Atrium Health Wake Forest Baptist	**DOCUMENT TYPE:** POLICY	**EFFECTIVE DATE:** 04/06/2023
		CREATION DATE: 06/01/2015

ORGANIZATION(S):

- ☒ North Carolina Baptist Hospital (NCBH)
- ☒ Lexington Medical Center (LMC)
- ☒ Davie Medical Center (DMC)
- ☒ Wilkes Medical Center (WMC)
- ☒ High Point Medical Center (HPMC)
- ☐ Wake Forest Health Network (WFHN)
- ☐ Wake Forest University Health Sciences (WFUHS)
- ☐ Wake Forest University School of Medicine
- ☐ NCBH Outpatient Endoscopy
- ☐ Wake Forest Baptist Imaging, LLC (WFBI)

PURPOSE

It is the policy of Wake Forest Baptist Health (WFBH) to maintain the integrity of the documentation within the electronic medical record (EMR) for purposes of accurate clinical communication, to enhance patient safety, to support medical necessity and to serve the business and legal needs of WFBH. All documentation must be in compliance with all federal, state and local laws, and Medical Staff Bylaws.

This policy is intended to provide guidance when applied to the electronic medical record to ensure utilization of a thoughtful, evaluative process that assists with the accurate documentation and coding of diagnoses and produces a note that enhances patient care.

Medical Center Coders and Clinical Documentation Specialists will utilize this guideline, ICD-10-CM/PCS Official Coding Guidelines as well as AHA's Coding Clinic to assure accuracy of code assignment. Clinical providers are advised to utilize this guideline in good faith, along with best practice standards and are responsible for the accuracy and relevance of content of their documentation.

SCOPE

This policy applies to Medical Center Clinical Documentation Excellence staff, Medical Coding staff, and Clinical Provider reference.

DEFINITIONS

A. ***Policy***: A statement of principle that is developed for the purpose of guiding decisions and activities related to governance, administration, or management of care, treatment, services or other activities. A policy may help to ensure compliance with applicable laws and regulations, promote one or more missions, contain guidelines for governance, and set parameters within which faculty, staff, students, visitors, and others are expected to operate.

B. ***WFBH***: Wake Forest Baptist Health (WFBH) is a health system that includes Wake Forest Baptist Medical Center and all affiliated organizations including Wake Forest University Health Sciences (WFUHS), North Carolina Baptist Hospital (NCBH), Lexington Medical Center (LMC), Davie Medical Center (DMC), Wilkes Medical Center (WMC), High Point

Medical Center (HPMC), Wake Forest Baptist Imaging, LLC (WFBI), NCBH Outpatient Endoscopy, Wake Forest Health Network (WFHN), High Point Surgery Center, LLC and Premier Surgery Center.

C. ***Clinical Indicator***: a measure, process, or outcome used to judge a particular clinical situation and indicate whether the care delivered was appropriate. (Stedman's Medical dictionary; 2006 Lippincott Williams & Wilkins)

- Help to evaluate and assess aspects of the structure, process, or outcome of health care. Clinical indicators can be generic measures, relevant for most clients, or disease-specific, expressing the quality of care for those with specific diagnoses. (International Journal on Quality Health Care. 2003 Dec;15(6):523-30.)

- To ensure that reliable and valid clinical indicators are used, the definitions here in have been designed, defined, and validated amongst evidence based practice guidelines and approved by WFBH leadership.

- Clinical Definition Appendices are subject to revision by WFBH leadership based upon changes in clinical practice guidelines and standards and may be updated separate from this policy as needed.

POLICY GUIDELINES

A. Providers are required to document in compliance with all federal, state, local laws and Medical Staff Rules and Regulations.

B. Documentation must be present in the medical record to substantiate that the diagnosis was clinically determined and medically treated. It is appropriate for the provider to include information needed to support clinical decision-making and the care rendered during a specific episode of care.

C. The writer/author of each document is responsible for all of the content of that document, and must ensure that any material placed into that record accurately reflects the care provided during that episode of care.

D. Careful consideration should be taken, and implications known, upon documenting and applying codes to diagnoses.

E. It is appropriate for the provider to clarify diagnoses with any relationship to pre-existing chronic conditions present on admission and clearly document this attribution.

F. It is appropriate for the provider to clarify any/all conditions present on admission and clearly document this.

G. Any user of this policy may request modifications and /or amendments. A written request must be submitted to the appropriate appendix owner with the reason for request, amendment recommendation with appropriate sources cited, proposed time frame in which to be instituted, and how modifications/amendments affect institutional initiatives.

Related Policies:

- Use of the Electronic Medical Record, Guidelines for Clinical Providers
- Electronic Medical Record Documentation - Use of Copy, Paste, Carry Forward, Cloning Functionality

REFERENCES

- International Journal on Quality Health Care. 2003 Dec;15(6):523-30.)
- Stedman's Medical dictionary; Lippincott Williams & Wilkins (2006)
- www.AHA.org; AHA Coding Clinic
- www.AHIMA.org; The Joint Commission Standards
- www.CMS.gov; ICD-9-CM Official Coding Guidelines for Coding and Reporting
- Enjoin; Documentation Handbook for Physicians (FY 2016)

ATTACHMENTS

- Appendix A: Acute Blood Loss Anemia
- Appendix B: Renal Failure
- Appendix C: Respiratory Failure
- Appendix D: Sepsis
- Appendix E: Malnutrition
- Appendix F: Hyponatremia
- Appendix G: Encephalopathy
- Appendix H: Heart Failure
- Appendix I: Coma

REVISION DATES

2/20, 4/23

Appendix A – Acute Blood Loss Anemia

		Date:	5/2015
Name & Title: Justin Hurie, MD; Joseph Cristiano, MD, Robert Phillips Heine, MD			
Signatures: Signatures on file		**Revised:** 4/2022	

A. **ABLA (Acute Blood Loss Anemia):** The American College of Physicians defines anemia as a "decrease in red blood cell volume." It can be further defined as a decrease in hemoglobin and the cells' lowered ability to carry oxygen. Excessive bleeding is the most common cause of anemia.

Acute blood loss anemia can occur frequently in many scenarios such as gastrointestinal bleeding, trauma, and surgery, and results when loss of red blood cells through bleeding exceeds production of new red blood cells.

1. Signs and symptoms of acute blood loss anemia include but are not limited to:
   a. Hypotension
   b. Dizziness
   c. Shortness of Breath
   d. Pallor
   e. Extreme Fatigue
   f. Tachycardia
   g. Confusion

Oftentimes, stool, urine, and imaging tests are needed to determine the source and cause of bleeding. The cause of bleeding can then be corrected, and transfusions, infusions, and iron supplements may be given if needed. However, given current blood conservation measures, a blood transfusion is not required to substantiate the diagnosis of acute blood loss anemia and frequently, monitoring of vital signs, urine output, and other clinical variables serves as definitive management of acute blood loss anemia.

Blood loss during surgical procedures is often expected and should not be confused with a complicating hemorrhage. Even if the amount of blood lost following surgery is expected, acute blood loss anemia is still present if anemia occurs.

A textbook definition for acute blood loss anemia does not currently exist for clinicians. Therefore, the information here in has been compiled to offer consistency and guidelines for documentation.

