Learning Objectives

- Explain types and causes of encephalopathy and typical physician terminology
- Describe common scenarios and opportunities for encephalopathy and brain-related severity of illness queries, as well as potential compliance risks and RAC targets
- Apply lessons learned to case scenarios

Patient Presentation

- Confused
- Disoriented
- Memory loss
- Weakness/numbness
- Poor coordination
- Lethargic
- Delirious
- Combative
- Psychotic

Image courtesy of Victor Habbick/FreeDigitalPhotos.net
Differential Diagnoses

- TIA vs. CVA
- Infection
- Injury
- Progression of chronic disease
- Toxic effects
- Dehydration
- Fluid/electrolyte imbalances
- CT head
- Labs/cultures
- MRI/MRA brain
- EEG

Coding Guideline Changes

<table>
<thead>
<tr>
<th>2003</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>348.30 Encephalopathy, unspecified moved from being indexed to delirium</td>
<td>MS-DRGs</td>
</tr>
</tbody>
</table>
| • 348.31 Metabolic encephalopathy  
  - Includes septic  
  - Excludes toxic metabolic (349.82) | • Tiered severity |
| • 348.39 Other encephalopathy | • MCCs |
| • Excludes |  
  - Alcoholic (291.2)  
  - Hepatic (572.2)  
  - Hypertensive (437.2) |
| • 349.82 Toxic metabolic encephalopathy |  
  • All encephalopathies excluding CCs | | 
  • CCs |
| • Alcoholic |  
  • Anoxic |
| • Hypertensive |

Terminology

- Confusion: inability to maintain a coherent stream of thought or action
- Delirium: confused state with superimposed hyperactivity of the sympathetic limb of the autonomic nervous system
  - Tremors, tachycardia, diaphoresis, mydriasis
  - Primarily associated with psychiatric conditions unrelated to underlying systemic conditions
- Encephalopathy: diffuse disease of the brain that alters brain function or structure

Underlying Cause

“Hospital/ICU Psychosis”

- Result of organic stress on the central nervous system rather than the factors in ICU/hospital setting
- Carries SOI if documented appropriately
- Equals toxic metabolic encephalopathy
- Requires physician education
“Sundowning”

- Baseline mental status with patterned impairment occurring at dusk – returns to baseline every morning
- What happens when “Sundowner” receives medication worsening baseline & “Sundowning” episodes?

**TOXIC METABOLIC ENCEPHALOPATHY**

- Can progress to psychosis with hallucinations
- Can take SEVERAL days to improve after meds discontinued and discharge delayed
- Sitters/restraints required

Study Shows …

- Delirium occurs in as many as 56% of hospitalized pts
- Delirium occurs in 20-79% of hospitalized older pts
  - One study reported it to be present upon admission to ICU in 31% of pts > 65
- Delirium occurs in 20-50% of non-vented ICU pts
- Delirium occurs in 60-80% of vented ICU pts

- Metabolic encephalopathy present in 12-33% of patients with organ failure

*CC 4th Q 2003, p. 58-59*

Potential Causes

- Severe hyponatremia
- Respiratory failure
- Severe sepsis
- Intracranial bleed
- Acute alcoholism
- Status epilepticus
- Zinc deficiency
- Drug overdose

- Hypoglycemia
- Postictal
- CNS sepsis
- Delirium tremens
- Hepato-lenticular degeneration (Wilson’s disease)
- Functional psychoses

Encephalopathy Types

- Toxic metabolic (349.82)
- Infectious/septic (348.31)
- Alcoholic (291.2)
- Hepatic (572.2)
- Hypertensive (437.2)
- Hypotensive (348.39)
- Structural (348.39)
- Anoxic (348.39)
Metabolic Encephalopathy (348.31)

**Definition**
- An acute condition of global cerebral dysfunction in the absence of primary structural brain disease
- Encompasses delirium *and* the acute confusional state
  
  *(CC, 4th Q 1993, p. 29)*

**Possible causes**
- Impaired organs
  - Liver (hepatic)
  - Kidney (uremic)
  - Thyroid (Hashimoto’s)
- Abnormalities of water, vitamins, chemicals, electrolytes (sodium, glucose)

Septic (348.31) / Infectious (348.39)

**Definition**
- AMS in presence of infection
- Same ICD-9 code as metabolic encephalopathy

**Possible causes**
- Underlying infection/septic state

Toxic Metabolic Encephalopathy (348.92)

