

Stroke, Atrial Fibrillation, and Anticoagulation

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Disclosures

◆ Consulting:

- Glaxo Smith Kline, protocol development

◆ Research:

- Glaxo Smith Kline: Co-National PI GSK DEPHINES – TAA trial
- WL Gore: Local PI Gore REDUCE PFO Closure Trial
- NIH:
 - U01-DK060990 (Prospective renal insufficiency cohort, stroke endpoint adjudication committee)
 - 1R01HL084375-01A2 (Determining neurologic outcomes from aortic valve surgery, co-investigator neurologic assessments)
 - 5U01HL088957-04 (local sub-investigator, NIH/NHLBI CT Surgery Network)

Overview

- ◆ Types of intracranial hemorrhage (ICH)
- ◆ The intersection of ICH and atrial fibrillation
- ◆ Stroke type and use/timing of anticoagulation

Stroke

**Brain injury due to a vascular blockage
or rupture**

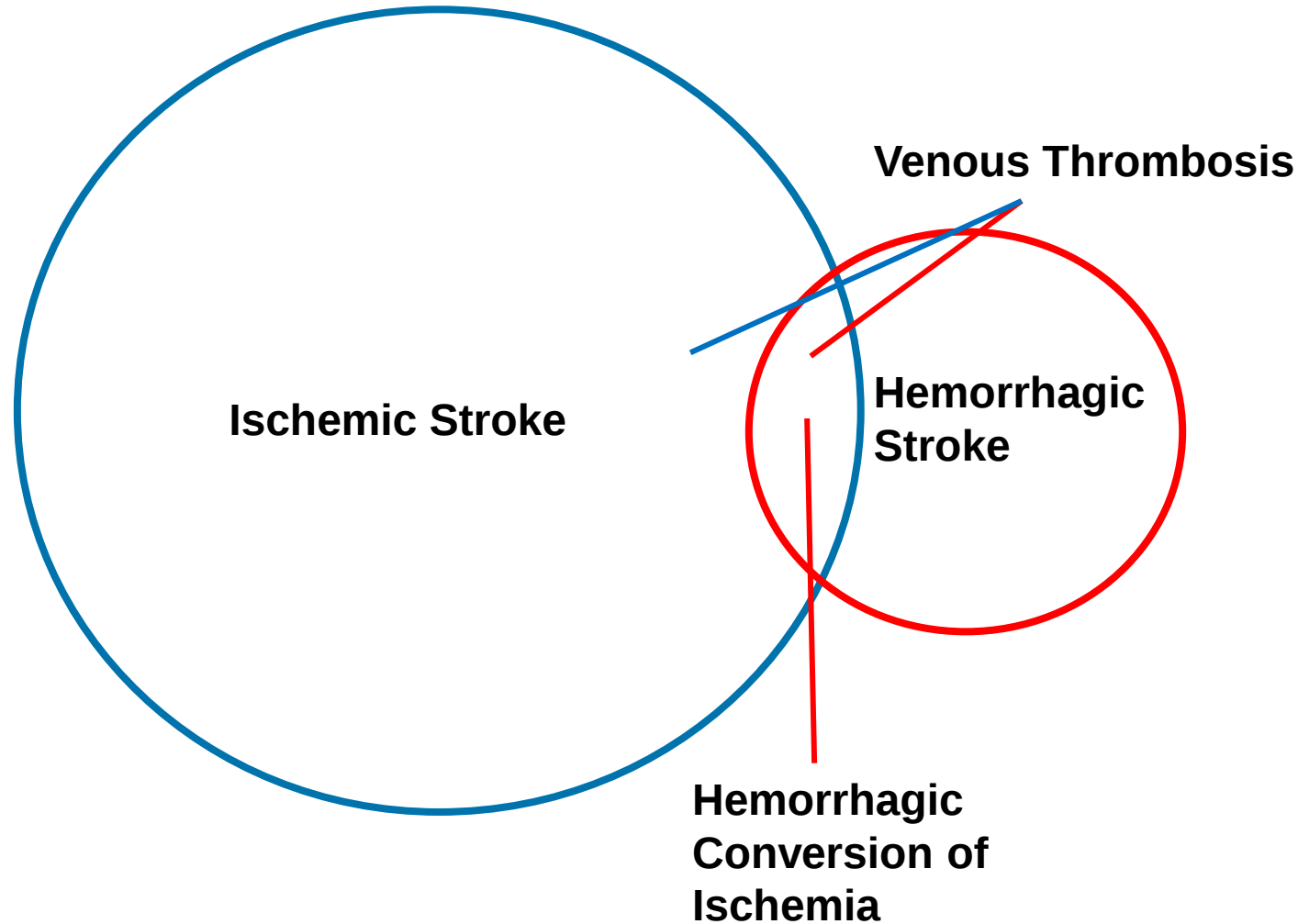
Two kinds of stroke:

