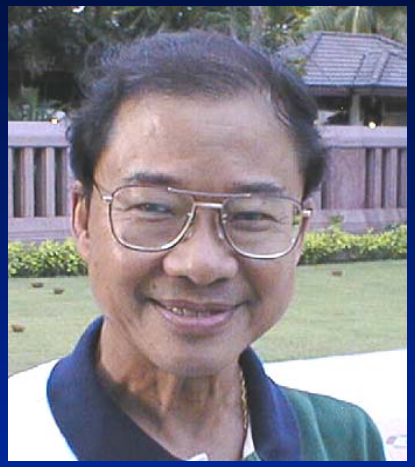
EGAT Study 1985



Professor Somchart Lochaya **Professor Vichai Tanphaichitr**

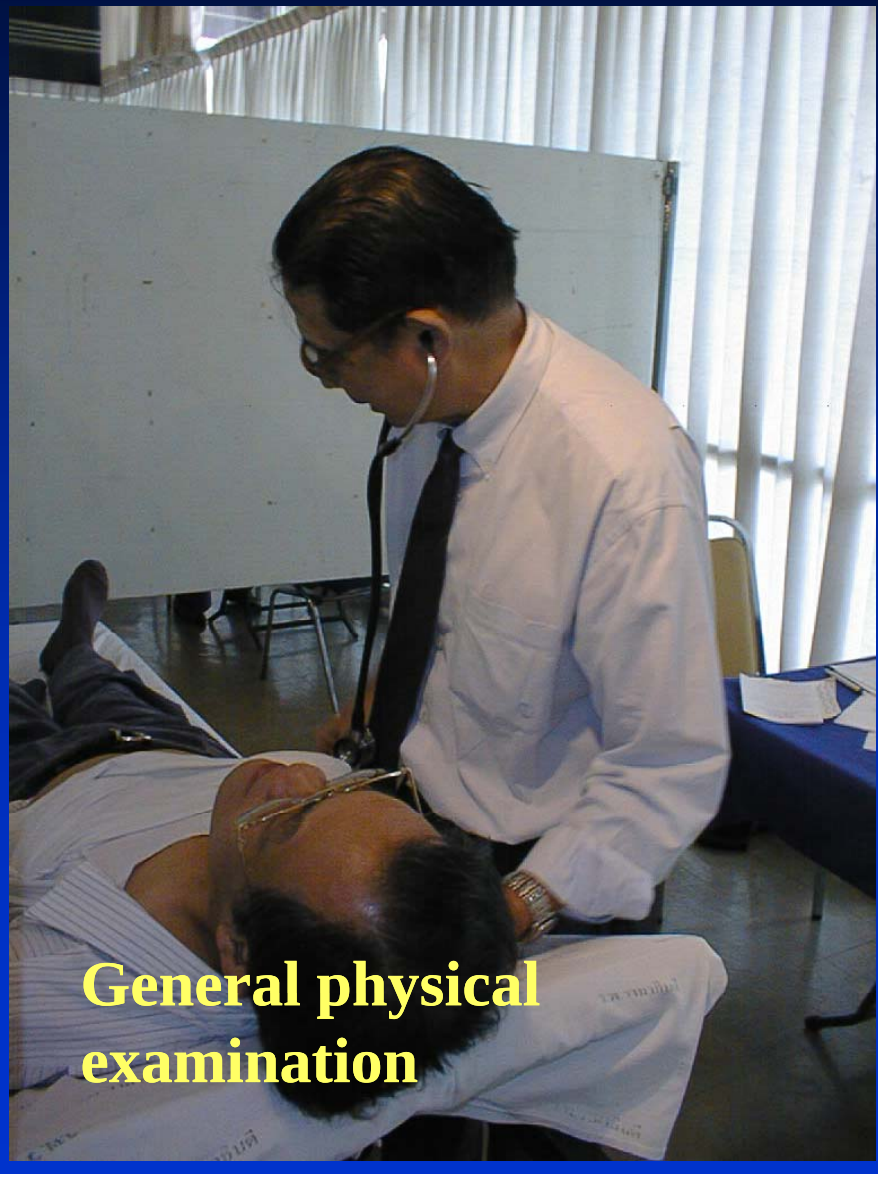
Supported by
Faculty of Medicine, Ramathibodi Hospital
Electricity Generating Authority of Thailand
The Heart Association of Thailand

EGAT follow up study 1997

EGAT follow up study 1997

Neurological examination

Exercise stress test



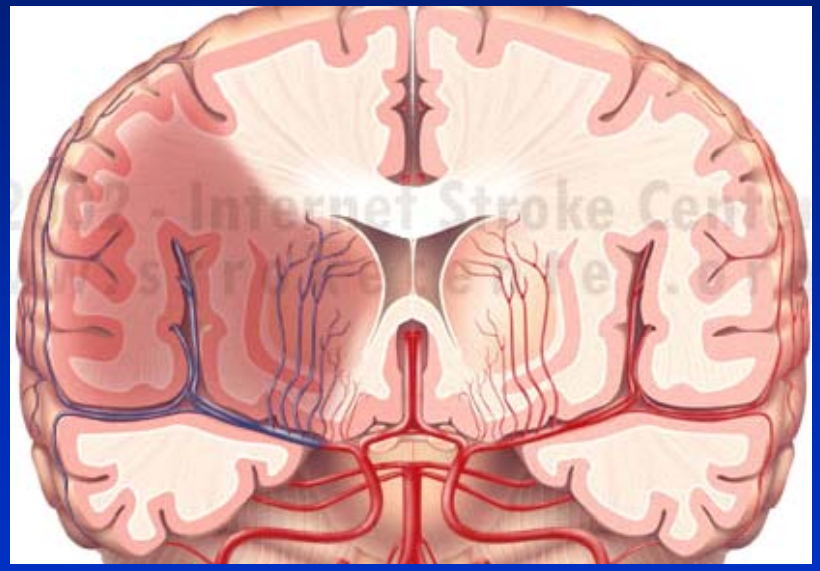
General physical examination

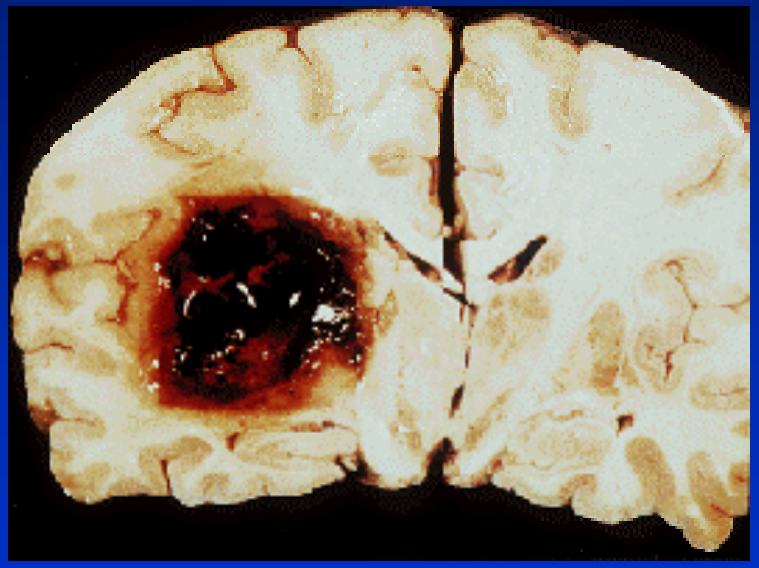

แพทย์และอนามัย กฟผ. ร่วมกับ คณะแพทยศาสตร์ โรงพยาบาลรามาธิบ
ะทันตแพทยศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย ระหว่างวันที่ 4 มิถุนายน
ารไฟฟ้าฝ่ายผลิตแห่งประเทศไทย นายอภิชาต ดิลกโศภณ และ ศ. บุญมี สถ
าสตร์ คณะแพทยศาสตร์ โรงพยาบาลรามาธิบดี วันที่ 4 มิถุนายน 2550 เวล

Stroke is different from myocardial infarction

- Stroke patients are at least 10 years older
- Not much a male excess in middle age
- HT is more and cholesterol is less strongly associated with stroke

Stroke is highly heterogeneous





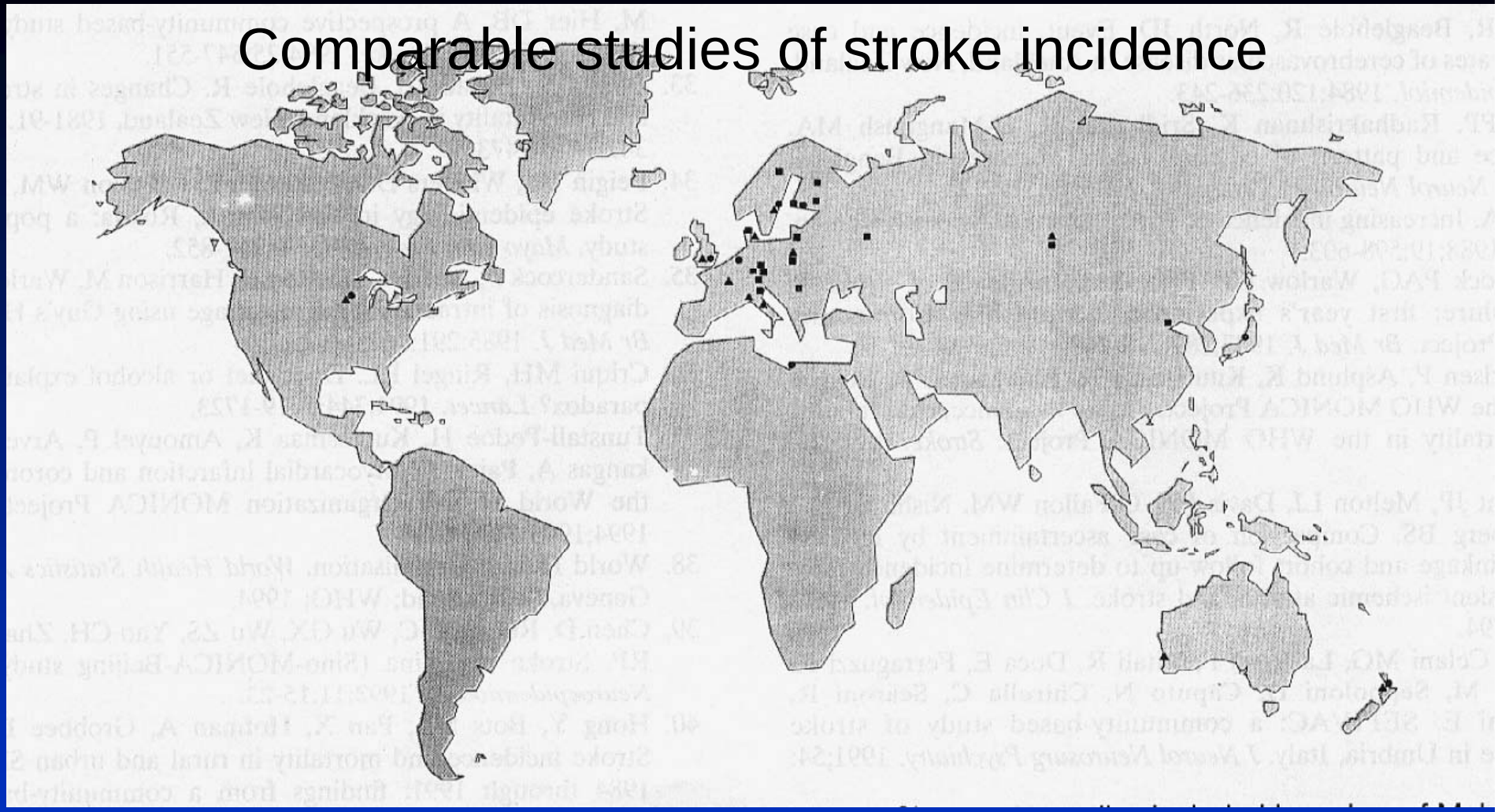
Burden of stroke

- Mortality
- Incidence
- Prevalence
- long-term outcome
- Cost

*Death certificate ?
*Omit milder forms of CVD
*Ischemic vs hemorrhagic?

*Incidence and case fatality ?
*Omit severe forms of CVD
*Ischemic vs hemorrhagic?