**Definition**
- Brain tissue degeneration due to toxic substance(s)

**Possible causes**
- CO2 toxicity
- Poisoning
- Drug ingestions/toxicity (outside agents)

PDX Sequencing – RAC Target

- Alcoholic liver cirrhosis vs. hepatic enceph
  - AHA Coding Clinic, First Qtr 2002
    - Advised coders to assign the hepatic enceph as the PDx
    - Could the patient stay at home with the condition?
      - Yes to cirrhosis – no to encephalopathy
Additional Encephalopathy Types

**Alcoholic (CC)**
- Wernicke-Korsakoff
  - Due to malnutrition – B1 deficiency
  - Nonreversible

**Anoxic (CC)**
- Global loss of brain function (time = tissue)
  - s/p CPR, prolonged seizures, prolonged status asthmaticus, prolonged COPD exacerbation

**Hypertensive (CC)**
- HA, N/V, visual changes, decreased LOC
  - Hypertensive crisis/emergency
  - BP elevation w/ organ failure
  - Also see chest pain, SOB, RF

**Hypotensive (MCC)**
- Bleeding, major infections, BP meds
  - Symptoms fainting, weakness, AMS

**Ischemic (MCC)**
- Narrowing vessels limiting blood supply to brain
- Progressive loss of function

**Structural (MCC)**
- Head trauma (internal or external)
  - Increased ICP
- Bleed/stroke

**Encephalopathy With Coma**
Coma is one of the four grades of encephalopathy
- Grade I: confusion or AMS
- Grade II: somnolence, inappropriate behavior, impending stupor
- Grade III: stuporous but arousable, markedly confused behavior
- Grade IV: unresponsive, coma

Exception: Hepatic encephalopathy (coma) is included in code assignment at 4th digit level – not necessary to report 572.2, Hepatic coma, as additional code assignment CC, First Quarter 1998, pp. 3-4

Can Be Coded Together
CABG Postop

- The reported incidence of postoperative encephalopathy varies from 8.4% to 32%
- Presentation more subtle
- Symptoms present following extubation
  - Should suspect it earlier when patients emerge combative or agitated from anesthesia
  - Often delays extubation
- Increased LOS (avg 14 days vs. 8)
- Higher mortalities (7.5% – 3x the avg rate)
- Often require rehab

Case Review #1

68 y/o male DM pt presents with sepsis secondary to UTI, AMS, and profound hypotension.

Presentation
- Lethargic
- BP 68/42
- HR 104
- Resp 24
- Temp 97.2
- PCT 23.1 (procalcitonin)
- WBC 28.2

Treatment
- ICU
- NS x 2L ED
- Dopamine gtt
- Levophed gtt
- BCX
- UCX

Course of Stay
- Lethargic x 48 hrs then return to baseline
- Vasopressors off after 24 hrs
- 5-day stay

Query Possibilities

- Manifestation: presenting signs/symptoms
- Underlying: cause – “due to”
- Severity: (acute or chronic)
- Instigating cause: (e.g., if the encephalopathy is due to a toxic substance, was the drug taken as prescribed or was it an accidental overdose?)
- Consequences: (e.g., did the patient fall and break a bone?)

Clinical Indicators Case #1

- Hypotension
- Sepsis diagnosis
- WBC 28.2
- AMS in presence of infection - lethargy x 48 hrs
- Age 68

Infectious/Septic Encephalopathy
Sample Query “Question”

Based on the above abnormal clinical findings, can you specify the known or suspected type of altered mental status status this patient was experiencing that produced a lethargic (obtunded, confused, agitated, comatose, etc.) state?

Sample Query “Reasonable Options”

<table>
<thead>
<tr>
<th>Encephalopathy (specify type):</th>
<th>______</th>
<th>Metabolic (MCC)</th>
<th>Infectious/Septic (MCC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>_____</td>
<td>Hypertensive (CC)</td>
<td>Alcoholic (CC)</td>
<td>Unspecified (MCC)</td>
</tr>
<tr>
<td>_____</td>
<td>Other: ______________________</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dementia (specify type):</th>
<th>______</th>
<th>Senile</th>
<th>Alzheimer’s</th>
<th>Unspecified</th>
</tr>
</thead>
<tbody>
<tr>
<td>_____</td>
<td>(specify behavior):</td>
<td>Delirium/Acute confusion (CC)</td>
<td>with depression (NO CC)</td>
<td>with delusion (NO CC)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Coma (MCC)</th>
<th>______</th>
<th>Unable to determine</th>
</tr>
</thead>
<tbody>
<tr>
<td>_____</td>
<td>Other: ______________________</td>
<td></td>
</tr>
</tbody>
</table>

Case Review #2

75/M with AMS found early morning by spouse at home. Unable to speak – was “fine” at bedtime.