Acute Blood Loss Anemia is defined as **both presence and documentation of diagnostic and monitoring/treatment criteria.**

B. **Diagnostic** Criteria, which would include one of the criteria below.
   1. Must meet one criterion below either (a.) or (b.):
      a. A patient with **documented acute bleeding** loses enough blood to become anemic (HGB and/or HCT < Normal) may have (not limited to):
         1) Trauma (self-inflicted or accidental)
         2) GI Loss (Hematochezia, Hematemesis, Melena)
         3) GU Loss (Hematuria)

4) Gynecologic Loss
5) Surgery
6) Other: Coagulopathy Disorders, Epistaxis, Hemoptysis, Hematomas,

b. A patient presents with anemia and becomes further anemic (HGB and/or HCT < Normal for that patient) due to acute bleeding **(see i, ii, iii, iv, v, or vi above).**

2. One abnormally low Hemoglobin (HGB) and/or Hematocrit (HCT) lab value consistent with WFBMC parameters (see below).

WFBMC Laboratory Value Ranges		
Hemoglobin (HGB)	Male: 14.0 - 18.0 G/DL	Female: 12.0 – 16.0 G/DL
Hematocrit (HCT)	Male: 42.0 - 52.0 %	Female: 37.0 - 47.0 %

3. **According to the CDC, anemia in pregnancy is defined as follows**:
   a. First/Third Trimester: HGB 11 G/DL or HCT 33%
   b. Second Trimester: HGB 10.5 G/DL or HCT 32%
   c. Acute blood loss anemia in pregnancy is a HGB/HCT that falls below the above values at delivery.
   d. If a pregnant patient starts below these values, any continued decline would represent acute blood loss anemia.

C. **Treatment/Monitoring any one of the following:**
   1. Initiation of transfusion. In the presence of treatment with transfusion, an absolute hemoglobin value is not needed to satisfy the definition of ABLA.
   2. Serial Monitoring requiring at least two subsequent values of HGB or HCT.
   3. Non-blood product treatment, including but not limited to: Iron, EPO, etc.
   4. Active reversal for coagulopathy with treatment including but not limited to: Vitamin K, PPC, etc.

D. **Decision Support for Clinical Definitions in the electronic medical record**
   1. For the diagnosis of acute blood loss anemia, there is a smart block developed within the EHR to aid the provider to document the diagnosis in the Wake One environment.
   2. Utilization of documentation support smart block is at the discretion of the treating provider, but will support the specificity, accuracy and completeness necessary for documentation pertaining to acute blood loss anemia within electronic medical record.

References:

- www.acphospitalists.org: Bleeding and Acute Blood Loss Anemia (2012)
- www.merckmanuals.com/home/blood-disorders/anemia/anemia-due-to- excessive-bleeding: Anemia Due to Excessive Bleeding (2015)
- https://www.cdc.gov/mmwr/preview/mmwrhtml/00001554.htm#:~:text=Cutoff%20values%20used%20to%20define,than%2032%25%20(5). : Progress in Chronic Disease Prevention Anemia during Pregnancy in Low-Income Women -- United States, 1987

Appendix B – Renal Failure

Name & Title: Michael Rocco MD; Joseph Cristiano, MD	
Signatures: Signature on file	**Date:** 1/2020

A. **Acute Kidney Injury (AKI):** Acute Kidney Injury is common, harmful, and usually treatable with improved outcomes when identified early. Acute Kidney Injury is defined by an abrupt decrease in renal function that includes, but is not limited to, Acute Renal Failure. It encompasses a variety of etiologies, representing a broad clinical syndrome. Even a minor reduction in kidney function has an adverse prognosis. AKI can occur with or without other acute or chronic kidney diseases and disorders.

B. AKI is minimally defined as any one or more of the following:
   1. Increase in serum creatinine (SCr) by ≥0.3 mg/dl (≥26.5 mmol/l) within 48 hours; or
   2. Increase in SCr to ≥1.5 times baseline, which is known or presumed to have occurred within the prior 7 days; or
   3. Urine volume ≤0.5 ml/kg/h for 6 hours.

C. AKI is staged for severity according to the following criteria[2] (table):

KDIGO Kidney Disease: Improving Global Outcomes Staging of AKI[2]		
Stage	Serum Creatinine	Urine Output
1	1.5–1.9 times baseline	<0.5 ml/kg/h for 6–12 hours
	OR	
	≥0.3 mg/dl (≥26.5 mmol/l) increase within 48 hours	
2	2.0–2.9 times baseline	<0.5 ml/kg/h for ≥12 hours
3	3.0 times baseline	<0.3 ml/kg/h for ≥24 hours
	OR	OR
	Increase in serum creatinine to ≥4.0 mg/dl	Anuria for ≥12 hours
	OR	
	Initiation of renal replacement therapy	
	In patients <18 years, decrease in eGFR to <35 ml/min per 1.73 m2	

The following methods[1] for establishing baseline SCr, are suggested in order of general preference, BUT highly dependent on the availability of SCr values, AND suspected chronological AKI timeline and provider judgment:

A.
- Mean outpatient look-back SCr between -7 to -365 days' prior
- Lowest SCr obtained during a hospitalization following treatment (excluding hemodilution related to massive fluid administration)
- Most recent inpatient or outpatient value
- SCr of 0.9 is assumed ONLY if there is no history of CKD, diabetes, hypertension, or any other condition that could lead to CKD
- Low muscle mass/sarcopenia would make SCr baseline lower than 0.9

The lowest SCr obtained during a hospitalization is usually equal to or

D. The diagnosis of AKI should be documented. Supporting documentation should include the indices of creatinine or oliguria linked to the diagnosis and the suspected or confirmed etiology.

E. The cause of AKI should be determined whenever possible:

1. Intrinsic renal disease not limited to but including autoimmune disorders, glomerulonephritis, acute interstitial nephritis, myeloma, etc.
2. Trauma
3. Hypotensive, normotensive, or nephrotoxic acute tubular necrosis
4. Sepsis
5. Due to or with Obstruction
6. Due to or induced by Medication/Chemicals/Chemotherapy/Radiocontrast

*Note that there can be more than one cause of AKI

F. **Acute tubular necrosis** (**ATN**) is a medical condition involving the death of tubular epithelial cells that form the renal tubules of the kidneys. Acute tubular necrosis should be documented when suspected. ATN presents with acute kidney injury (AKI) and is one of the most common causes of AKI.

1. Clinical Criteria:

   a. Must meet criteria for AKI
   b. Suspected when SCr rises > 0.5mg/dL/day above baseline after an apparent trigger
   c. Failure to respond to appropriate fluid trigger (with initial evidence of volume depletion)
   d. Confirmed by supporting laboratory evidence (any of the following):

      1) Urinalysis with the presence of muddy brown casts, granular casts, epithelial casts, free renal tubular epithelial cells BUT not by hyaline casts alone
      2) Urine sodium concentration of > 40-50 mEq/L
      3) Fractional excretion of sodium > 2%

2. Triggers of Acute Tubular Necrosis:
   a. Sepsis
   b. Hypotension or relative hypotension
   c. Nephrotoxic drug injury

G. Clinical Documentation Concepts for AKI and ATN:

1. The diagnosis of AKI should be documented. Supporting documentation should include the indices of creatinine or oliguria linked to the diagnosis and the suspected or confirmed etiology.
2. When ATN is suspected or confirmed, the diagnosis should be documented in addition to documentation for AKI.
3. When AKI is in the setting of pre-existing suspected or confirmed CKD, document AKI in CKD and specify stage of CKD when known
4. AoCKD is not an approved definition
5. Acute Kidney Insufficiency, acute kidney disease, and renal failure are non-specific terms and should not be interchanged with AKI and ATN

H. **CKD (Chronic Kidney Disease):** CKD is defined by the presence of kidney damage **or** decreased kidney function **for three or more months**, irrespective of the cause. The persistence of the damage or decreased function for at least three months is **necessary** to distinguish CKD from acute kidney disease. Kidney damage refers to pathologic abnormalities, whether established via renal biopsy or imaging studies, or inferred from markers such as urinary sediment abnormalities or increased rates of urinary albumin excretion. Decreased kidney function refers to a decreased glomerular filtration rate (GFR), which is usually estimated (eGFR) using serum creatinine and one of several available equations.

