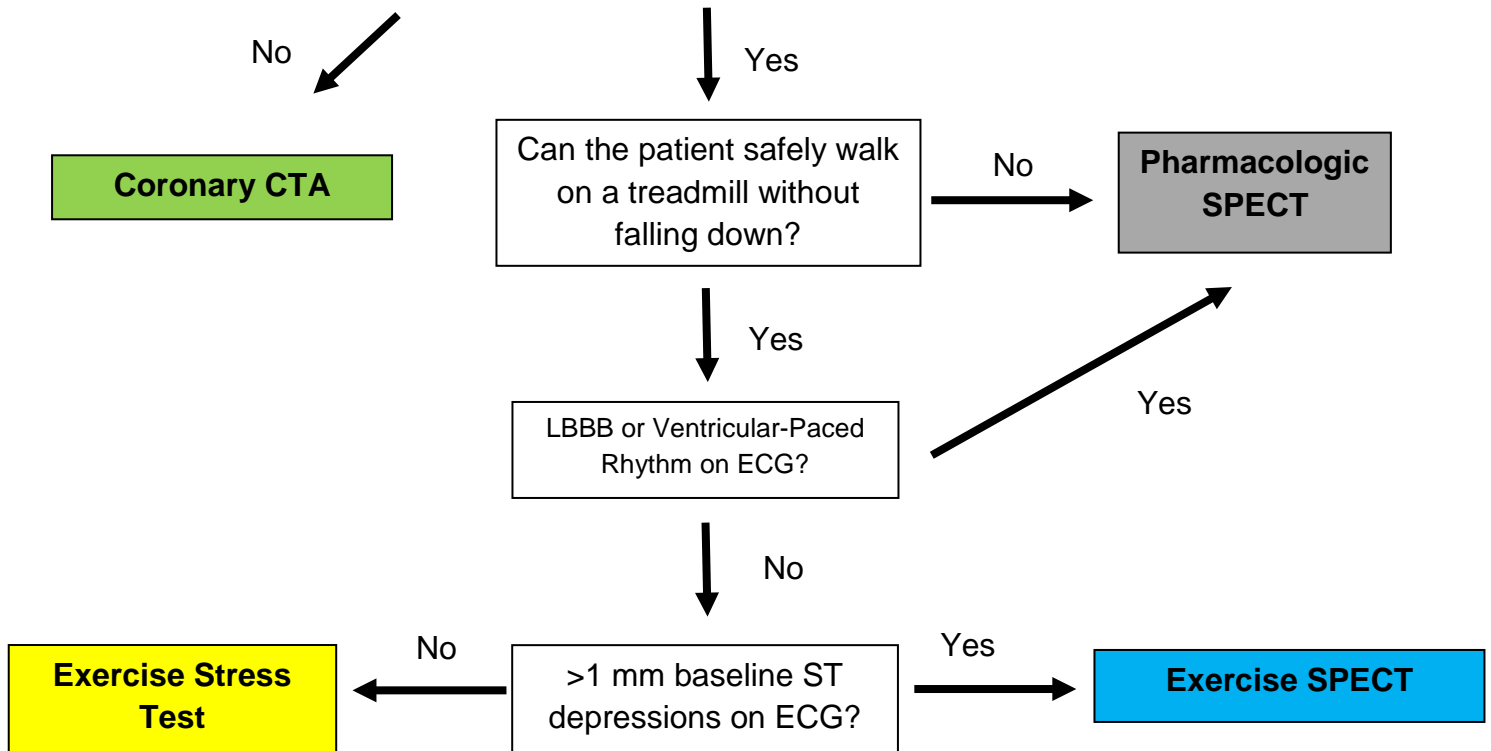
No known CAD, no renal failure, BMI < 40, no severe asthma/COPD?

- 
- a. Yes? => Lexi-scan technecium SPECT or Coronary CTA
 - b. No? => Known CAD, CRF, BMI>40, severe asthma/COPD?
 - i. Yes => Lexi-scan technecium SPECT

Grady CDU CV Imaging Algorithm

Contraindications to Coronary CTA:

(Known obstructive CAD (prior CABG, PCI, or stenosis >50%), History of severe iodinate contrast reaction, atrial fibrillation or frequent ectopy, pregnancy, BMI >40, or GFR<30, unable follow commands or breath holds. Weekend or holiday)



CONDITION SPECIFIC GUIDELINES

(* These protocols might not be used at all hospitals.)

ABDOMINAL PAIN

A. TRANSFER CRITERIA

- Stable VS
- Ancillary Signs / Symptoms - anorexia, N&V, fever, elevated WBC
- Additional imaging needed, but not required in ED
- Negative pregnancy test
- Non-surgical abdomen
- High likelihood (~70%) of discharge within 15 hours

B. EXCLUSION CONSIDERATIONS

- Unstable VS (HR >110, SBP<100, RR > 22)
- Patients who meet criteria for sepsis (+qSOFA score; elevated lactate; fever; elevated WBCs)
- 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
- IV hydration, serial labs
- Advance diet as tolerated
- Imaging studies as indicated (i.e. CT abdomen / pelvis, ultrasound, HIDA scan, MRI)
- 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

- Recommend there be a noted response to therapy in the ED
- Erythroderma, morbiliform rash, 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 CONSIDERATIONS

- Hypotension (MAP <65), tachycardia > 120 (hard exclusion)
- O2 saturation consistently < 94% on room air
- Suspicion of acute coronary syndrome or alternate etiology of symptoms
- Additional problems requiring medical management
- Stridor, respiratory distress, hoarseness, or deemed high risk for airway compromise by provider
- IV vasopressors required (hard exclusion)

C. POTENTIAL INTERVENTIONS

- IV fluids as needed
- Frequent reassessments of airway
- Antihistamines
- Corticosteroids – only if an alternative indication is present to warrant use.¹
- Cardiac monitoring (if indicated)
- Inhaler or nebulizer treatments (if indicated)
- Pulse oximetry
- Repeat doses of IM 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: MAP < 65 or RR > 24/min or hypoxia

ASTHMA

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 β_2 agonists
- β_2 agonist nebs (2 treatments or 10 mg albuterol) + steroids (prednisone 40 mg or methylprednisolone 40 – 60 mg IV) given in ED
- Chest X-ray with no acute findings (pneumonia, pneumothorax, CHF)

B. EXCLUSION CONSIDERATIONS

- 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
 - a. If ABG done, Elevated pCO₂ (>50) plus decreased pH
 - b. O₂Sat < 92% on room air, unless documented chronic hypoxia
 - c. PEFr* < 40% predicted or personal best
- Suspicion of ACS, new onset CHF, pneumonia

