

Anticoagulation after intracranial haemorrhage (ICrH)

Rustam Al-Shahi Salman

Professor of clinical neurology (University of Edinburgh)

Honorary consultant neurologist (NHS Lothian)

Clinical director (UKCRC CTU network)



THE UNIVERSITY of EDINBURGH



My disclosures



Salary (paid to me)



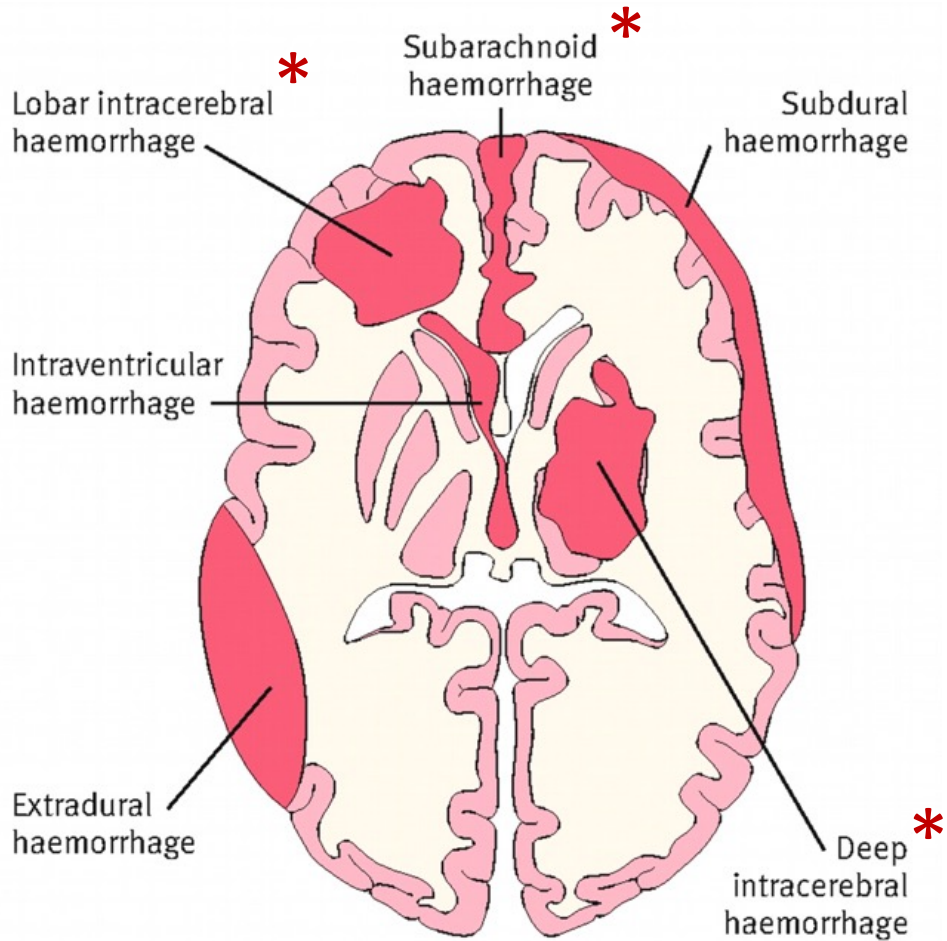
Grants (paid to employer)