I. CKD is defined as either one of the following (i. or ii.) present for >3 months)

1. Markers of kidney damage (one or more).
2. Albuminuria (AER >30 mg/24 hours; ACR >30 mg/g [>3 mg/mmol])
3. Urine sediment abnormalities
4. Electrolyte and other abnormalities due to tubular disorders
5. Abnormalities detected by histology
6. Structural abnormalities detected by imaging
7. History of kidney transplantation
   - Decreased GFR (two values at least 3 months apart)
8. GFR <60 ml/min/1.73 m2 (GFR categories G3a–G5)
   - Assign cause of CKD based on presence or absence of systemic disease and the location within the kidney of observed or presumed pathologic-anatomic findings.
9. Assign GFR staging categories as follows:

GFR Category	GFR (ml/min/1.73m2)	Terms
G1	≥90	Normal or high
G2	60-89	Mildly decreased*
G3a	45-59	Mildly to moderately decreased
G3b	30-44	Moderately to severely decreased
G4	15-29	Severely decreased
G5	<15	Kidney failure
	* Relative to young adult level In the absence of evidence of kidney damage, neither GFR category G1 nor G2 fulfill the criteria for CKD.	

- iii. Assign albuminuria* categories as follows:

*note that where albuminuria measurement is not available, urine reagent strip results can be substituted

Category	AER (mg/24 hours)	ACR approximate equivalent mg/mmol mg/g	Terms
A1	<30	<3 <30	Normal to mildly increased
A2	30-300	3-30 30-300	Moderately Increased*
A3	>300	>30 >300	Severely Increased**
*Relative to young adult level. **Including nephrotic syndrome (albumin excretion usually >2200mg/24hours [ACR >2220mg/g; >220mg/mmol])			

J. **Pediatric concepts:** AKI principles in this guideline are fully applicable to children. The CKD principles in this guideline are fully applicable to children > 2 years of age.

K. Children under two years of age do not fit within the above classification system because they normally have a low GFR even when corrected for body surface area. In these patients, calculated GFR based upon serum creatinine can be compared with normative age-appropriate values to detect kidney impairment. The KDIGO guideline suggests that a GFR value more than one standard deviation below the mean should raise concern and prompt more intensive monitoring.

L. Documentation Concepts for CKD:

1. Document the presence of CKD and stage in all hospitalized patients, unless not clinically relevant
2. ESRD and CKD V are not interchangeable, please use ESRD in patients with CKD stage V on chronic dialysis
3. Document the presence of CKD in the setting of kidney transplantation when present

M. **Decision Support for Clinical Definitions in the electronic medical record**

1. For the diagnosis of renal failure, there is a smart block developed within the EHR to aid the provider to document the diagnosis in the Wake One environment.
2. Utilization of documentation support smart block is at the discretion of the treating provider, but will support the specificity, accuracy and completeness necessary for documentation pertaining to renal failure within electronic medical record.

N. **References:**

- Thomas ME, Blaine C, Dawnay A, et al. The definition of acute kidney injury and its use in practice. *Kidney Int.* 2015;87(1):62-73.
- Khwaja A. KDIGO clinical practice guidelines for acute kidney injury. *Nephron Clin Pract.* 2012;120(4):c179-184.
- https://kdigo.org/guidelines/acute-kidney-injury/: Kid*ney Disease:* Improving Global Outcomes (KDIGO) Acute Kidney Injury Work Group. KDIGO Clinical Practice Guideline for Acute Kidney Injury. Kidney inter., Suppl. 2012; 2: 1–138.

- https://kdigo.org/guidelines/ckd-evaluation-and-management/: Kidney Disease: Improving Global Outcomes (KDIGO) CKD Work Group. KDIGO 2012 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease. *Kidney Int*., Suppl. 2013; 3: 1–150.

Appendix C – Acute Respiratory Failure *(adult)*

		Date:	2/2015
Name & Title: Andrew Namen MD; Shayn Martin MD; Joey Cristiano MD Justin Hurie MD			
Signatures: Signatures on file		**Revised**: 12/2019	

A. **Respiratory Failure:** respiratory dysfunction resulting in abnormalities of oxygenation (O2) and/or carbon dioxide (CO2) elimination, is classified as either hypoxemic (type I) or hypercapnic (type II), or a combination of both, and frequently associated with but not limited to the following and should be documented as such when appropriate:

1. Chronic obstructive pulmonary disease (COPD)
2. Status asthmaticus
3. Heart failure
4. Pneumonia
5. Sepsis
6. ARDS
7. Cardiac arrest

B. **Acute respiratory failure is defined by any ONE of the below definitions:**
Definition 1. Any (1) OBJECTIVE CRITERIA combined with at least (1) CLINICAL FEATURES

1. **Objective Criteria**
   a. paO2 <60 mm Hg or SpO2 (pulse oximetry) < 90 % breathing room air
   b. pCO2 >50 and pH <7.35 (ABG or VBG)
   c. P/F ratio (pO2 / FIO2) < 300 OR S/F (SpO2/FIO2) < 315[1]
   d. pCO2 increase by 10 mm Hg from baseline (if known)

2. **Clinical Features**
   a. Agonal respirations or apneic episodes
   b. Tachypnea with RR > 30 OR bradypnea < 8
   c. Subjective dyspnea with either (1) accessory muscle effort or (2) presence of wheezing on auscultatory exam
   d. Presence of mechanical ventilation (invasive/noninvasive)
   e. Necessity of supplemental oxygen >4 liters to maintain Sp02 >90%

Chronicity Classification: should be considered in all cases (acute, chronic or acute on chronic). If the patient has a chronic condition with acute worsening with objective criteria demonstrating an increase in oxygen requirement from baseline or CO2 retention, then acute on chronic criteria is met.

C. Post-Operative Respiratory Failure is defined as BOTH:

1. The same criteria as (B.) above **AND**
2. Excluding those cases < 8 hours' post- surgery completion

Note: A postoperative patient requiring ventilator support < 8 hours' post-surgery completion may not be considered having acute respiratory failure. The duration of mechanical ventilation, usual or expected, following the type of surgery performed

should be considered when reviewing documentation of respiratory failure post operatively. Terms such as pulmonary insufficiency and respiratory insufficiency should be evaluated and used cautiously.

D. **Decision Support for Clinical Definitions in the electronic medical record**

1. For the diagnosis of respiratory failure, there is a smart block developed within the EHR to aid the provider to document the diagnosis in the Wake One environment.
2. Utilization of documentation support smart block is at the discretion of the treating provider, but will support the specificity, accuracy and completeness necessary for documentation pertaining to respiratory failure within electronic medical record.

A. References:

- Stedman's Medical dictionary; Lippincott Williams & Wilkins (2006)
- www.acphospitalists.org: Revisiting Respiratory Failure – Parts 1 and 2 (2013)
- Textbook of Respiratory Medicine Murray and Nadel 6th ed. Pages 1723 and 1740.
- Textbook of Medical Physiology, Guyton and Hall, 12 ed. Chapter 39. Rice TW, Wheeler AP, Bernard
- [1]R, Hayden DL, Schoenfeld DA, Ware LB. Comparison of the SpO2/FIO2 ratio and the PaO2/FIO2 ratio in patients with acute lung injury or ARDS. *Chest.* 2007;132(2):410-417.

Appendix D – Sepsis (Adult)

		Date:	5/2015
Name & Title: Karl Thomas MD; Andrew Namen, MD; Joseph Cristiano, MD; Shayne Martin, MD			
Signatures: Signature on file		**Revised**: 12/2019	

A. **Sepsis Syndromes:**
Sepsis is: The presence of both infection and acute onset of **measurable** organ dysfunction caused by dysregulated host response to that infection.