C. POTENTIAL INTERVENTIONS

- Serial treatments with nebulized β_2 agonist Q2-4hr and ipratropium Q6hr
- IV Magnesium Sulfate as needed (ideally given in ED and not CDU; IV 2g Mg must be ordered to be given over 20 minutes, not standard magnesium rate over 1 gram / hour for therapeutic benefit)
- Frequent reassessment. BNP if needed.
- Systemic steroids (preferably PO, IV if needed) if not given in the ED
- Pulse oximetry, ABG, and oxygen with cardiac monitoring as needed
- Initiate corticosteroid controller inhaler

D. DISPOSITION

I. **Home** (on steroids, nebs, with follow-up and smoking cessation)

- Acceptable VS – HR \leq 100, RR \leq 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
- Discharge with total of 5 days of treatment of prednisone, albuterol neb refills or albuterol MDI + spacer; also discharge with controller steroid inhaler

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 CONSIDERATIONS

- 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 - Emory Serial hs-Troponin (0, 1, 3) protocol and ECGs
- 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 (anticoagulants, antiarrhythmics, etc) with cardiologist

II. Hospital

- Failure to maintain control of rate under 100
- Positive diagnostic testing (as indicated for MI, PE, CHF, etc.)
- Unstable condition

BACK PAIN

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)
- Difficulty ambulating because of pain
- Compression fracture for possible kyphoplasty

B. EXCLUSION CONSIDERATIONS

- Frequent ED visits for back pain – suspected habitual patient / narcotic addicted
- Age over 65 years old with inability to ambulate
- 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, kyphoplasty on anticoagulation.
- 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
- Cellulitis with a drained abscess which requires a brief period of observation and wound care

B. EXCLUSION CONSIDERATIONS

- Septic or toxic patients, sustained tachycardia, or evidence of acute organ dysfunction, poor clinical appearance
- Immunocompromised patients – neutropenia, HIV not on ARV, 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; infections of >9% TBSA; extensive tissue sloughing or overlying crepitus; 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 (primary objective)
- Antibiotics based on contemporary local guidelines and sensitivities
- Antibiotics - pharm consult for renal impairment
 - Non-purulent –
 - § Cephalexin 500mg PO Q6hr
 - § Ceftriaxone 2gm IVPB Q24hr plus metronidazole 500 mg Q8H if perioral or perirectal location, skin necrosis, neighboring skin ulcer
 - Purulent (or PCN allergy) –
 - § Sulfamethoxazole-trimethoprim 800mg/160mg - 2 tablets PO q12hr
 - Doxycycline 100 mg – 1 tablets PO q12hr
- Pertinent labs (CBC, glucose, lactate, 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

CHEST PAIN – POSSIBLE ACS

A. TRANSFER CRITERIA

- Chest discomfort is potentially due to cardiac ischemia
- Intermediate risk of ACS based on Emory Chest Pain Protocol and ACC/AHA guidelines
- HEART score ≥ 3
- No acute ischemic ECG changes, negative troponins (<50 , or <100 if low suspicion of ACS; $\Delta < 25$)
- Acceptable vital signs ($< \text{HR } 110$, $\text{SBP} > 90$ and < 200 , $\text{RR} < 24$, afebrile)

B. EXCLUSION CONSIDERATIONS

- High risk by Emory and ACC/AHA chest pain criteria.
- HEART pathway score < 3 or chest pain is clearly non-cardiac
- New ECG changes consistent with ischemia (ST elevations/depression, new LBBB)
- Active chest pain judged to most likely be acute cardiac ischemia
- Positive troponin ($>100 \text{ uq/mL}$) not known to be chronic
- Stress test or cardiac imaging needed - but NOT available while in the CDU
- Recent normal cardiac catheterization or coronary CTA within 2 years (no coronary stenosis)
- Recent high quality normal stress test with imaging (nuclear, MRI, echo) within 1 year.

C. POTENTIAL INTERVENTIONS

- Continue saline lock, cardiac monitor, daily aspirin, nitrates prn, and NO CAFFIENE if stress test is planned, NPO six hours before stress test.
 - Emory Serial hs-Troponin I testing (0, ± 1 , 3hr) and ECGs from first ED blood draw [3]
- Troponins as needed beyond 3-hours for any concerning symptoms or new EKG changes
- Repeat EKG based on symptoms or monitor alert – show to CDU / ED physician STAT
- 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.
- If symptom controlled and negative serial hsTn and ECGs – consider Shared Decision Making: discharge with short term outpatient follow-up (+/- ASA-statins, goal directed medical therapy).
- Stress testing or cardiac Imaging - if initial and 3 hour hs-TnI is negative. Testing options include Coronary CT Angiography (no known hx of CAD), nuclear (PET or SPECT), or stress echo.
- Do NOT routinely order ECHO in addition to stress testing

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 ($PO_2 > 90$, $HR < 100$, $RR < 24$, $SBP > 100$)
- Alert and oriented
- No indication of impending respiratory fatigue

B. EXCLUSION CONSIDERATIONS

- Concurrent acute co-morbidities - Pneumonia, CHF, cardiac ischemia
- Unstable VS or clinical condition
- Acute confusion / lethargy or other evidence of CO_2 narcosis; uncompensated pCO_2 rise
- Poor response to initial therapy
- O_2 sat < 85 on 2 L O_2 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 (albuterol 5.0 mg), ipratropium Q6hr, and steroids (40 mg prednisone QD or IV methylprednisolone 40-60 mg Q12H)
- Administer antibiotics for 7 days in all COPD Exacerbations
 - Choices include: Augmentin 875 BID, Doxycycline 100 mg BID, Bactrim DS BID (renal dosing)
- Hydration as 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 with return to baseline status
- Pulse-ox $> 90\%$ on room air or home FIO_2 , back to patient's baseline
- Discharge with prednisone 40 mg QD for a total of 5 days plus 7-10 days of antibiotics
- Educate patient to continue MDI/nebulizer treatment at home every 4-6 hours for 3 days
- Refill controller medications and rescue inhalers (30 day supply)
- Education on Devices (inhaler, nebulizer, oximeter, etc.) after discharge
- Assist in scheduling a follow-up appointment within 15 day

II. Hospital

- Progressive deterioration in status, Unstable VS
- Failure to resolve exacerbation within 18 hours
- Co-existent pneumonia or CHF
- Uncompensated pCO_2 Retention
- O_2 sat $< 90\%$ on room air or home FIO_2