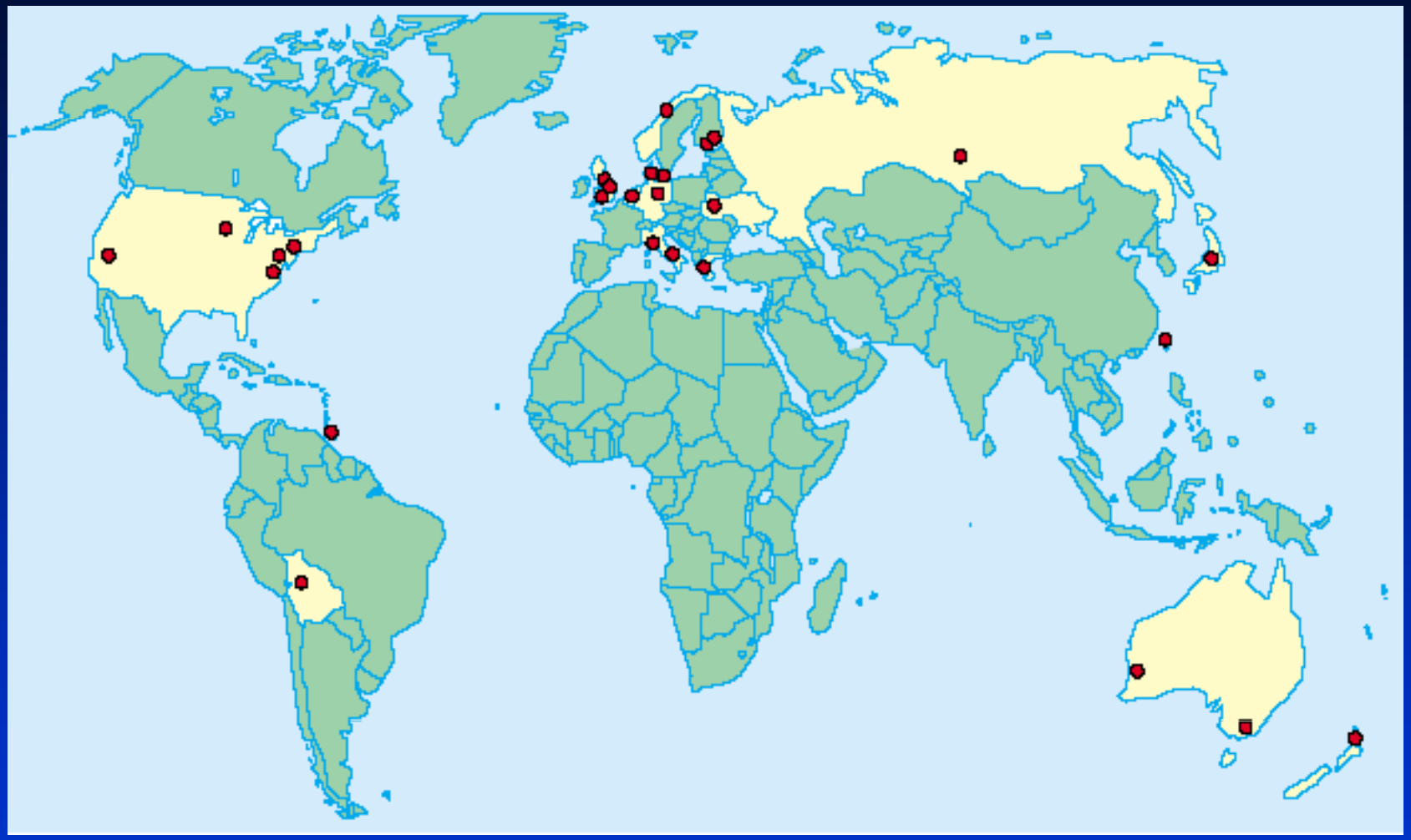
Comparable studies of stroke incidence



● Malmgren et al ▬ WHO MONICA ▲ Sudlow et al

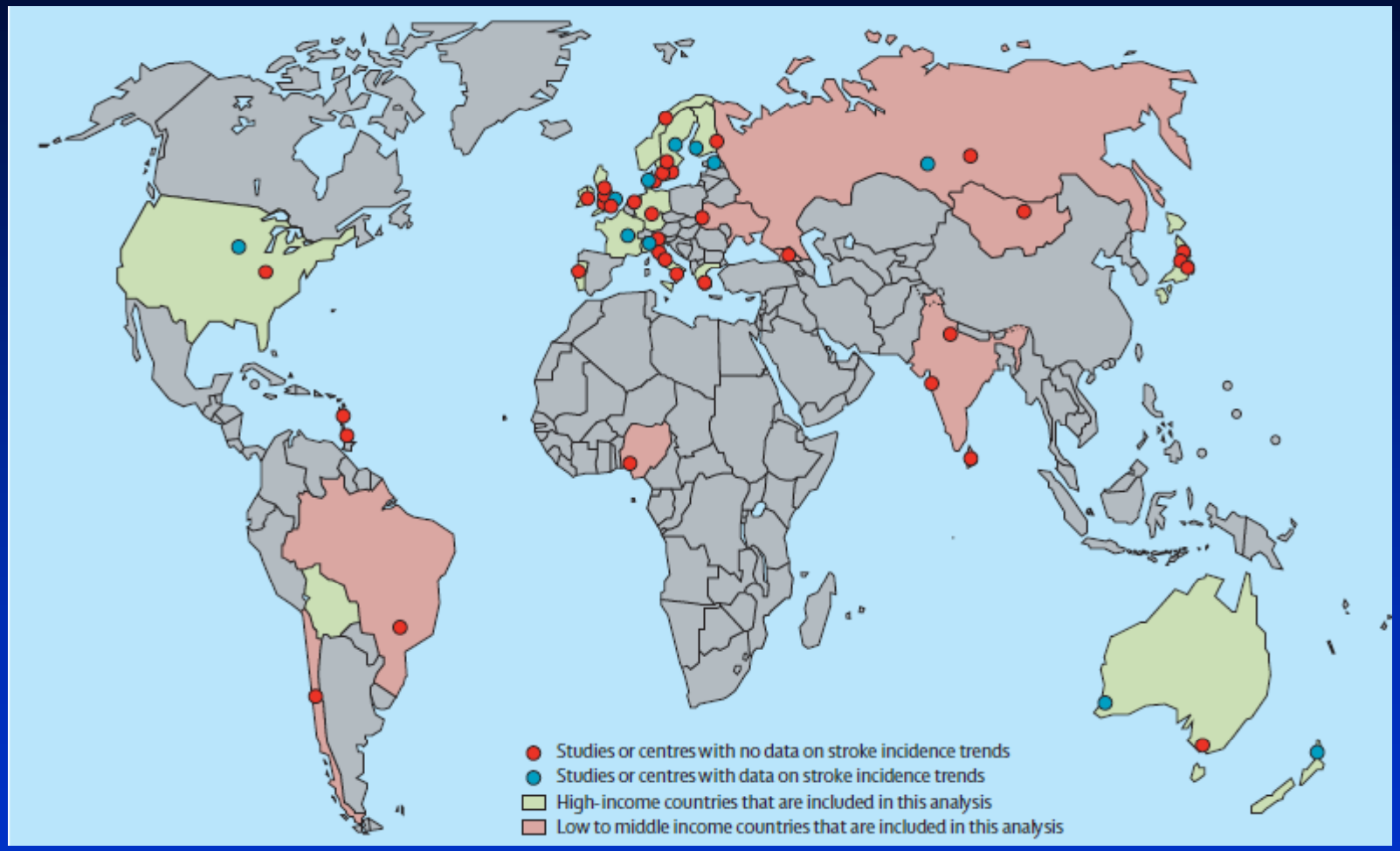
Sudlow CL, Warlow CP. Comparable studies of the incidence of stroke and its pathological types: results from an international collaboration. Stroke 1997; 28: 491–99.

World map showing areas of the selected studies of stroke incidence and prevalence.



Stroke epidemiology: a review of population based studies of incidence, prevalence, and case-fatality in the late 20th century. THE LANCET Neurology Vol 2 January 2003

World map showing areas of the selected studies of stroke incidence and prevalence.



Worldwide stroke incidence and early case fatality reported in 56 population-based studies: a systematic review. Lancet Neurol 2009; 8: 355–69

Stroke incidence in EGAT 1/4

- Well defined source population (denominator)
- Complete identification of fatal and non-fatal events (including patients who are hospitalised or managed elsewhere)

Stroke is highly heterogeneous

- Prognosis
- Type of treatment required
- Preventive strategies
  - ! Diagnostic skill and technologically accessibility

Definition: Stroke

- rapidly developing clinical symptoms or signs of focal, and at times global (patients with deep coma and SAH), loss of cerebral function.
- with symptom lasting more than 24 hours or leading to death.
- no apparent cause other than that of vascular origin.

Hatano S.Experience from a multicenter stroke register: a preliminary report. Bull WHO 1976;54:541-53

Definition: TIA

- acute loss of focal cerebral or ocular function
- with symptom lasting less than 24 hours
- presumed to be due to embolic or thrombotic vascular disease (perferable, after investigation).

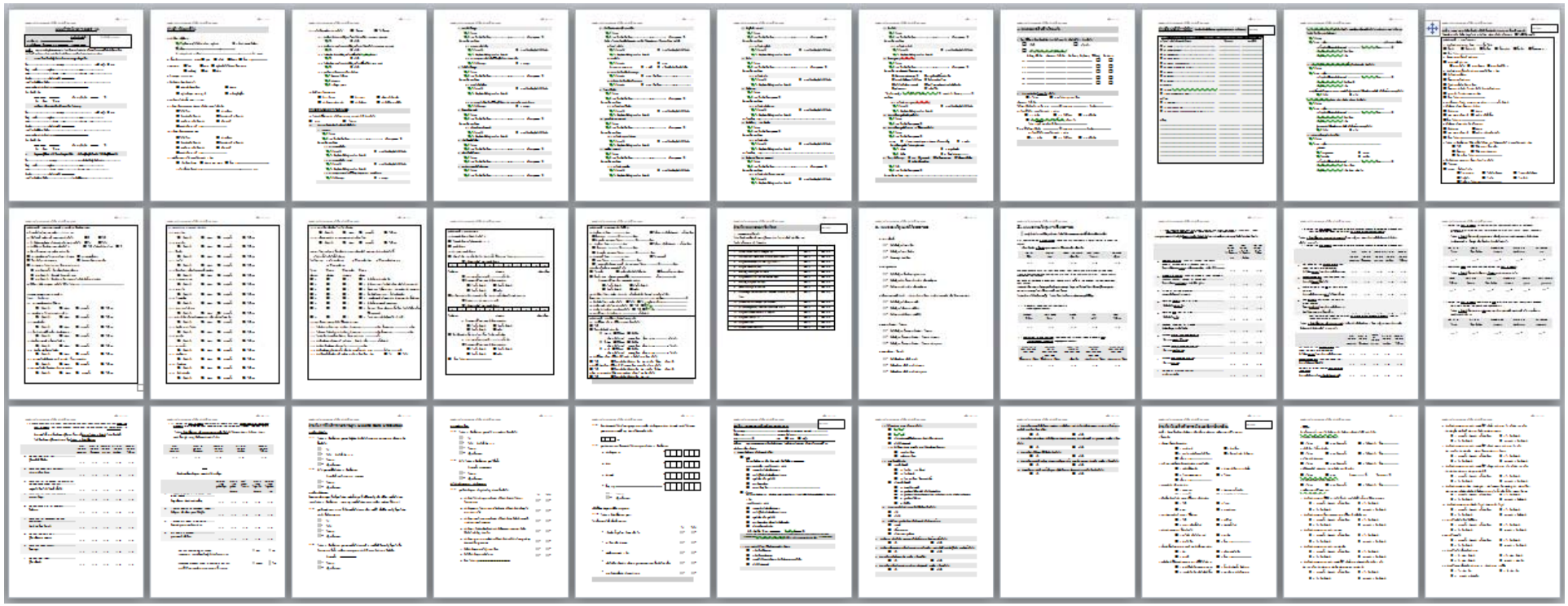
Warlow CP, Morris PJ. Introduction. In: Warlow CP, Morris PJ, eds. Transient Ischemic Ataacks. New york: Marcel Decker, 1982:vii-xi.

Questionare

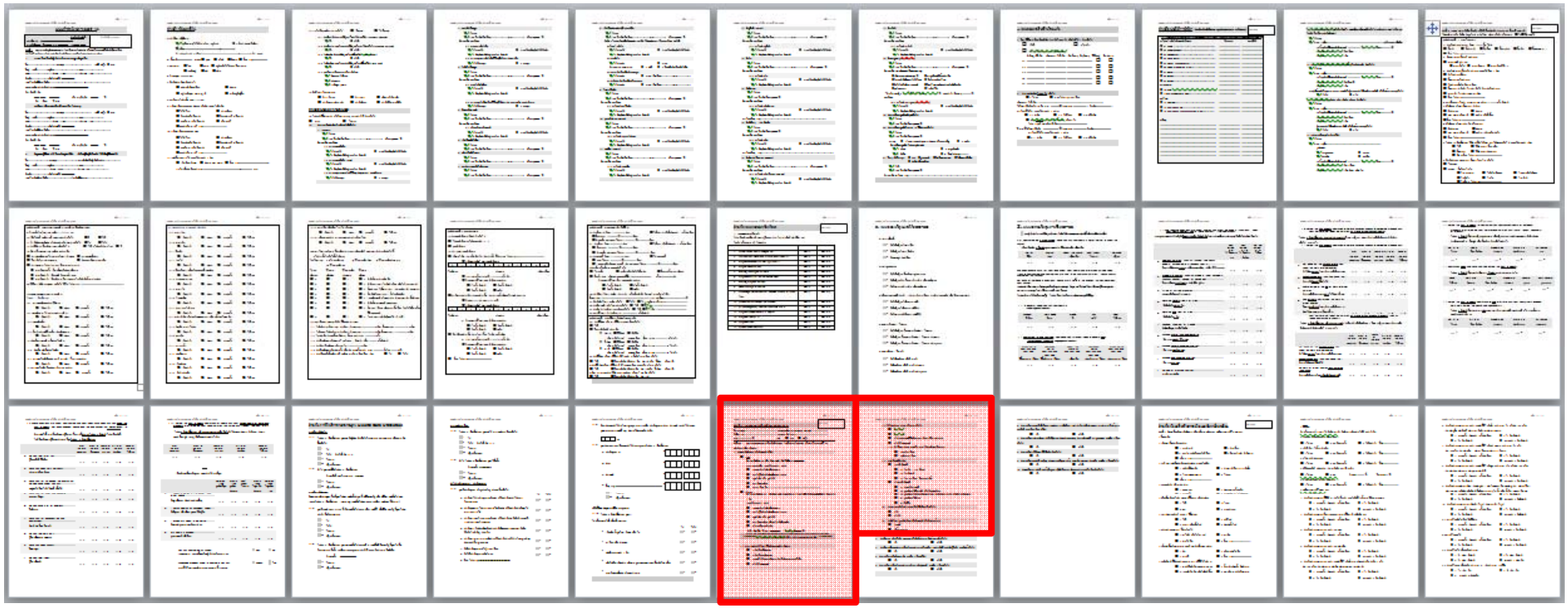
- Short and simple
- High sensitivity (low specificity is acceptable)

Sorensen PS et al. Prevalence of stroke in a district of Copenhagen. Acta neurol.scandinav 1982;66:68-81.

แบบสอบถาม



แบบสอบถาม



Case ascertainment

1. ท่านเคยเป็นอัมพาต หรือ อัมพฤกษ์ หรือไม่

☐ 1. เคย

ถ้าเคยเป็นอัมพาต หรือ อัมพฤกษ์ เป็นเมื่อปี พ.ศ. |__|__|__|__|

อาการของท่านคือ (ตอบได้มากกว่า 1 อย่าง)

☐ 1. แขนขาข้างใดข้างหนึ่งอ่อนแรง

☐ 2. ชาไม่รู้สึกด้านใดด้านหนึ่งของร่างกาย

☐ 3. พูดไม่ชัด หรือ พูดไม่ได้

☐ 4. ตาเห็นภาพซ้อน

☐ 5. อาการอื่นๆ คือ.....