1. **The patient must have either a defined infection or strongly suspected infection**
   a. Criteria for defined infection are positive cultures consistent with clinical presentation and relevant radiographic findings.
   b. **Indicators of strongly suspected infection include both attempts to culture infectious organisms (eg. repeated blood cultures) as well as treatment with antibiotics extending more than 24 hours**

2. The patient must have at least **1** of the following **measures of organ dysfunction**:
   a. Transient hypotension (MAP < 70 or SBP < 100) responsive to fluid administration without intravenous vasopressors
   b. Altered mental status with Glasgow Coma Scale Score ≤ 12
   c. Lactate > 2mmol/L present during period of transient hypotension.
   d. Urine output < 0.5 mL/kg/hr for more than 2 hrs despite adequate fluid resuscitation OR doubling of serum creatinine or decrease by >50% of estimated glomerular filtration rate.
   e. Hypoxemia with Pao2/Fio2 < 300 OR SpO2/FiO2 of < 315; OR any increase in supplemental oxygen requirements or initiation of invasive or non-invasive mechanical ventilation or high flow oxygen therapy.
   f. Bilirubin ≥ 2 mg/dL (34.2 µmol/L)
   g. Platelet count ≤ 100,000 µL or >50% decline from baseline
   h. Qualifying conditions must be attributed to sepsis rather than to pre-existing or known chronic organ dysfunction.

3. Sepsis should be strongly considered if the patient satisfies criteria (1) in the presence of lactic acid > 2 mmol/L.

B. **Septic Shock:** Sepsis as defined above and acute circulatory failure or metabolic dysfunction defined by at least one of the following:

1. Lactic acid > 2.0 mmol/L despite adequate fluid resuscitation.
2. Intravenous vasopressors (norepinephrine, epinephrine, phenylephrine, vasopressin, dopamine) required to maintain MAP ≥ 65 mmHg despite adequate volume resuscitation.
3. Requirement for repeated fluid boluses more than 30 cc/kg or repeated fluid boluses after the first 3 hours of resuscitation to maintain MAP ≥ 65

C. **Sepsis Operational Considerations**:

1. Adequate volume resuscitation:

   - 30 cc/kg intravenous fluids within 3 hours of sepsis onset in the absence of chronic renal disease, cardiovascular disease, or objectively documented hypervolemia.

2. Systemic Inflammatory Response Syndrome: the presence of 2 or more SIRS criteria indicates patient is at risk for sepsis, but dos does not establish sepsis in the absence of new, measurable organ dysfunction
3. Screening: SIRS criteria, Early Warning Score, and other analytic scoring systems may be used to screen patients for sepsis. Clinicians cannot utilize any single scale or score to establish diagnosis. Definitional criteria including measurable organ dysfunction above must be applied.

D. **Sepsis in Burn Patients:**

Sepsis in a burn patient is defined as a clinical change that triggers the concern for possible infection- a presumptive diagnosis where antibiotics are started and a search for an infectious cause initiated. The diagnosis needs to be tied to the discovery of an infection (defined below). **The definition is age-dependent with adjustments necessary for children.**

The trigger includes at least **3** of the following:

1. Temperature >39° (102.2 F) or <36.5°C (97.7 F)
2. Progressive tachycardia
   a. Adults >110 bpm
   b. Children>2 SD above age-specific norms (85% age-adjusted max heart rate)
3. Progressive tachypnea
   a. Adults >25 bpm not ventilated; If Vented: Minute ventilation>12 l/min
   b. Children>2 SD above age-specific norms (85% age-adjusted max respiratory rate)
4. Thrombocytopenia (will not apply until 3 days after initial resuscitation)
   a. Adults <100,000/mcl
   b. Children <2 SD below age-specific norms
5. Hyperglycemia (in the absence of pre-existing diabetes mellitus)
   a. Untreated plasma glucose 200 mg/dl or equivalent mM/L
   b. Insulin resistance—examples include

      1) >7 units of insulin/hr intravenous drip (adults)
      2) Significant resistance to insulin (>25% increase in insulin requirements over 24 hours)

6. Inability to continue enteral feedings >24 hours
   a. Abdominal distension
   b. Enteral feeding intolerance (residual >150 ml/hr in children or two times feeding rate in adults)
   c. Uncontrollable diarrhea (> 2500 ml/d for adults or >400 ml/d in children)

      *In addition, it is required that a documented infection (defined below) is identified:
      1) Culture positive infection, or

2) Pathologic tissue source identified, or
3) Clinical response to antimicrobials

E. **Documentation concepts:**

1. Underlying infection including anatomic site and infectious organism should be clearly documented when determined

   a. Localized infection (i.e. Pneumonia, Cellulitis, etc.)
   b. Causal organism specificity if determined (i.e. Staph, Strep, etc.)

2. Associated organ dysfunction

   a. Related to sepsis or
   b. Another medical condition

3. Modifiers will be documented when present

   a. Due to device, implant, graft, line, etc.
   b. Due to procedure as expected/unavoidable
   c. Due to procedure as unexpected/avoidable complication

4. Negative or inconclusive blood cultures do not preclude a diagnosis of sepsis in patients with clinical evidence of the condition.

5. Present on admission status, evolving on admission, not present on admission, or unable to clinically determine status should be clearly documented.

   a. Diagnosis should be carried throughout progress notes and into discharge summary when applicable
   b. Resolution and ruled out status should be clearly documented when applicable

F. **Decision Support for Clinical Definitions in the electronic medical record**

1. For the diagnosis of sepsis, there is a smart block developed within the EHR to aid the provider to document the diagnosis in the Wake One environment.
2. Utilization of the documentation support smart block is at the discretion of the treating provider, but will support the specificity, accuracy and completeness necessary for documentation pertaining to sepsis within electronic medical record.

G. **References**:

- Singer, M., Deutschman, D.S, Seymour, C.W., Shankar-Hari, M., Annane, D., Bauer, M., Angus, D.C. (2016). The Third International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3). JAMA. 315(8), 801-810. Accessed http://jama.jamanetwork.com/ on 10/18/2016.
- Seymour, C.W., Liu, V.X., Iwashyna, T.J., Brunkhorst, F.M., Rea, T.D., Scherag, A., Angus, D.C. (2016). Assessment of Clinical Criteria for Sepsis for the Third International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3). JAMA, 315(8), 762 – 774.
- Goulden, R., Hoyle, M.C., Monis, J., Railton, D., Riley, V., Martin, P., … Nsutebu, E. (2018). qSOFA, SIRS and NEWS for predicting inhospital mortality and ICU admission

in emergency admissions treated as sepsis. Emergency Medicine Journal, 8(0), 1–5. Downloaded from http://emj.bmj.com/ on February 28, 2018.

- Churpek, M.M., Snyder, A., Sokol, S., Pettit, N.N., Edelson, D.P., (2017). Investigating the Impact of Different Suspicion of Infection Criteria on the Accuracy of Quick SepsisRelated Organ Failure Assessment, Systemic Inflammatory Response Syndrome, and Early Warning Scores. Critical Care Medicine, 45(11), 1805 – 1812.

Appendix E – Malnutrition

Name & Title: Sarah Coulter, MS, RD, LDN; Ashish Khanna. M.D.; Joseph A. Cristiano, M.D.	
Signatures: Signatures on file	**Date:** 10/2019

A. Malnutrition – Overview

According to the World Health Organization (WHO), malnutrition refers to deficiencies, excesses, or imbalances in a person's intake of energy and/or nutrients. The term malnutrition addresses 3 broad groups of conditions:

1. undernutrition, which includes wasting (low weight-for-height), stunting (low height-for-age) and underweight (low weight-for-age);
2. micronutrient-related malnutrition, which includes micronutrient deficiencies (a lack of important vitamins and minerals) or micronutrient excess; and
3. overweight, obesity and diet-related non-communicable diseases (such as heart disease, stroke, diabetes and some cancers).