Ischemia (lack of blood flow) = 75-80%

Hemorrhage (ruptured blood vessel) = 20-25%

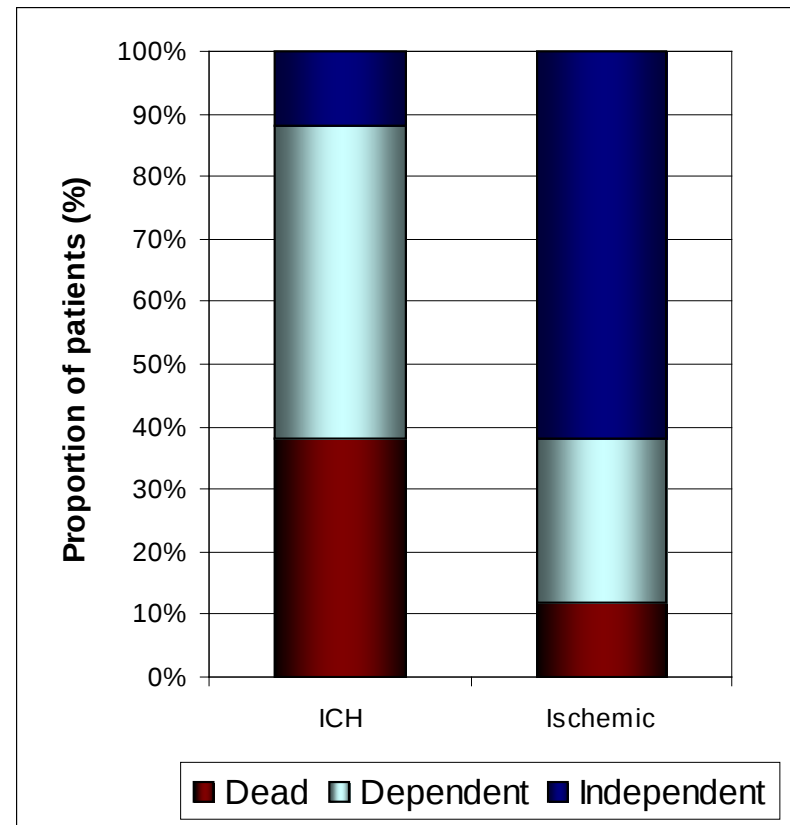


Ischemic and Hemorrhagic Strokes



Outcome of ICH Compared to Ischemic Stroke

- **Mortality**
 - 6-month, 30-50%
 - 1-year, 50%
- **Only 20% of ICH patients are independent at 6 months vs 60% of ischemic stroke patients**



Manno EM, et al. *Mayo Clin Proc.* 2005;80:420-433; Mayer SA, Rincon F. *Lancet Neurol.* 2005;4:662-672; Qureshi AI, et al. *N Engl J Med.* 2001;344:1450-1460; Taylor TN, et al. *Stroke.* 1996;27:1459-1466; Reed SD, et al. *Neurology.* 2001;57:305-314.