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 CONSIDERATIONS

- Dehydration is not clearly present, ie lightheadedness without a clear explanation
- Unstable VS (hypotension MAP<65, tachycardia HR>120, 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)
- Balanced crystalloids and 0.9% saline appropriate
- Serial exams, monitor intake and output, vital signs
- Antiemetics as indicated
- Advance diet as tolerated

D. DISPOSITION

I. Home

- Acceptable VS
- Resolution of symptoms, able to tolerate oral fluids
- Normal electrolytes (if checked)

II. Hospital

- Unstable VS
- Associated cause found requiring hospitalization
- Inability to tolerate oral fluids despite observation protocol

ELECTROLYTE ABNORMALITY

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 > 2.2 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 > 0.8 mEq/L (ionized), e.g. renal failure
 6. Hypomagnesemia >1.0 mEq/L associated with other electrolyte abnormalities

B. EXCLUSION CONSIDERATIONS

- Unstable VS or cardiovascular compromise
- Severe dehydration or severe electrolyte abnormalities (K >6.0, K <2.2, Na >155, Na <120, iCa >7.0, iCa <1.0, Mg <0.8) without evidence of improvement of derangement and clinical stability
- Mental status changes, seizure, lethargy, neuro deficit, or other sign of cerebral edema
- Associated causes not amenable to short term treatment: bowel obstruction, appendicitis, bowel ischemia, DTs, DKA, sepsis, drug effects, etc.
- Unlikely to be corrected within 15 hours
- More than two acute electrolyte disturbances (soft exclusion)

C. POTENTIAL INTERVENTIONS

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

D. DISPOSITION

I. Home

- Acceptable VS
- Resolution of symptoms, able to tolerate oral fluids
- Improved electrolytes, now within normal range
- Arrange follow for repeat labs for patient in 3-5 days

II. Hospital

- Unstable VS
- Associated cause found requiring hospitalization
- Electrolyte derangement does not improve with therapy in CDU
- Inability to tolerate oral fluids

GASTROINTESTINAL BLEED (UPPER)

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 24hr
- Normal PT/INR, Hgb>10, normal Cr.
- Rectal exam for blood (+/- guaiac) and orthostatic vitals done in the ED

B. EXCLUSION CONSIDERATIONS

- Unstable VS (HR>100, SBP<100, RR>22) or fever (T>38)
- Significant orthostatic changes (\downarrow SBP \geq 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 or SBP < 180, R < 32, HR <110
- 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 CONSIDERATIONS

- New onset CHF
- Acute cardiac ischemia (EKG changes, positive troponin (above baseline troponin), ongoing ischemic chest pain, unstable angina) or new arrhythmias
- Unstable VS after treatment (HR>110 , SBP<90 or >180, RR>32, Pox<92)
- Acute co-morbidities - sepsis, pneumonia, new murmur, confusion, anemia, AKI
- Abnormal features to consider (not strict exclusion) - Severe anemia (Hgb<8), (BUN>40 or Cr>3), Na<135, BNP > 1,000, or known EF < 25%[2]
- Other exclusion considerations include documented co-morbid history of COPD, hypertensive episode leading to exacerbation, any respiratory insufficiency worse than patient's baseline[1]
- Patient requiring vasoactive drips, invasive or noninvasive ventilation (bipap)
- Evidence of poor perfusion (confusion, cool extremity, weakness, N/V)
- Patients requiring stress tests (contraindicated acutely)

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 (Tnl) - 3 and 6hrs from 1st lab draw.
- Repeat electrolytes q6 hours and prn
- Medication as indicated – IV diuretics (2X home dose) q6hr, nitroglycerine paste (if needed for hypertension), ASA (if chronically on, and not for new ischemia concern)
- Echocardiography (only if not done within 6 months) 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) – do not add new ACEi or beta-blocker without consultation of HMS or Cardiology; can prescribe if already known to be taking and ran out of medications

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

HEADACHE

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 CONSIDERATIONS

- 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

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 clinical suspicion of other acute pathology (cardiac chest pain, sepsis, respiratory distress)
- Acceptable vital signs: BP <200/100, HR <120
- Requiring less than 4L O2 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 CONSIDERATIONS

- Acute comorbid condition (cardiac chest pain, sepsis, respiratory distress) **or need for a 2nd CDU protocol**
- Hypertension or hypotension 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 orders
 - 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 – only if indicated
- 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

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 CONSIDERATIONS

- Pregnancy > 20 weeks
- Unstable vital signs, severely abnormal lab values see electrolyte abnormality plan
- Severely dehydrated as evidenced by acute renal failure
- Urinary tract or other acute infection in pregnancy
- Suspected ectopic or molar pregnancy

C. POTENTIAL INTERVENTIONS

- ED –
 - IV – initial fluid resuscitation should be with LR or NS (if hyponatremic) then maintenance with D5LR or D5NS at 250 cc/hr with at least 20 mEq KCL (or more if hypokalemic) until urine ketones clear, then 150 cc/hr. Dextrose containing fluids should be avoided if hypokalemic as increased insulin secretion can exacerbate hypokalemia
- CDU –
 - 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)
 - Doxylamine 10mg/pyridoxine 10mg (Diclegis) 2 tabs PO qHS up to QID prn as tolerated
 - Metoclopramide (Reglan) 10mg PO or IV q8hr prn nausea/vomiting
 - Diphenhydramine 10 to 50 mg IV q6-8 hours PRN
 - Ondansetron (Zofran) 4mg PO or IV q6hr prn nausea/vomiting note limited data on safety profile - ACOG recommends shared decision making
- Other Medications:
 - Consider addition of H2 blockers such as cimetidine or ranitidine
 - Thiamine B1 100 mg IV daily
- Dietary counseling

I. DISPOSITION –

Home - RAPID FOLLOWUP WITH OB/GYN

- Stable vital signs, normal labs, urine ketones cleared
- Taking oral fluids
- Absence of significant nausea, no vomiting

Admit

- 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 CONSIDERATIONS

- 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)

C. POTENTIAL INTERVENTIONS

A. ED

- Hydration - ED / hyperglycemia - 1-2L NS, then NS at 250cc/hr.
- Novalog
 - DKA ED Initial dose = 0.2 u/kg initial
 - 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
 - DKA CDU repeat subQ doses = 0.2 u/kg Q2hour until BS<250 then 0.1u/kg Q2hr
 - 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
- Endocrinology consult as indicated and available
- **When labs normalize** (BS <250; pH >7.3; AG <14); HCO₃>18):
 - Change CDU labs to - POC glucose QAC and HS
 - Stop IV fluids
 - 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 CONSIDERATIONS

- Intentional over dosage of hypoglycemic medications
- Major co-morbid condition causing hypoglycemia – liver failure, alcohol dependence, 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

- Post concussive symptoms but negative HCT
- Meets BIG 1 criteria (see exclusions below)
- 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 CONSIDERATIONS

- 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 for change in mental status or consultant recommendations
- 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
 - Physical Medicine & Rehabilitation consult

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 CONSIDERATIONS –over read of initial HCT to BIG 2 or 3 criteria

OPIOID WITHDRAWAL / BUPRENORPHINE INDUCTION*

A. TRANSFER CRITERIA

- Opioid Use Disorder highly motivated for buprenorphine maintenance
- Non-suicidal patients
- Stable Vital Signs and Mental Status
- Toxicology consult obtained in ED and buprenorphine induction planned.

