STROKE IN OLDER ADULTS

PREVENTION TO REHABILITATION

Date: ۲۲ آبان ۱۴۰۴

Time: ۹:۰۰-۱۲:۰۰

STROKE IN OLDER ADULTS

EPIDEMIOLOGY & BURDEN OF DISEASE

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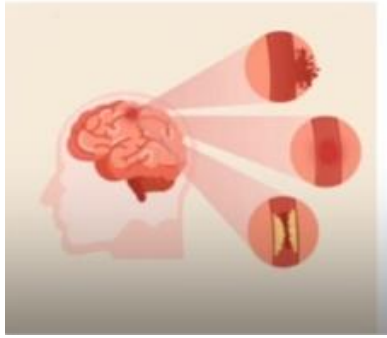
Community and preventive medicine

Janbazan Medical & Engineering Research Center

Date: ۲۲ آبان ۱۴۰۴ **Time:** 9:00-12:00

OLDER ADULTS AND STROKE

SENIOR CITIZENS=>60/65YEARS



- Now and future of aging
- Stroke epidemiology & older adult
- Stroke burden & aging
- IRAN in numbers

SENIORS
RESIDENCIAS

ELDERLY FUTURE

- The world is ageing rapidly. According to United Nations population projections:
- Between 1974 and 2024 (50yrs), the worldwide share of people aged 65 almost doubled – increasing from **5.5%** per cent to **10.3%.**
- **Between 2024 and 2064 (40yrs),** this number will double again, increasing to 20.7%.
- During the same time, the number of persons aged **80 and above** is projected to more than triple.
- Developed countries have the highest share of older persons, **developing countries** are often witnessing a rapid rate of population ageing, leaving many ill prepared for the new realities.

Letter to the Editor

The Growth of Aging Population in Iran: An Achievement or a Challenge?

Bakhtiar Piroozi, Amjad Mohamadi-Bolbanabad & Azad Shokri

Pages 711-714 | Published online: 10 Apr 2024

Cite this article https://doi.org/10.1080/01634372.2024.2340725 Check for updates

Achievement or Challenge?

- **Mean age: 32 yrs**
- **Elderly rate:**
  - **2016: 9/5% 2024: 11%**
  - **Estimation: 2030: 15%**
  - **Estimation: 2050: 30%**

1410:15%
1430: 30%
In 25yrs

سونامی سالمندی

https://www.tandfonline.com/doi/full/۱۰/۱۰۸۰/۰۱۶۳۴۳۷۲/۲۰۲۴/۲۳۴۰۷۲۵

بحران سالمندی و ایران

ورود به آستانه سالمندی قبل از توسعه یافتگی

حقوق بازنشستگی، بازدهی صندوق ها پایین، ناتوانی بیمه، افزایش تورم، قادر نبودن فرزندان به پرستاری/کمک و به تامین هزینه های اضافه والدین

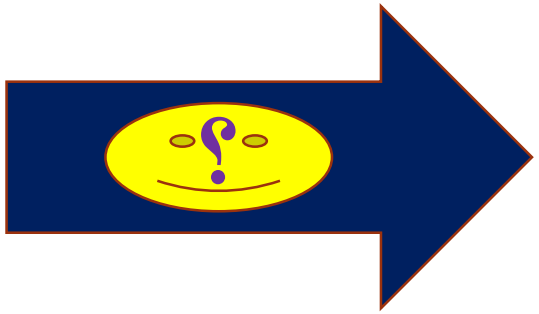
آینده پژوهی ساختار جمعیتی در ایثارگران (جانباز/شاهد) 2024

3 میلون کل و ۱میلیون شاهد و جانباز

- در حال حاضر: **25.5**٪ جمعیت سالمند:

- سال ۱۴۱۰: **70.8**٪ جمعیت سالمند: **چالش جدی ۶۰-۶۹ ساله ها**
  - **(n=595,172)** + ۷۰ سال حدود۱۵٪

- سال ۱۴۲۰: **81.5**٪ جمعیت سالمند: **چالش جدی ۷۰ سال و بالاتر**
  - **(n=580,365)** + ۷۰ سال حدود۶۵٪



زنگ خطر "چالش فرصت یا بحران":

آمادگی برای مواجه این شیفت جمعیتی چقدر است؟

آیا زیرساخت های لازم برای ارایه خدمات مهیا است؟

https://ijwph.ir/browse.php?a_id=1509&sid=1&slc_lang=en

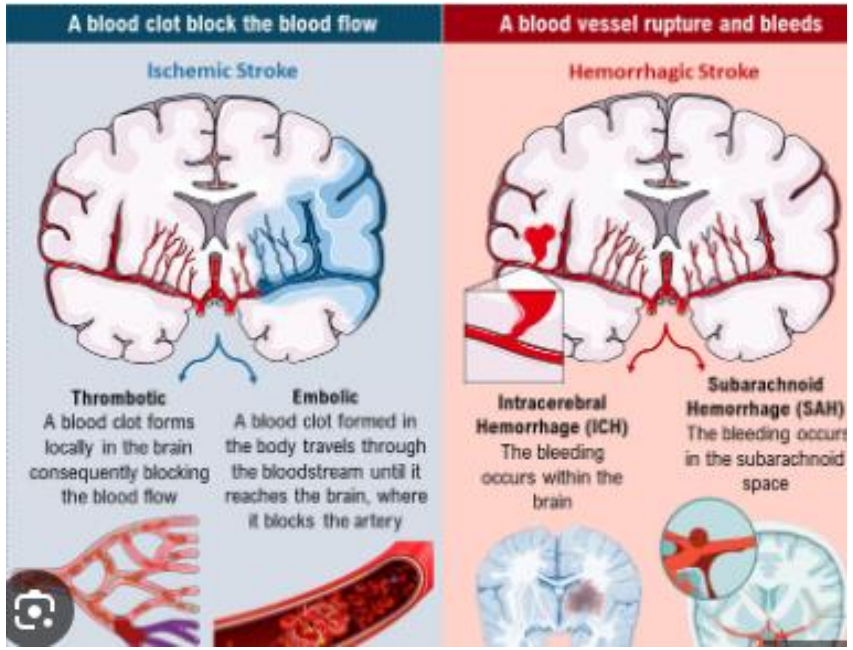
INTRODUCTION:

Emergency?

Online?

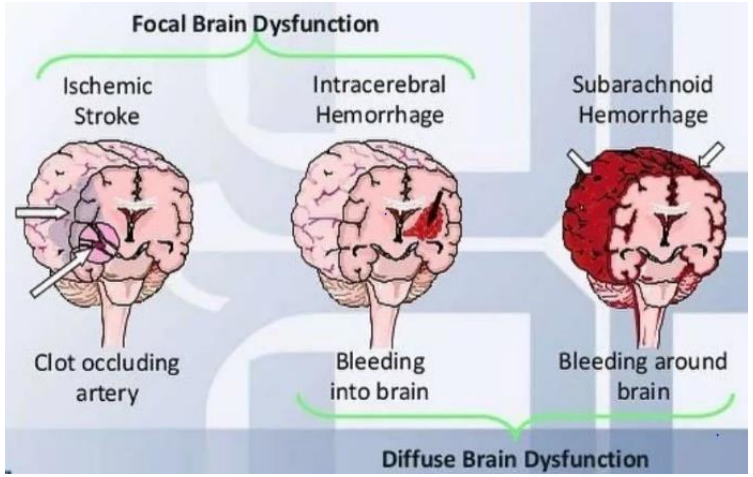
Office visit?

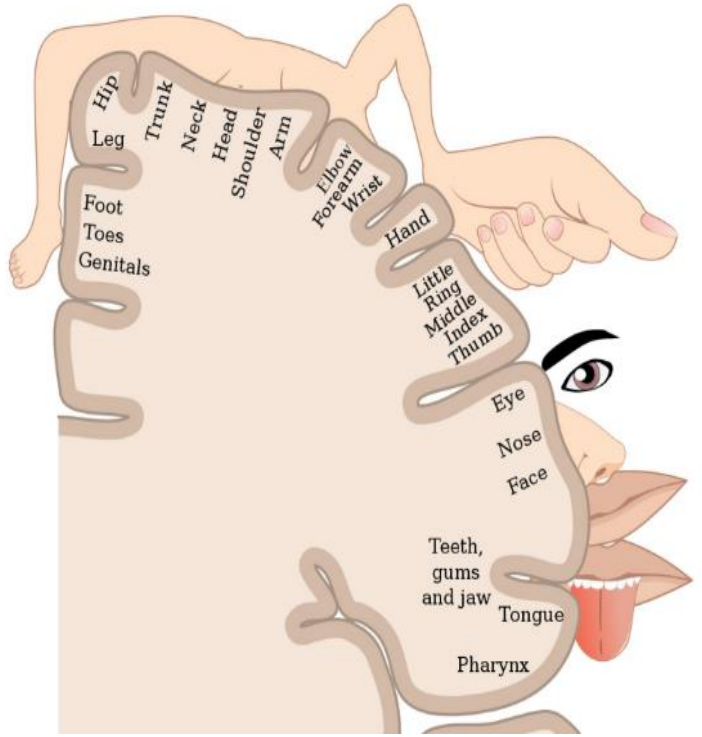
Stroke is a common medical emergency that requires **"urgent recognition"** and **"treatment"**