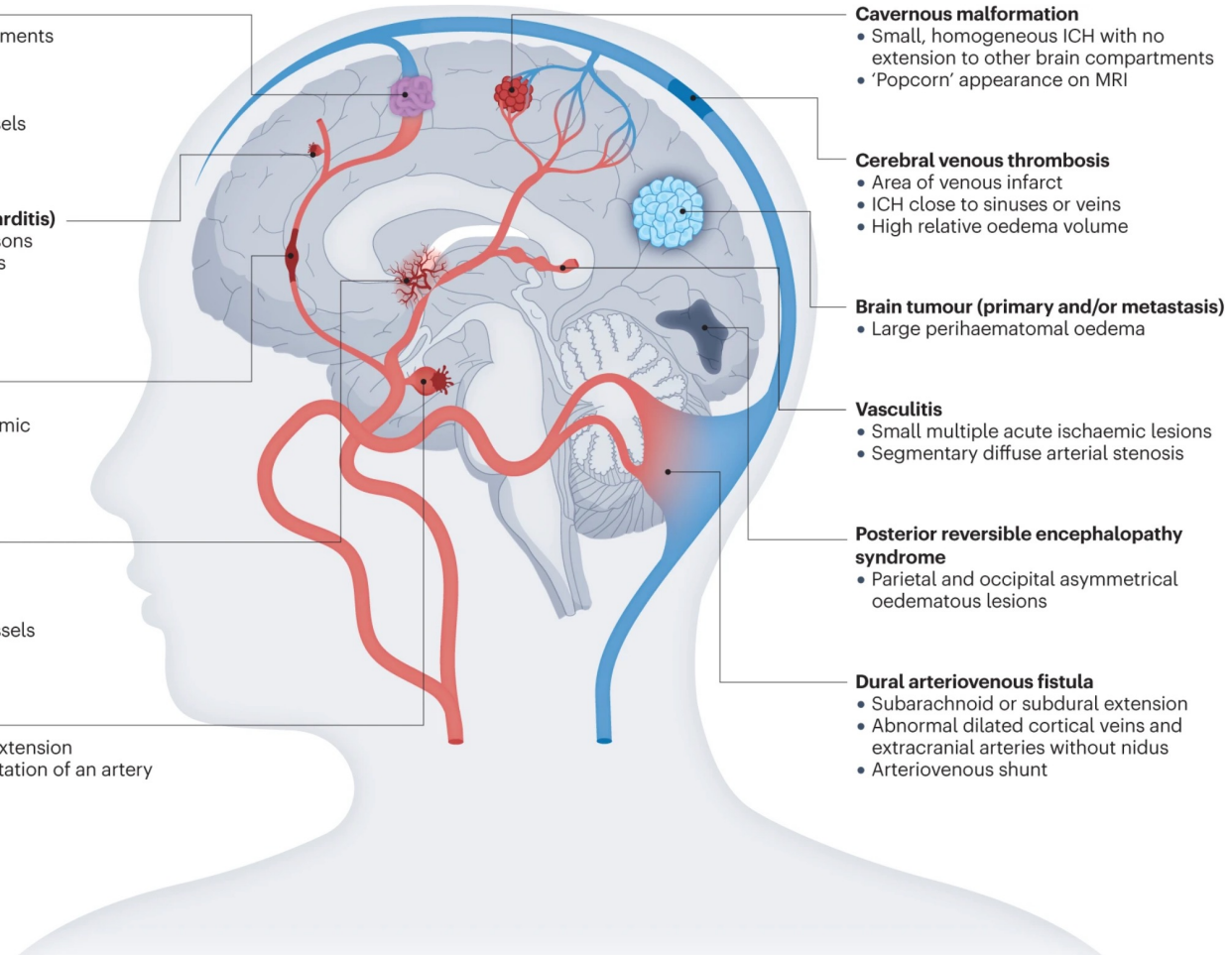
Consultancies (paid to employer)



Learning objective: intracranial haemorrhage (ICrH)



- Arteriovenous malformation**
 - Extension to other brain compartments (subarachnoid haemorrhage)
 - Flow voids
 - Calcification
 - Nidus with abnormal dilated vessels
 - Arteriovenous shunt
- Micro-aneurysm (infective endocarditis)**
 - Acute and multiple ischaemic lesions
 - Small irregular arterial aneurysms
 - Diffuse brain microbleeds
- Haemorrhagic transformation of cerebral infarction**
 - Substantial areas of acute ischaemic lesions adjacent to the ICH
- Moya Moya disease**
 - Stenosis and/or occlusion of the terminal portion of the internal carotid arteries
 - Presence of dilated collateral vessels
- Aneurysm**
 - Disproportionate subarachnoid extension of the blood, abnormal focal dilatation of an artery



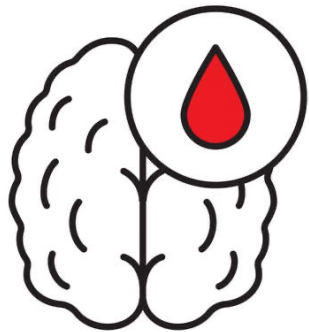
Learning objective: evidence-based update on the effects of oral anticoagulation



Indication

Complication

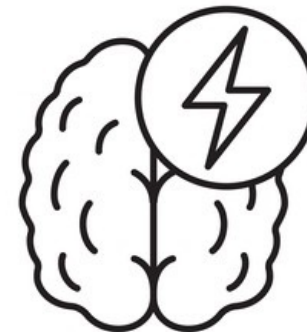
Prevention?