B. EXCLUSION CONSIDERATIONS

- Any suicidal ingestion
- Unstable vital signs, altered mental status, combative, or disruptive patients
- Abuse of Benzodiazepines or Ethanol
- Evidence of organ dysfunction
- Toxicology not consulted

C. POTENTIAL INTERVENTIONS

- IV fluids
- Opioid Withdrawal Monitoring Using Clinical Opioid Withdrawal Scale (see below)
- Labs or drug screens
- Symptomatic treatment with clonidine, hydroxyzine, diazepam, and non-opioid analgesics

D. DISPOSITION

I. Home

- Stable vital signs
- Patient with low Clinical Opioid Withdrawal Scale Score.
- Patients cleared for discharge by toxicologists.

II. Hospital

- Unstable Vital Signs
- Persistent symptoms (vomiting, diarrhea)
- Significant new lab abnormalities (LFTs, CPK, electrolytes)
- Admission recommended by Medical Toxicology

PAPILLEDEMA*

A. INCLUSION CRITERIA

- Patients at moderate risk for IHH 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 CONSIDERATIONS

- 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 overuse patients with low clinical suspicion of an acute process

C. POTENTIAL INTERVENTIONS

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 proceeding with the CDU protocol
- LP if indicated emergently

CDU

- Pain medications as needed
- Serial neurological examinations q4 hours
- Completion of neurology consult; 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

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

PNEUMONIA

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 CONSIDERATIONS

- 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
- COVID pneumonia; 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, COPD, 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

PSYCHIATRIC / SUBSTANCE ABUSE*

A. OBSERVATION CRITERIA

- Active emotional / psychiatric 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 CONSIDERATIONS

- 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 local inpatient psychiatry service
- Likelihood of clearance or disposition to outside facility within 48 hours less than 70%

C. POTENTIAL INTERVENTIONS

- Manage in a safe supervised environment (i.e. ED secluded room)
 - Initiate appropriate “Safety Behavioral Assessment Plan” (SBAP) interventions
 - 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 as indicated (alcohol, chemistry, TSH, etc.)
- Check appropriate levels (i.e. valproic acid, lithium)
- Trial of therapy for psychiatric condition
 - Provide patient’s appropriate home psychiatric medications
- 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 (maintain observation status if appropriate):

- Pt requiring hospitalization with no imminent transfer to psychiatric facility within 48 hours
- Intoxicated patients:
 - If patient’s CIWA-Ar score > 13
 - If patient has had an alcohol withdrawal related seizure this admission
 - If patient is neurologically unstable, notify provider and consider transfer
- Provider discretion

PYELONEPHRITIS

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 CONSIDERATIONS

- Pregnant females
- Continued signs of severe sepsis after ED treatment (elevated lactate, qSOFA>1, hemodynamic instability)
- Poorly controlled comorbidities – diabetes, renal failure,
- Immunosuppressed patients - HIV, transplant patients, chronic high dose steroids, asplenic
- History of MDRO (Multi-Drug Resistant Organism) on previous urine cultures
- Urinary tract anatomic abnormality (solitary kidney, reflux, or indwelling device) without specialist evaluation
- Urethral or ureteral obstruction (i.e. obstructing kidney stones, urinary retention) without specialist evaluation. Poor candidate for outpatient treatment of pyelonephritis (i.e. poor home support)

C. POTENTIAL INTERVENTIONS

- IV hydration, antiemetic, antipyretic, urine culture (if not obtained in ED)
- 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); new eGFR < 40 ml/min, kidney stone?, urine pH>7.0

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

B. EXCLUSION CONSIDERATIONS

- Unstable VS
- Clinical evidence of a UTI (fever, significant pyuria on a Cath specimen)
- Solitary kidney
- Large proximal stone (>6 mm) with high grade obstruction requiring procedure
- 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 - 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).
- Fever / meningitis work-up completed if indicated
- Continued observation beyond ED visit clinically indicated

B. EXCLUSION CONSIDERATIONS

- Ongoing seizures or postictal state
- Persistent focal neurological findings (e.g. Todd's paralysis)
- Clinical suspicion of meningitis or new stroke
- Fever without LP completed or another source identified
- 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 or recently post-partum / 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
- Loading anticonvulsants (as indicated) completed with home dosing
- 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

SOCIAL ADMISSIONS

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 CONSIDERATIONS

- Inpatient admission criteria are met
- Social worker / care coordination unable to provide a 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
 - Risk factors for cardiac or neurogenic syncope (CHF, CAD, cerebrovascular disease)
 - No active exacerbation (no signs of cardiac ischemia, stroke, CHF exacerbation)
- Minimum ED interventions: ECG, monitor, IV, labs
- Vital signs normal
- No new neurologic deficits (Consider neuro consult and mCVA/TIA pathway)

B. EXCLUSION CONSIDERATIONS

- Abnormal or unstable vital signs (HR <50 or >100, SBP<100 or >200, pO₂<94%, RR>24)
- ECG: any **Tri-fascicular Bundle Branch Blocks** – 1st degree block **plus** any 1 of the following three:
 - 1) LBBB; 2)RBBB+LAFB; or 3)RBBB+LPFB
- ECG: Prolonged QTc (>500mS), Brugada changes, new ECG ST/T wave changes
- Significant cardiac arrhythmias (v. tach, a fib, bradycardia, etc.)
- Serious cause highly suspected and not ruled out – ACS, PE, GI Bleed, sepsis, AAA, IC bleed, etc.
- Significant injury (e.g. fracture, subdural). Lacerations acceptable.
- New CT or significant lab abnormalities (if done)
- Unsafe home environment or need for inpatient admission