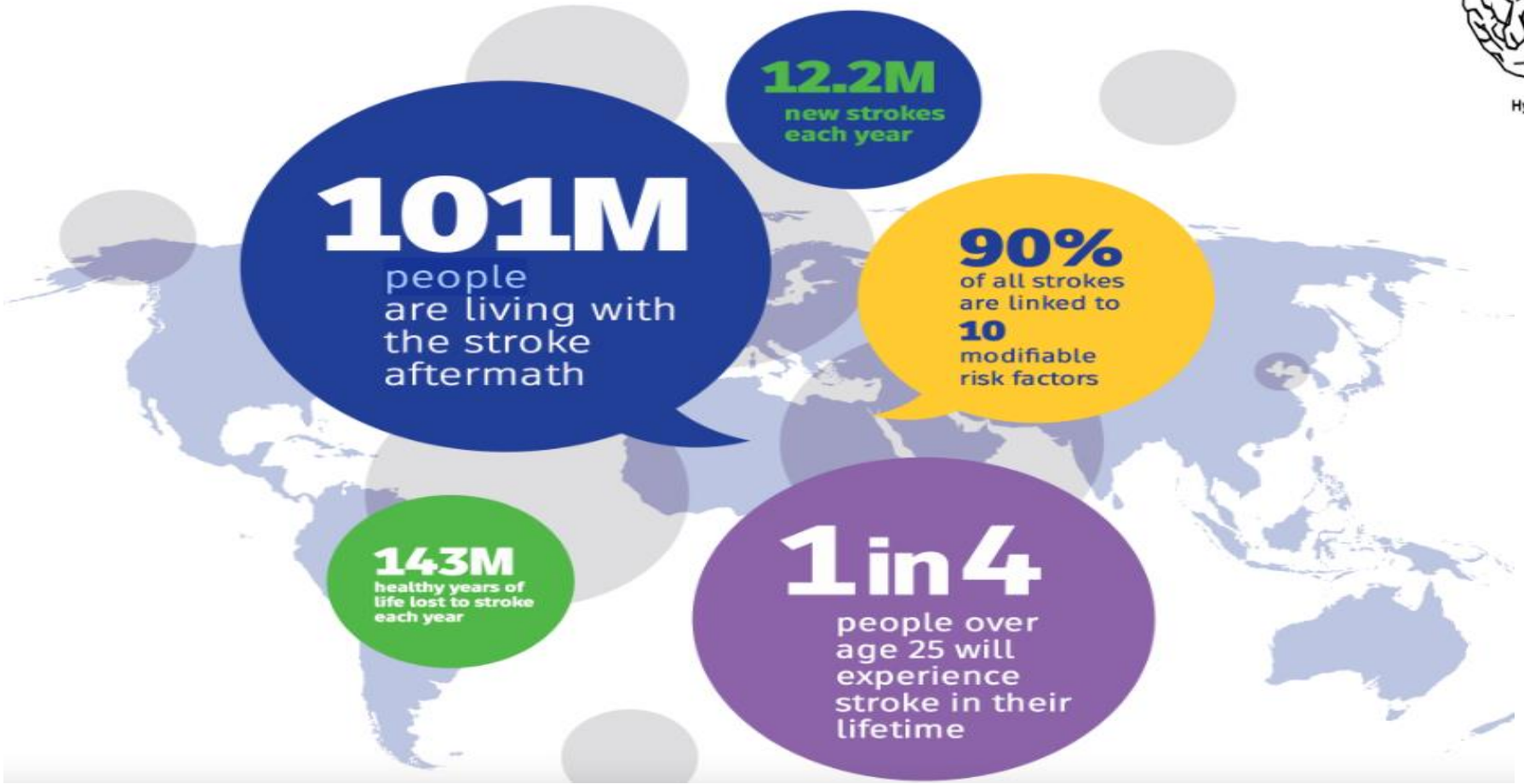
WHAT IS A STROKE?

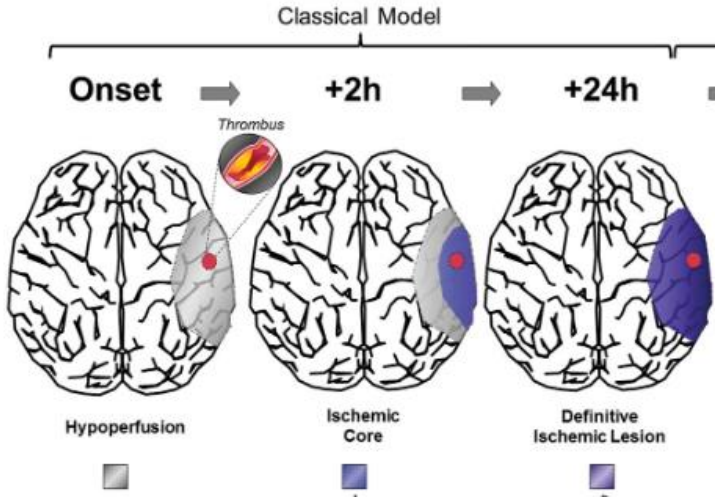
- Stroke happens when the blood supply to part of your brain is cut off. Without blood, brain cells can be damaged or destroyed.
- This damage can have different effects depending on where it happens in the brain. Your body, mobility and speech, as well as how you think and feel, can all be affected.





STROKE IN THE WORLD





Ischemic: 80%
Hemorrhagic/poor: 20%

GBD:1990-2019 ALL AGE: STROKE IN TOP 5

GBD non-communicable diseases: 3(1990) to 6 out 10

Communicable, maternal, neonatal, and nutritional diseases
Non-communicable diseases
Injuries

A All ages

Leading causes 1990	Percentage of DALYs 1990	Leading causes 2019	Percentage of DALYs 2019	Percentage change in number of DALYs, 1990–2019	Percentage change in age-standardised DALY rate, 1990–2019
1 Neonatal disorders	10·6 (9·9 to 11·4)	1 Neonatal disorders	7·3 (6·4 to 8·4)	−32·3 (−41·7 to −20·8)	−32·6 (−42·1 to −21·2)
2 Lower respiratory infections	8·7 (7·6 to 10·0)	2 Ischaemic heart disease	7·2 (6·5 to 7·9)	50·4 (39·9 to 60·2)	−28·6 (−33·3 to −24·2)
3 Diarrhoeal diseases	7·3 (5·9 to 8·8)	3 Stroke	5·7 (5·1 to 6·2)	32·4 (22·0 to 42·2)	−35·2 (−40·5 to −30·5)
4 Ischaemic heart disease	4·7 (4·4 to 5·0)	4 Lower respiratory infections	3·8 (3·3 to 4·3)	−56·7 (−64·2 to −47·5)	−62·5 (−69·0 to −54·9)
5 Stroke	4·2 (3·9 to 4·5)	5 Diarrhoeal diseases	3·2 (2·6 to 4·0)	−57·5 (−66·2 to −44·7)	−64·6 (−71·7 to −54·2)
6 Congenital birth defects	3·2 (2·3 to 4·8)	6 COPD	2·9 (2·6 to 3·2)	25·6 (15·1 to 46·0)	−39·8 (−44·9 to −30·2)
7 Tuberculosis	3·1 (2·8 to 3·4)	7 Road injuries	2·9 (2·6 to 3·0)	2·4 (−6·9 to 10·8)	−31·0 (−37·1 to −25·4)
8 Road injuries	2·7 (2·6 to 3·0)	8 Diabetes	2·8 (2·5 to 3·1)	147·9 (135·9 to 158·9)	24·4 (18·5 to 29·7)
9 Measles	2·7 (0·9 to 5·6)	9 Low back pain	2·5 (1·9 to 3·1)	46·9 (43·3 to 50·5)	−16·3 (−17·1 to −15·5)
10 Malaria	2·5 (1·4 to 4·1)	10 Congenital birth defects	2·1 (1·7 to 2·6)	−37·3 (−50·6 to −12·8)	−40·0 (−52·7 to −17·1)
11 COPD	2·3 (1·9 to 2·5)	11 HIV/AIDS	1·9 (1·6 to 2·2)	127·7 (97·3 to 171·7)	58·5 (37·1 to 89·2)
12 Protein-energy malnutrition	2·0 (1·6 to 2·7)	12 Tuberculosis	1·9 (1·7 to 2·0)	−41·0 (−47·2 to −33·5)	−62·8 (−66·6 to −58·0)
13 Low back pain	1·7 (1·2 to 2·1)	13 Depressive disorders	1·8 (1·4 to 2·4)	61·1 (56·9 to 65·0)	−1·8 (−2·9 to −0·8)
14 Self-harm	1·4 (1·2 to 1·5)	14 Malaria	1·8 (0·9 to 3·1)	−29·4 (−56·9 to 6·6)	−37·8 (−61·9 to −6·2)
15 Cirrhosis	1·3 (1·2 to 1·5)	15 Headache disorders	1·8 (0·4 to 3·8)	56·7 (52·4 to 62·1)	1·1 (−4·2 to 2·9)
16 Meningitis	1·3 (1·1 to 1·5)	16 Cirrhosis	1·8 (1·6 to 2·0)	33·0 (22·4 to 48·2)	−26·8 (−32·5 to −19·0)
17 Drowning	1·3 (1·1 to 1·4)	17 Lung cancer	1·8 (1·6 to 2·0)	69·1 (53·1 to 85·4)	−16·2 (−24·0 to −8·2)
18 Headache disorders	1·1 (0·2 to 2·4)	18 Chronic kidney disease	1·6 (1·5 to 1·8)	93·2 (81·6 to 105·0)	6·3 (0·2 to 12·4)
19 Depressive disorders	1·1 (0·8 to 1·5)	19 Other musculoskeletal	1·6 (1·2 to 2·1)	128·9 (122·0 to 136·3)	30·7 (27·6 to 34·3)
20 Diabetes	1·1 (1·0 to 1·2)	20 Age-related hearing loss	1·6 (1·2 to 2·1)	82·8 (75·2 to 88·9)	−1·8 (−3·7 to −0·1)
21 Lung cancer	1·0 (1·0 to 1·1)	21 Falls	1·5 (1·4 to 1·7)	47·1 (31·5 to 61·0)	−14·5 (−22·5 to −7·4)
22 Falls	1·0 (0·9 to 1·2)	22 Self-harm	1·3 (1·2 to 1·5)	−5·6 (−14·2 to 3·7)	−38·9 (−44·3 to −33·0)
23 Dietary iron deficiency	1·0 (0·7 to 1·3)	23 Gynaecological diseases	1·2 (0·9 to 1·5)	48·7 (45·8 to 51·8)	−6·8 (−8·7 to −4·9)
24 Interpersonal violence	0·9 (0·9 to 1·0)	24 Anxiety disorders	1·1 (0·8 to 1·5)	53·7 (48·8 to 59·1)	−0·1 (−1·0 to 0·7)
25 Whooping cough	0·9 (0·4 to 1·7)	25 Dietary iron deficiency	1·1 (0·8 to 1·5)	13·8 (10·5 to 17·2)	−16·4 (−18·7 to −14·0)