Case ascertainment

☐ 2. ไม่เคย

ถ้าไม่เคยเป็นอัมพาต หรืออัมพฤกษ์ ท่านเคยมีอาการใดต่อไปนี้ที่เกิดขึ้นแบบทันทีทันใด หรือภายใน 1 วัน

(ตอบได้มากกว่า 1 อย่าง)

- ☐ 1. แขนขาข้างใดข้างหนึ่งอ่อนแรง
- ☐ 2. ชาไม่รู้สึกด้านใดด้านหนึ่งของร่างกาย
- ☐ 3. พูดไม่ชัด หรือ พูดไม่ได้
- ☐ 4. ตาเห็นภาพซ้อน หรือมองไม่เห็นเฉียบพลัน
- ☐ 5. ไม่เคยมีอาการข้างต้น

ถ้ามี เป็นเมื่อไร ปี พ.ศ. . |__|__|__|__| (ตอนอายุ |__|__|__| ปี)

Case ascertainment

1.1. อาการของท่านได้รับการวินิจฉัยจากแพทย์ว่าเป็นจาก

- ☐ 1. เส้นเลือดตีบในสมอง
- ☐ 2. เส้นเลือดแตกในสมอง
- ☐ 3. แพทย์ไม่ได้บอกว่าเป็นจากเส้นเลือดในสมองแตกหรือตีบ
- ☐ 4. ไม่ได้ไปพบแพทย์

Case ascertainment

1.2. ได้รับการทำ CT brain หรือ MRI หรือไม่

- ☐ 1. CT brain
- ☐ 2. MRI brain
- ☐ 3. ไม่เคยทำ (แพทย์วินิจฉัยจากการซักประวัติตรวจร่างกาย)
- ☐ 4. ไม่ได้ไปพบแพทย์

1.2.1 ถ้าได้รับการทำ CT brain หรือ MRI ได้ทำหลังจากเกิดอาการ

- ☐ 1. ภายใน 1 เดือน
- ☐ 2. หลังจาก 1 เดือน

Consequences

1.3. อาการผิดปกติข้างต้น

- ☐ 1. หายดีเป็นปกติ
  - ☐ 1.1. ใน 1 วัน (24 ชั่วโมง)
  - ☐ 1.2. ใน 1 สัปดาห์
  - ☐ 1.3. ใน 2 – 3 เดือน หรือมากกว่านั้น
- ☐ 2. ไม่หายดีเป็นปกติ
  - ☐ 2.1. ทำงานได้ตามปกติ
  - ☐ 2.2. ดูแลตัวเองได้เดินเองได้ หรือใช้อุปกรณ์ช่วย
  - ☐ 2.3. ดูแลตัวเองได้บ้างโดยมีคนช่วยในการทำกิจวัตรประจำวัน หรือเดินโดยมีคนช่วย
  - ☐ 2.4. ดูแลตัวเองไม่ได้เลย
  - ☐ 2.5. เสียชีวิต

Consequences

1.4. ท่านสามารถกลับไปประกอบอาชีพได้ดีเหมือนเดิมหรือไม่

- ☐ 1. ได้
- ☐ 2. ไม่ได้

1.5. ท่านได้รับการดูแลป้องกันการเกิดอัมพฤกษ์ หรืออัมพาตซ้ำจาก

- ☐ 1. แพทย์
- ☐ 2. ซื้อยาทานเอง
- ☐ 3. ไม่ทราบการดูแลรักษา

Case ascertainment

1. Have you ever experienced a stroke

   If so, your symptom was (were)

   – Weakness in one side
   – Numbness in one side
   – Speech difficulties
   – Others = ……..

Case ascertainment

2. If you don’t think you ever got stroke, have you ever experienced a sudden onset of any of the following symptoms
   - Weakness in one side
   - Numbness in one side
   - Speech difficulties
   - No

Case ascertainment

3. Your doctor told you that your stroke (or symptoms) came from
   - Occlusion of the vessel
   - Rupture of the vessel
   - Not from vascular disease
   - I didn’t see any doctor

Case ascertainment

4. Have you got any imaging
   - CT scan
   - MRI
   - No imaging (diagnosis was made base on clinical data only)

Consequences

5. The symptoms
   - Recovered in
     - 1 day **TIA**
     - 1 week **RIND**
     - more than one weeks **stroke**
   - Not completely recovered
     - full working ability
     - dependent with some aids
     - partially dependent
     - dependent

Consequences

5. The symptoms
   - Recovered in
     - 1 day **TIA**
     - 1 week **RIND**
     - more than one weeks **stroke**
   - Not completely recovered
     - full working ability
     - dependent with some aids
     - partially dependent
     - dependent

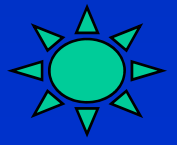
Consequences

6. Can you go back to the same position in EGAT?

The large number of patients assessed by the team but not considered to have had stroke or TIA

- Deleberate policy to encorage referral of all possible cases (avoid missing cases with unusual clinical presentations)
- Participants can request to see a neurologist

However, screening all neurological diseases is not our objective.



Results

Stroke in EGAT 1/4

- 72623 person-years
- First stroke
  - Image confirmed 88
  - Clinical definite 21
  - Clinical probable 21
- Crude incidence per thousand
  - 150-179

Worldwide situation

- Comparing stroke rates in different parts of the world may increase our understanding of both etiology and prevention
- However, comparisons are meaningful only if studies use standard definitions and methods, with comparably presented data.

Male prevalence

Age	Pop	Cases	PR%	CI
50-54	360	3	0.83	0.17-2.42
55-59	771	9	1.17	0.54-2.20
60-64	640	5	1.09	0.13-1.87
65-69	385	7	1.82	0.73-3.71
70-74	93	0	0	

Female prevalence

Age	Pop	Cases	PR%
50-54	139	0	0
55-59	286	2	0.70
60-64	140	2	1.43
65-69	68	0	0
70-74	11	0	0

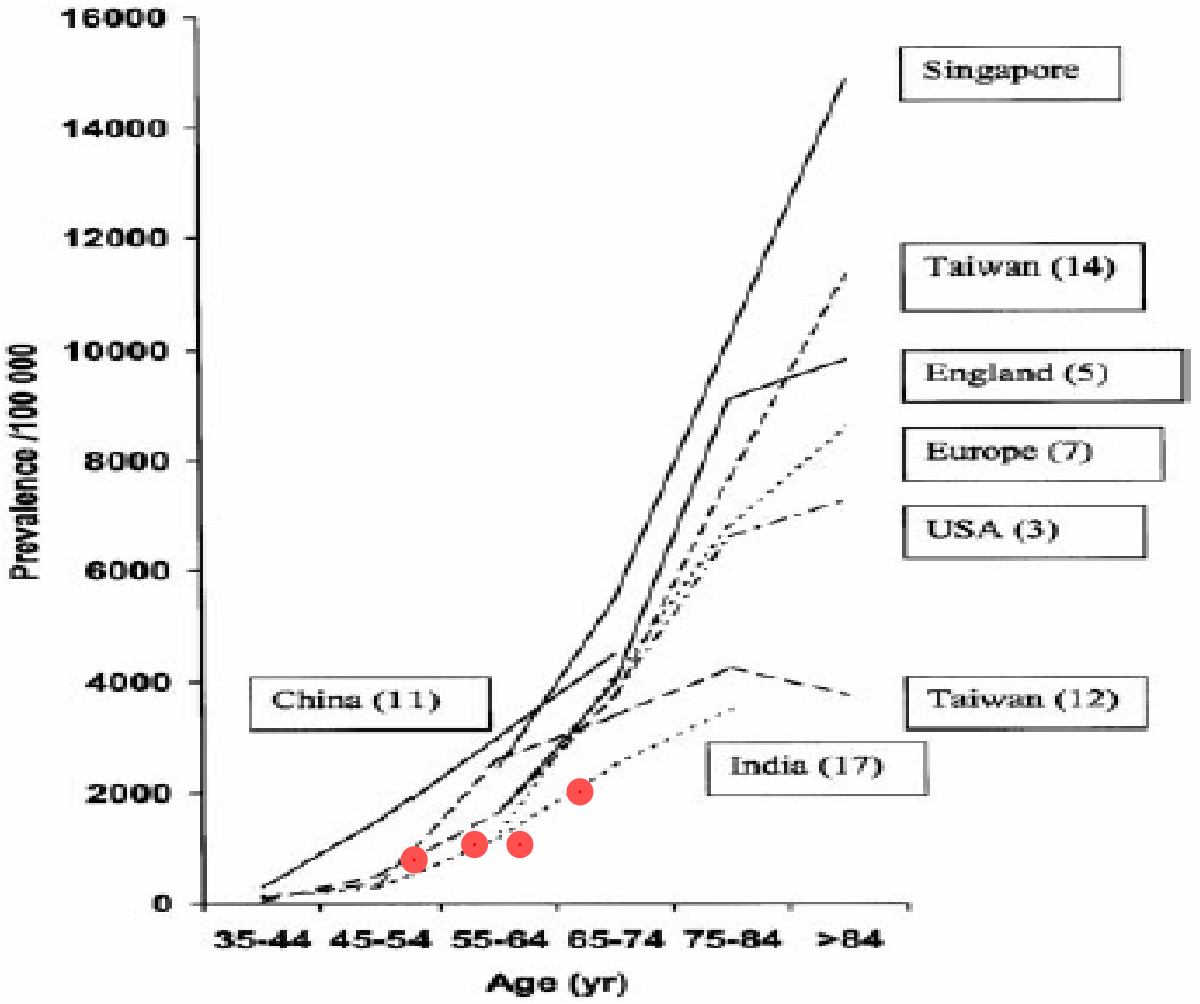


Figure 1. Prevalence of stroke per 1 000 000 population in selected countries (references are in parentheses).

Age stratified incidence

Age	Pop-year	Events	per1000
35-44	11409	0	0
45-54	28712	28	0.98
55-64	25522	51	2.00
65-74	6827	28	4.10
75-76	153	2	13.07

Male incidence

Age	Pop-year	Events	per1000
35-44	8205	0	0
45-54	21193	19	0.89
55-64	13071	31	2.38
65-74	1711	8	4.68

Female incidence

Age	Pop-year	Events	per1000
35-44	3117	0	0
45-54	6883	5	0.73
55-64	3255	1	0.31
65-74	264	1	3.79

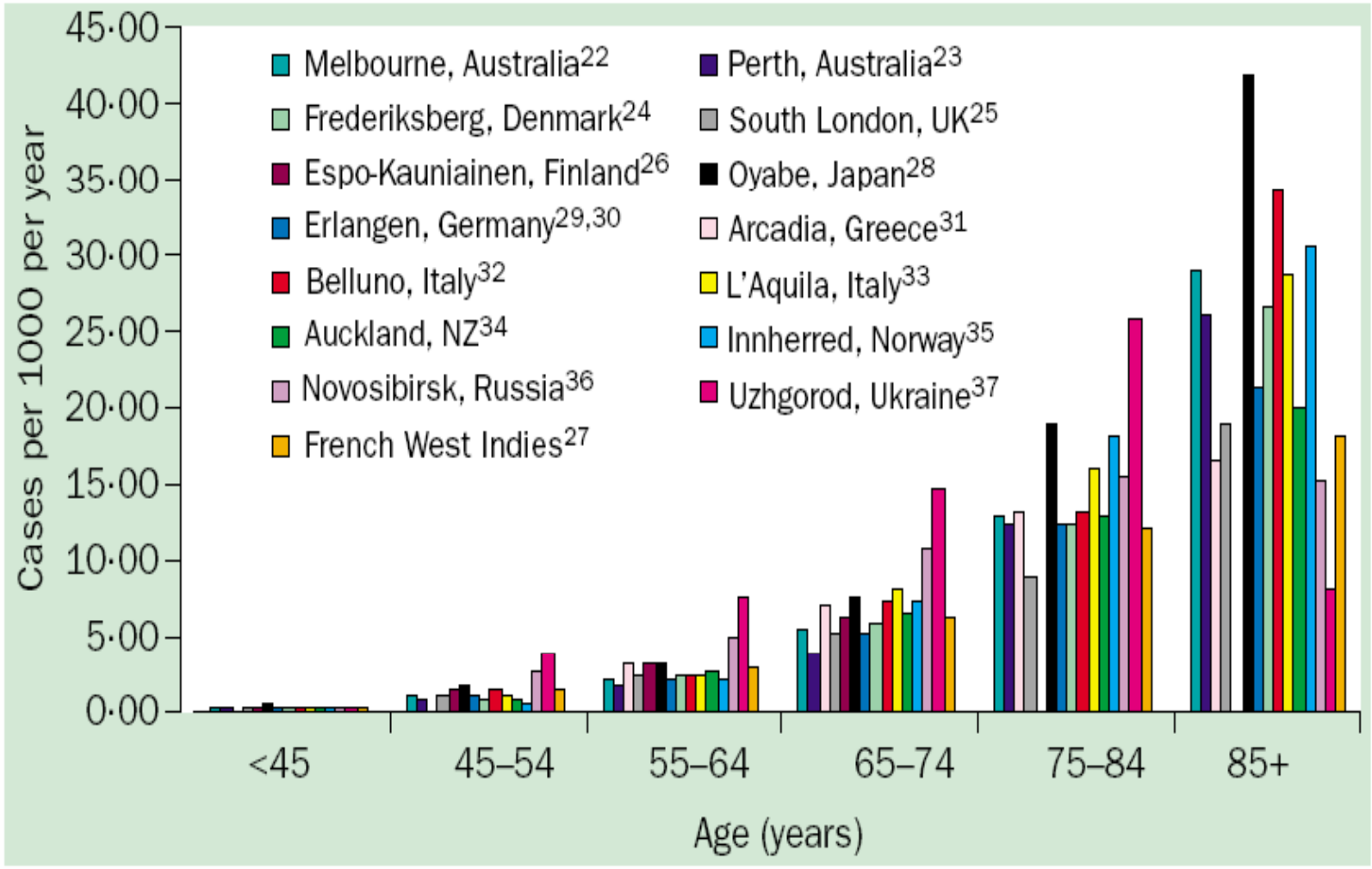
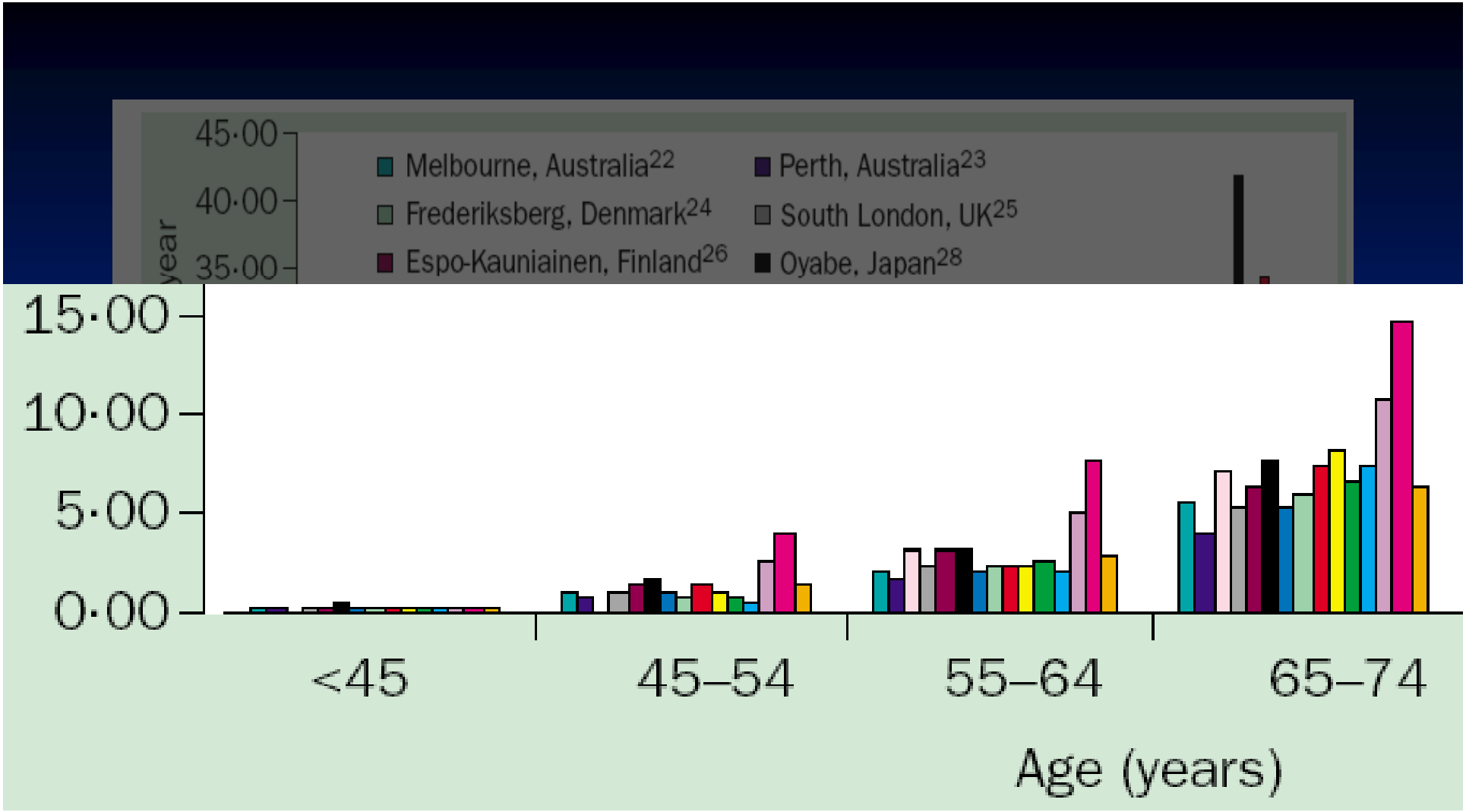