**Presentation**
- Aphasia
- Right-sided weakness
- Vomitus on sheets
- Lethargic
- BP 208/105
- HR 98
- Resp 22
- Afebrile

**Treatment**
- CT head
- Ischemic stroke
- Anticoagulation
- CXR – 7 RLL infiltrate
- IV Labetalol
- IV ABX

**Course of Stay**
- CXR – RLL pneumonia
- Decrease LOC
  - Obtunded/lethargic X 48 hours
  - Alert but disoriented
  - Clear at d/c

Clinical Indicators Case #2

? Hypertensive Encephalopathy
- Accelerated HTN
- Decreased LOC POA
  - Obtunded/lethargic X 48 hours
- Age 75
- BP 208/105 – IV Labetalol

Likely normal evolution of CVA
Permissive HTN usually allowed in a CVA
### Case Review #3

**Presentation**
- Alert – oriented x 3 w/o hx dementia
- VSS
- Infection-free

**Treatment**
- Surgical procedure
- IV meds for rate/rhythm control
- PCA pump
- Sleeping med

**Course of Stay**
- Confused ICU day #2 – pulling out lines
- Restraints applied
- Narcotics dc’d
- Mental status improved day following med changes

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### Clinical Indicators Case #3

- S/P CPR
- Unresponsive w/o sedation
- Obtunded/lethargic X 48 hours
- Remained confused and disoriented after extubation
- Slow to respond – no resolution
- Absence of infection
- BP stable
- No mention of electrolyte or metabolic imbalances

**Anoxic vs. TME** (secondary to anesthesia/meds)
Warrants discussion/query

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### Case Review #4

**Presentation**
- Alert – oriented x 3 w/o hx dementia
- VSS
- Infection-free

**Treatment**
- Surgical procedure
- IV meds for rate/rhythm control
- PCA pump
- Sleeping med

**Course of Stay**
- Confused ICU day #2 – pulling out lines
- Restraints applied
- Narcotics dc’d
- Mental status improved day following med changes

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### Clinical Indicators Case #4

- AMS – pulling out lines – restraints applied
- Multiple new medications
- Antiarrhythmics, pain meds, sleep meds
- No s/s infection
- Mental status improved after discontinuation of medication(s)

**Likely Post-op Drug-Induced Delirium (292.81)**
with e-code indicating Adverse Drug Reaction
- Equals a CC, but reportable in HealthGrades
**Case Review #5**

Alcohol liver cirrhosis homeless patient unarousable at shelter – moaning only. No further history.

<table>
<thead>
<tr>
<th>Presentation</th>
<th>Treatment</th>
<th>Course of Stay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weak, confused,</td>
<td>Lactulose</td>
<td>Restraints off after 24 hours –</td>
</tr>
<tr>
<td>combative</td>
<td></td>
<td>sitter required</td>
</tr>
<tr>
<td>Gross ascites</td>
<td></td>
<td>A&amp;D x 3 after 72 hours</td>
</tr>
<tr>
<td>Elevated LFTs</td>
<td></td>
<td>LFTs improved but remained</td>
</tr>
<tr>
<td>Elevated ammonia</td>
<td></td>
<td>slightly elevated</td>
</tr>
<tr>
<td>BP 148/72</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HR 88</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resp 18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temp 99.4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Clinical Indicators Case #5**

- AMS – nonarousable followed by confused and combative behavior requiring restraints
- History of alcoholic cirrhosis with elevated pneumonia
- AMS resolved after 72 hours when LFTs improved

**Hepatic Encephalopathy**

PDX? 3 day stay – Hepatic encephalopathy
5 day stay – Investigate further due to DRG/LOS mismatch

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**Case Review #6**

92-year-old COPD nursing home pt found in respiratory distress, confused, & agitated w/o hx of dementia

<table>
<thead>
<tr>
<th>Presentation</th>
<th>Treatment</th>
<th>Course of Stay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rapidly progressed</td>
<td>ETT / Mech Vent</td>
<td>Vent x 48 hrs</td>
</tr>
<tr>
<td>to lethargy</td>
<td>Sedation to prevent</td>
<td>Confused w/o agitation after</td>
</tr>
<tr>
<td>RA sats 79%</td>
<td>self-extubation</td>
<td>extubation x 72 hrs</td>
</tr>
<tr>
<td>PH 7.32</td>
<td>IV ABX</td>
<td>Creatinine 1.2</td>
</tr>
<tr>
<td>Resp 32</td>
<td>IV Steroids</td>
<td>Oral Steroids</td>
</tr>
<tr>
<td>Temp 97.2</td>
<td>Resp RX</td>
<td></td>
</tr>
<tr>
<td>Creatinine 2.5</td>
<td>NS bolus x 2 liters</td>
<td></td>
</tr>
<tr>
<td>(no hx CKD)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Clinical Indicators Case #6**