GBD:1990-2019(AGE 50-74): STROKE & HEART IN TOP 2

Communicable, maternal, neonatal, and nutritional diseases
Non-communicable diseases
Injuries

20 out 25 first & 9 out of 10 first

of GBD in Elderly non-communicable diseases

E 50–74 years

Leading causes 1990	Percentage of DALYs 1990	Leading causes 2019	Percentage of DALYs 2019	Percentage change in number of DALYs, 1990–2019	Percentage change in age-standardised DALY rate, 1990–2019
1 Ischaemic heart disease	12·5 (11·6 to 13·4)	1 Ischaemic heart disease	11·8 (10·7 to 12·9)	46·1 (35·6 to 56·4)	−29·1 (−34·2 to −24·1)
2 Stroke	10·9 (10·0 to 11·8)	2 Stroke	9·3 (8·5 to 10·1)	31·5 (19·5 to 42·9)	−36·3 (−42·1 to −30·8)
3 COPD	6·5 (5·5 to 7·1)	3 Diabetes	5·1 (4·6 to 5·7)	156·1 (143·4 to 167·9)	24·5 (18·5 to 30·4)
4 Tuberculosis	4·0 (3·6 to 4·4)	4 COPD	4·7 (4·2 to 5·2)	12·0 (0·9 to 32·3)	−45·9 (−51·4 to −36·2)
5 Lung cancer	3·6 (3·3 to 3·9)	5 Lung cancer	3·9 (3·4 to 4·3)	64·3 (48·8 to 80·2)	−19·8 (−27·3 to −12·1)
6 Diabetes	3·1 (2·8 to 3·4)	6 Low back pain	3·1 (2·3 to 4·0)	72·1 (70·0 to 74·3)	−15·9 (−16·9 to −14·9)
7 Cirrhosis	2·8 (2·6 to 3·1)	7 Cirrhosis	2·7 (2·4 to 3·0)	44·6 (33·2 to 57·1)	−29·1 (−34·7 to −23·0)
8 Low back pain	2·8 (2·1 to 3·7)	8 Chronic kidney disease	2·3 (2·1 to 2·5)	130·2 (113·0 to 145·6)	12·1 (3·7 to 19·5)
9 Diarrhoeal diseases	2·6 (1·6 to 4·0)	9 Age-related hearing loss	2·2 (1·5 to 3·0)	100·8 (96·0 to 104·9)	−2·6 (−4·9 to −0·5)
10 Stomach cancer	2·4 (2·2 to 2·6)	10 Road injuries	2·1 (1·9 to 2·3)	72·9 (56·5 to 83·9)	−15·2 (−23·2 to −9·9)
11 Road injuries	1·9 (1·8 to 2·0)	11 Other musculoskeletal	1·9 (1·4 to 2·6)	172·0 (160·6 to 187·4)	33·6 (280 to 40·2)
12 Lower respiratory infections	1·8 (1·6 to 2·0)	12 Tuberculosis	1·9 (1·7 to 2·1)	−27·8 (−36·2 to −16·9)	−64·7 (−68·9 to −59·4)
13 Age-related hearing loss	1·7 (1·2 to 2·3)	13 Lower respiratory infections	1·8 (1·6 to 1·9)	49·8 (37·9 to 62·4)	−27·5 (−33·3 to −21·5)
14 Chronic kidney disease	1·6 (1·4 to 1·7)	14 Depressive disorders	1·7 (1·3 to 2·3)	107·3 (104·7 to 110·1)	1·5 (0·2 to 2·9)
15 Asthma	1·5 (1·2 to 1·9)	15 Colorectal cancer	1·7 (1·6 to 1·9)	95·1 (80v8 to 108·2)	−5·1 (−12·1 to 1·2)
16 Hypertensive heart disease	1·5 (1·2 to 1·7)	16 Falls	1·7 (1·5 to 2·0)	88·3 (76·5 to 100·0)	−8·4 (−14·1 to −2·6)
17 Falls	1·4 (1·3 to 1·6)	17 Stomach cancer	1·7 (1·5 to 1·9)	6·3 (−5·0 to 18·9)	−48·1 (−536 to −42·0)
18 Colorectal cancer	1·4 (1·3 to 1·5)	18 Osteoarthritis	1·5 (0·8 to 2·9)	113·6 (110·9 to 116·4)	4·1 (28 to 5·4)
19 Depressive disorders	1·3 (0·9 to 1·7)	19 Blindness and vision loss	1·4 (1·1 to 2·0)	88·8 (81·9 to 95·8)	−8·6 (−12·0 to −5·0)
20 Blindness and vision loss	1·2 (0·9 to 1·6)	20 Breast cancer	1·4 (1·3 to 1·5)	85·0 (69·9 to 99·4)	−9·5 (−16·9 to −2·5)
21 Liver cancer	1·2 (1·0 to 1·3)	21 Diarrhoeal diseases	1·4 (0·9 to 2·1)	−21·0 (−42·4 to 11·9)	−61·0 (−72·1 to −45·8)
22 Breast cancer	1·2 (1·1 to 1·2)	22 Hypertensive heart disease	1·3 (1·0 to 1·5)	36·7 (20·8 to 58·8)	−33·8 (−41·7 to −23·4)
23 Oesophageal cancer	1·1 (0·9 to 1·2)	23 Headache disorders	1·2 (0·4 to 2·5)	102·5 (88·7 to 108·2)	−1·2 (−7·4 to 2·3)
24 Osteoarthritis	1·1 (0·6 to 2·2)	24 Oral disorders	1·2 (0·8 to 1·8)	90·5 (86·0 to 94·7)	−7·4 (−9·6 to −5·1)
25 Self-harm	1·1 (1·0 to 1·2)	25 Neck pain	1·1 (0·7 to 1·7)	115·9 (110·5 to 122·2)	5·7 (3·0 to 8·5)

Lancet 2020; 396: 1204–22. chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(20)30925-9.pdf

GBD:1990-2019 (AGE +75): STROKE & HEART IN TOP 2

Communicable, maternal, neonatal, and nutritional diseases
Non-communicable diseases
Injuries