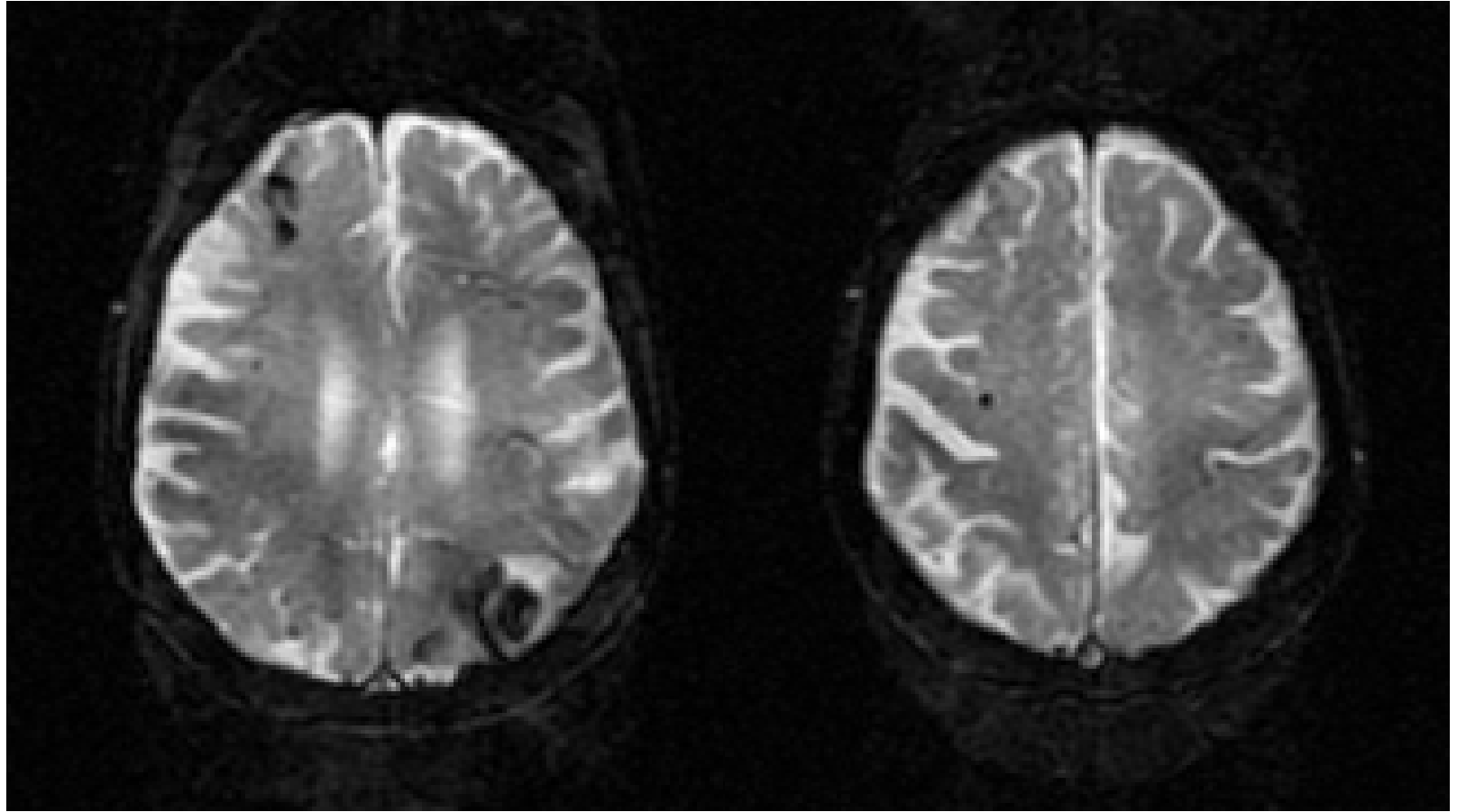
Intracranial Hemorrhage

- Intraparenchymal (intracerebral)
- Subarachnoid
- Vein Thrombosis
- Subdural
- Epidural

