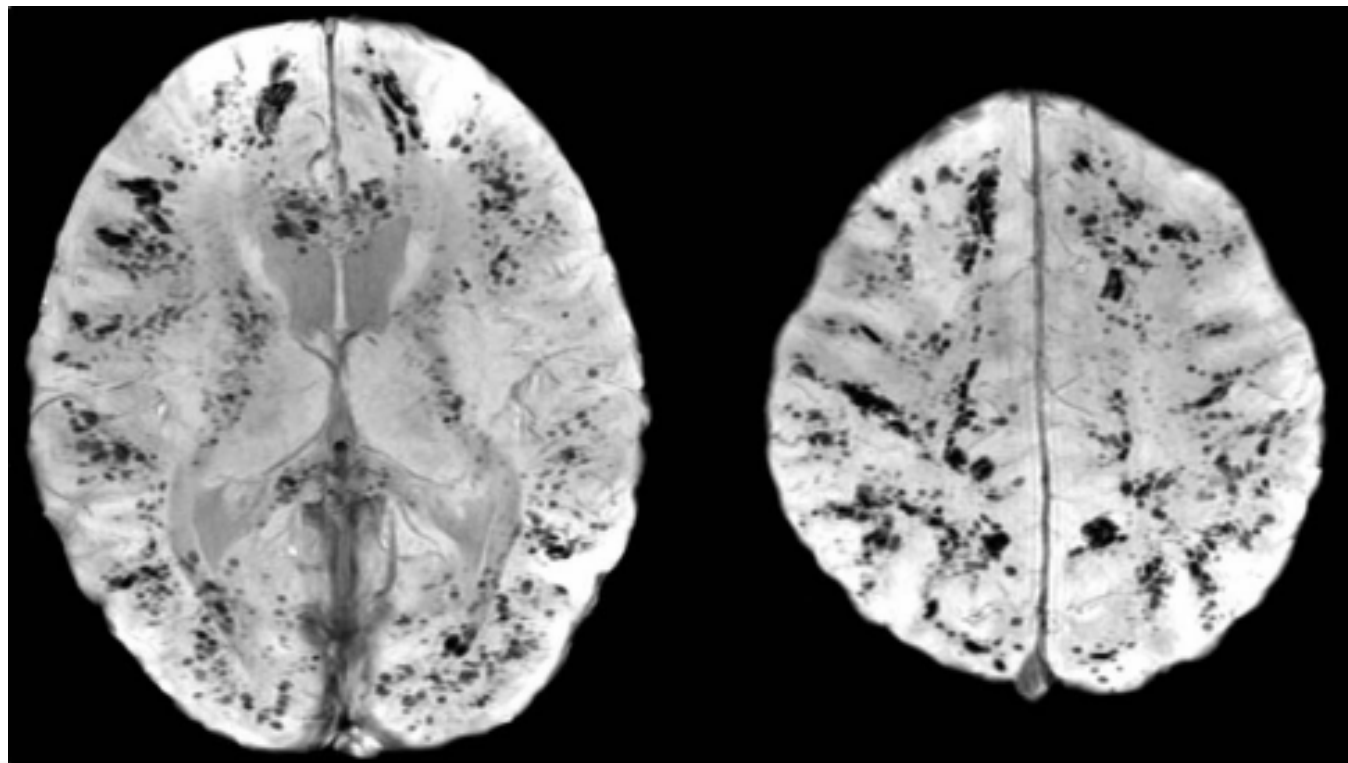


CASE REPORT 2

An 8-year-old girl in septic shock due to necrotizing methicillin-resistant *Staphylococcus aureus* (MRSA) pneumonia developed signs of end-organ damage, new right hemiplegia, and left gaze preference.

Susceptibility-weighted MRI demonstrated extensive multifocal petechial hemorrhage preferentially at the gray-white matter interface



On Tue, Jan 21, 2014 at 8:20 AM, Nicola Latronico <nicola.latronico@med.unibs.it> wrote:
Dear Mitchel,

I read with interest your recent case report in Neurology. Very interesting!!

Would you classify this case under the large umbrella of "septic encephalopathy". If not -I guess because of the presence of focal neurological signs - how would you define the diagnosis?

Did you perform a brain CT?

Thank you for your time.