GBD in Elderly non-communicable diseases: 20 out 25 first & 8 out of 10 first

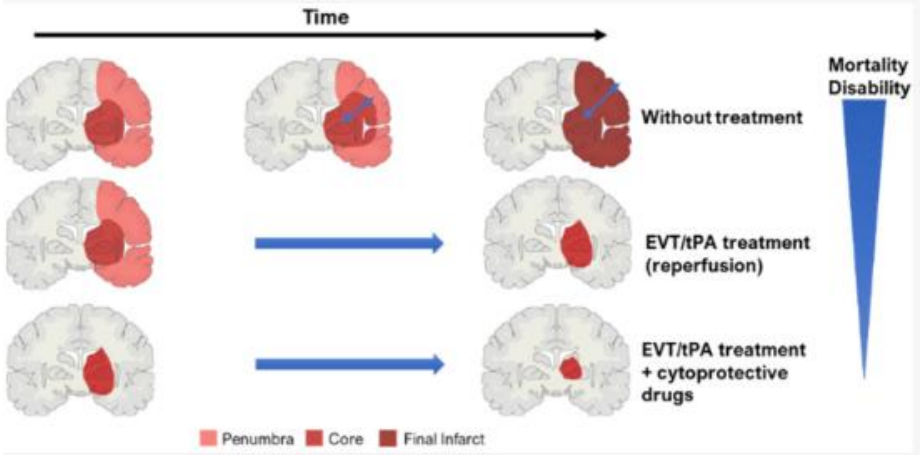
A All ages

Leading causes 1990	Percentage of DALYs 1990	Leading causes 2019	Percentage of DALYs 2019	Percentage change in number of DALYs, 1990–2019	Percentage change in age-standardised DALY rate, 1990–2019
F 75 years and older					
1 Ischaemic heart disease	18·6 (17·1 to 19·7)	1 Ischaemic heart disease	16·2 (14·6 to 17·6)	66·6 (57·7 to 74·2)	−32·4 (−35·8 to −29·4)
2 Stroke	15·5 (14·3 to 16·7)	2 Stroke	13·0 (11·7 to 14·0)	60·5 (48·7 to 72·5)	−33·4 (−38·3 to −28·5)
3 COPD	9·9 (8·6 to 10·7)	3 COPD	8·5 (7·5 to 9·2)	63·6 (49·1 to 86·1)	−31·0 (−37·1 to −21·9)
4 Alzheimer's disease	3·8 (1·7 to 8·6)	4 Alzheimer's disease	5·6 (2·6 to 12·2)	180·0 (168·0 to 194·7)	2·6 (−2·1 to 6·6)
5 Lower respiratory infections	3·3 (3·0 to 3·6)	5 Diabetes	4·0 (3·6 to 4·3)	190·7 (179·4 to 201·0)	23·1 (18·6 to 27·5)
6 Diarrhoeal diseases	3·1 (2·0 to 4·5)	6 Lower respiratory infections	3·3 (2·9 to 3·6)	87·4 (76·2 to 99·6)	−25·3 (−29·3 to −20·4)
7 Diabetes	2·6 (2·4 to 2·9)	7 Lung cancer	2·6 (2·3 to 2·8)	164·3 (143·6 to 183·8)	16·4 (7·4 to 24·9)
8 Hypertensive heart disease	2·3 (1·9 to 2·5)	8 Falls	2·6 (2·2 to 2·9)	166·4 (151·1 to 183·4)	6·4 (0·4 to 13·3)
9 Age-related hearing loss	2·0 (1·5 to 2·7)	9 Chronic kidney disease	2·5 (2·3 to 2·7)	196·0 (173·9 to 211·1)	21·6 (12·6 to 27·4)
10 Lung cancer	1·9 (1·8 to 2·0)	10 Age-related hearing loss	2·5 (1·9 to 3·3)	137·8 (132·0 to 143·9)	−2·2 (−4·3 to −0·2)
11 Falls	1·8 (1·6 to 2·1)	11 Hypertensive heart disease	2·4 (1·8 to 2·7)	106·0 (68·5 to 131·7)	−15·1 (−31·5 to −5·0)
12 Tuberculosis	1·8 (1·6 to 2·1)	12 Diarrhoeal diseases	1·9 (1·2 to 3·0)	15·1 (−16·8 to 65·3)	−51·0 (−64·9 to −30·4)
13 Low back pain	1·7 (1·2 to 2·3)	13 Low back pain	1·8 (1·3 to 2·4)	105·7 (100·2 to 111·4)	−12·5 (−13·8 to −11·3)
14 Chronic kidney disease	1·6 (1·5 to 1·8)	14 Colorectal cancer	1·7 (1·5 to 1·8)	126·9 (113·4 to 138·3)	−4·5 (−9·7 to 0·1)
15 Stomach cancer	1·6 (1·4 to 1·7)	15 Blindness and vision loss	1·7 (1·3 to 2·2)	124·7 (119·3 to 130·7)	−7·4 (−9·9 to −4·8)
16 Blindness and vision loss	1·4 (1·1 to 1·8)	16 Atrial fibrillation	1·3 (1·1 to 1·5)	148·6 (134·8 to 161·9)	−1·8 (−6·9 to 2·5)
17 Colorectal cancer	1·4 (1·3 to 1·5)	17 Stomach cancer	1·3 (1·1 to 1·4)	55·0 (43·8 to 66·6)	−32·9 (−37·5 to −28·0)
18 Asthma	1·2 (1·0 to 1·7)	18 Prostate cancer	1·1 (1·0 to 1·4)	117·0 (102·1 to 142·3)	−8·5 (−14·6 to 2·1)
19 Cirrhosis	1·2 (1·0 to 1·3)	19 Cirrhosis	1·1 (1·0 to 1·2)	82·3 (62·1 to 100·9)	−21·3 (−30·2 to −13·5)
20 Prostate cancer	1·0 (0·8 to 1·2)	20 Parkinson's disease	1·1 (1·0 to 1·2)	153·7 (138·7 to 166·6)	6·0 (0·0 to 11·1)
21 Atrial fibrillation	1·0 (0·8 to 1·2)	21 Osteoarthritis	1·1 (06 to 21)	139·5 (136·5 to 142·6)	0·8 (−0·4 to 2·1)
22 Osteoarthritis	0·9 (0·5 to 1·7)	22 Oral disorders	0·9 (0·6 to 1·3)	112·0 (106·4 to 117·6)	−10·9 (−12·9 to −8·8)
23 Oral disorders	0·8 (0·6 to 1·2)	23 Tuberculosis	0·9 (0·8 to 1·0)	−6·3 (−16·9 to 14·6)	−59·2 (−64·0 to −50·3)
24 Parkinson's disease	0·8 (0·8 to 0·9)	24 Asthma	0·8 (0·7 to 1·0)	25·2 (3·2 to 41·2)	−46·2 (−55·9 to −39·8)
25 Upper digestive diseases	0·8 (0·7 to 0·9)	25 Road injuries	0·8 (0·7 to 0·9)	110·0 (99·8 to 118·1)	−9·3 (−13·5 to −5·9)

er (JMERC)

Lancet 2020; 396: 1204–22. chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(20)30925-9.pdf

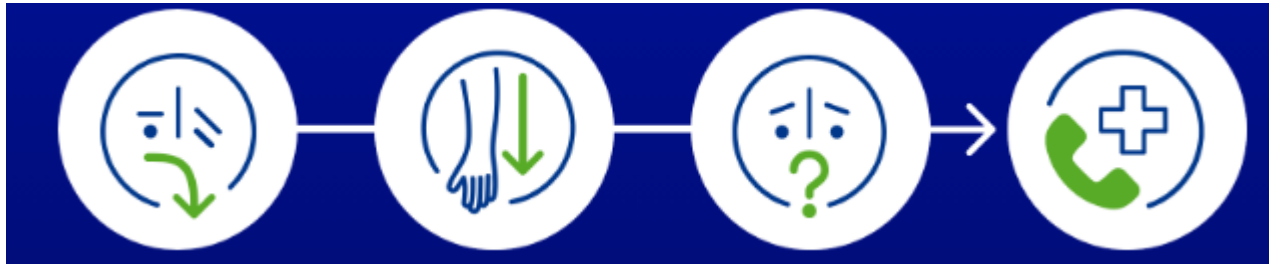
2021 LANCET PUB. 2023



- New stroke per year: 12 million
- Death No.: 7·3 million
  - 10·7% (9·8–11·3) of **all deaths** and
- DALYs : 160 million (147·8–171·6)
  - 5·6% (5·0–6·1) of **all DALYs** from all causes,
  - Loss of 4.58 life years and 9.21 QALYs
- Most strokes occur
  - Ischemic: 70 – 80 yrs & Hemorrhagic: 60 – 70 yrs
  - 16% under 50 yrs

https://www.thelancet.com/journals/laneur/article/PIIS/۷-۰۰۳۶۹(۲۴)۴۴۲۲-۱۴۷۴fulltext