B. Malnutrition – Adult Criteria

1. The Department of Clinical Nutrition at WFBH has created its Adult Malnutrition Criteria based on criteria from The Academy of Nutrition and Dietetics and The American Society of Parenteral and Enteral Nutrition.
   a. Serum Proteins (albumin, pre-albumin, transferrin) should not be used as an indicator for malnutrition due to evidence that suggests there is not always a direct correlation between their value and nutrition status. Furthermore, they are affected by, but not limited to, inflammation, injury/stress, organ failure and fluid status.
   b. Edema may not always be an accurate indicator for malnutrition and may be a result of other etiologies including, but not limited to, traumatic physical injury, vascular damage and organ failure/dysfunction.
   c. Muscle atrophy may not always be an indicator of malnutrition and may be a result of other etiologies including, but not limited to, neurogenic diseases or disorders, physical injury, long-term corticosteroid use, immobilization, musculardystrophy, or stroke.

2. These criteria are summarized below.

C. Malnutrition - Pediatric Malnutrition Criteria

1. The Department of Clinical Nutrition at WFBH has created its Pediatric Malnutrition Criteria.
2. These criteria apply to term babies > 30 days old and preterm babies > 44 weeks old.
3. These criteria are summarized below.

D. Malnutrition - Neonatal Malnutrition Criteria

1. The Department of Clinical Nutrition at WFBH has created its Neonatal Malnutrition Criteria.
2. These criteria apply to term babies < 30 days and preterm babies < 44 weeks)
3. These criteria are summarized below.

E. Smart phrase to be used in electronic medical record
   1. For the diagnosis of malnutrition, the smart phrase .malnutr has been created for providers to add to the templates they use in Epic.
   2. This smart phrase is designed to pull in documentation from the registered dietitian when he/she has diagnosed malnutrition based on the attached criteria.

F. References

- https://www.who.int/news-room/fact-sheets/detail/malnutrition; World Health Organization, Malnutrition – Key Facts, 2018, February 16.
- White, J.V., Guenter, P., Jensen, G., Malone, A., Schofield, M., RD Academy Malnutrition Work Group, A.S.P.E.N. Malnutrition Task Force, & A.S.P.E.N. Board of Directors. (2012). Consensus Statement of the Academy of Nutrition and Dietetics/American Society for Parenteral and Enteral Nutrition: Characteristics Recommended for the Identification and Documentation of Adult Malnutrition (Undernutrition). *Journal of the Academy of Nutrition and Dietetics, 112*(5), 730 – 738. Retrieved from https://jandonline.org/article/S2212-2672(12)00328-0/pdf
- Barlow, S.E. & The Expert Committee. (2007). Expert committee recommendations regarding the prevention, assessment, and treatment of child and adolescent overweight and obesity: summary report. *Pediatrics, 120* Supplement 4, S164 - S192.
- Becker, P., Carney, L. N., Corkins, M. R., Monczka, J., Smith, E., Smith, S. E., … American Society for Parenteral and Enteral Nutrition. (2015). Consensus statement of the Academy of Nutrition and Dietetics/American Society for Parenteral and Enteral Nutrition: Indicators recommended for the identification and documentation of pediatric malnutrition (undernutrition). *Nutrition in Clinical Practice, 30* (1), 147 – 161.
- Bouma, S. (2017). Diagnosing Pediatric Malnutrition: Paradigm Shifts of Etiology-Related Definitions and Appraisal of the Indicators. *Nutrition in Clinical Practice, 32*(1), 52 – 67.
- Cote, A. T., Harris, K.C., Panagiotopoulos, C., Sandor, G.G. & Devlin, A.M. (2013). Childhood obesity and cardiovascular dysfunction. *Journal of the American College of* Cardiology, 62(15), 1309 – 1319.
- Hoelscher, D., Kirk, S., Ritchie L., Cunningham-Sabo, L, & Academy Positions Committee. (2013). Position of the Academy of Nutrition and Dietetics: Interventions for the Prevention and Treatment of Pediatric Overweight and Obesity. *Journal of the Academy of Nutrition and Dietetics, 113*(10), 1375 – 1394
- Mehta, N.M., Corkins, M.R., Lyman, B., Malone, A., Goday, P.S., Carney, L.N., Monczka, J.L., … American Society for Parenteral and Enteral Nutrition Board of Directors. (2013). Defining Pediatric Malnutrition: A Paradigm Shift Toward Etiology-Related Definitions. *Journal of Parenteral and Enteral Nutrition, 37*(4), 460 – 81.
- Whitlock, E.P., Williams, S.B., Gold, R., Smith, P.R. & Shipman, S.A. (2005). Screening and interventions for childhood overweight: a summary of evidence for the US Preventive Services Task Force. *Pediatrics, 116*(1), 125 – 144.
- Goldberg, D.L., Becker, P.J., Brigham, K., Carlson, S., Fleck, L., Gollins, L., … Van Poots, H.A. (2018). Identifying Malnutrition in Preterm and Neonatal Populations: Recommended Indicators. *Journal of the Academy of Nutrition and Dietetics*, *118*(9), 1571 – 1572, 1574 – 1582.

Wake Forest Baptist Health

Adult Malnutrition Criteria

Based on criteria from The Academy of Nutrition and Dietetics and The American Society of Parenteral and Enteral Nutrition

Malnutrition Indicators *(minimum of 2 indicators must be present)*	**MODERATE MALNUTRITION**		
	Acute	**Chronic**	**Social/Environmental**
Weight loss	1-2% in 1 week 5% in 1 month 7.5% in 3 months	5% in 1 month 7.5% in 3 months 10% in 6 months 20% in 1 year	5% in 1 month 7.5% in 3 months 10% in 6 months 20% in 1 year
Energy Intake	<75% of estimated energy needs for >7 days	<75% of estimated energy needs for ≥1 month	<75% of estimated energy needs for ≥3 months
Loss of Subcutaneous Fat*	Mild	Mild	Mild
Muscle Wasting*	Mild	Mild	Mild
Fluid accumulation	Mild	Mild	Mild

Malnutrition Indicators *(minimum of 2 indicators must be present)*	**SEVERE MALNUTRITION**		
	Acute	**Chronic**	**Social/Environmental**
Weight loss	>2% loss in 1 week >5% loss in 1 month >7.5% loss in 3 months	>5% in 1 month >7.5% in 3 months >10% in 6 months >20% in 1 year	>5% in 1 month >7.5% in 3 months >10% in 6 months >20% in 1 year
Energy Intake	≤50% of estimated energy needs for ≥5 days	≤75% of estimated energy needs for ≥1 month	≤50% of estimated energy needs for ≥1 month
Loss of Subcutaneous Fat*	Moderate	Severe	Severe
Muscle Wasting*	Moderate	Severe	Severe
Fluid accumulation	Moderate to severe	Severe	Severe

Adult Weight Classifications

Underweight: BMI <18.5 kg/m²
Overweight: BMI 25-29.9 kg/m²
Obese: BMI 30-39.9 kg/m²
Morbid Obesity: BMI ≥40 kg/m²

Serum Proteins (albumin, prealbumin, transferrin) are not reliable indicators for malnutrition due to evidence that suggests there is not always a direct correlation between their value and nutrition status. Furthermore, they are affected by, but not limited to, inflammation, injury/stress, organ failure and fluid status.
Edema may not always be an accurate indicator for malnutrition and may be a result of other etiologies including, but not limited to, traumatic physical injury, vascular damage and organ failure/dysfunction.
Muscle atrophy may not always be an indicator of malnutrition and may be a result of other etiologies including, but not limited to, neurogenic diseases or disorders, physical injury, long-term corticosteroid use, immobilization, muscular dystrophy, or stroke.