Best regards, Nicola

Hello Nicola,

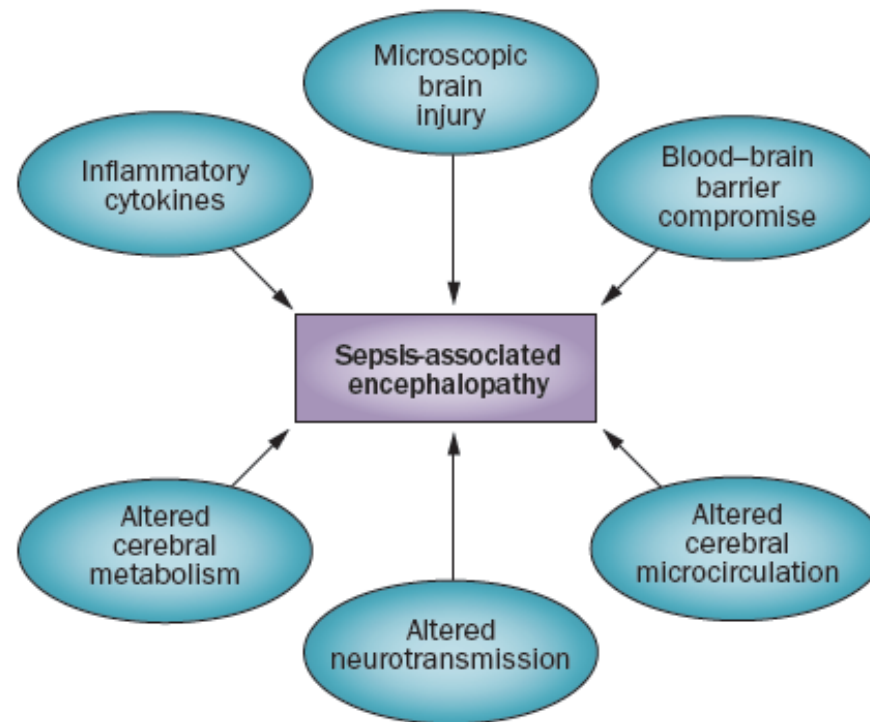
Thank-you for interest. Unfortunately given the brevity of the Neuroimage format we were not able to include the corresponding DWI images and description which showed multifocal areas of diffusion restriction.

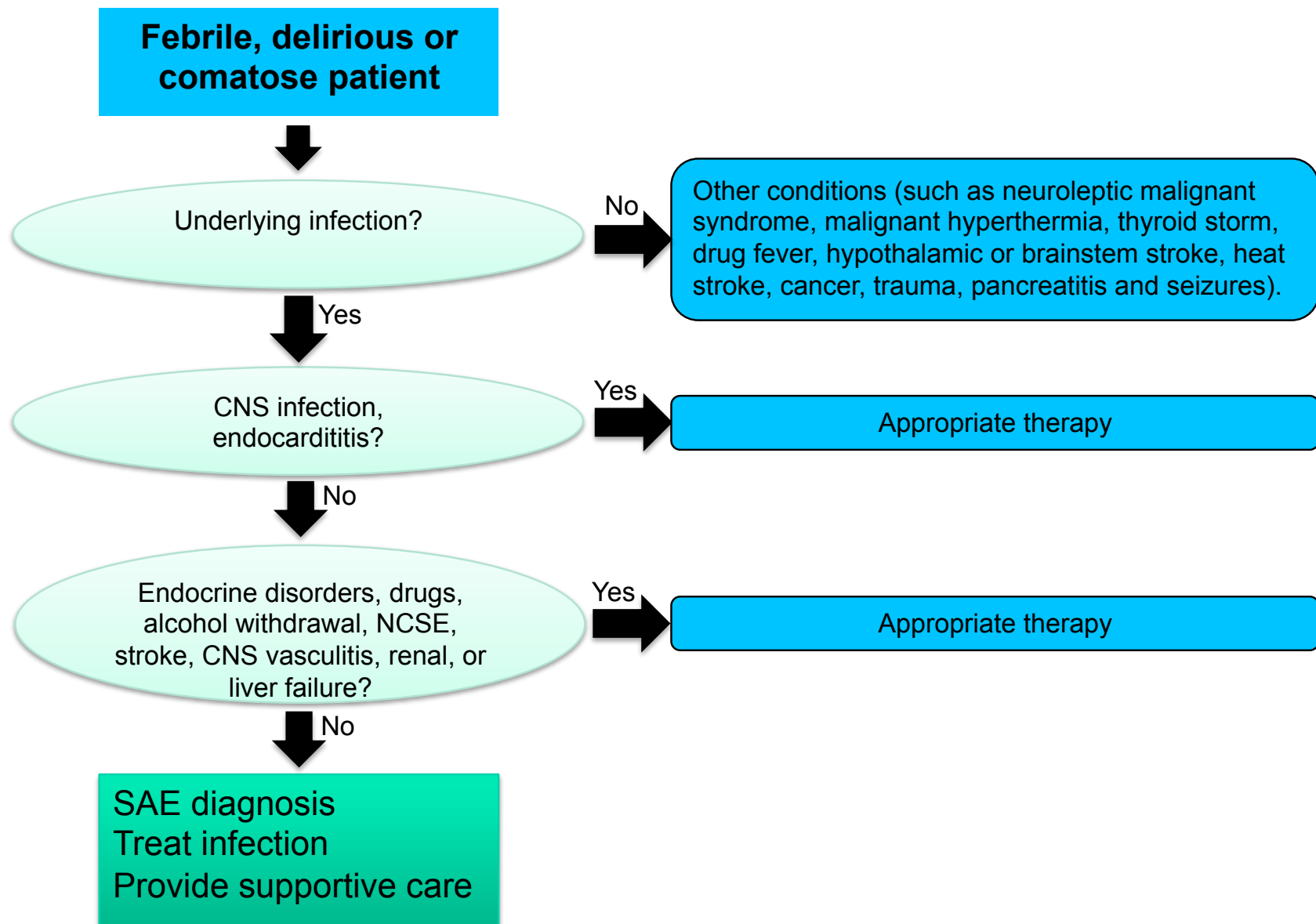
A CT was done afterwards which showed several areas of **ischemic infarct** but interestingly enough the petechiae were not visualized on standard head CT.