STROKE- CVA



- **WHO**: Prioritized non-communicable diseases
- Stroke is the second leading cause of mortality worldwide
- Leading cause of acquired disability in adults
- Two-thirds of the stroke-induced burden occurs in developing countries
  - Younger ages & higher MR

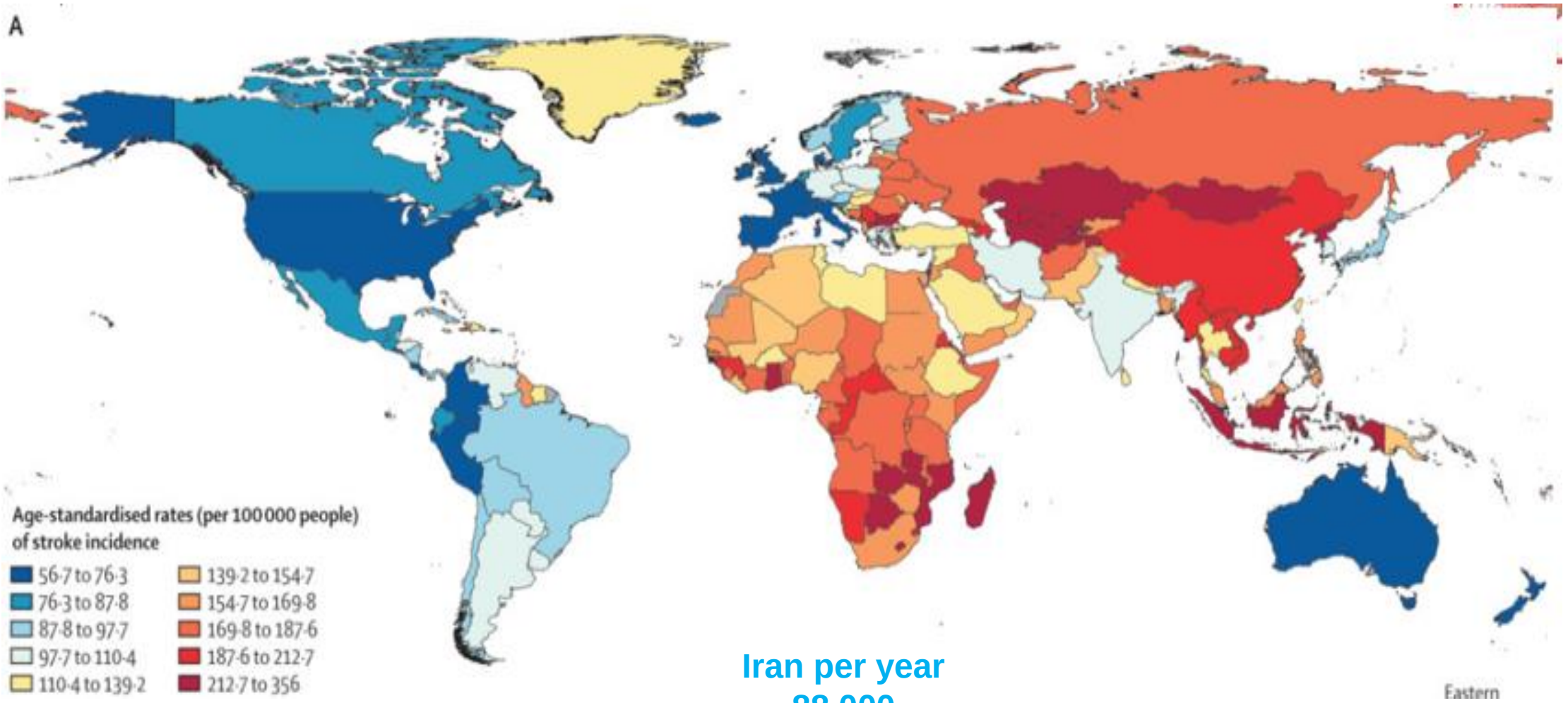
Lancet 2020; 396: 1204–22. chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/
https://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(20)30925-9.pdf

STROKE

- People affected, died and remained disabled after stroke
- Chance of another stroke: 25%
- Stroke patients are at highest risk of death:
  - First weeks after the event, and
  - 20% to 50% die within the first month (age, severity, morbidity, treat, complication)
  - Mostly due to recurrence or complications of stroke
  - Cause of death: "Over half of stroke will die due to stoke"
- Recovery occurs up to about 6-12 months (history of stroke)
- Achieving independence in self-care by one year after a stroke: 60% to 83%

https://www.researchgate.net/publication/esaesiD_ralucsavorbereC_fo_nedruB_labolG_ehT_۲۲۸۵۵۱۳۷۷

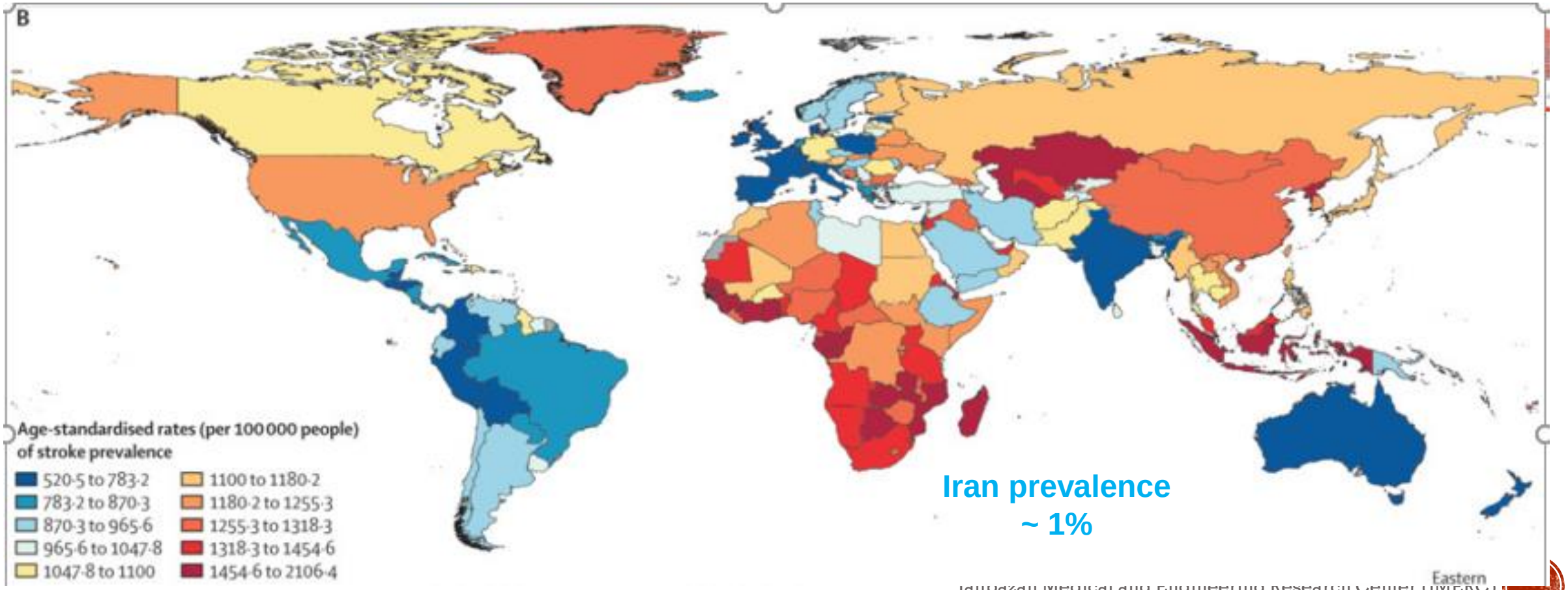
STROKE INCIDENCE-LANCET PUB. 2023



Iran per year
88,000

https://www.thelancet.com/journals/laneur/article/PIIS/۷-۰۰۳۶۹(۲۴)۴۴۲۲-۱۴۷۴fulltext