Intraparenchymal Hematoma



Intraparenchymal Hematoma



Intraventricular Hematoma



Subarachnoid Hemorrhage



Hemorrhagic Conversion of Ischemia



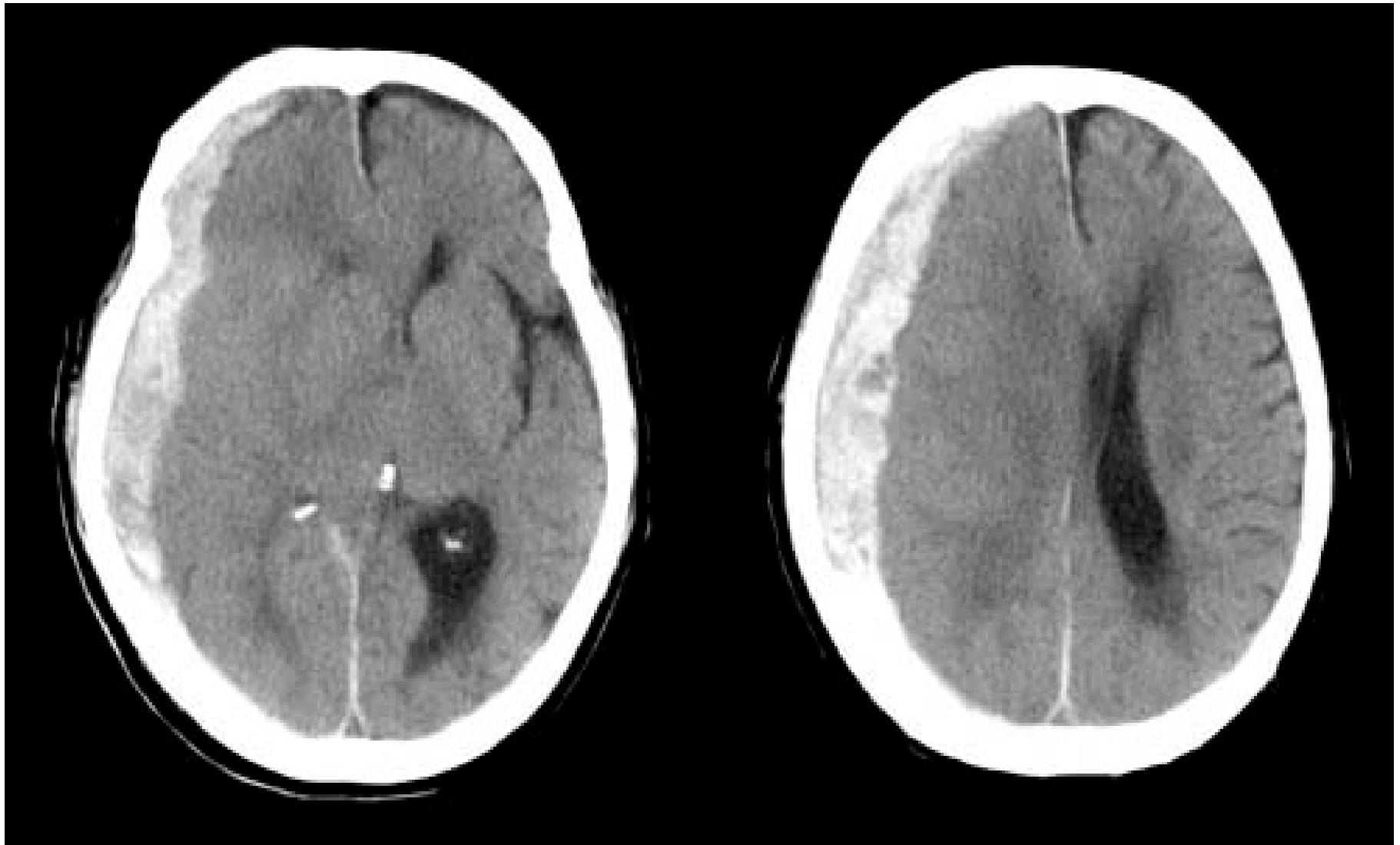
Should we give this patient heparin?



Epidural Hematoma



Subdural Hematoma



Intracranial Hemorrhage and Atrial Fibrillation

- ♦ Primary risk of AF is ischemic stroke
- ♦ Optimal treatment is anticoagulation
- ♦ AC increases risk of ICH

Congestive heart failure

Hypertension

Age ≥ 75

Diabetes

Stroke

Vascular disease

Age 65-74

Sex

Category

Hypertension

Abnormal renal and liver function

Stroke

Bleeding

~~Labile INRs~~

Elderly

Drugs or alcohol

Stroke Type and Anticoagulation

♦ Ischemic Stroke

- Due to AF, requires long term AC
- When to start?
 - Depends on size of infarct, presence of hemorrhagic conversion

♦ Primary ICH

- Hypertension – Maybe eventual AC, if BP well controlled
- Amyloid angiopathy - #NeverAC

♦ Other causes of hemorrhage

- Hemorrhagic conversion of ischemic stroke – Sure! Eventually...
- Major trauma – Sure! Eventually...
- AVM – Sure! If treated...