C. POTENTIAL INTERVENTIONS

- At least 6 hours of cardiac monitoring
- Postural BP (if not done in ED)
- Serial TnI at 0, 1, and +/- 3 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 outpatient cardiac 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 CONSIDERATIONS

- 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

TRANSFUSION OF BLOOD AND BLOOD PRODUCTS

A. TRANSFER CRITERIA

- Symptomatic anemia or hemoglobin < 7 with known / suspected cause
- Deficiency correctable by transfusion
- Stable vital signs with recent labs verifying need for transfusion

B. EXCLUSION CONSIDERATIONS

- Unstable vital signs
- Active bleeding present, unless easily controlled (ex. Non-pregnant vaginal bleeding requiring less than 1 pad per hour)
- Active lower or upper GI bleeding with anemia
- End stage renal failure, dialysis patients
- Pregnant patients
- Hgb<5

C. POTENTIAL INTERVENTIONS

- IV started, Pre-medicate and IV hydration as needed (pre-medications include Benadryl)
- Type and Cross match sent if not previously done
- Repeat CBC at least 1 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

TRANSIENT ISCHEMIC ATTACK (TIA) / SMALL STROKE

A. TRANSFER CRITERIA

- Transient ischemic attack – resolved acute deficit, not crescendo TIAs.
- Sub-acute stroke (NIHSS \leq 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 CONSIDERATIONS

- Head CT imaging positive for bleed, mass, or significant acute infarction.
- Known extra-cranial embolic source – cardiomyopathy, artificial heart valve, endocarditis, known mural thrombus, or recent MI.
- Known carotid stenosis (>50%)
- Any acute neurological deficit with NIHSS>3 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 (unless cancelled by neurology) - to detect PFO or cardio-embolic source.
- Cardiac monitoring – for at least 12 hours for paroxysmal atrial fibrillation
- Appropriate therapy: antiplatelet (Aspirin vs ASA + Clopidogrel), statin, +/-BP and DM meds
- 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)
- Appropriate therapy: antiplatelet (Aspirin vs ASA + Clopidogrel), statin, +/-BP/DM meds

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. mural thrombus, paroxysmal atrial fibrillation
- Unable to complete workup or safely discharge patient within timeframe
- Physician judgment

TRAUMA: BLUNT ABDOMINAL TRAUMA*

A. TRANSFER CRITERIA

- Stable Vital Signs
- Trauma team consulted
- Blunt mechanism with persistent pain/tachycardia
- Spine clearance
 - C-spine cleared or in Aspen
 - T/L spine cleared
- Lacerations closed/extremities splinted
- Able to ambulate (assistance needed acceptable)

B. EXCLUSION CONSIDERATIONS

- Unstable VS (HR>120, SBP<100)
- Pregnant > 12 weeks gestation
- Unarousable, combative, potential fall risk, unable to follow commands
- Respiratory distress
- Inability to control pain
- Pending operative management of acute injuries
- Active medical comorbidities (ESRD, CHF)
- Grade III or higher solid organ injury

C. POTENTIAL INTERVENTIONS

- Serial abdominal exams q 6 hrs by CDU APP and by trauma team
- Serial labs (lactate, CBC, chem, CK) q 6 hrs X3
- Clear diet, advance as tolerated if stable after 2nd set of labs
- PT/OT consult
- Pain control

D. DISPOSITION

ANY PATIENT FELT TO BE UNSTABLE SHOULD BE TRANSFERRED BACK TO MTC FOR RESUSCIATION

I. **Home**

- Negative or non-concerning imaging
- Acceptable vital signs and labs
- Pain is manageable with oral agents
- Able to ambulate and complete ADLs
- Cleared by trauma

II. **Hospital**

- Persistent abnormal vital signs
- Critical overread on imaging
- Inability to control pain
- Need for rehab
- Discretion of Trauma or CDU attending

TRAUMA: BLUNT CHEST TRAUMA*

E. TRANSFER CRITERIA

- Stable Vital Signs
- Trauma team consulted
- Pulmonary contusions with $\leq 4L$ O₂ requirement to keep SaO₂>92%
- Rib fractures
- Pneumothorax not requiring chest tube
- Able to pull 15cc/kg on Incentive Spirometer
- Spine clearance
 - C-spine cleared or in Aspen
 - T/L spine cleared
- Lacerations closed/extremities splinted
- Able to ambulate (assistance needed acceptable)

F. EXCLUSION CONSIDERATIONS

- Unstable VS (HR>120, SBP<100)
- Flail segment
- Pregnant > 12 weeks gestation
- Unarousable, combative, potential fall risk, unable to follow commands
- Respiratory distress
- Inability to control pain
- Pending operative management of acute injuries
- Active medical comorbidities (ESRD, CHF)

G. POTENTIAL INTERVENTIONS

- Repeat CXR
- Clear diet, advance as tolerated
- PT/OT consult
- Pain control

H. DISPOSITION

ANY PATIENT FELT TO BE UNSTABLE SHOULD BE TRANSFERRED BACK TO MTC FOR RESUSCIATION

III. **Home**

- Negative or non-concerning imaging
- Acceptable vital signs and labs
- Pain is manageable with oral agents
- Able to ambulate and complete ADLs
- Cleared by trauma

IV. **Hospital**

- Persistent abnormal vital signs
- Critical overread on imaging
- Inability to control pain
- Need for rehab
- Discretion of Trauma or CDU attending

TRAUMA: GENERAL TRAUMA OBSERVATION*

I. TRANSFER CRITERIA

- Stable Vital Signs
- Blunt mechanism with negative imaging and one of the following:
 - Difficulty ambulating due to pain
 - Persistent tachycardia
 - Need for serial labs (CK, base deficit) T/L spine cleared
- Spine clearance
 - C-spine cleared or in Aspen
 - T/L spine cleared
- Lacerations closed/extremities splinted
- Able to ambulate (assistance needed acceptable)

J. EXCLUSION CONSIDERATIONS

- Unstable VS (HR>120, SBP<100)
- Pregnant > 12 weeks gestation
- Unarousable, combative, potential fall risk, unable to follow commands
- Respiratory distress
- Inability to control pain
- Pending operative management of acute injuries
- Active medical comorbidities (ESRD, CHF)

K. POTENTIAL INTERVENTIONS

- Clear diet, advance as tolerated
- Serial labs (lactate, CBC, chem, CK)
- PT/OT consult
- Pain control

L. DISPOSITION

ANY PATIENT FELT TO BE UNSTABLE SHOULD BE TRANSFERRED BACK TO MTC FOR RESUSCIATION

V. Home

- Negative or non-concerning imaging
- Acceptable vital signs and labs
- Pain is manageable with oral agents
- Able to ambulate and complete ADLs
- Cleared by trauma