Figure 3. Annual incidence by age per 1000 population of all types of stroke combined in selected studies.



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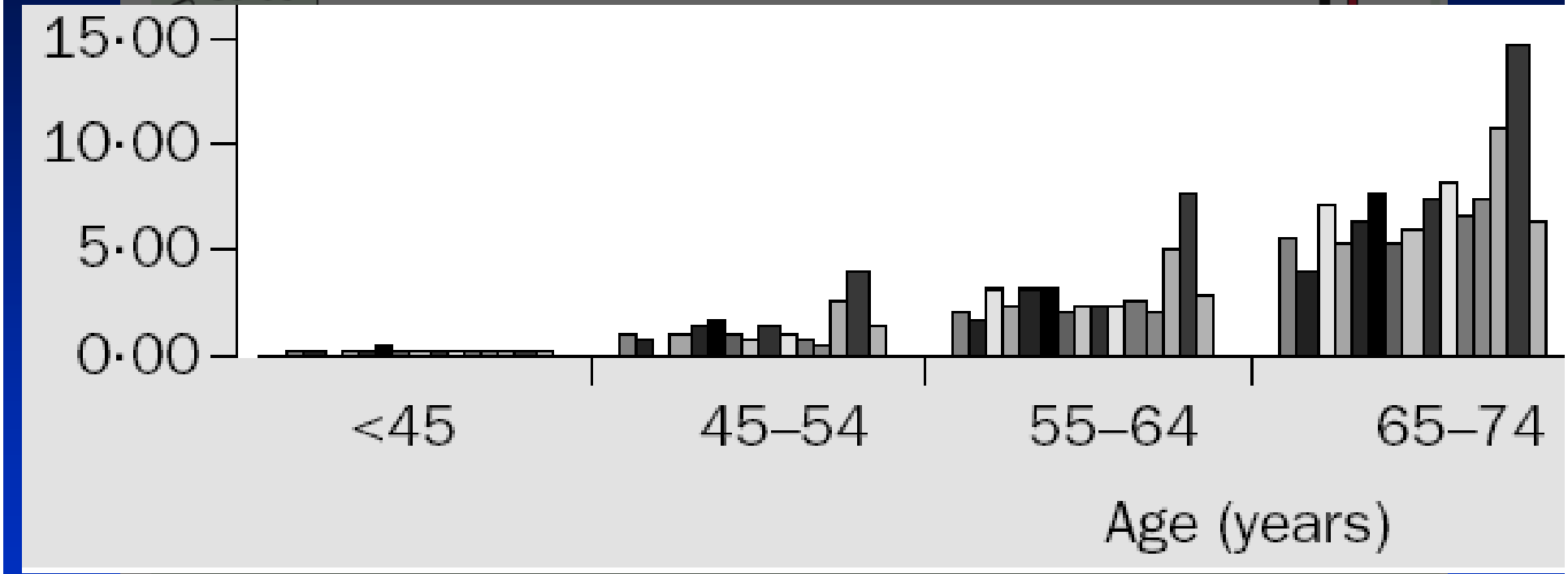

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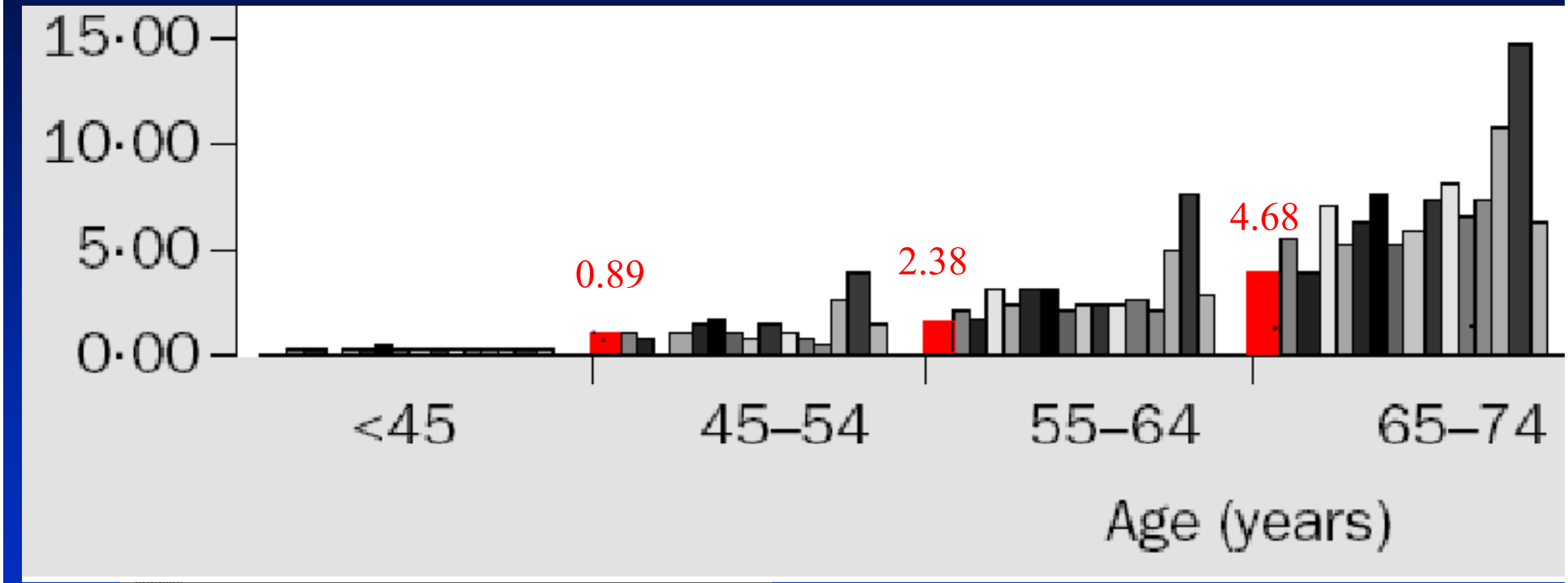
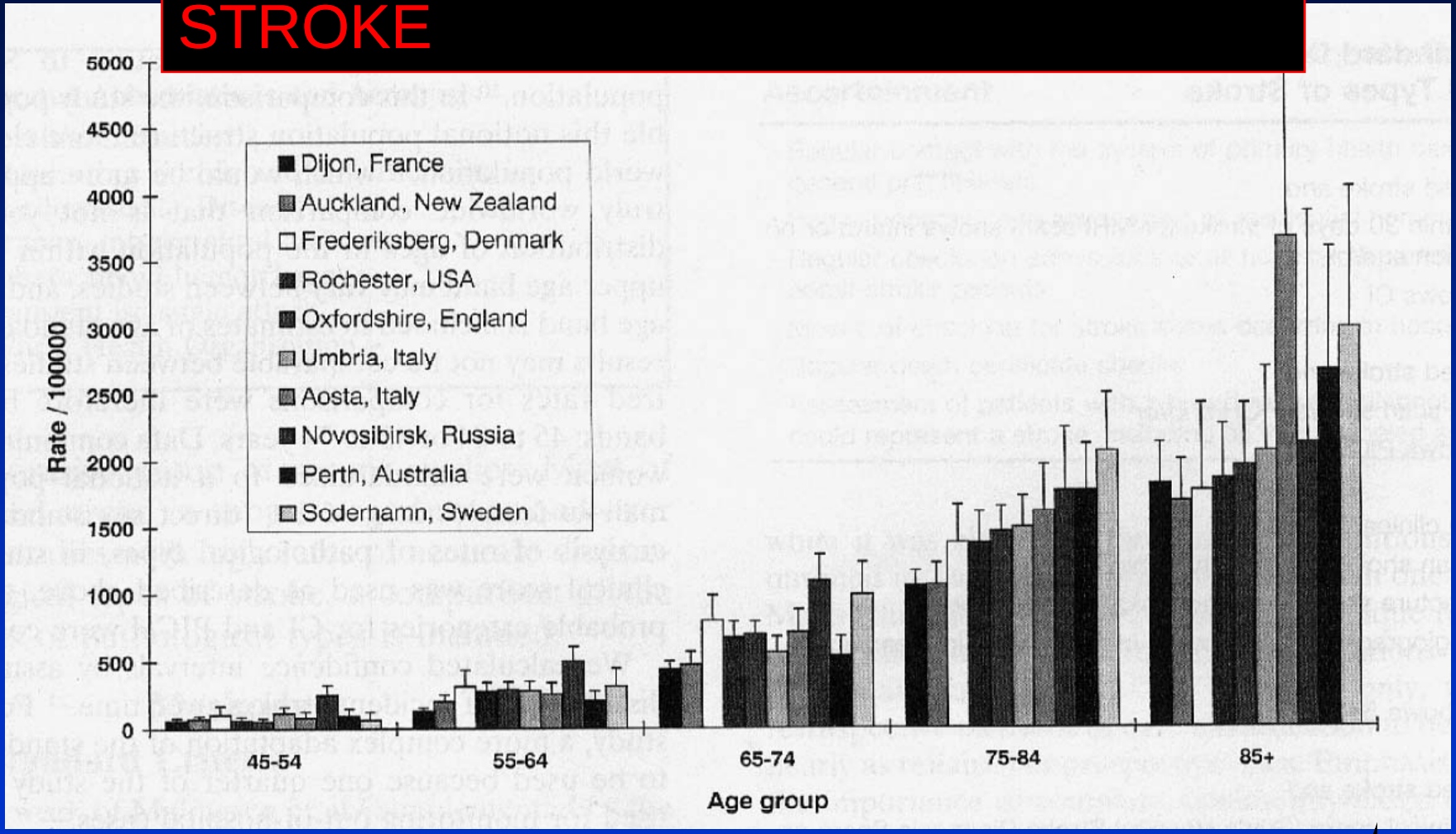
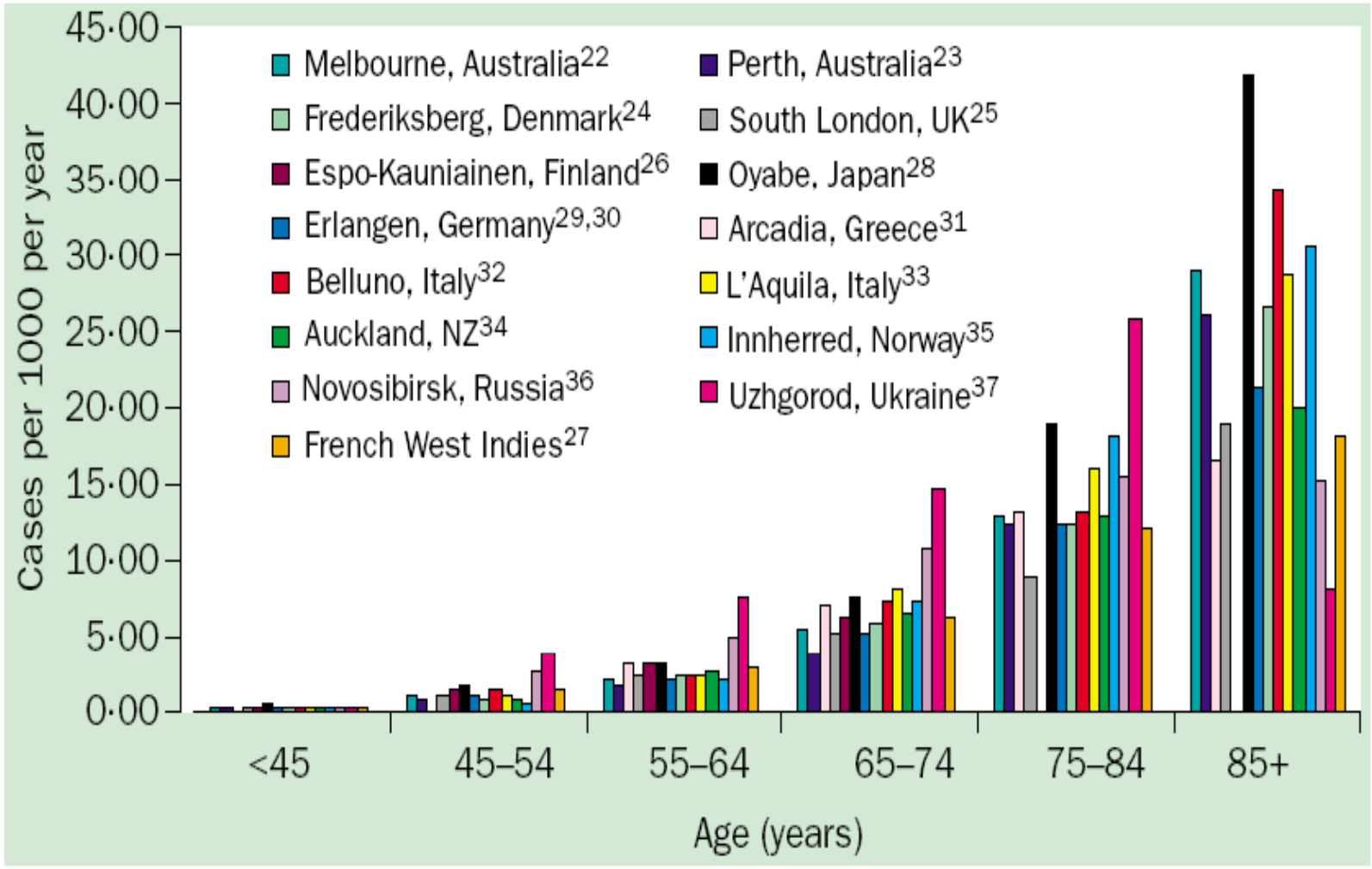