We had difficulty classifying a diagnosis because there was a limited amount of literature with this particular finding. The most we could find was in adult patients with **bacterial endocarditis with septic emboli**. Based on those cases it fits best with a **pyogenic arteritis** especially given the presence of secondary ischemic infarcts.

Mitchel Williams, MD
Assistant Professor
Department of Pediatrics and Neurology
Children's Hospital of Michigan

ETIOLOGY OF SEPSIS-ASSOCIATED ENCEPHALOPATHY





CASE REPORT 3



CHEST

Transparency in Health Care

CASE REPORT

A “Near Miss”

William F. Dunn, MD, FCCP; Shirley C. Adams; and Robert W. Adams

CHEST 2008; 133:1217–1220

A 66-year-old woman with acute chest pain was diagnosed with acute coronary syndrome in the anterior myocardial distribution. In the EP: ventricular fibrillation arrest.

At attempted angioplasty, a dissection of the left anterior descending artery occurred, and cardiogenic shock developed. She underwent emergent coronary artery bypass grafting.

Hospital Course (27 Days)

On day 4, the patient responded only to painful stimuli. An EEG was performed and revealed triphasic waves that were interpreted to be consistent with a poor prognosis. Two brain CTs revealed no focal lesions. A lumbar puncture was normal.

Throughout the course, she never regained consciousness. Continued roving eye movements were noted, and there were intermittent semipurposeful writhing motions, for which wrist restraints and sedation (lorazepam at 1 to 4 mg IV every 1 to 4 h as needed) were prescribed.

Multiple notes in the charting commented on the “doting” nature of the husband, expressing his wife’s seeming visual recognition of him without staff recognition of the same phenomena. “Appropriate” gestures, nods, and feeble hand grasps described by the husband were not witnessed by any ICU staff. The husband had a near-constant presence in the ICU.

Multiple physicians were consulted, including neurology, gastroenterology, infectious diseases, and ENT. Each physician concurred that the patient had anoxic encephalopathy and had a poor prognosis.

A second neurologic opinion was declined after repeated suggestions to withdraw care. On postoperative day 27, the patient was transferred to our institution (Mayo Foundation, Rochester, MN).

COMA?

Text of neurologic consultation

Consultative neurological summary note:


“Asked to see by Dr. _____ for decreased mental status 28 days after cardiorespiratory failure.

Reviewed history and examined patient.

Anterior MI, bypass following PTCA, ARDS, etc → unresponsive.

Exam:

Without focal changes. Generalized semi-purposeful limb movements. Appears to want to void. Eye opening. No command following.



Impression: Anoxic encephalopathy —at 28 days potential for full cognitive recovery is low—
EEG and MRI should help quantify this.”

The patient was seen by an ICU team: faculty attending, four interns, four supervisory residents, and three critical care fellows. The patient was unresponsive to command, with eyes closed, and with ***slow writhing-like motions*** of all four extremities.



No change in status was apparent after two doses of 0.4 mg of naloxone. However, the patient then received flumazenil at 0.2 mg IV for five doses while the team watched.

Between the fourth and fifth doses, she regained responsiveness, opened her mouth, and protruded her tongue to command. The 0.7-mm tracheostomy tube was corked, and the cuff was deflated.

When asked her name, she responded, “***Shirley. My name is Shirley Adams***”.



CHEST

Transparency in Health Care

CASE REPORT

Iatrogenic Delirium and Coma*

A “Near Miss”



William F. Dunn, MD, FCCP; Shirley C. Adams; and Robert W. Adams

CHEST 2008; 133:1217–1220



Shirley and Robert Adams, co-authors

DELIRIUM

An acute brain dysfunction with changes in consciousness and cognition that fluctuates during the day.

van den Boogaard M, et al. *Crit Care Med* **2012**; 40:112–118

It may or may not be accompanied by agitation.

Devlin JW, et al. *Intensive Care Med* **2007**; 33:929–940

Effect of sedation level on the prevalence of delirium when assessed with CAM-ICU and ICDSC

Haenggi M, et al.

Intensive Care Med 2013; 39:2171–2179

The proportion of CAM-ICU-positive evaluations decreased **from 53 to 31%** ($p < 0.001$) if assessments from patients at RASS -2/-3 (22 % of all assessments) were excluded. Similarly, the number of positive ICDSC results decreased from 51 to 29% ($p < 0.001$).

Apparent prevalence of delirium is dependent on how a depressed level of consciousness after sedation stop is interpreted (**delirium vs persisting sedation**).

We suggest that any reports on delirium using these assessment tools should be stratified for a sedation score during the assessment.