VI. Hospital

- Persistent abnormal vital signs
- Critical overread on imaging
- Inability to control pain
- Need for rehab
- Discretion of Trauma or CDU attending

TRAUMA: TRAUMATIC CERVICAL RADICULOPATHY*

M. TRANSFER CRITERIA

- Stable Vital Signs
- Blunt trauma with isolated upper extremity paresthesia or weakness
- T/L spine cleared
- Lacerations closed/extremities splinted
- Able to ambulate (assistance needed acceptable)

N. EXCLUSION CONSIDERATIONS

- Lower extremity radicular symptoms, concern for central cord syndrome, concern for cauda equina syndrome
- Unstable VS (HR>120, SBP<100)
- Pregnant > 12 weeks gestation
- Unarousable, combative, potential fall risk, unable to follow commands
- Respiratory distress
- Inability to control pain
- Pending operative management of acute injuries
- Active medical comorbidities (ESRD, CHF)

O. POTENTIAL INTERVENTIONS

- C-spine MRI
- Spine service consult
- Clear diet, advance as tolerated
- PT/OT consult
- Pain control

P. DISPOSITION

ANY PATIENT FELT TO BE UNSTABLE SHOULD BE TRANSFERRED BACK TO MTC FOR RESUSCIATION

VII. **Home**

- Negative or non-concerning imaging
- Acceptable vital signs and labs
- Pain is manageable with oral agents
- Able to ambulate and complete ADLs
- Cleared by trauma

VIII. **Hospital**

- Persistent abnormal vital signs
- Critical overread on imaging
- Inability to control pain
- Need for rehab
- Discretion of Trauma or CDU attending

VAGINAL BLEEDING

Q. TRANSFER CRITERIA

- Heavy dysfunctional uterine bleeding, progestin ordered in ED
- Bleeding in early pregnancy (quant HCG < 3000) 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

R. EXCLUSION CONSIDERATIONS

- Unresolved hemodynamic compromise in ED (HR>110, SBP<90, HR rise >30 on standing)
- Hematocrit < 20
- Fever or other evidence of infection
- EGA > 12 weeks
- Coagulopathy (prolonged PT, PTT, thrombocytopenia) or coagulopathic disorder (i.e. hemophilia)
- Significant GU trauma

S. POTENTIAL INTERVENTIONS

- Serial vital signs and bleeding intensity checks (pad count)
- IV saline infusion
- RhoGam for pregnant Rh-negative patients (300 mcg)
- Consider high dose estrogen (25mg IV) for non-pregnant patients
- Repeat hematocrit
- Blood transfusion as indicated for Hgb<7

T. DISPOSITION

IX. **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

X. **Hospital**

- In-patient procedure required
- Vital signs unstable
- Bleeding intensity does not slow or increases

VERTIGO

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)
- **Note:** If suspected TIA then use the TIA guideline and protocol

B. EXCLUSION CONSIDERATIONS

- 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, , Brain MRI, consider head CT if headache present
- Canalyth repositioning maneuvers and training as indicated
- Consultation as indicated
- Advance diet and ambulate as tolerated

D. DISPOSITION

I. Home

- Acceptable vital signs
- Able to ambulate and care for self safely or have adequate home support
- 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

VTE (LOW RISK VENOUS THROMBO EMBOLISM)

A. INCLUSIONCRITERIA

- PE confirmed by radiology (preliminary read by resident is okay) with Low Risk 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. EXCLUSIONCRITERIA

- Abnormal vital signs - Pulse $> 110/\text{min}$; SBP $< 100\text{mm Hg}$; 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 $< 30\text{mL/min}$
- 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** - Phlegmesia (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)

SUPPLEMENTAL MATERIALS

Observation Policies - CMS

Observation Policies: Medicare Claims Processing Manual

Chapter 4 - Part B Hospital (Including Inpatient Hospital Part B and OPPS; **(Rev. 11305, 03-24-22)**)

<https://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/downloads/clm104c04.pdf>

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.

[Ann Emerg Med. 2008; 51:686.]

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.

Hospital, Stress Test, Location, and Supervision of Patient Condition During Test

Hospital	Test	Location	Coverage (MD and Associate Provider)
EUH	Lexi-scan Technetium SPECT ¹	Emory Clinic (Nuclear Medicine) ¹	Cardiology (Emergency) ¹
EUH	Dobutamine Stress Echo	Emory Clinic	Cardiology
EUH	Adenosine MRI	MRI	Cardiology
EUH	Coronary CTA	Emory ED CT	ED and Radiology
EUHM	Lexi-scan Technetium SPECT ¹	Cardiac Imaging	Cardiology
EUHM	Dobutamine Stress Echo or GXT	Cardiac Imaging	Cardiology
EUHM	Adenosine MRI	Cardiac Imaging	Cardiology
EUHM	Coronary CTA	Cardiac Imaging	Radiology
ESJH	Lexi-scan Technetium SPECT ¹	Nuclear Cardiology	Cardiology
ESJH	Coronary CTA	ESJH RAD CT	Cardiology and Radiology
EJCH	Lexi-scan Technetium SPECT ¹	Nuclear Medicine	Cardiology (CDU team covers weekends and emergencies)
EJCH	Dobutamine Stress Echo	Outpatient Echo lab	Cardiology
Grady	Persantine / Lexi-scan Tc SPECT	Stress lab/Nuclear Medicine	Cardiology
Grady	Dobutamine or GXT Stress Echo	Echo / stress lab	Requires cardiology approval
Grady	Exercise Treadmill Test	Stress lab	Cardiology
Grady	Coronary CTA	ED/3 rd floor CT	ED and Radiology

1 - The EUH and EJCH Emergency Department Physician is responsible for patients during weekend SPECT₂ at which time it is performed by the ED CDU Associate Provider in the Radiology department.

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 *sestimi*)
 - 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 - Childbearing 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 childbearing age females
4. **The cost** of the test

Emory CDU bed request: HEART Score

The screenshot displays the 'ED Disposition Plan CDU' form. The 'HEART Score' section is highlighted with a red dashed box. It includes five sub-sections: History, ECG, Age, Risk factors, and Troponin, each with radio button options. A 'Total Score' field is located at the bottom left of the highlighted area.