15·00
10·00
5·00
0·00
0.89
2.38
4.68
<45
45–54
55–64
65–74
Age (years)

STOPING AT 65 YEARS = EXCLUDING APPROXIMATELY 75 % OF ALL STROKE





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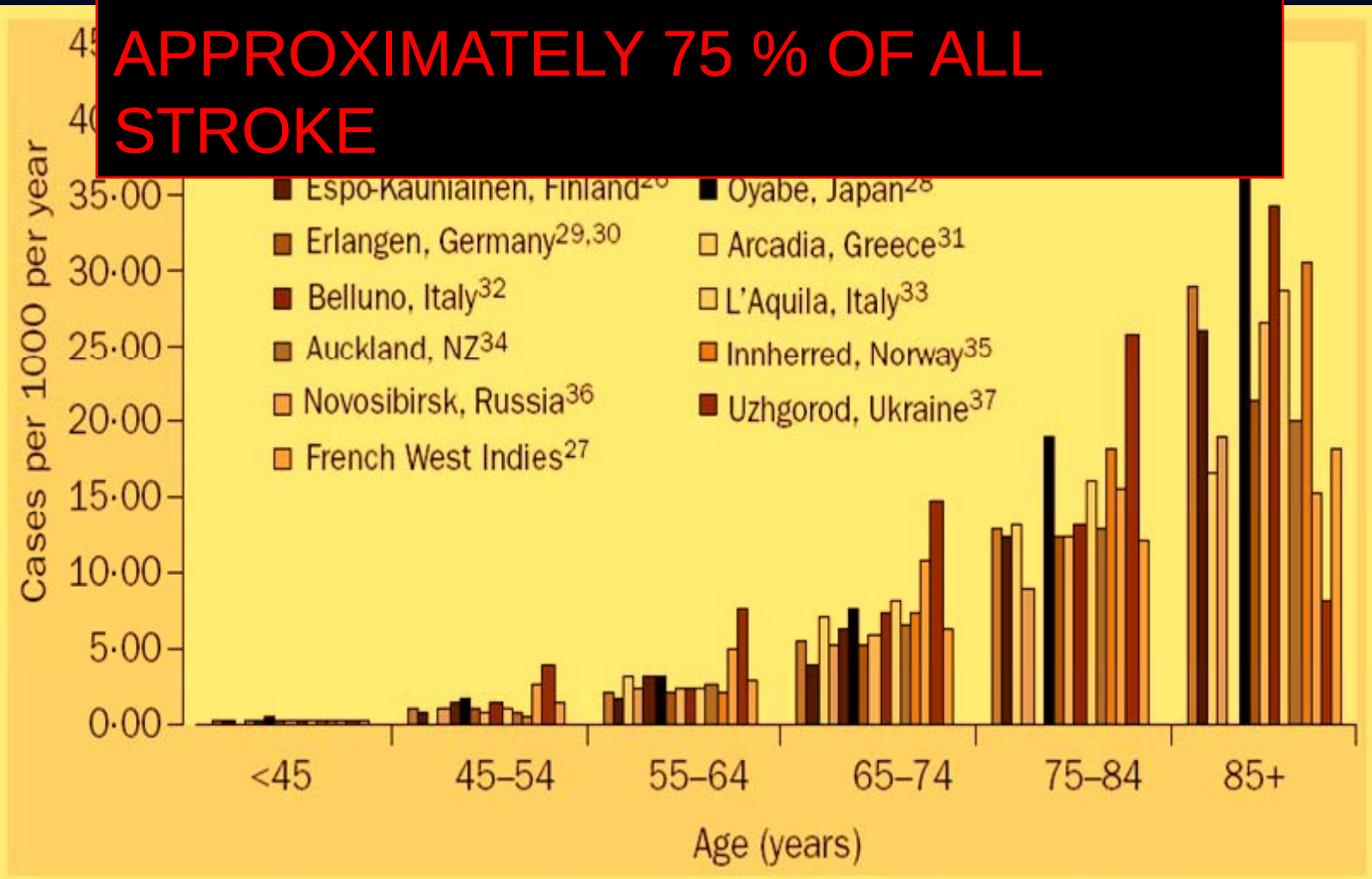

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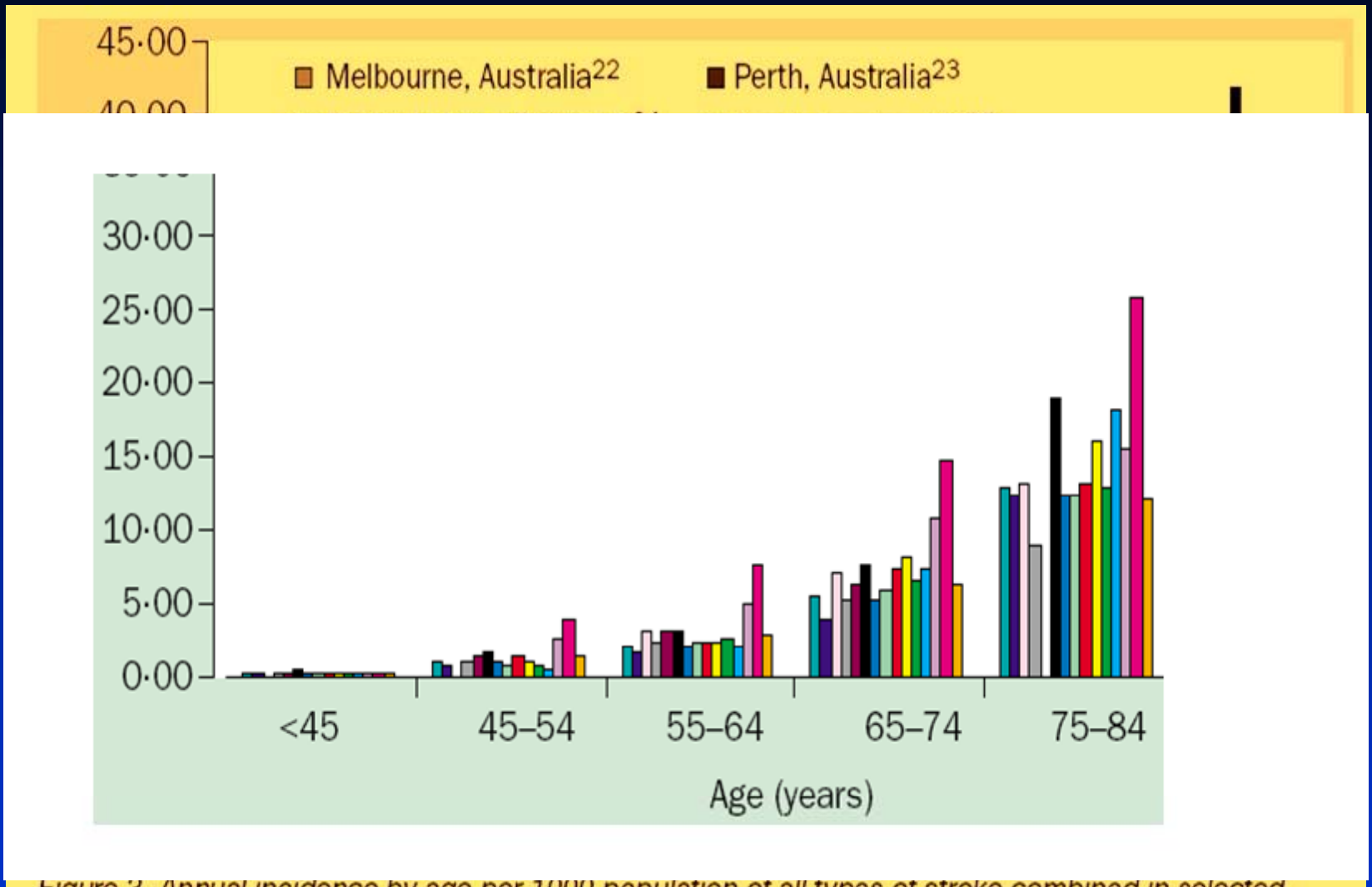

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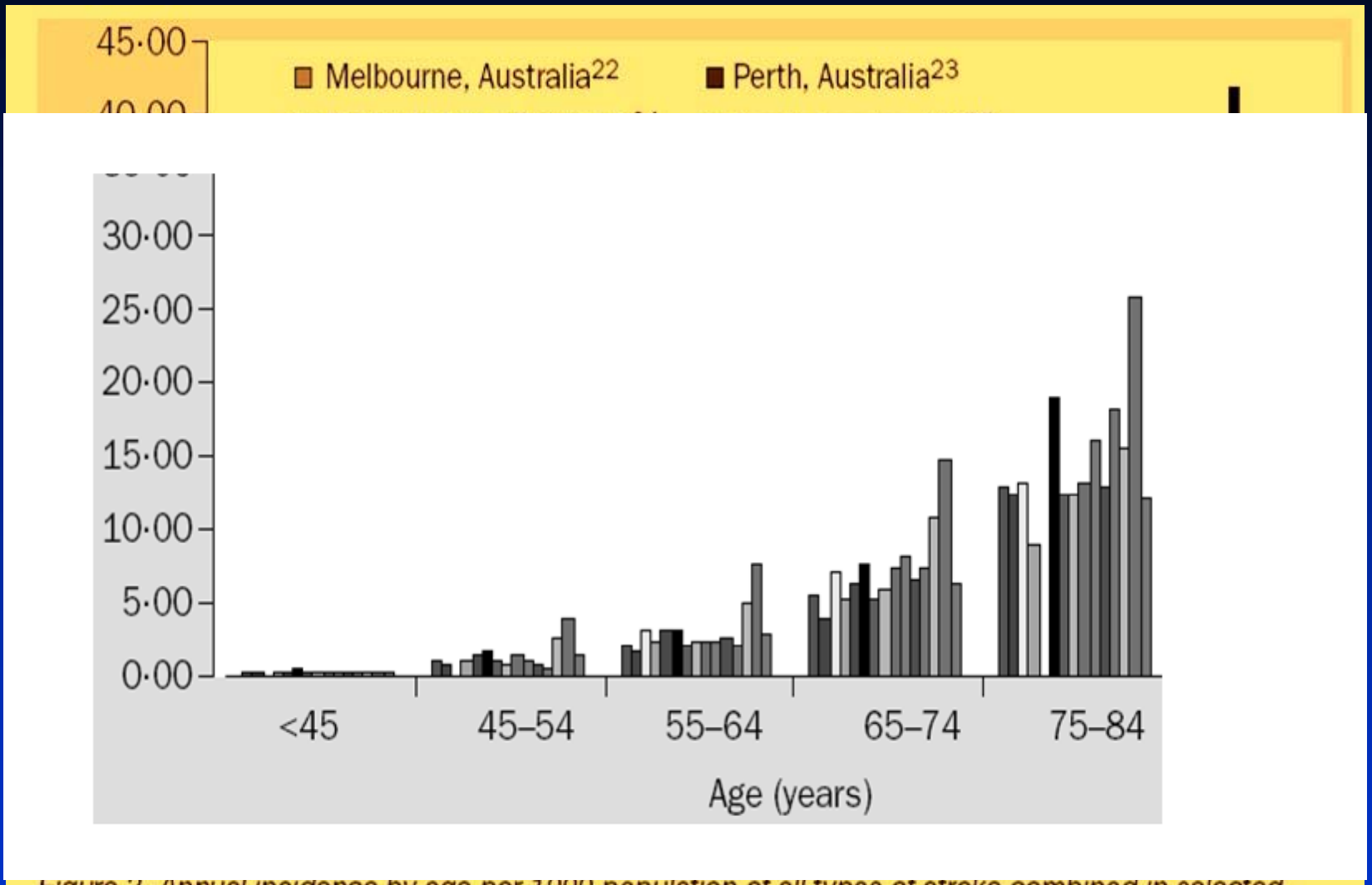