Acute and chronic malnutrition occur in the presence of inflammation. Social/environmental malnutrition occurs in the absence of inflammation.
*The RD may perform a physical exam and document at least two physical exam findings as an indicator of malnutrition.

Department of Clinical Nutrition. Last revised: 11/05/20

Wake Forest® Baptist Health
Brenner Children's Hospital

Pediatric Malnutrition Criteria

(term > 30 days old, preterm > 44 weeks old)

Malnutrition Indicators Note: Any criterion may stand alone to signify malnutrition	Mild Malnutrition	Moderate Malnutrition	Severe Malnutrition
Weight for Length on WHO Growth Chart (0-2 years) **Body Mass Index** (BMI) on CDC Growth Chart (2-20 years)	-1 to -1.9 z-score	-2 to -2.9 z-score	≤ -3 z-score
Length/Height for Age	No data	No data	≤ -3 z-score
Mid-upper Arm Circumference (MUAC) z-score on WHO Standards for 6 months- 5 years	-1 to -1.9 z-score	-2 to -2.9 z-score	≤ -3 z-score
Weight Gain Velocity (0-2 years)	51-75% of expected gain	26-50% of expected gain	≤25% of expected gain
Unintentional Weight Loss (2-20 years)	5-7.4% weight loss	7.5-9.9% weight loss	≥10% weight loss
Unintended drop in weight z-score (0-20 years)		Decline of 1 to 1.9 z-score	Decline ≥2 z-score
Deceleration in Weight for Length (0-2 years) **Deceleration in Body Mass Index** (BMI) (2-20 years)	Decline of 1-1.9 z-score	Decline of 2-2.9 z-score	Decline of ≥ 3 z-score
Inadequate Energy/Protein Intake	51-75% estimated needs	26-50% estimated needs	≤ 25% estimated needs

Exclusions

- Infants < 1 month and premature infants <1 month adjusted gestational age
- Not intended for malnutrition related to obesity

Acute vs Chronic

- Acute = less than or equal to 3 months between data points used to calculate weight loss, weight gain, or deceleration of weight/length and BMI.
- Chronic = greater than 3 months between data points to calculate weight loss, weight gain, or deceleration of weight/length and BMI.

Pediatric Weight Classifications

Children <2 years of age:
Underweight: Weight for length < -2 z-score
Overweight: Weight for length > 2 z-score

Children >2 years of age:
Underweight: BMI <5th percentile
Overweight: BMI 85th – 95th percentile
Obese: BMI >95th percentile
Severe Obesity: BMI >99th percentile

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Neonatal Malnutrition Criteria

(term < 30 days, preterm < 44 weeks)

Malnutrition Indicator Any indicator may stand alone to signify malnutrition	Mild Malnutrition	Moderate Malnutrition	Severe Malnutrition	Use of indicator
Decline in weight-for-age z-score	Decline of 0.8-1.2 z-score	Decline of >1.2-2 z-score	Decline of >2 z-score	- Not appropriate for first 2 weeks of life
Weight gain velocity (use online calculator www.peditools.org)	< 75% of expected rate of weight gain to maintain growth rate	<50% of expected rate of weight gain to maintain growth rate	<25% of expected rate of weight gain to maintain growth rate	- Not appropriate for first 2 weeks of life
Nutrient Intake	≥ 3-5 consecutive days of protein/energy intake ≤ 75% of estimated needs	≥ 5-7 consecutive days of protein/energy intake ≤ 75% of estimated needs	>7 consecutive days of protein/energy intake ≤ 75% of estimated needs	- Preferred indicator during first 2 weeks of life

Malnutrition Indicator Requires 2 or more indicators	Mild Malnutrition	Moderate Malnutrition	Severe Malnutrition	Use of indicator
Days to regain birth weight	15-18 days	19-21 days	>21 days	- Use in conjunction with nutrient intake
Linear growth velocity (use online calculator www.peditools.org)	< 75% of expected rate of linear growth to maintain growth rate	<50% of expected rate of linear growth to maintain growth rate	<25% of expected rate of linear growth to maintain growth rate	- Not appropriate for first 2 weeks of life - May be deferred in critically ill unstable infants - Use in conjunction with accurate length measurements available
Decline in length-for-age z-score	Decline of 0.8-1.2 z-score	Decline of >1.2-2 z-score	Decline of >2 z-score	- Not appropriate for first 2 weeks of life - May be deferred in critically ill unstable infants - Use in conjunction with accurate length measurements available

Assessment of fluid status should be included and clinical judgement is essential

Considerations

- Preterm infants reaching a PMA of 40 weeks should be converted to a term growth chart (WHO or NCHS)
- Preterm infants >44 weeks and term neonates reaching an age >30 days should be converted to the pediatric malnutrition screening tool
- Infant born <37 weeks should have their anthropometric measurements adjusted for prematurity

Birth Weight Classifications

Small for gestational age (SGA):	Z-score < -1.28 (<10%ile) - may be well nourished or malnourished
Appropriate for gestational age (AGA):	Z-score between -1.28 and 1.28 (10-90%ile)
Large for gestational age (LGA):	Z-score > 1.28 (>90%ile)
Intrauterine growth restriction (IUGR):	May be SGA or AGA, may or may not be malnourished at birth. If patient with decreased nutrient stores, may develop malnutrition quickly if nutrient intake insufficient.

Appendix F – Hyponatremia

		Date:	11/2019
Name & Title: Joey Cristiano MD; Matthew Gorris MD; Amret Hawfield MD			
Signatures: Signatures on file		**Revised**:	

A. Hyponatremia is the most common electrolyte abnormality among hospitalized patients. When defined as a serum sodium below 135 mmol/L the incidence is as high as 15-30% in some studies. There is a significant body of data demonstrating that hyponatremia is associated with adverse outcomes, including increased in-hospital mortality and increased length of stay. Therefore, it is important to diagnose and treat this problem. Hyponatremia can be classified as mild, moderate, or profound.
   1. Mild = serum sodium between 130-135 mmol/L
   2. Moderate = serum sodium between 129-125 mmol/L
   3. Profound = serum sodium <125 mmol/L

B. When possible, the underlying etiology should be explored. Be aware that hypertonic and isotonic hyponatremia may not be clinically relevant. Common causes of this include:
   1. Isotonic (Normal plasma osmolarity 280-295 mOsm/kg H20) Hyperglycemia; pseudohyponatremia (hyperlipidemia, hyperproteinemia)
   2. Hypertonic (High serum osmolarity > 295 mOsm/kg H_20) Severe hypoglycemia with dehydration; mannitol

C. Management of Hyponatremia may require:
   1. Close monitoring of electrolytes
   2. IV fluid therapy
   3. Diet orders
   4. Need to consult subspecialty service

D. **Decision Support for Clinical Definitions in the electronic medical record**

   1. For the diagnosis of hyponatremia, there is a smart block developed within the EHR to aid the provider to document the diagnosis in the Wake One environment.
   2. Utilization of documentation support smart block is at the discretion of the treating provider, but will support the specificity, accuracy and completeness necessary for documentation pertaining to hyponatremia within electronic medical record.