ED Disposition Plan CDU

Performed on: 10/28/2015 0844

CDU Protocol

- ☒ Abdominal distention
- ☐ Chest Pain
- ☐ CHF
- ☐ COPD exacerbation
- ☐ Asthma
- ☐ Cellulitis
- ☐ Abdominal injury
- ☐ Allergic rxn
- ☐ Abdominal pain
- ☐ Back pain
- ☐ Chest injury
- ☐ DVT
- ☐ Dehydration/vomiting
- ☐ Electrolyte abnormality
- ☐ GI bleed
- ☐ Headache
- ☐ Head injury
- ☐ Hyperemesis gravidarum
- ☐ Hypertensive urgency
- ☐ Hypoglycemia
- ☐ Hyperglycemia
- ☐ Overdose
- ☐ Papilledema
- ☐ Pneumonia
- ☐ Pyelonephritis
- ☐ Renal colic
- ☐ Rib fractures
- ☐ Seizures
- ☐ Social admission
- ☐ Supraventricular tachycardia
- ☐ Syncope
- ☐ TIA
- ☐ Transfusion of blood/products
- ☐ Vaginal bleeding
- ☐ Vertigo
- ☐ Other:

Family History

- ☐ Asked and no relevant family history
- ☐ Coronary Artery Disease
- ☐ Diabetes mellitus
- ☐ Hypertension
- ☐ CVA
- ☐ PE/DVT
- ☐ Other:

CDU Synopsis

HEART Score

History

- ☐ Highly suspicious
- ☐ Moderately suspicious
- ☐ Slightly suspicious

ECG

- ☐ Significant ST-depression
- ☐ Non-specific repolarization abnormality
- ☐ Normal

Age

- ☐ >85
- ☐ 45-85
- ☐ <45

Risk factors

- ☐ 3 or more risk factors
- ☐ 1-2 risk factors
- ☐ No risk factors

Troponin

- ☐ Greater than or equal to 3x normal limit
- ☐ 1-3x normal limit
- ☐ Less than or equal to normal limit

Total 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.

Emory Saint Joseph's Cardiac CT Coronary Angiography (CCTA) protocol

Patient Selection

- No history of PCI/CABG
- GFR > 40
- Sinus Rhythm
- BMI < 40
- No history of significant elevation on previous CAC score (>400)
- Age < 70
- Ability of patient to cooperate with instructions (breath hold instructions)

Ordering Protocol

- Ensure the patient meets "patient selection" criteria
- Initiate oral beta blockers to patients with heart rates > 60 bpm at presentation
- Provider will need to call reading physician (7a-5p) to discuss case and ensure appropriate patient selection
- Available hours 7a-5p, 7 days/week
- Call cardiologist on call on weekends to ensure reader availability

Ordering Logistics

- NPO diet is not required for CCTA
- Hold caffeinated products (reduces HR, PVCs/PACs)
- 18 gauge peripheral IV in right AC vein should be attempted in the CDU to optimize contrast injection and image quality
- There is no policy to restrict repeat iodinated contrast exams if a second scan is clinically indicated
- There is no waiting period on performing a second contrast enhanced exam if the patient has normal renal function

Protocol 1 - Normal QRS, No AV block and SBP >100

- HR < 60 BPM: No beta blocker necessary, proceed with CCTA from ER directly
- HR 60-65 BPM: metoprolol tartrate 25 mg x 1
- HR 65-75 BPM: metoprolol tartrate 50 mg x 1
- HR 75-85 BPM: metoprolol tartrate 100 mg x 1
- HR 85-90 BPM: metoprolol tartrate 100 mg x 1, recheck HR in 1-2 hours, + 50 mg if no significant improvement
- HR > 90 BPM: Discuss with CCTA reader on call before ordering beta blockers

Protocol 2 - For QRS > 120 (LBBB< RBBB< IVCD), 1st degree AV block, or SBP < 100)

- HR < 60 BPM: No beta blocker necessary, proceed with CCTA from ER directly
- HR 60-70 BPM: metoprolol tartrate 25 mg x1
- HR 70-80 BPM: metoprolol tartrate 50 mg x1
- HR 80-90 BPM: metoprolol tartrate 75 mg x 1, recheck HR in 1-2 hours, + 50 mg if no significant improvement
- HR > 90 BPM: Discuss with CCTA reader on call before ordering beta blockers

Selective use of the CDU for COVID-19 positive patients

January 19, 2021

Background:

Initially, low risk COVID patients were excluded from the CDU to preserve use of PPE and cohort patients into selected units. Due to the high prevalence of COVID, limited inpatient bed availability and good supplies of PPE we will take selected low risk COVID positive patients in the CDU. Patients with a 70-90% probability of safe discharge within 15-18 hours.

Inclusion criteria:

- Previously defined CDU inclusion criteria
- Known COVID positive: ≥ 21 days from test, without COVID inpatient criteria.
 - No restrictions outside of pneumonia.
- Known COVID positive: ≤ 21 days from test, without COVID inpatient criteria
 - Only non-respiratory / non-febrile conditions. Examples include: dehydration, electrolyte replacement, FTD, syncope, etc.
- PUI / COVID unknown: respiratory / febrile conditions; low COVID probability
 - Respiratory conditions - asthma, COPD, heart failure
 - Febrile conditions – cellulitis, diarrhea

EXCLUSION CONSIDERATIONS:

- Previously defined CDU EXCLUSION CONSIDERATIONS
- Pneumonia – COVID or non-COVID.
- COVID positive with inpatient criteria
 - Pulse ox $<95\%$ (room air: resting or ambulatory), tachypnea (Resp ≥ 28), oxygen requirement, hypotensive despite fluids, significant co-morbidity
 - If done - any troponin elevation (above baseline)

Workflow:

- High clinical risk COVID pneumonia – admit to inpatient bed as usual
- PUI / COVID unknown: CDU eligible
 - Order “Testing for COVID-19 Symptomatic”. Admit to the CDU as usual.
- Known COVID positive: CDU eligible
 - Order “Testing for COVID-19 Symptomatic”. Admit to the CDU as usual.
 - Notify CDU nurse / APP of COVID status.

Mild – Moderate DKA Flowsheet

	Time	BS	pH	AG	HCO ₃	K ⁺
ED						
2hr						
4hr						
6hr						
8hr						
10hr						
12hr						
14hr						
16hr						

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

Tremors - have patient extend arms & spread fingers. Rate on scale 0 - 7.

- 0 - No tremor
- 1 - Not visible, but can be felt fingertip 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).
2. Document vitals and CIWA-Ar assessment on the Withdrawal Assessment Sheet.
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.