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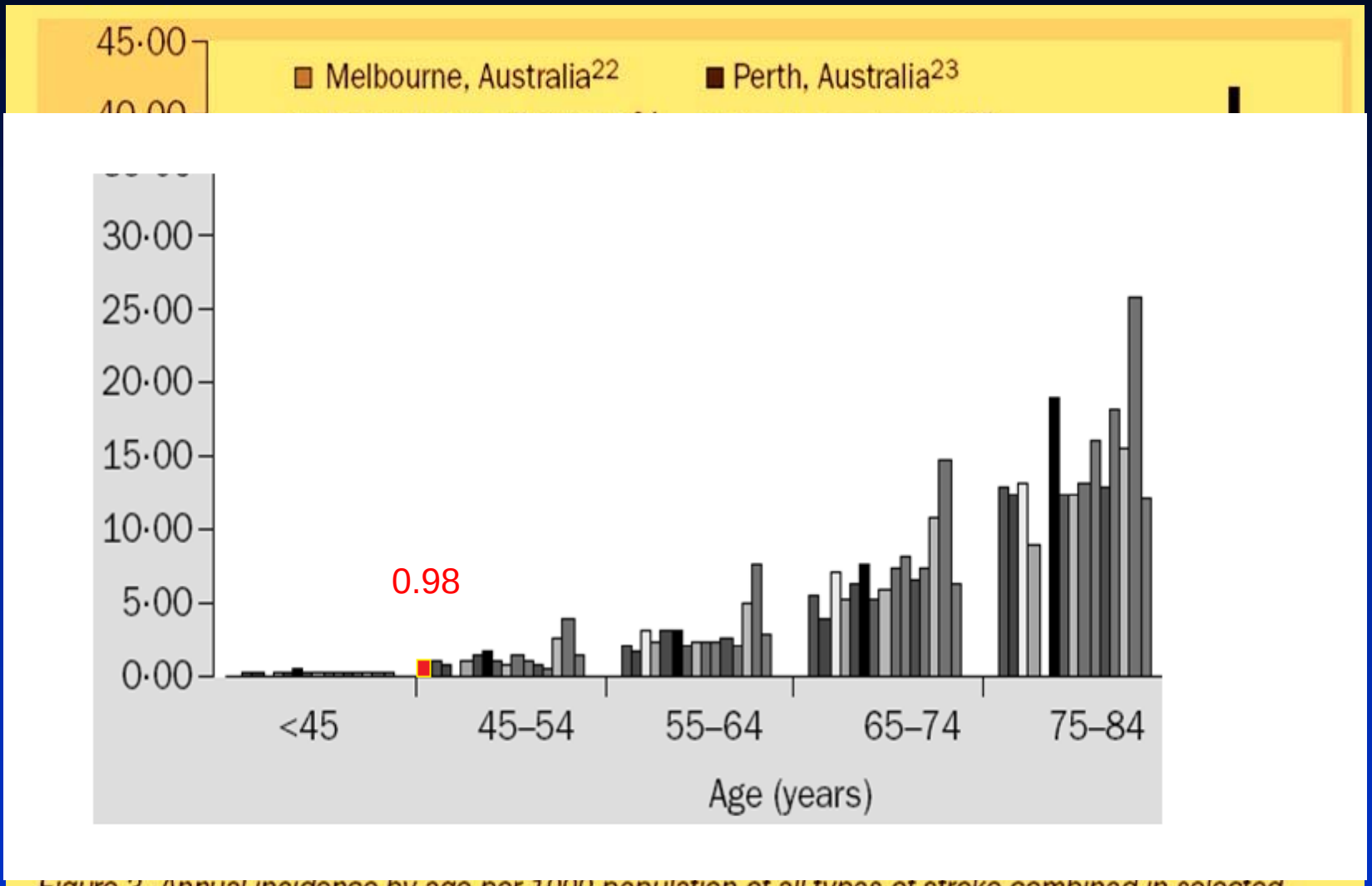

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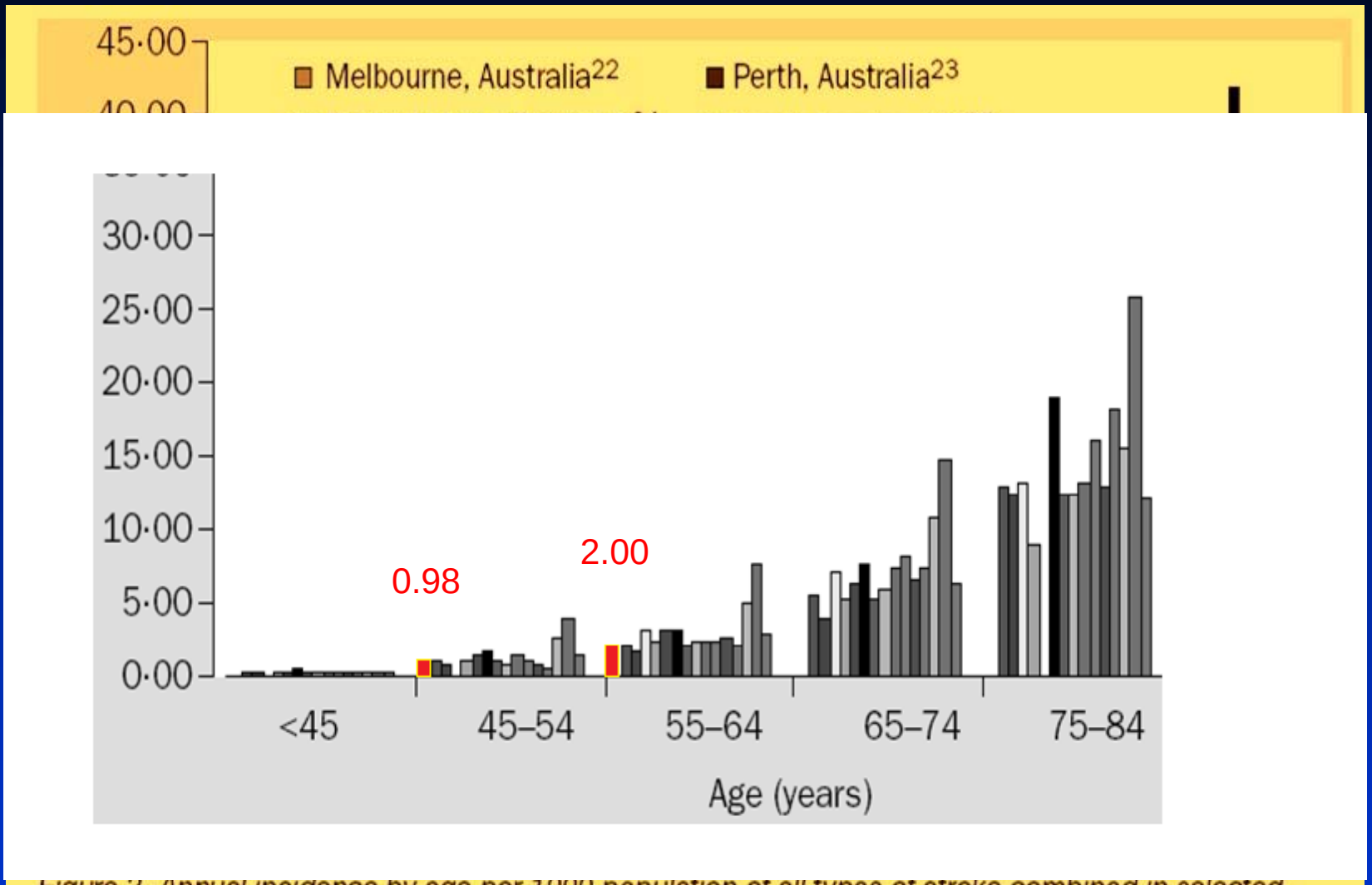

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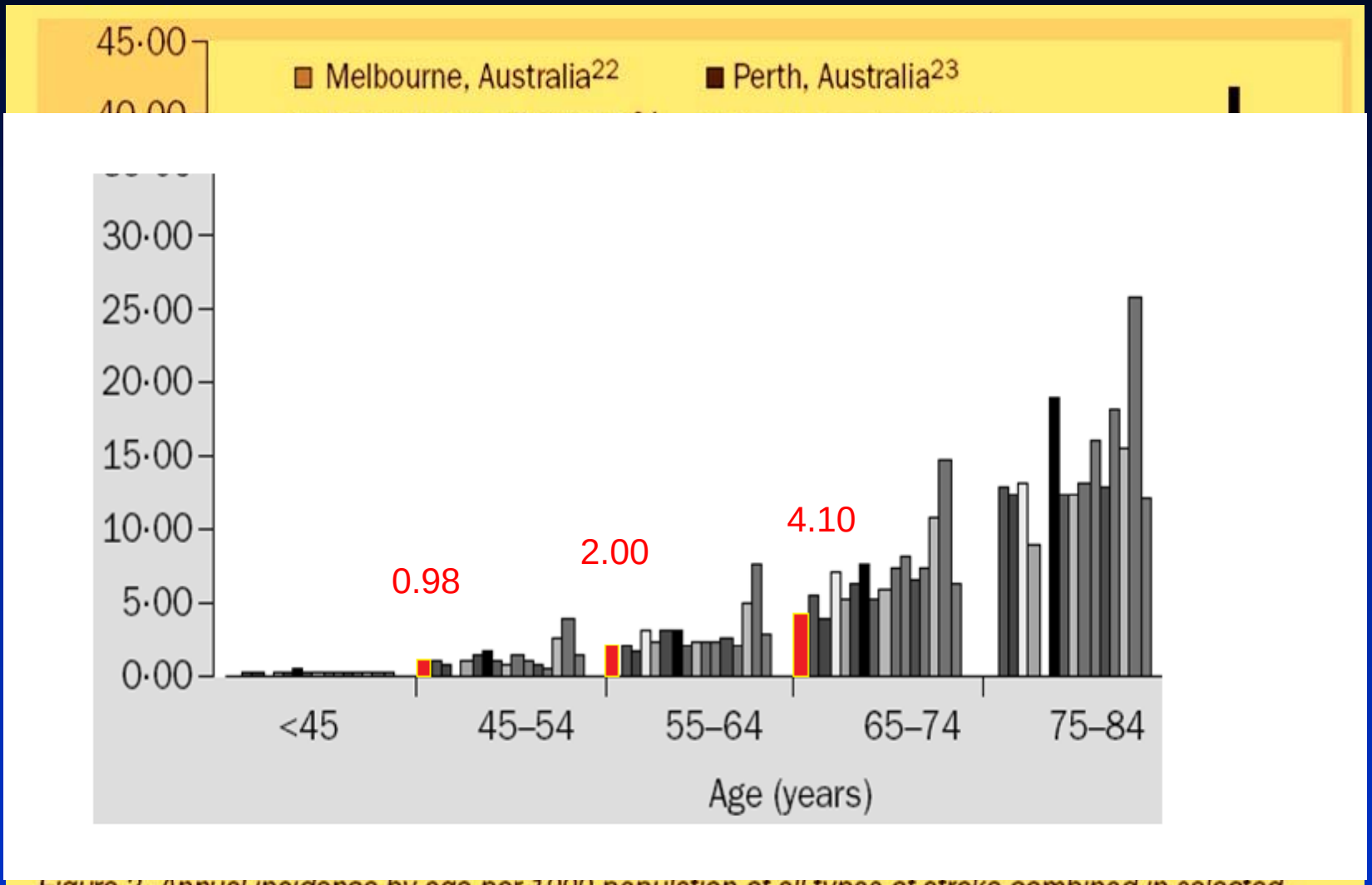

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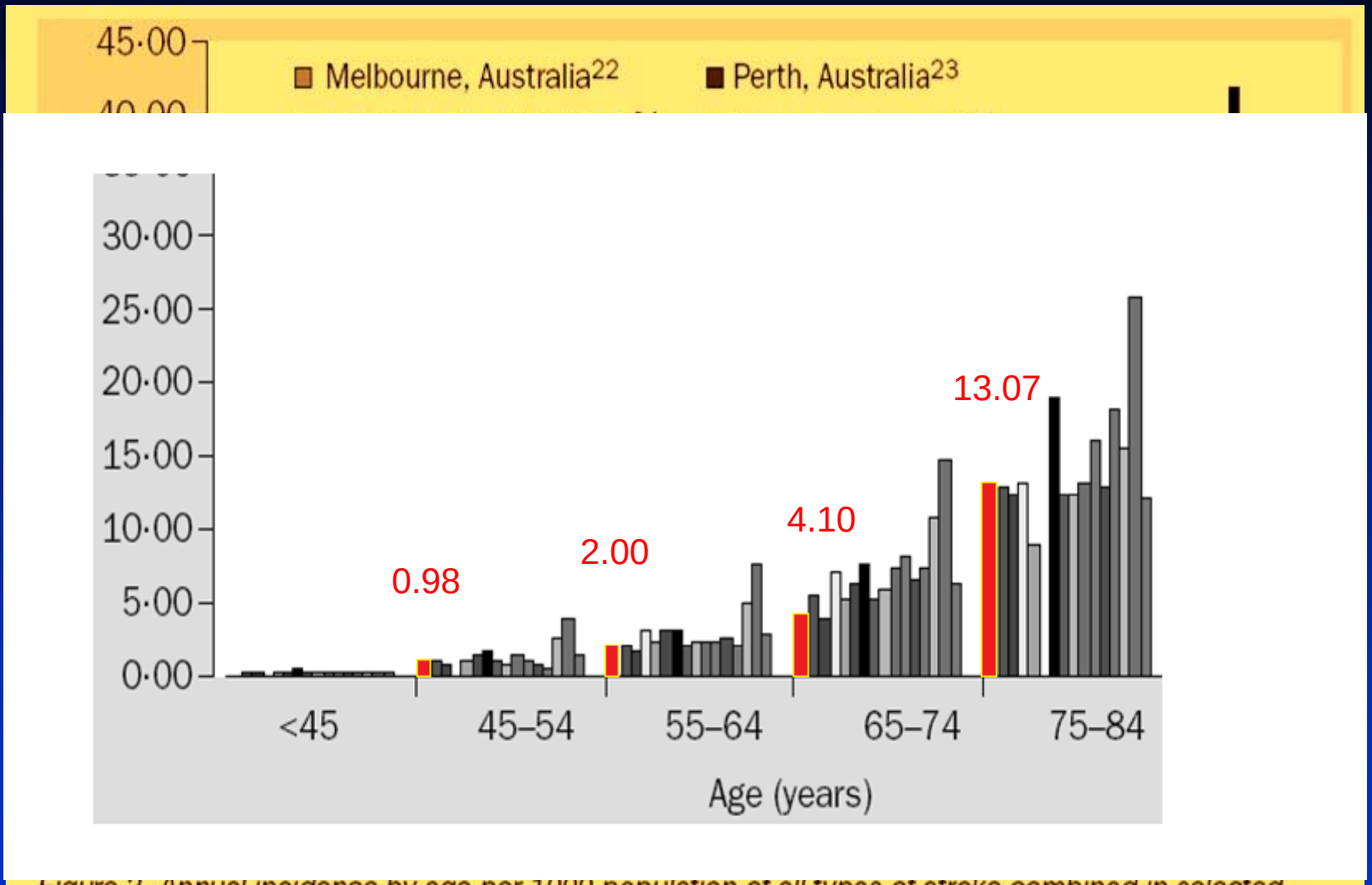