STROKE PREVALENCE-LANCET PUB. 2023

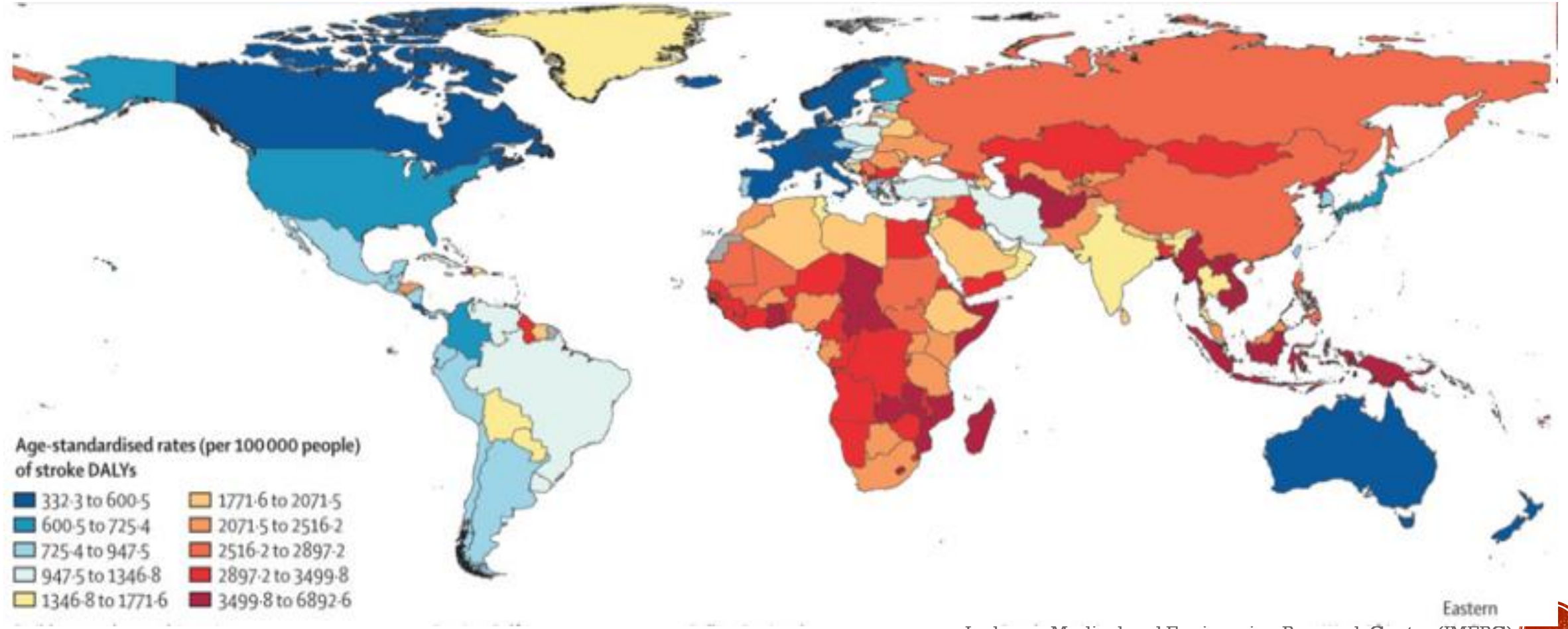


Iran prevalence ~ 1%

https://www.thelancet.com/journals/laneur/article/PIIS/۷-۰۰۳۶۹(۲۴)۴۴۲۲-۱۴۷۴fulltext

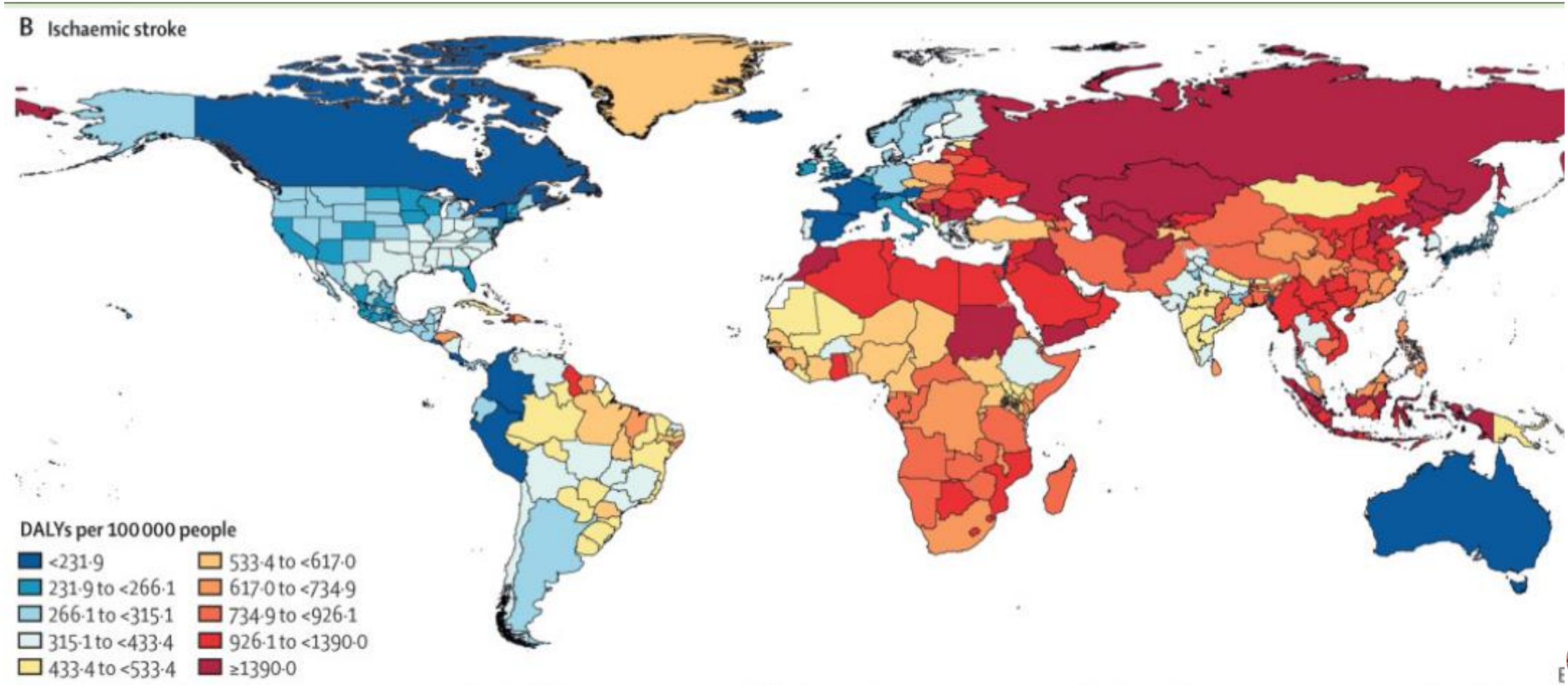
STROKE DALYS
LANCET PUB. 2023

High-income countries (past two decades) decreased:
Incidence of ischemic by 13%,
Mortality rate by 37%,
DALY (the disability-adjusted life year) by 34% and
Mortality ratio to incidence by 21%



https://www.thelancet.com/journals/laneur/article/PIIS/۷-۰۰۳۶۹(۲۴)۴۴۲۲-۱۴۷۴fulltext

ISCHEMIC STROKE: DALYS



CVA FACTS LANCET PUB. 2023

Low and middle-income countries(LMICs)

- **Incident 83%,**
- **Prevalent 77%,**
- **DALYs 86%, and**
- **Fatal strokes 87%**

Often LMICs is where healthcare providers find it more **challenging** to provide the care that is needed for **effective prevention**, **treatment** and **rehabilitation** of stroke

https://www.thelancet.com/journals/laneur/article/PIIS/۷-۰۰۳۶۹(۲۴)۴۴۲۲-۱۴۷۴fulltext