E. **References:**

- Verbalis, J, Korzelius, C.A., Goldsmith, S., Greenberg, A., Schrier, R., Sterns, R., Thompson, C. (2013). Diagnosis, Evaluation, and Treatment of Hyponatremia: Expert Panel Recommendations. The American Journal of Medicine, 126(10), 55 – 94.
- Sbardella, E., Isidori1, A.M., Arnaldi, G., Arosio, M., Barone, C., Benso, A., Berardi, R., … Peri, A. (2018). Approach to hyponatremia according to the clinical setting: Consensus statement from the Italian Society of Endocrinology (SIE), Italian Society of Nephrology (SIN), and Italian Association of Medical Oncology (AIOM), Journal of Endocrinological Investigation, 41, 3 – 19.
- Noorn, E.J., Zietse, R. (2017). Diagnosis and Treatment of Hyponatremia: Compilation of the Guidelines. Journal of the American Society of Nephrology, 28, 1340 – 1349.
- Spasovski, G., Vanholder, R., Allolio, B., Annane, D., Ball, S., Bichet, D., Decaux, G.,

Fenske, W., … Nagler, E. (2014). Clinical practice guideline of diagnosis and treatment of hyponatraemia. Nephology Dialysis Transplantation, 29(2) ii1 – ii39.

Appendix G – Encephalopathy

		Date:	11/2019
Name & Title: Joey Cristiano MD; Jess Palakshappa MD; Caitlin Jones MD; Kristi Tucker MD; Andrew Namen MD			
Signatures: Signatures on file		**Revised**:	

A. **Encephalopathy:** The National Institute of Neurological Disorders and Stroke (NIH NINDS) describes encephalopathy as a broad term "for any diffuse disease of the brain that alters brain function or structure" with further elaboration that "depending on the type and severity of encephalopathy, common neurological symptoms include progressive loss of memory and cognitive ability, subtle personality changes, inability to concentrate, lethargy and progressive loss of consciousness."

B. The pathophysiology and definitions for delirium and encephalopathy have significant overlap and frequently describe patients with similar clinical conditions. However, these terms are not interchangeable.
   1. Encephalopathy represents a disease spectrum for cerebral/brain dysfunction with varying clinical manifestations including the acuity, severity and the etiology (s).[1] Due to the heterogeneity of the condition, there is not universally accepted diagnostic criteria for use in clinical care in the biomedical literature.
   2. Delirium has specific clinical manifestations as defined in DSM-V including a disturbance in attention over a short period of time with disturbance in cognition[2]. Specific validated assessment instruments are available and include but not limited to the CAM, CAM-ICU and bCAM.

C. Institutionally, encephalopathy can be defined for clinical documentation using the term below (Section D). Since encephalopathy is more inclusive of end-organ brain dysfunction, use of this definition when clinically indicated with or without the diagnosis of delirium is at the discretion of the clinician.

D. **Diagnostic Criteria:**

   1. **<u>Acute vs Acute on Chronic Vs Chronic</u>**: Describes the time-based nature of a patient's clinical manifestations of encephalopathy.
      a. Acute: Encephalopathy suspected to have developed over hours to days in the absence of baseline brain dysfunction.
      b. Chronic: The presence of pre-existing baseline brain dysfunction for at least 3 months' duration that requires management, and/or treatment during an episode of care.
         1) Traumatic Brain Injury
         2) Dementia or degenerative neurocognitive conditions
         3) Stroke or vascular brain disease
         4) Neoplastic, infectious or structural brain mass disease
         5) Cancer related paraneoplastic brain disease

      c. Acute on Chronic: The presence of clinical manifestations of encephalopathy that has developed over hours to days in the presence of pre-existing baseline chronic encephalopathy.

2. A diagnosis of encephalopathy will be met by both satisfying at least one element of both the clinical criteria and treatment criteria:

3. **Clinical Criteria**: The presence of any one of the following diagnostic criteria identified within the last 24 hours
   a. In the absence of pharmacologic sedation, an altered level of conscious as determined by absolute GCS < 12 or change in 2 over 72 hours, RASS > 2 or < -2
   b. In the presence of pharmacologic sedation, an altered level of consciousness as determined by GCS or RASS out proportion to degree of pharmacologic sedation.
   c. The presence of delirium as determined by validated diagnostic tools including but not limited the CAM-ICU or brief CAM (b-CAM).
   d. Treating provider's judgement of clinical features consistent with encephalopathy (including but not limited to alteration in level of consciousness, disorientation, inattentiveness, disorganized thinking, agitation, hyperactivity or other signs or symptoms)

4. **Treatment Criteria**: Any of the following interventions performed specifically for the provision of treatment and/or workup for encephalopathy that includes but is not limited to:
   a. Blood work, imaging, and/or EEG
   b. Consultative services for management out of scope of the primary team
   c. The use of benzodiazepines, anti-psychotic medications, or other high-risk medications intended for management of encephalopathy
   d. Modification of medications relevant to management of encephalopathy
   e. Sitter or tele-sitter care assistance for a patient needs as a result of encephalopathy
   f. The use of restraints (in the non-ICU setting)
   g. In patients with limited goals of care, other symptomatic and/or expectant measures for management of encephalopathy

5. Etiology or cause for a patient's encephalopathy: We encourage the diagnostic evaluation for the causative factor or etiology for a patient's encephalopathy. Additionally, we strongly encourage clinical documentation that links such clinically determined cause(s) to the diagnosis of encephalopathy. For example, encephalopathy due to sepsis or hyponatremia.

E. **Documentation Elements**:

1. Delirium and encephalopathy are not interchangeable terms, when clinically applicable we encourage documentation of encephalopathy when present and satisfying the aforementioned definition.
2. Provide documentation of the acuity of encephalopathy (acute, chronic, or acute on chronic) and the clinical criteria satisfying the diagnosis.
3. Provide documentation of all suspected or confirmed etiologies to the encephalopathy diagnosis.

F. **Decision Support for Clinical Definitions in the electronic medical record**

1. For the diagnosis of encephalopathy, there is a smart block developed within the EHR to aid the provider to document the diagnosis in the Wake One environment.
2. Utilization of documentation support smart block is at the discretion of the treating

provider, but will support the specificity, accuracy and completeness necessary for documentation pertaining to encephalopathy within electronic medical record.

G. References

- Stevens RD, Pronovost PJ. The spectrum of encephalopathy in critical illness. *Semin Neurol.* 2006;26(4):440-451.
- American Psychiatric Association., American Psychiatric Association. DSM-5 Task Force. *Diagnostic and statistical manual of mental disorders : DSM-5.* 5th ed. Washington, D.C.: American Psychiatric Association; 2013.
- https://acphospitalist.org/archives/2015/01/coding.htm
- https://www.ninds.nih.gov/Disorders/All-Disorders/Encephalopathy-Information-Page#disorders-r1

Appendix H – Heart Failure

		Date:	01/2020
Name & Title: Karl Richardson, MD, Joseph Cristiano MD, Olivia Gilbert, MD			
Signatures: Signatures on file		**Revised**: 4/2022	

A. **Heart failure**: A clinical syndrome which includes symptomatic fluid retention/congestion, elevated intra-cardiac pressures, and/or the inability of the heart to deliver adequate blood flow to meet the metabolic needs of the body. Heart failure is divided by left ventricular ejection fraction (LVEF) into heart failure with preserved ejection fraction (LVEF ≥ 45%) or HFpEF and heart failure with reduced ejection fraction (LVEF <45%) or HFrEF. Despite this difference the diagnosis is made in a similar manner for both HFrEF and HFpEF.

B. **Chronicity**: In the acute setting, the evaluation of heart failure can be differentiated based on its presence or absence of known or suspected pre-existing chronic heart failure.
   1. Acute Heart Failure: A new diagnosis of heart failure without known pre-existing chronic heart failure.
   2. Chronic Heart Failure: A pre-existing diagnosis of heart failure. In this setting, a patient's chronic heart failure signs and symptoms are considered to be stable, the heart failure is being monitored and managed but is not considered to be the primary reason for a patient's acute hospitalization.
   3. Acute on Chronic Heart Failure: A worsening of a patient's signs or symptoms of heart failure occurring over days to weeks in a patient with a pre-existing diagnosis of chronic heart failure.