Immobility

Venous thromboembolism

Subcutaneous heparin

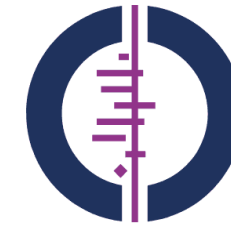


Atrial fibrillation (AF)

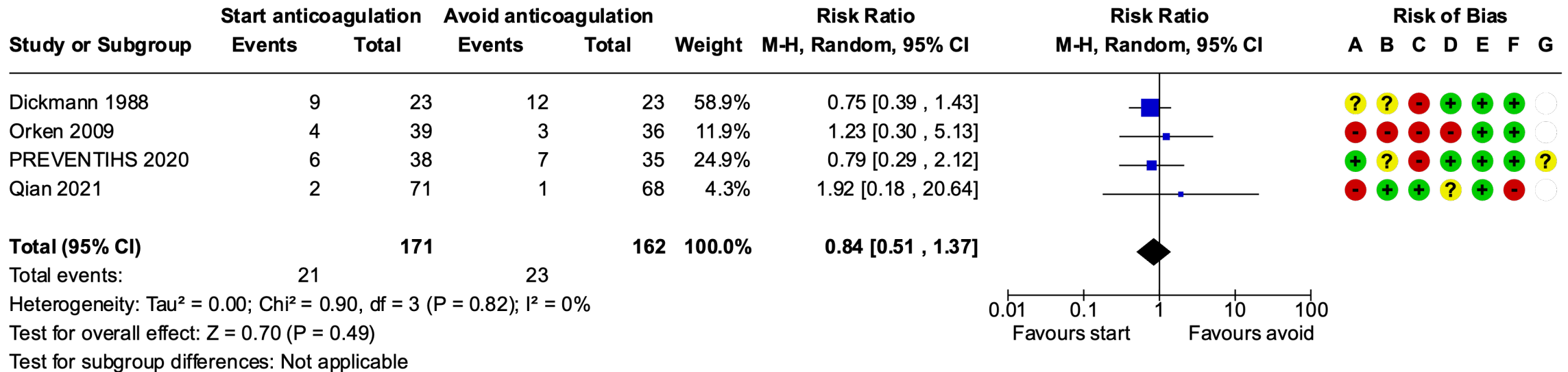
Ischaemic stroke

Oral anticoagulation

Key message: effect of short-term prophylactic dose anticoagulation after ICH on venous thromboembolism



Uncertain effects in small randomised controlled trials (RCTs)



Key message: effects of long-term oral anticoagulation for AF after ICrH



Outcomes	Risk ratio (95% CI)	Participants (RCTs)	Certainty of the evidence
MACE (primary)	0.61 (0.40-0.94)	334 (3)	⊕⊕⊕⊖ Moderate
Death	1.05 (0.62-1.78)	334 (3)	⊕⊕⊕⊖ Moderate
Vascular death	1.47 (0.65-3.32)	334 (3)	⊕⊕⊕⊖ Moderate
Ischaemic stroke	0.35 (0.17-0.71)	334 (3)	⊕⊕⊕⊖ Moderate
Myocardial infarction	0.20 (0.02-1.71)	334 (3)	⊕⊕⊕⊖ Moderate
All major occlusive events	0.27 (0.14-0.53)	334 (3)	⊕⊕⊕⊖ Moderate
Recurrent ICrH	2.43 (0.88-6.73)	334 (3)	⊕⊕⊕⊖ Moderate
Major extracranial haemorrhage	0.58 (0.13-2.57)	334 (3)	⊕⊕⊕⊖ Moderate
Any stroke	0.70 (0.42-1.15)	334 (3)	⊕⊕⊕⊖ Moderate
modified Rankin Scale score 0-2	0.98 (0.78-1.24)	288 (2)	⊕⊕⊖⊖ Low

Key references



1. Cochrane A, Chen C, Stephen J, Rønning OM, Anderson CS, Hankey GJ, Al-Shahi Salman R. Antithrombotic treatment after stroke due to intracerebral haemorrhage. *Cochrane Database of Systematic Reviews* 2023;1(1):CD012144
 2. Al-Shahi Salman R, Stephen J, Tierney JF, Lewis SC, Newby DE, Parry-Jones AR, White PM, Connolly SJ, Benavente OR, Dowlatshahi D, Cordonnier C, Viscoli CM, Sheth KN, Kamel H, Veltkamp R, Larsen KT, Hofmeijer J, Kerkhoff H, Schreuder FHBM, Shoamanesh A, Klijn CJM, van der Worp HB for the Collaboration Of Controlled Randomised trials of long-term Oral Antithrombotic agents after spontaneous intraCranial Haemorrhage (COCROACH). Effects of oral anticoagulation for atrial fibrillation after spontaneous intracranial haemorrhage: prospective individual participant data meta-analysis of randomised trials. *Lancet Neurol* 2023 Published: October 12, 2023. DOI:[https://doi.org/10.1016/S1474-4422\(23\)00315-0](https://doi.org/10.1016/S1474-4422(23)00315-0)
-