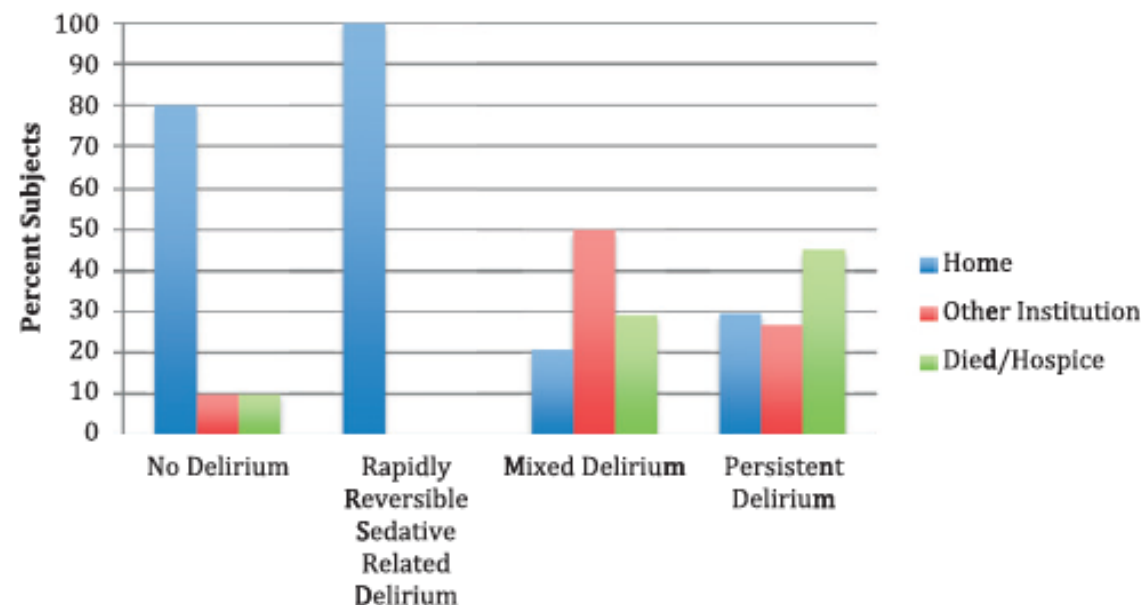
Rapidly Reversible, Sedation-related Delirium versus Persistent Delirium in the ICU

Patel SB, et al.

Am J Resp Crit Care Med 2014; 189(6):658-65

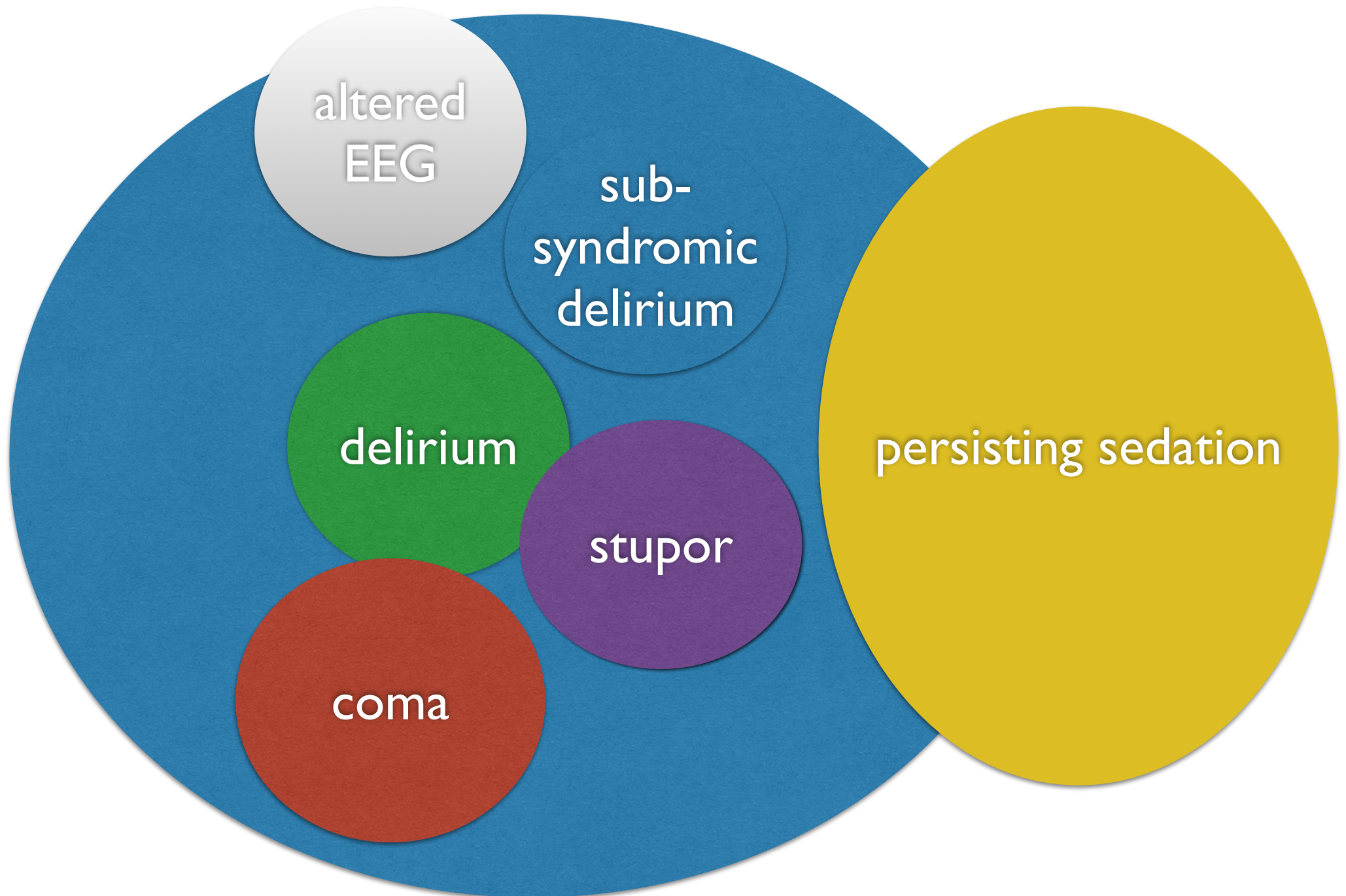
Rapidly reversible, sedation-related delirium is fundamentally different from persistent delirium (delirium that does not abate after sedative interruption).