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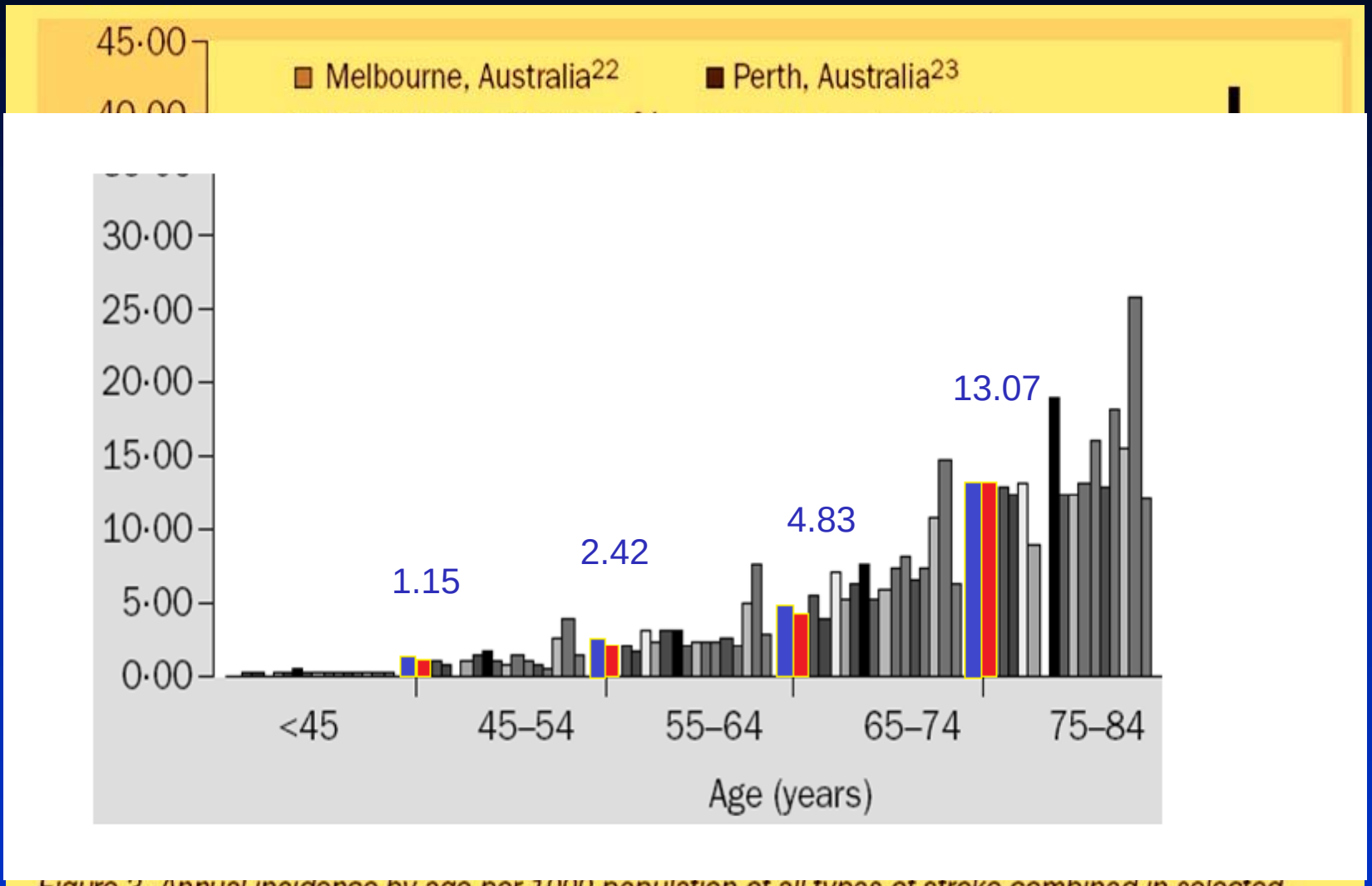

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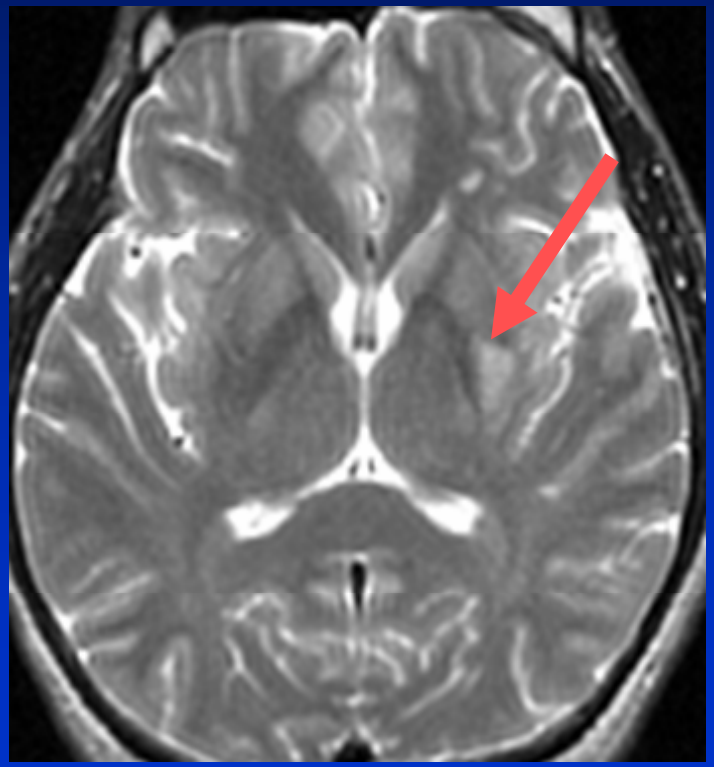
Stroke in EGAT 1/4

- 72623 person-years
- First stroke
  - Image confirmed 88
  - Clinical definite 21
  - Clinical probable 21
- Crude incidence per thousand
  - 150-179
- Age-standardised per thousand
  - 163-187 (Segi)
  - 171-195 (WHO)

C.L.M. Sudlow, C.P. Warlow.Comparable Studies of the Incidence of Stroke and its Pathological Types. Stroke.1997;28:491-499

- Most of the Far Eastern studies have suggested that the proportion of PICH is significantly higher (up to 35%) than in whites

Stroke subtype and Imaging



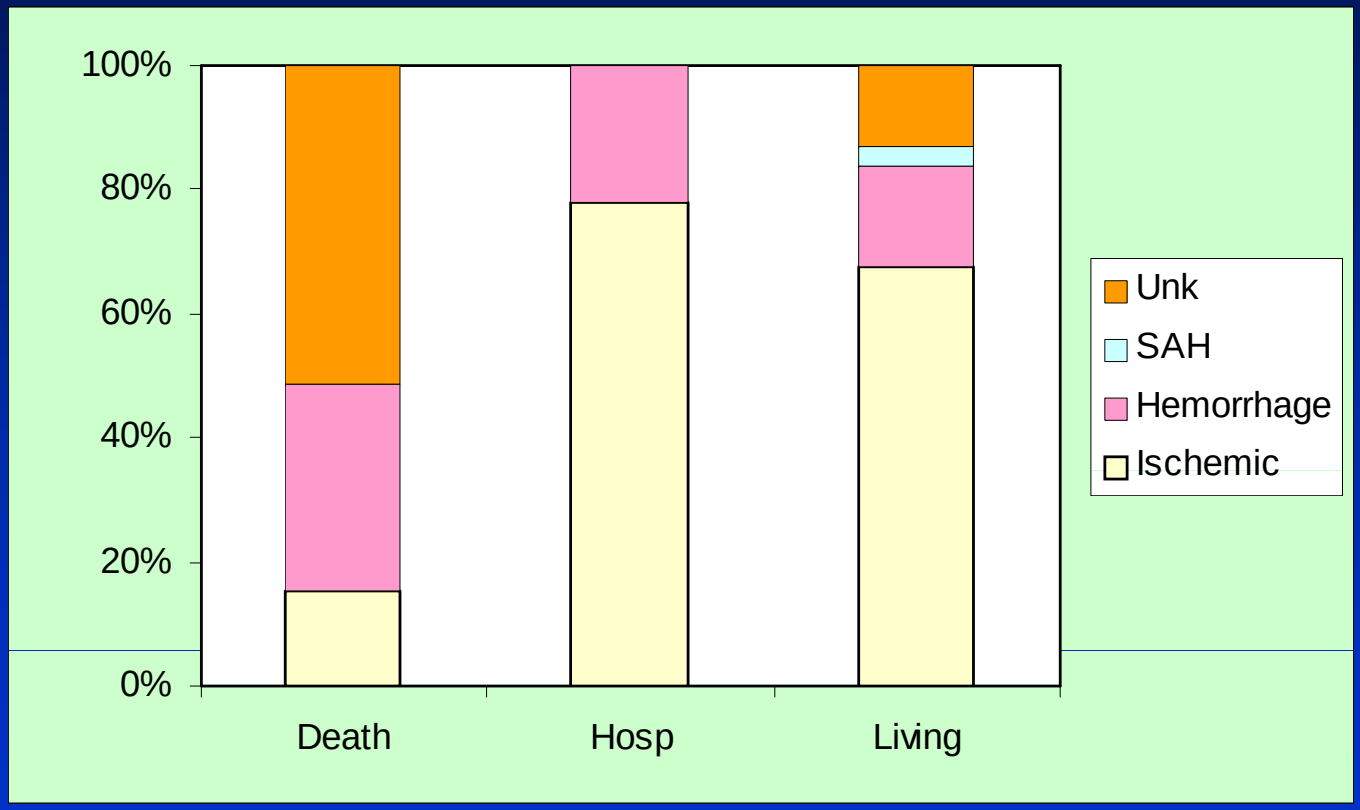
C.L.M. Sudlow, C.P. Warlow.Comparable Studies of the Incidence of Stroke and its Pathological Types. Stroke.1997;28:491-499

- Most of the Far Eastern studies have suggested that the proportion of PICH is significantly higher (up to 35%) than in whites
- Unfortunately, none of these studies fulfill our criteria for a comparable pathological types study

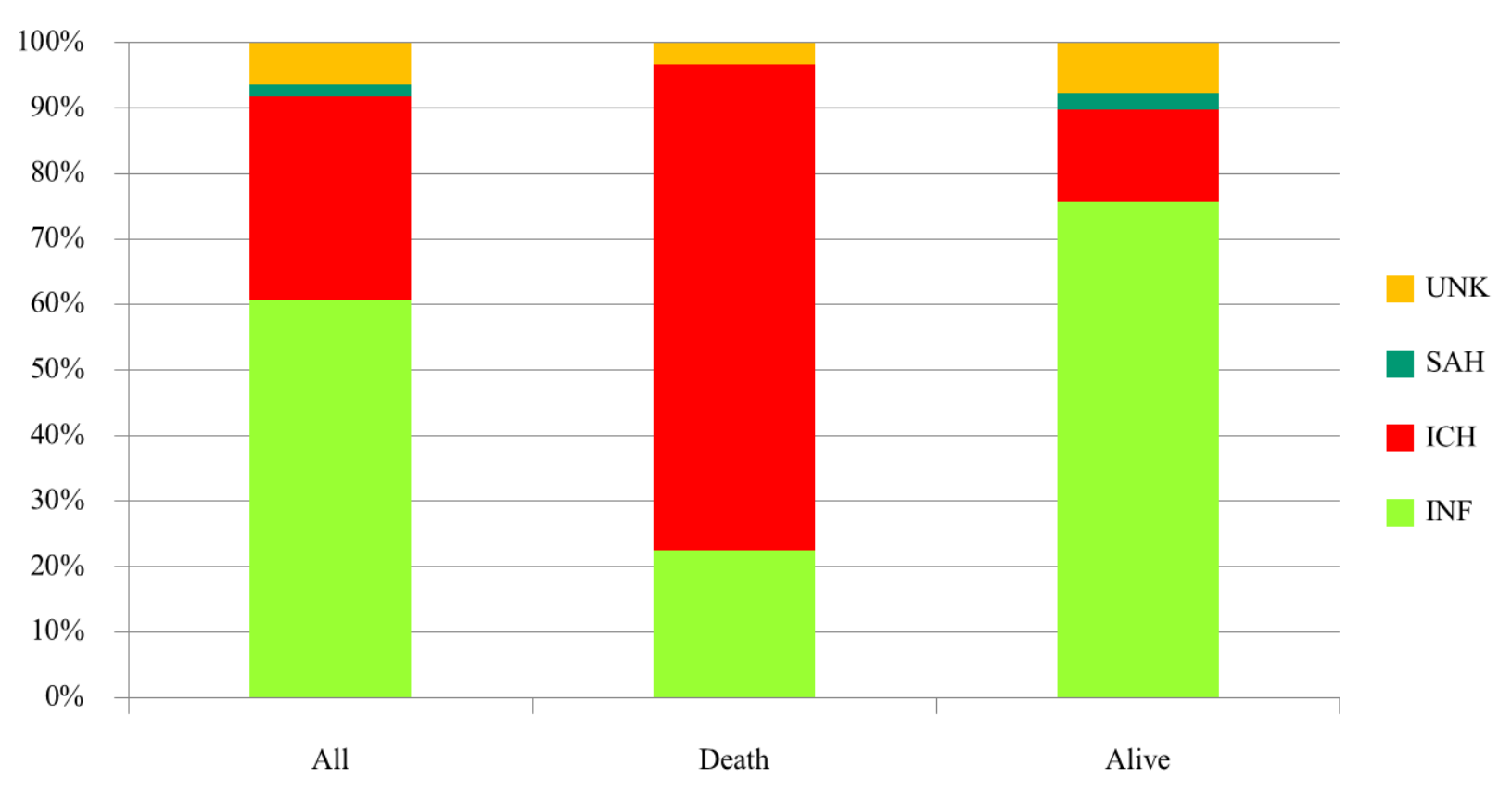
Minimum CT scan rate of approximately 70%