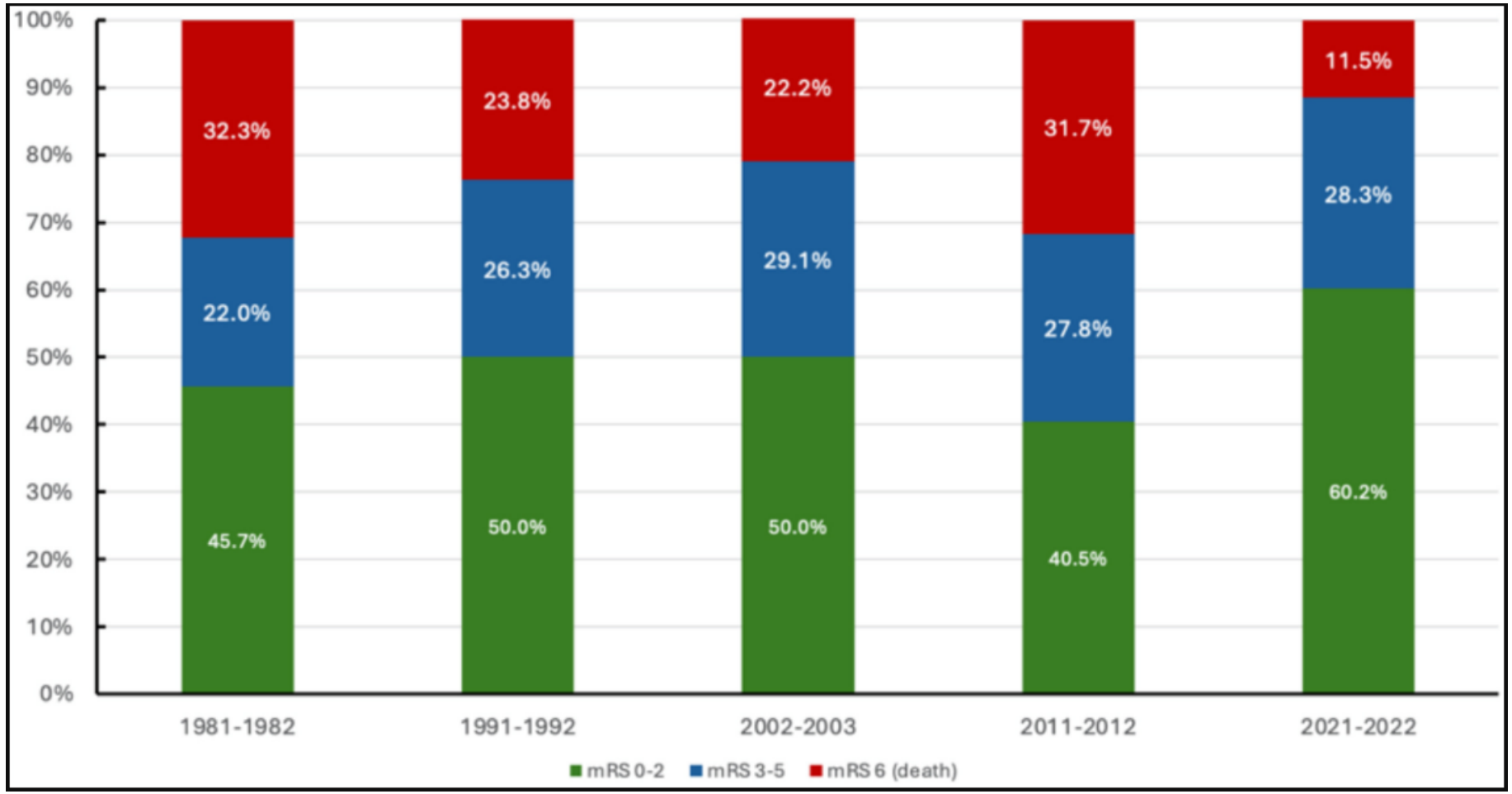
LANCET 2025: 28-DAY STROKE CASE-FATALITY AND DISABILITY TREND IN INCIDENT STROKE, (40 YEARS 1981–2022)

Good functional outcome/modified Rankin Score 0–2.

Poor functional outcome modified Rankin Score 3–5 (p for trend is <0.001 for mRS 0–2, 3–5,)

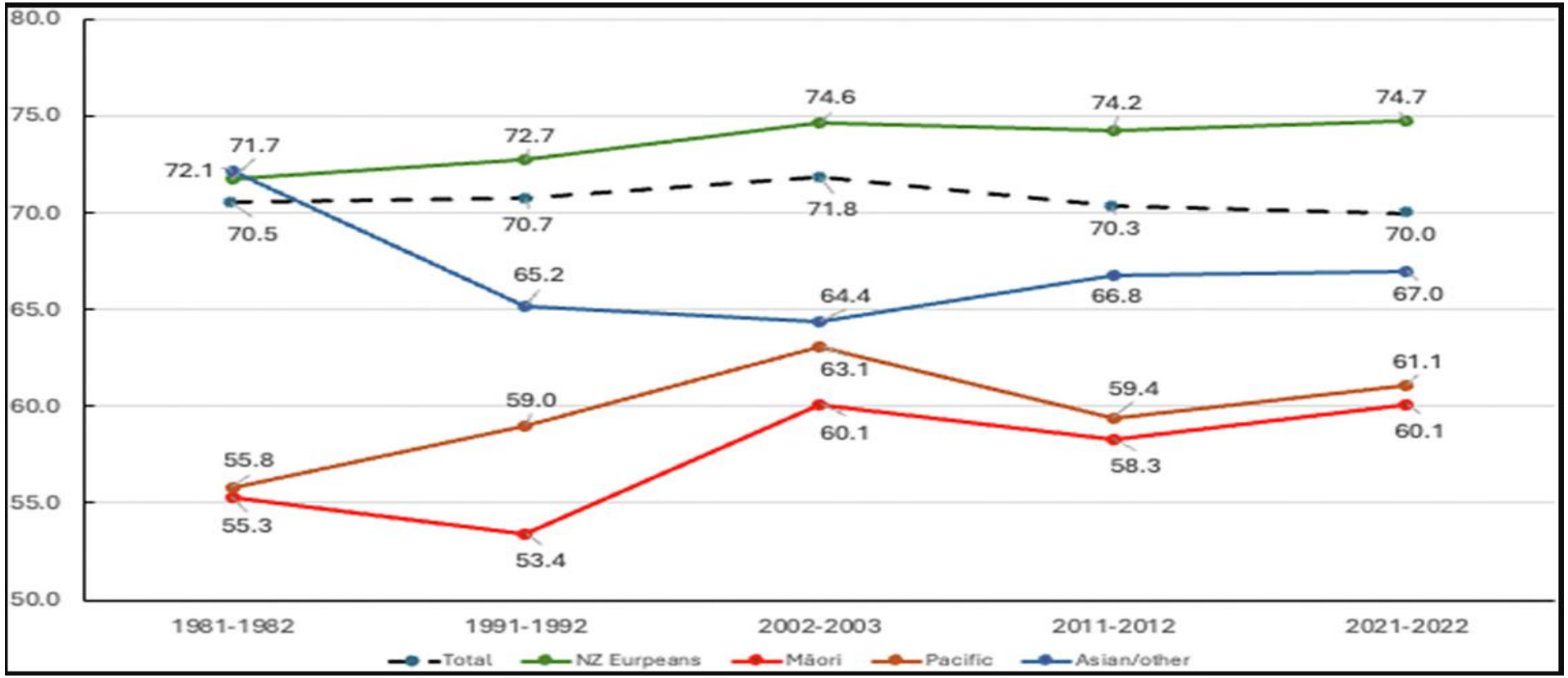
mRS 6 (death)

”Improved over the last 40 years”



https://www.thelancet.com/journals/lanwpc/article/PIIS/۸-۰۰۰۴۵(۲۵)۶۰۶۵-۲۶۶۶fulltext

LANCET 2025: MEAN AGE TREND IN INCIDENT STROKE, 1981–2022



Statistically significant increase in age-standardised stroke incidence rates in Asian/other people and people younger than 55 years old

https://www.thelancet.com/journals/lanwpc/article/PIIS/۸-۰۰۰۴۵(۲۵)۶۰۶۵-۲۶۶۶fulltext

SYS. REV. 2022: IRAN 28 STUDY

Volume 8, Issue 4 (Autumn 2022) Caspian J Neurol Sci 2022, 8(4): 252-267 | Ba

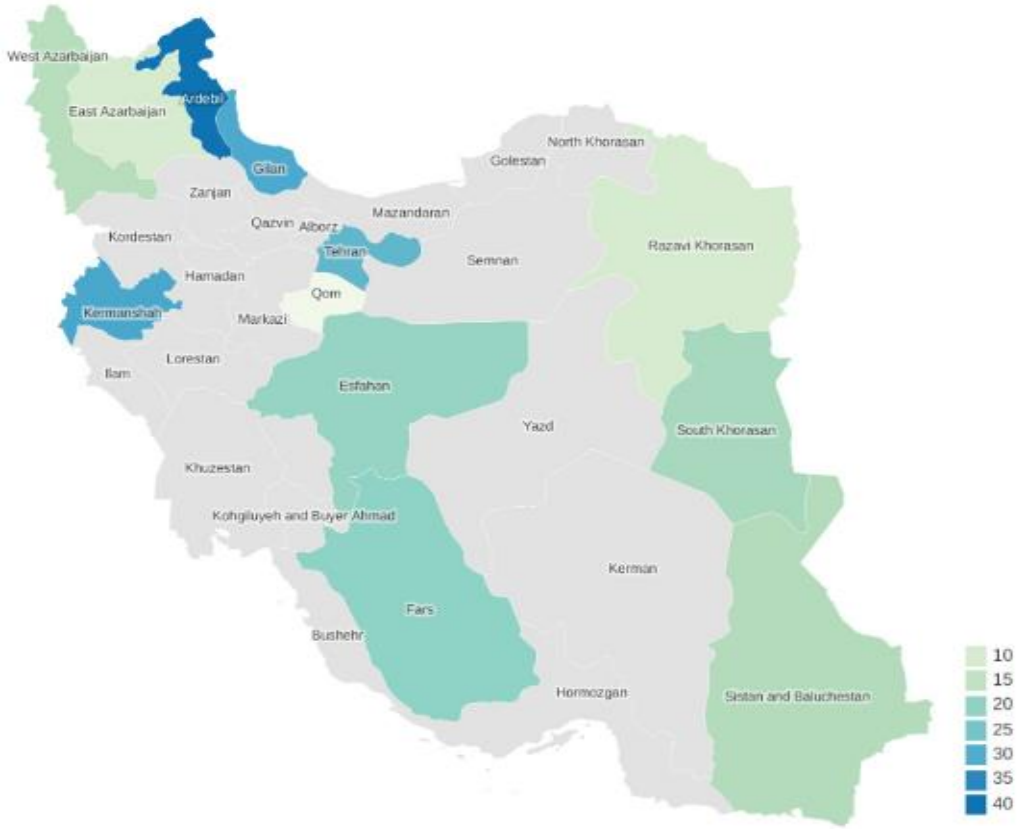
Mortality Rate of Acute Stroke in Iran: A Systematic Review and Meta-Analysis