Degree of sedation should be considered in delirium assessments.

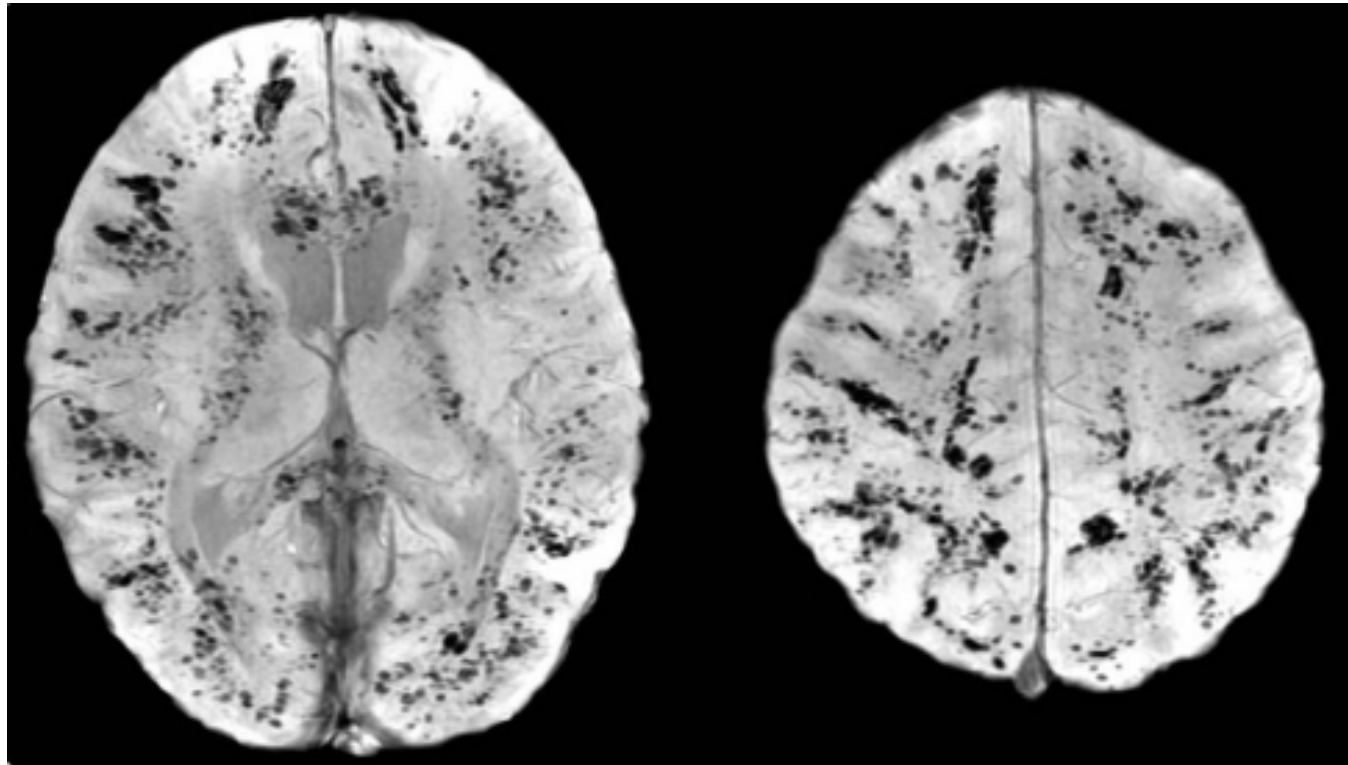