CT or MRI scan rate of 81% (88/109) in all stroke

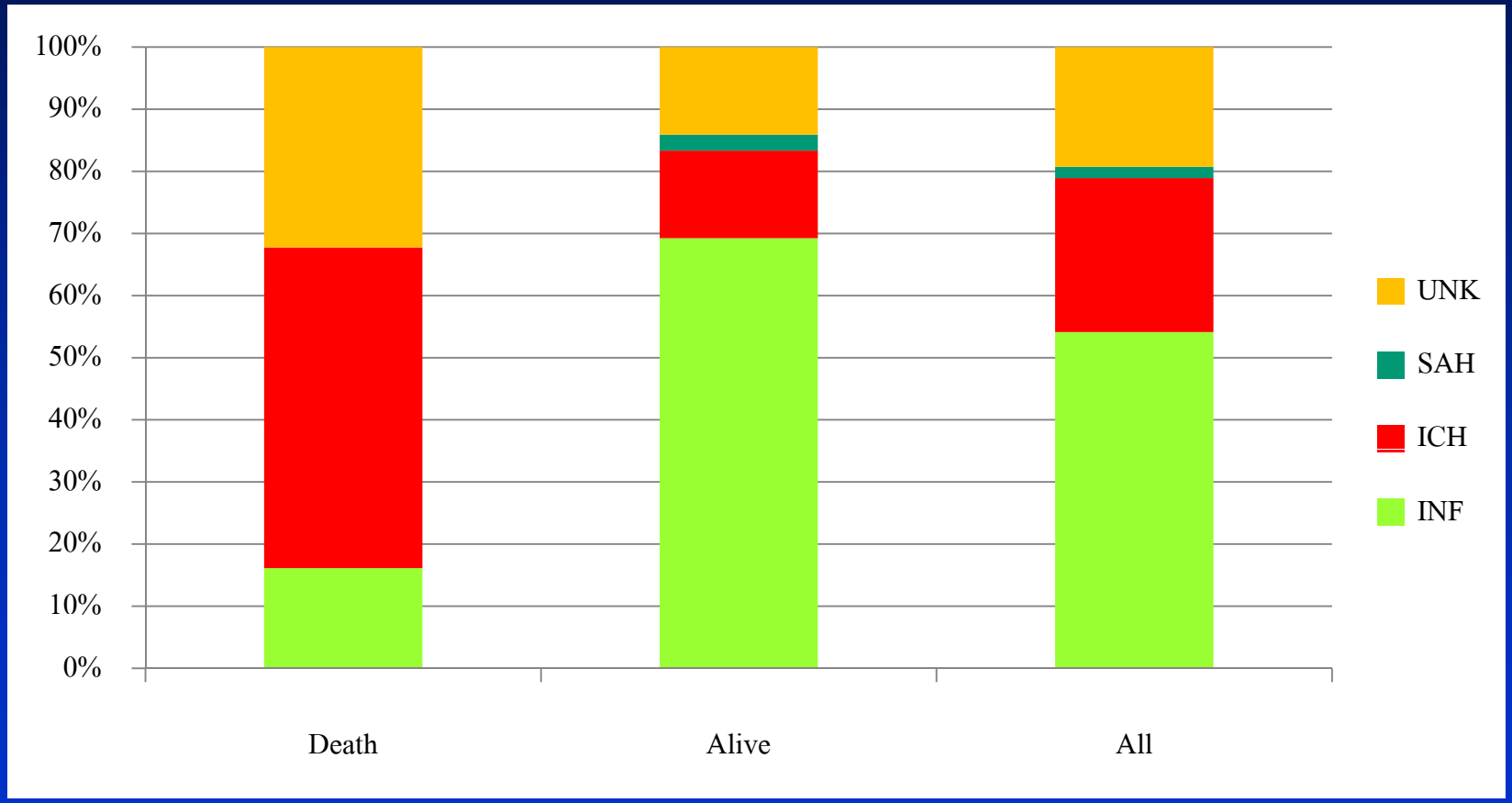
Pathological subtype



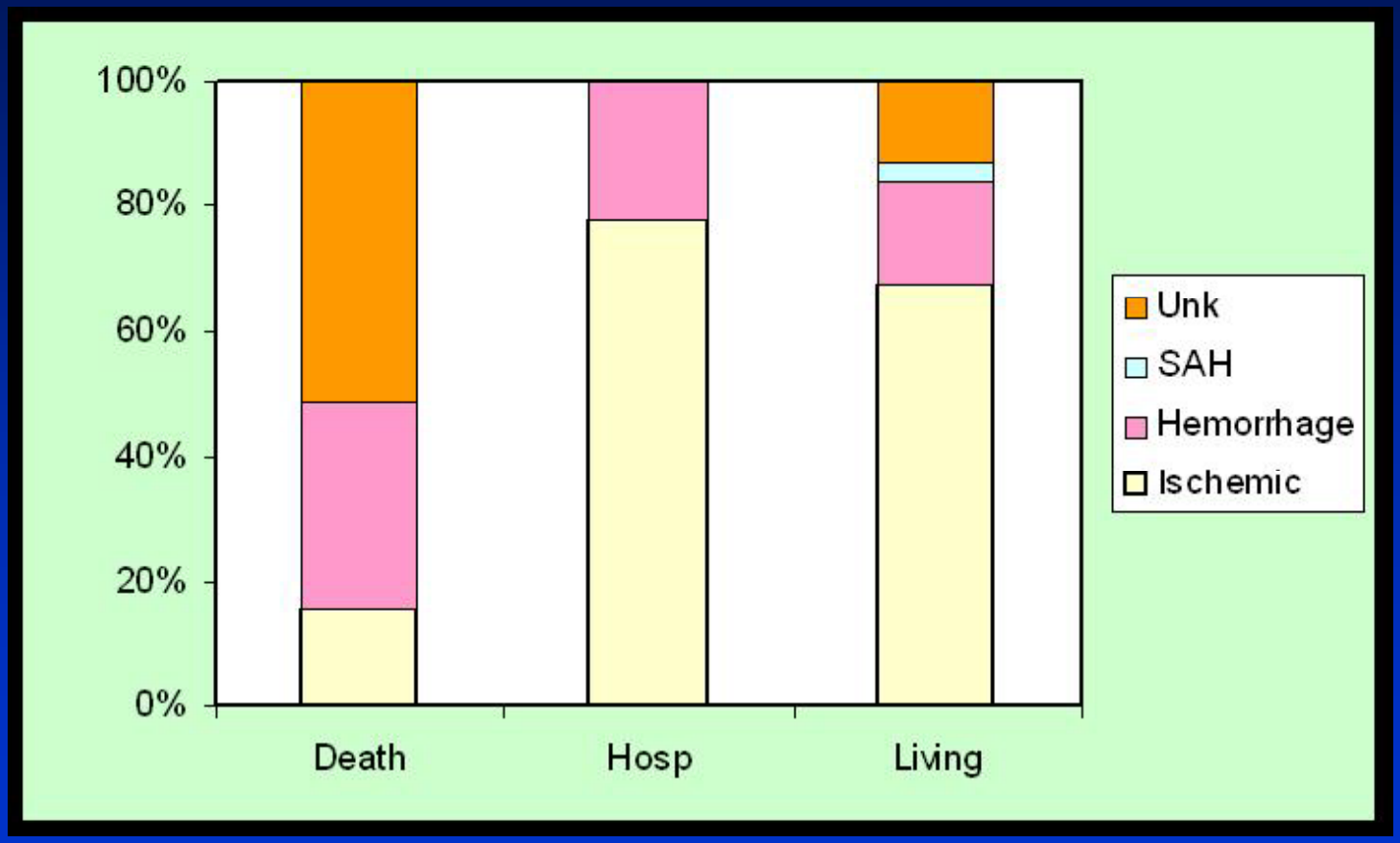
Pathological subtype



Pathological subtype



Pathological subtype



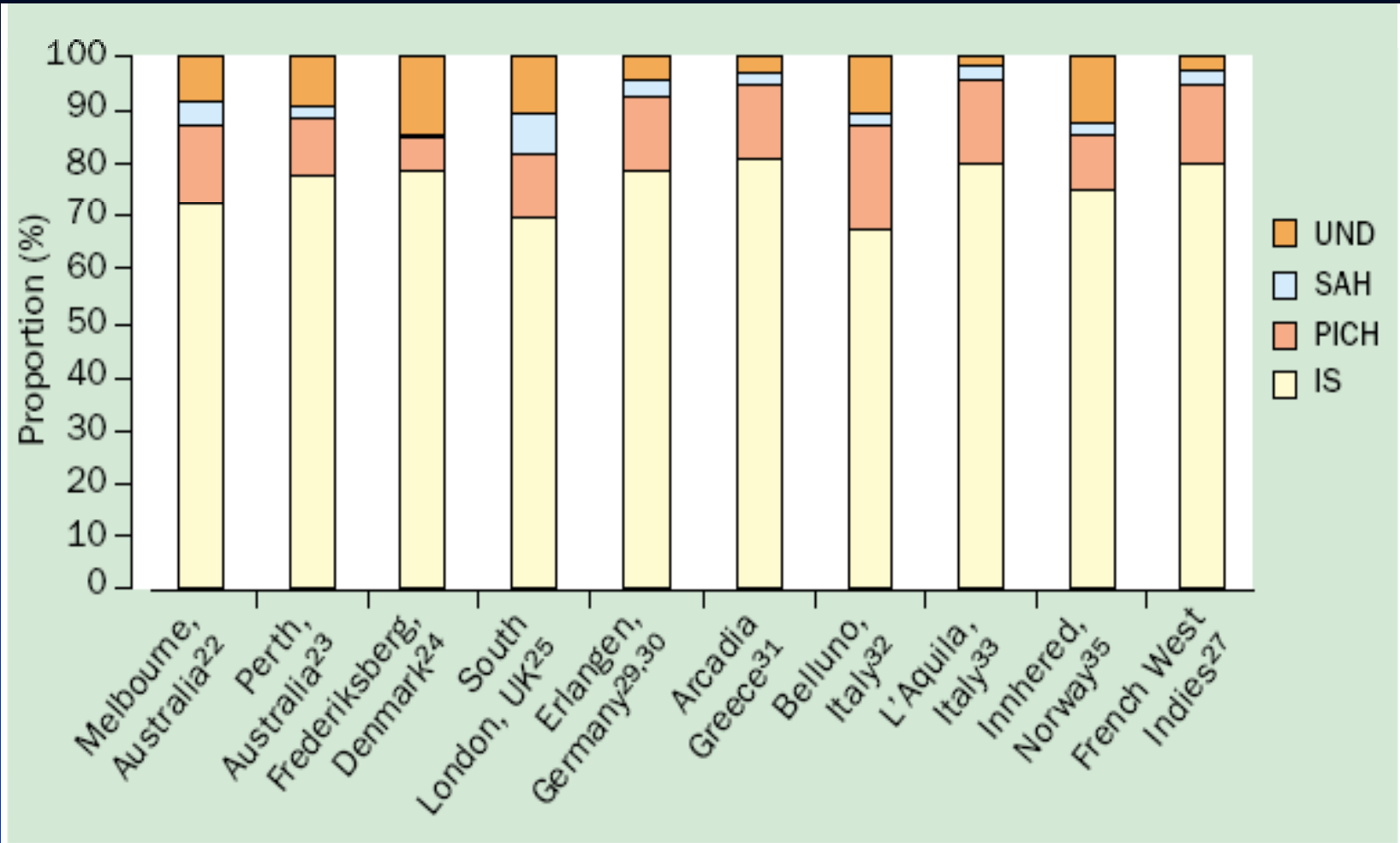


Figure 2. Proportional frequency of stroke types in selected populations. UND=undefined; SAH=subarachnoid haemorrhage; PICH=primary intracerebral haemorrhage; IS=ischaemic stroke.

Ideal epidemiological study

- Prospective
- Large, representative population
- Obtain complete case ascertainment
- High proportion of cases with confirmed pathology (imaging)

Is EGAT community has unusual characteristics with limit the general applicability of the results?

Ideal epidemiological study

- Prospective
- Large, representative population (with known structure)
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Is EGAT community has unusual characteristics with limit the general applicability of the results?

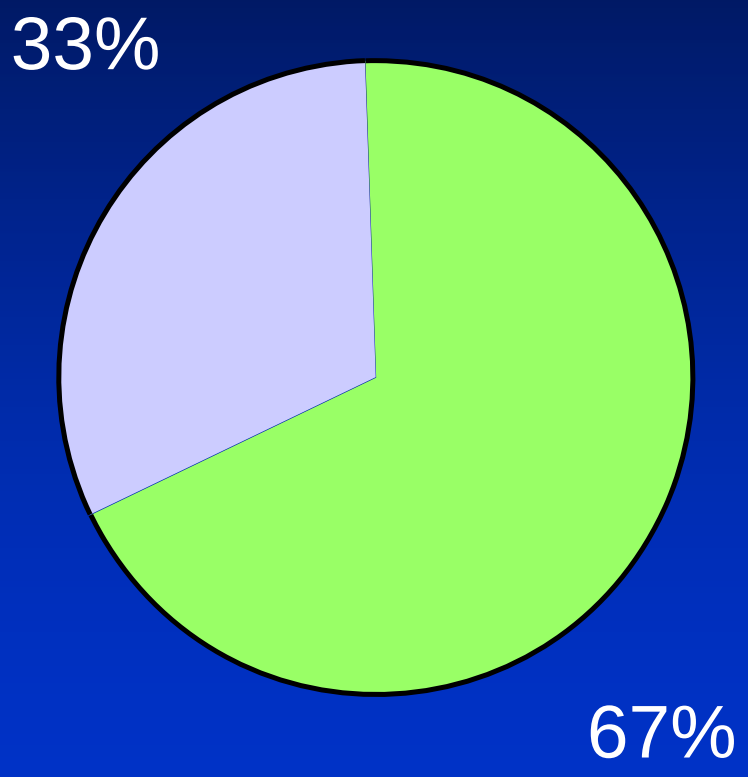
THANK

MANY

THANKS


NIPRO
NIPRO
3M
NIPRO
คืนบัตร

Case ascertainment



- Classification of ischemic and hemorrhagic stroke had been confirmed by CT or MRI in two-third of the cases

Expected results

- Stroke mortality
- Incidence (age and sex stratification)
- Relationship to some characteristics (risk factors ?)

Stroke and risk factors

- Environment vs genetics
- Most strokes arise in the much larger number of people with moderate risk of stroke than in the smaller number at high risk
- The prevalence of causative risk factors, or their population mean (eg, BP) has been changing

Stroke vs DM

		Non-DM	DM	Total
No stroke	Count	3178	47	3225
	%	97.6	92.2	97.5
Stroke	Count	77	4	81
	%	2.4	7.8	2.5
		3255	51	3306