General Inclusion Criteria

- NO active pathology (chest pain, resp distress sepsis, etc)
- Acceptable vital signs: BP <200/100, HR <120
- Requiring less than 4L O2 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

Exclusion Criteria

- Hypertension requiring IV drips
- Abn VS (BP>200/100, HR>120, febrile, Pox requiring >4LNC 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 dyspneic, near-normal electrolytes)
- Dialysis not available: Saturday 5PM – Monday 7:30AM

Fast Track Dialysis (FTD) Pathway for Urgent HD at EUHM

ESRD on Hemodialysis
7:30AM to 5PM
Mon – Sat ED arrival

FTD?
(No exclusion criteria)

No

Treat/Room per ED MD

First Contact Triage MD/Nurse

1. Hx, Exam. Order **VGB or BMP, 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 (dialysis 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?

NO

Emergent dialysis/ICU

NO

Discharge to Outpatient Dialysis per Renal MD

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

Overnight

Next day chair

HMS observation admit

- (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

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
2. Completes HD with Nephrology Assessment
3. Ok with discharge?

NO

1. Nephrology to call ER/CDU to relay that further HD needed or concerns
2. Patient admitted to HMS

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

Discharge Home

EHC Physician TeleCDU Shift – Every day 7 AM – 4 PM.

Workspace

- EUHM: Orr Building 822, 404-686-8822. 8th floor, **Room 822**. The code for the room is **52210#**.
- EUH: Annex Building N324, 404-778-4825)
- Home – only if work from home requirements are met:
 - Your work environment **MUST** be professional and confidential. No family members that are able to listen in. No domestic sounds. Dress professionally. Consider making an artificial background that looks professional.
 - Use headphones or earbuds.
 - Use a computer (ideally with two monitor setup).

EHC TeleHealth Shift Workflow

7 AM – 8:30 AM	8:30 AM – 10:30 AM	10:30 AM – ~3:00 PM	3:00 – 4:00P
EUH CDU Rounds (end on time)	EUHM CDU Rounds (end on time)	Take on the management of 4 patients from each CDU (8 total). Handle complex issues, call admissions, address testing delays (MRI, PET, etc), do notes and d/c instructions, call consultants, etc.	Afternoon rounds with APP See patients not seen yet, prep dispositions.

CDU Clinical coverage

	Day Shift	Afternoon Shift	Midnight Shift
EUH			
APP CDU clinical issues	6:00 APP	15:30 APP	20:00 Gold APP @ 0130
Physician clinical issues	7A-4P TeleHealth	14:00 Blue Zone @ 1600	22:00 Blue Zone
EUHM			
APP CDU clinical issues	6:00 CDU APP	16:00 CDU APP	20:00 Zone 1APP @ 0200
Physician clinical issues	7A-4P TeleHealth	14:30 Zone 1 @ 1600	22:30 Zone 1

Numbers that you need to know:

- EUHM Control Room (where TeleDoc is working): (404) 686-8822
- EUHM CDU: (404) 686-3831
- EUHM CDU APP phone: (404) 831-0309
- EUHM ED Charge Nurse Station (404) 686-8819

- EUH Control Room (where TeleDoc is working): (404)778-4825
- EUH CDU: (404)712-2908
- EUH CDU APP phone: (404) 938-0153
- EUH Charge Nurse Station at (404)712-2337

Scripting for patient encounters:

"Hi I'm Dr. _____ the Emergency Medicine doctor taking care of you in the Observation Unit today. We will be using telemedicine to take care of you today because of the COVID-19 public health emergency. ---- (APP) --- will be helping me to make sure that we get all of the necessary information. As we are talking I may look away at my computer to view your chart or to place orders. This device is not recording anything, and is HIPAA complaint. Our team will provide care in person if needed. Are you OK with continuing with this televisit?"

Essential documentation: Specify the patient location and your work location (ie. EUHM if you are in the Orr Building control room). If you walked over and physically saw the patient, no need to add telehealth note.

Working with Amwell (see training slide set) - To have access you must be registered with AmWell through EHC before your shift.

Remote CDU physician - Logging on to AmWell for teleCDU rounds from a control room:

In web browser, go to: emoryhealthcare.avizia.com

1. Click on "Single Sign On" tab
2. Log-in with your EHC ID and Password
3. Click on "Create A Case" folder icon on top bar, right side
4. Toggle to CDU, then
5. Toggle to Emory University Hospital, then
6. Toggle to "EUH CDU Cart 1", click on it then
7. Click on "Skip Patient", then
8. Click "Skip Intake & Join Video", then
9. CDU camera view should display in AmWell webpage

Logging in to AmWell from your cellular device (if needed while not at the computer): Same steps as above. Due to cramped screen size it is not as ideal. Using ear buds / headphones improves audio clarity. Should not be your major mode of operations.

Onsite APP - Working with AmWell cart in the CDU:

1. Wait for teleCDU physician to call in. Have cart charged and at work station for rounds.
2. When call arrives, teleCDU doc can control most features. Things that you can adjust on rounds are:
 - a. Adjust height of the table
 - b. Center cart toward yourself (or patient on rounds).
 - c. Do NOT try to turn camera on top. The physician controls the camera.
3. Controls – tap the screen, at the bottom are tabs for microphone, speaker, camera, devices. Tap on each:
 - a. Microphone – to mute your side
 - b. Speaker – to increase or decrease sound, or mute
 - c. Camera – two options. 4X internal, 20X PTZ (best option)
 - d. Devices – Horus Scope in drawer:
 - i. Touch power button on top of camera. It should light up device
 - ii. On AmWell screen, touch "Share"
 - iii. On Horus – adjust "brightness" or "focus" while looking at Horus screen. They adjust very slowly but work great.
 - iv. To take a snapshot, tap "OK" on Horus. This freezes the screen for closer inspection. When done tap "OK" again, and it goes back to video mode.
 - v. When done tap "end share" on AmWell screen. Turn off power button on top of Horus. Place in drawer and carefully close the drawer.
4. In the CDU - No need to leave a meeting, but if needed you can touch "End Call" to end the visit on your end. Most of the time the teleCDU physician will take care of that from their end.
5. End of shift or when not in use – plug into wall to charge cart.

Working with Zoom (backup for when AmWell fails): Have APP retrieve Zoom rolling tablet, turn on.

1. Log into your zoom account
2. Click "Join" to join a meeting. A "Join Meeting" box will pop up.
3. In the "Meeting ID or Personal Link Name" box enter: **85831937496**
4. When you enter that number, a box will pop up asking you to "Enter Meeting Passcode"
5. In that box, enter: **818466**
6. When you enter that, select the appropriate sound options for your computer
7. You are now "in". The EUH and EUHM tablets will "join" your meeting when they have questions or are ready to round.