Discharge location of subjects

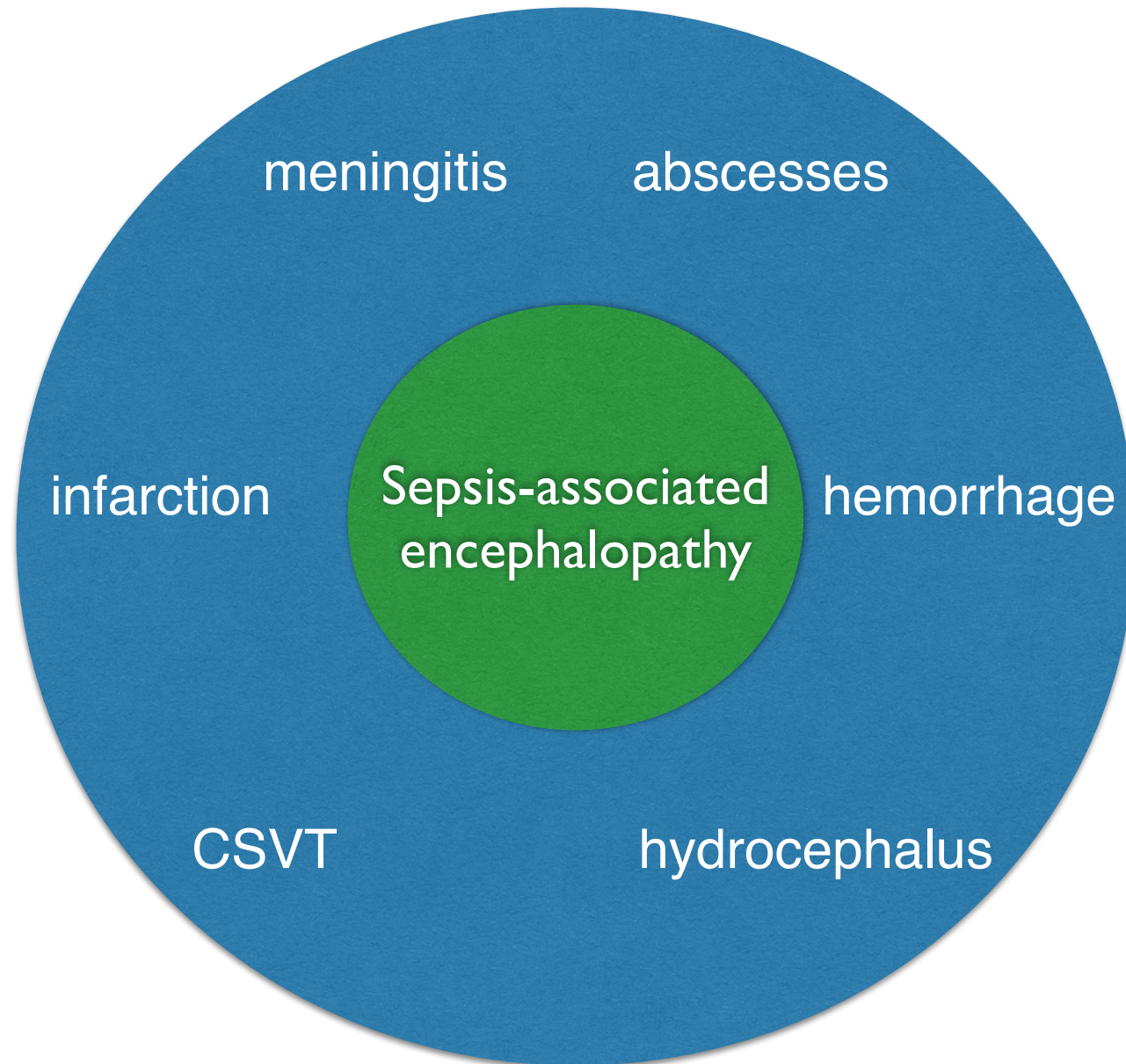
SEPSIS-ASSOCIATED ENCEPHALOPATHY



WHAT NAME ?