C. **Diagnostic Criteria**: At the time of presentation, a heart failure diagnosis will be satisfied by the presence of at least 2 signs OR symptoms (a) PLUS either an elevated BNP (b), or additional diagnostic supporting evidence (c).
   1. Signs or symptoms:
      a. Shortness of breath or dyspnea of exertion
      b. Edema/swelling
      c. Orthopnea/paroxysmal nocturnal dyspnea
      d. Non-productive cough
      e. Elevated jugular venous pressure and/or hepatojugular reflux
      f. The presence of an S3 gallop or third heart sound

   2. Brain Natriuretic Peptide: BNP measurement can aid in differentiating the presence of signs and symptoms of HF from non-cardiac causes. Cut-off values in the acute setting are included below but the absolute value should be interpreted carefully. BNP has high sensitivity for detecting HF and consequently normal levels should be interpreted carefully for alternative non-cardiogenic causes. However, unexpectedly low BNPs can occur in end-stage HF, flash pulmonary edema, right-sided HF, and in morbidly obese patients.
      a. Natriuretic peptide (NP) level > 100 pg/nL, unless chronically elevated OR
      b. Pro-NP level > 300 pg/nL, unless chronically elevated
   3. Additional diagnostic evidence:
      a. Pulmonary vascular congestion OR edema noted on CXR,
      b. Moderate to severe LVH by EKG or echocardiogram

c. Elevated pressures on echocardiogram (elevated pulmonary artery systolic pressure [PASP] greater than or equal to 40, E/e' > 14) or by direct measurement at cardiac catheterization.

4. Although a transthoracic echocardiogram is not absolutely necessary for a diagnosis of acute HF, it should be strongly considered within the clinical context for definitive evaluation for the structural and hemodynamic features of HF (unless it has previously been performed in the past year). In particular, TTE should be strongly considered in patients who present without baseline cardiac function, are suspected to have possible interval changes in cardiac function and/ or patients presenting without underlying cardiac disease.

5. Determination of the underlying cardiac etiology is central to the diagnosis of heart failure as other cardiac or non-cardiac conditions can mimic the heart failure syndrome. Additionally, an etiological workup for the trigger for a patient's acute HF diagnosis should be exhaustively evaluated. This includes:
   a. ACS
   b. Arrhythmia
   c. Valvular disease
   d. Hypertensive emergency
   e. Infective endocarditis
   f. Pulmonary embolism
   g. Sepsis, DKA, thyroid abnormalities

6. The current definition of HF restricts itself to stages at which clinical symptoms are apparent. Patients can present with asymptomatic structural or functional cardiac abnormalities (such as systolic or diastolic left ventricular dysfunction which are precursors of HF) which may warrant treatment. These should not be classified as heart failure unless symptoms are present.

7. Documentation Concepts:

   a. Documentation of HF must specify if the HF with reduced EF or with preserved EF. is often referred to as diastolic CHF and systolic CHF respectively. Although both terms are acceptable, HF with preserved EF and HF with reduced EF are preferred terms.
   b. Documentation related to HF must also include the acuity (acute, acute on chronic or chronic).
   c. Documentation of the supporting diagnostic criteria to satisfy both the type and acuity of HF and suspected etiology is strongly suggested.

D. Decision Support for Clinical Definitions in the electronic medical record

1. For the diagnosis of heart failure, there is a smart block developed within the EHR to aid the provider to document the diagnosis in the Wake One environment.
2. Utilization of documentation support smart block is at the discretion of the treating provider, but will support the specificity, accuracy and completeness necessary for documentation pertaining to heart failure within electronic medical record.

E. References

- Lindenfeld J, Albert NM, Boehmer JP, et al. HFSA 2010 Comprehensive Heart Failure Practice Guideline. *J Card Fail.* 2010;16(6): e1-194.

- Ponikowski P, Voors AA, Anker SD, et al. 2016 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure: The Task Force for the diagnosis and treatment of acute and chronic heart failure of the European Society of Cardiology (ESC). Developed with the special contribution of the Heart Failure Association (HFA) of the ESC. *Eur J Heart Fail.* 2016;18(8):891-975.
- Yancy CW, Jessup M, Bozkurt B, et al. 2013 ACCF/AHA guideline for the management of heart failure: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. *J Am Coll Cardiol.* 2013;62(16): e147-239.

Appendix I – Coma

		Date:	10/2021
Name & Title:	Joey Cristiano MD; Mustapha Ezzedine MD; Kristi Tucker MD; Preston Miller MD; Maureen Sheehan; Daniel Couture	**Revised**:	

A. **Coma:** The National Institute of Neurological Disorders and Stroke (NIH NINDS) describes coma as a broad term 'profound or deep state of unconsciousness…an individual with coma is alive but unable to move or respond to his or her environment…may occur as a complication of an underlying illness, or result of injuries.'

B. The pathophysiology of coma is not completely understood but can be descriptively be depicted as arousal and awareness which lasts typically greater than 1 hour.
   1. Glascow Coma Scale (GCS) has been described as a cornerstone of the assessment of a patient's state of arousal or lack thereof in the setting of coma. GCS is also a powerful predictor of survival and neurologic outcomes in the critically ill patient population and in those patients with head trauma, non-traumatic coma, ischemic and hemorrhagic cerebral vascular accidents.
   2. Delirium and encephalopathy specifically represent acute confusional states characterized by fluctuations and impairment in attentiveness. While changes in level of consciousness is frequently associated with confusional states, coma can be distinguished by the profound degree and persistence of unconsciousness.

C. Institutionally, coma is described most centrally as related to a patient's GCS.

D. **Diagnostic Criteria:**
   1. **GCS**: Severe impairment in level of consciousness that is acute and best measured within the initial 24 hours of admission.
      a. GCS < 8 considered out proportion or in the absence of pharmacologic sedation.
      b. Measured by the provider and/or critical care nursing staff.
      c. Persistently < than 8 on at least 2 measurements at least one hour apart.

   2. A diagnosis of coma must be associated to the suspected or confirmed underlying etiology:
      a. Traumatic brain injury
      b. Primary intracerebral hemorrhage
      c. Ischemic stroke
      d. Hypoxia-ischemic or anoxic brain injury
      e. Severe metabolic derangement, toxin or medication related
      f. Seizure
      g. Infectious process

E. **Documentation Elements**:
   1. Coma, encephalopathy, and altered mental status are not interchangeable terms. Coma strictly requires satisfying the impairment in GCS as noted above.
   2. Documentation must explicitly include the patient's GCS score at the time of diagnosis.
   3. Provider documentation is strongly encouraged for all suspected or confirmed etiologies to the coma diagnosis.

F. **Decision Support for Clinical Definitions in the electronic medical record**

1. For the diagnosis of coma, there is a smart block developed within the EHR to aid the provider to document the diagnosis in the Wake One environment.
2. Utilization of documentation support smart block is at the discretion of the treating provider, but will support the specificity, accuracy and completeness necessary for documentation pertaining to encephalopathy within electronic medical record.

G. **References**

https://www.ninds.nih.gov/Disorders/All-Disorders/Coma-Information-Page. Accessed 06/11/2021 .

Plum F, Posner JB. The diagnosis of stupor and coma. 3d ed. Philadelphia: F. A. Davis Co.; 1980.

Stevens RD, Bhardwaj A. Approach to the comatose patient. Critical care medicine. 2006;34(1):31-41.

Stevens RD, Pronovost PJ. The spectrum of encephalopathy in critical illness. Semin Neurol. 2006;26(4):440-451.