- Respiratory failure (PH < 7.35)
- Confused and agitated x 72 hours after intubation/sedation
- AKI
- Resolved AMS – not permanent

**Metabolic encephalopathy (MCC) or Hypoxic encephalopathy (CC)?**
**What's the Difference?**

**Hypoxic Encephalopathy** (CC)
- Cause due to anoxic brain damage
- Irreversible/Permanent

**Metabolic Encephalopathy due to Hypoxemia** (MCC)
- Cause due to hypercapnea/hypercapnia, hypoxia/hypoxemia
- Reversible/temporary

**Case Review #7**

Alcohol-dependent cirrhosis pt admitted with 3rd-degree burn to back – found down > 6 hours.

**Presentation**
- Confused and agitated
- BP 112/68
- HR 84
- Resp 16
- Temp 97.6
- Elevated BUN 36
- Elevated CPK 432
- Elevated ammonia level 84

**Treatment**
- Wound care
- Alcohol withdrawal protocol
- Low-dose sedatives
- Aggressive IVF resuscitation
- Lactulose
- IV ABX

**Course of Stay**
- Full-blown DTs
- One-day stay – transferred to burn care center

**Clinical Indicators Case #7**

- Confused & agitated prior to arrival
- Elevated ammonia levels
- ? Rhabdomyolysis
- ETOH/DTs
- Lactulose

What’s missing? WBCs, temp, infection indicators

**Hepatic encephalopathy vs. DTs vs. septic/infectious encephalopathy**

**WHAT TO DO? QUERY**

**Additional Brain SOI**

**CC**
- Delirium - acute due to condition classified elsewhere
- Dementia with behavioral disturbance
- Hallucinations other than visual
- Delusions associated with paranoid schizophrenia
- Acquired Hydrocephalus
- Specified bipolar disorder
- Drug withdrawal

**MCC**
- Cerebral/Vasogenic Edema
- check radiographic reports for midline shift or edema
- Mannitol, Steroids, Decadron
- Coma
**Additional Brain – No SOI**

- Delirium – acute not associated w/ any condition
- Dementia w/o behavioral disturbance
- Stupor
- Psychosis
- Bipolar Disorder unspecified
- Seizure
- Concussion
- Confusion
- Alzheimer's with dementia

**ICD-10 – 10/1/2014 Are You Ready?**

- **Encephalopathy (acute) G93.40**
  - acute necrotizing hemorrhagic G04.30
  - postimmunization G04.32
  - postinfectious G04.31
  - specified NEC G04.39
  - alcoholic G31.2
  - anoxic – see Damage, brain, anoxic
  - arteriosclerotic I67.2
  - centrolobal progressive (Schilder) G37.0
  - congenital Q07.9

- degenerative, in specified disease NEC G32.89
- demyelinating callosal G37.1
- due to drugs – see also Table of Drugs and Chemicals G92
- hepatic – see Failure, hepatic
- hyperbilirubinemic, newborn P57.9
- due to immunization (conditions in P55) P57.0
- hypertensive I67.4
- hypoglycemic E16.2

**ICD-10: Encephalopathy Expanded**

- hypoxic – see Damage, brain, anoxic
- hypoxic ischemic P91.60
- mild P91.61
- moderate P91.62
- severe P91.63
- in (due to) (with)
- birth injury P11.1
- hyperinsulinism E16.1
- influenza – see Influenza, encephalopathy
- lack of vitamin – see also Deficiency, vitamin E56.9
- neoplastic disease (see also Neoplasm) E49.8
- serum – see also Reaction, serum T80.60
- syphilis A52.17
- trauma (postconcussional) F07.81
- current injury – see Injury, intracranial
- vaccination G04.03
- lead – see Poisoning, lead metabolic G93.41
- drug induced G92
- toxic G92
- myoclonic, early, symptomatic – see Epilepsy, generalized, specified NEC

- postradiation G93.89
- saturnine – see Poisoning, lead
- septic G93.41
- specified NEC G93.49
- spongiform, subacute (viral) A81.00
- toxic G92
- metabolic G92
- traumatic (postconcussional) F07.81
- current injury – see Injury, intracranial
- vitamin B deficiency NEC E53.9
- vitamin B1 E51.2
- Wernicke’s E51.2

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References


4. J.A. Thomas. (2010, July 14) FHIMA Coding Round Table.


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