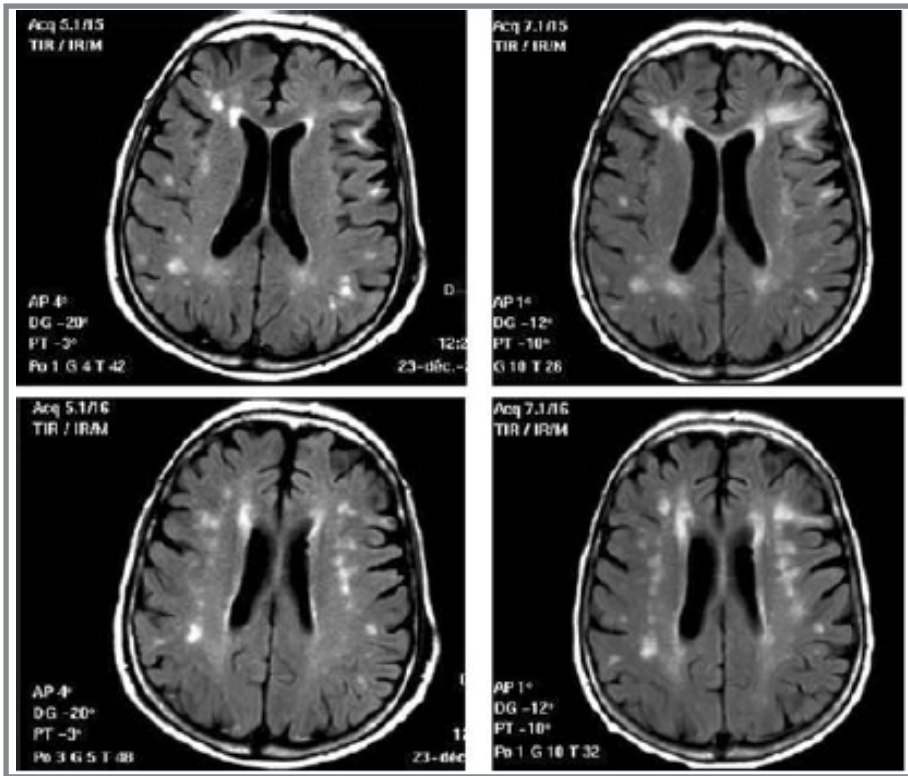


SEPSIS-ASSOCIATED BRAIN INJURY

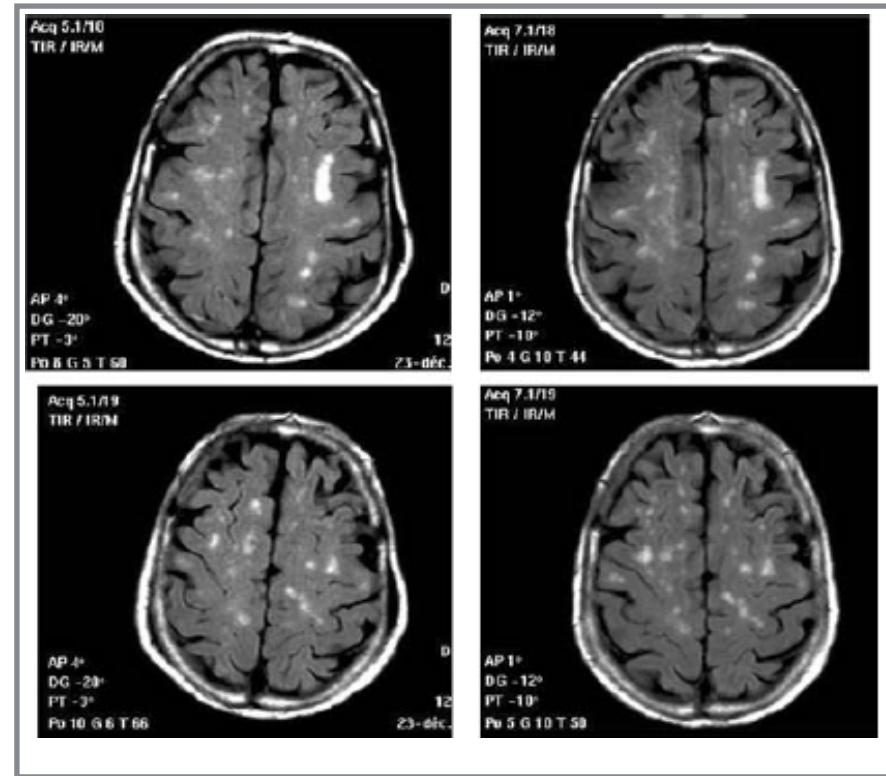


SEPSIS-ASSOCIATED BRAIN INJURY: LEUKOENCEPHALOPATHY

Day 3



Day 30



Brain MRI in a 79-year-old woman with *Streptococcus pneumoniae* lung infection complicated by septic shock and acute respiratory distress syndrome. Multiple bright signal areas visible bilaterally at the level of the centrum semiovale indicate leukoencephalopathy.

The relationship between delirium duration, white matter integrity, and cognitive impairment in intensive care unit survivors as determined by diffusion tensor imaging:
The VISIONS prospective cohort magnetic resonance imaging study.

Morandi A, et al.
Crit Care Med 2012; 40: 2182–2189

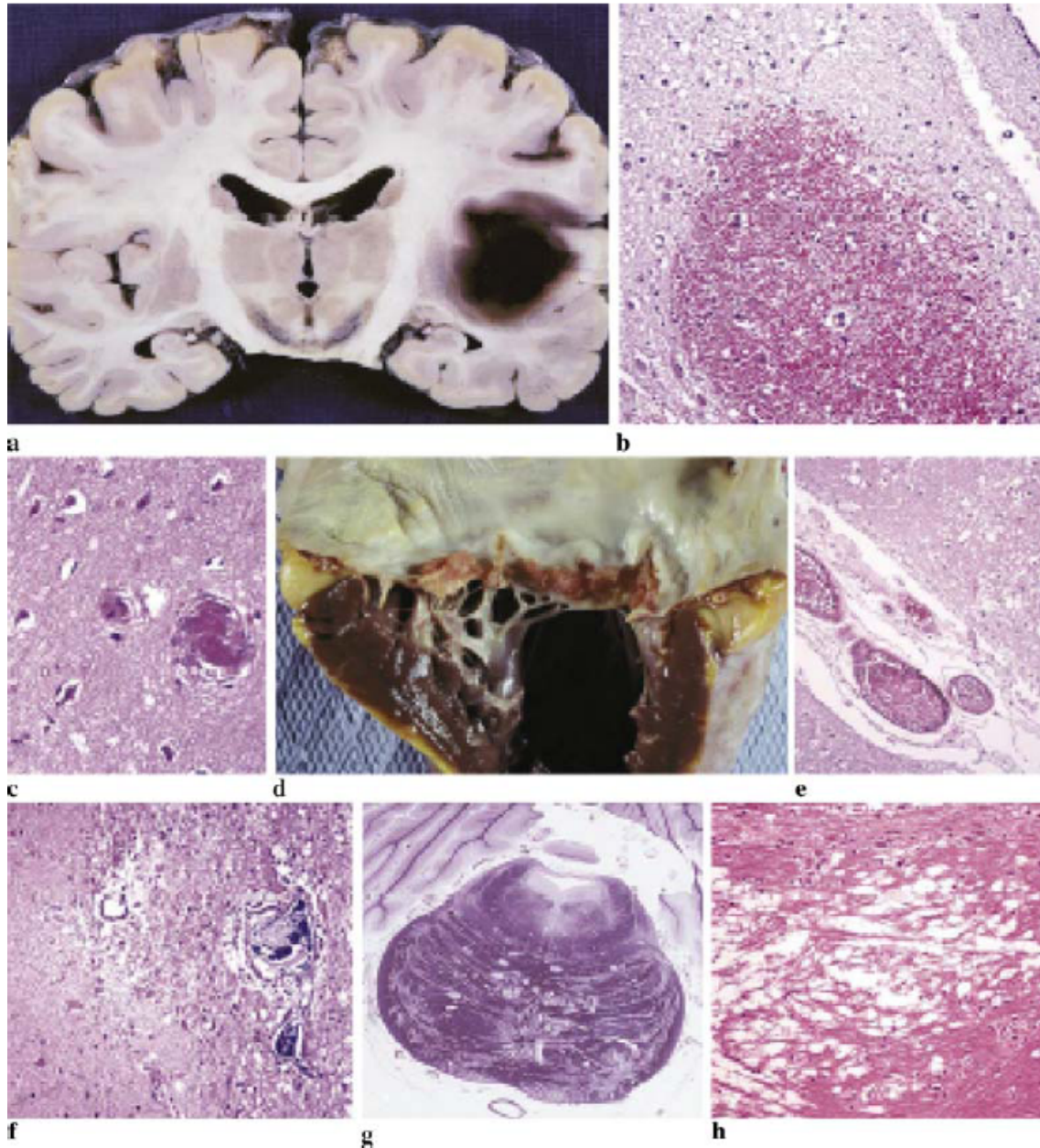
Using diffusion tensor imaging, an advanced magnetic resonance imaging technique that is highly specific for white matter fibers, the authors demonstrated a greater duration of delirium to be associated with white matter disruption in the genu, splenium, and body of the corpus callosum and in the anterior limb of the internal capsule.

In turn, white matter alterations were associated with worse cognitive scores at 3- and 12-month follow-up.

DELIRIUM: LOST IN CONNECTION

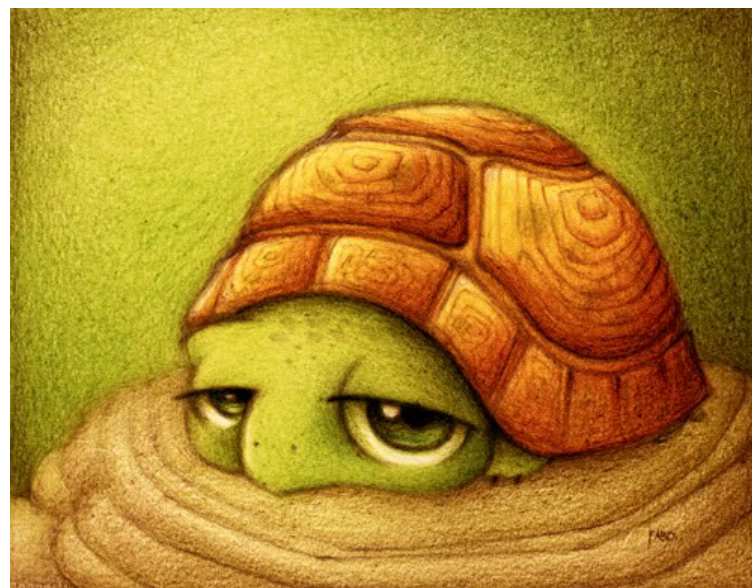
Latronico N, Piva S, Fagoni N, Rasulo F.
Crit Care Med 2012; 40: 2259-60

SEPSIS-ASSOCIATED BRAIN INJURY: *NECROSIS AND HEMORRHAGE*



Ebersoldt M, et al. *Intensive Care Med* 2007; 33:941–950

THE STORY CONTINUES



After her release from Mayo Clinic, Shirley wanted to come home instead of being sent to a rehabilitation center.

She weighed 100 lb [45 Kg] and was too weak to hold a newspaper.

Over time (approximately 12 months), the milestones were accomplished and she regained her strength and normal weight of 132 lb [60 Kg].

Now we are into senior roller skating once a week, and circuit training three times a week at the local health club.

MOF

NEUROLOGIC
COMPLICATIONS

SABI

SAE

CIP & CIM
ICUAW

THE MULTIPLE ORGAN FAILURE



"Ah, Gertrude, Gertrude,
le sciagure non vengon mai sole,
simili ad avanguardie solitarie,
ma ad intere legioni!"

WILLIAM SHEAKSPEARE

IN CONCLUSION

Pluralitas non est ponenda sine necessitate

William of Occam, Franciscan friar (1285-1348)

Among competing hypotheses, favor the simplest one.

The Occam's razor

IN CONCLUSION

Patients can have as many diseases as they damn well please.

John Hickam (1914-70)

Multiple symptoms and signs may be due to more than one disease.

Hickam's dictum