Hossein-Ali Nikbakht [*1], Layla Shojaie[2], Nasim Niknejad[3], Soheil Hassanipour[4], Hassan Soleimanpour[5], Sohrab Heidari[6], Sima Afrashteh[7], Ehsan Sarbazi[8], Saber Ghaffari-fam[6]

1- Social Determinants of Health Research Center of Babol University of Medical Sciences, Babol University of Medical Sciences, Babol, Iran

1998 to 2020, and only 13 provinces

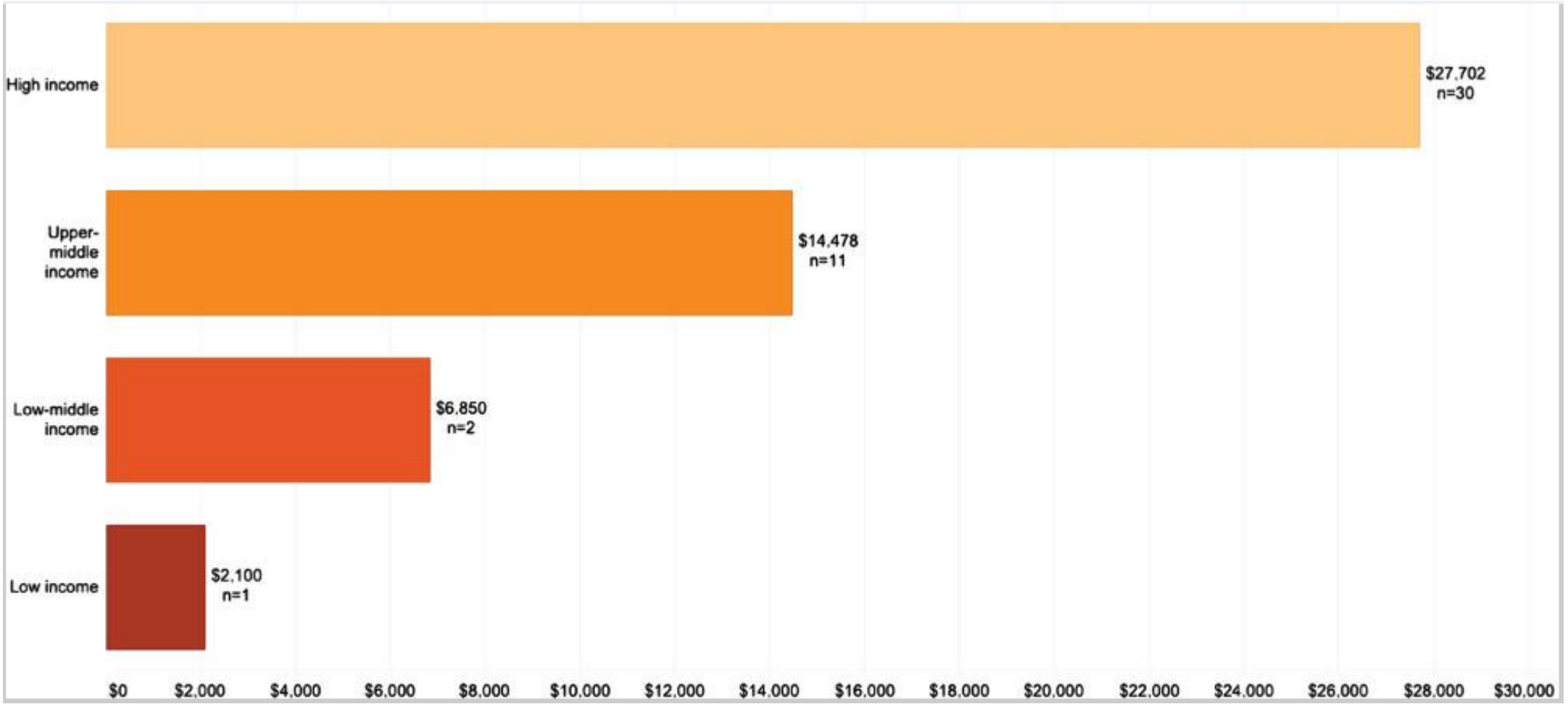
- Hospital mortality rate in Iran: **18.71%**
- one -month-long stroke mortality rate in Iran: **23.43%** (11.8% to 56.8%)
- The 1-year mortality rate: **34.44**%
  - Predictors: **age**, pre-stroke functional status, the severity of stroke, DM, heart disease
- Life mortality: N/A



https://cjns.gums.ac.ir/browse.php?a_id=١=lmth&ne=gnal_cls&١=dis&٥۶٨

Janbazan Medical and Engineering Research Center (JMERC)

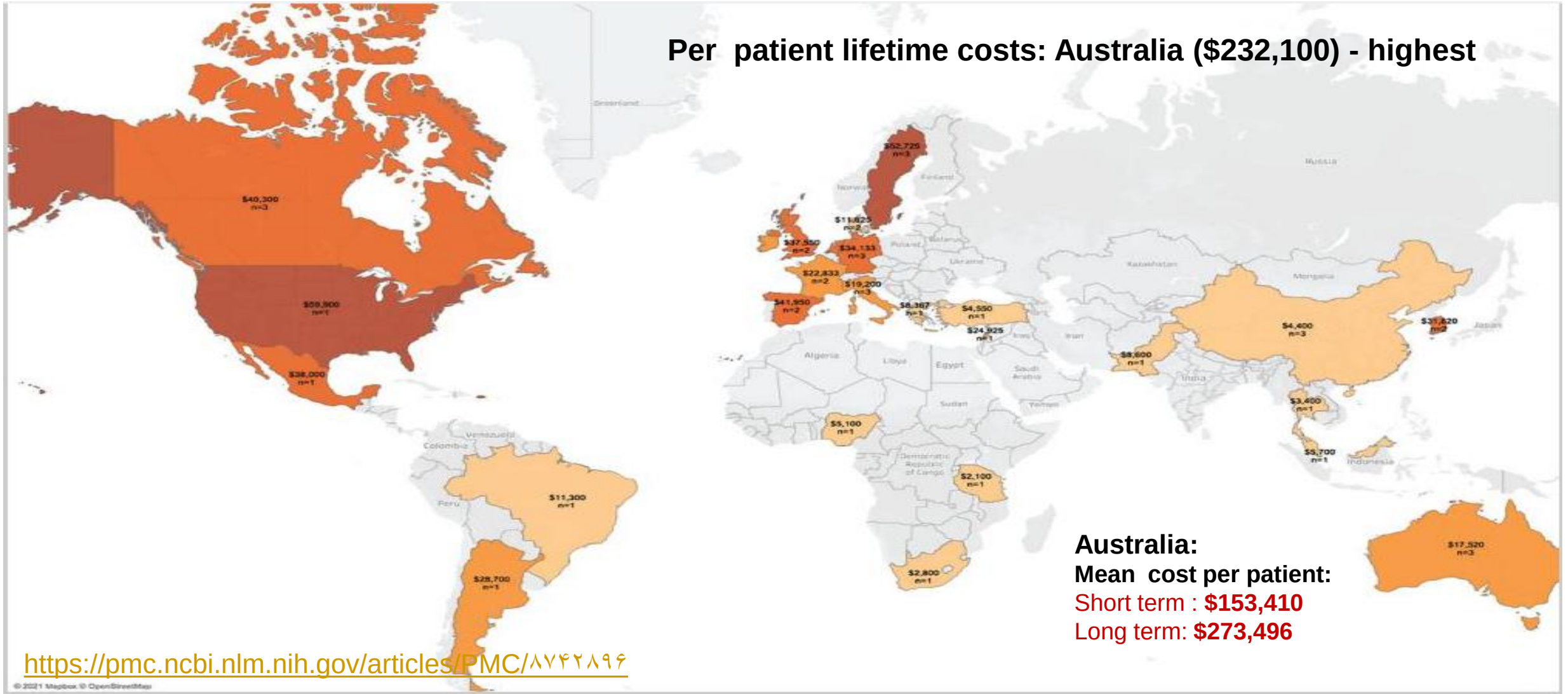
ECONOMY BURDEN OF STROKE:
PER PATIENT PER YEAR COSTS (USD 2020) BY REGION



https://pmc.ncbi.nlm.nih.gov/articles/PMC/۸۷۴۲۸۹۶

WORLD MAP: PER PATIENT PER YEAR COSTS(USD 2020):

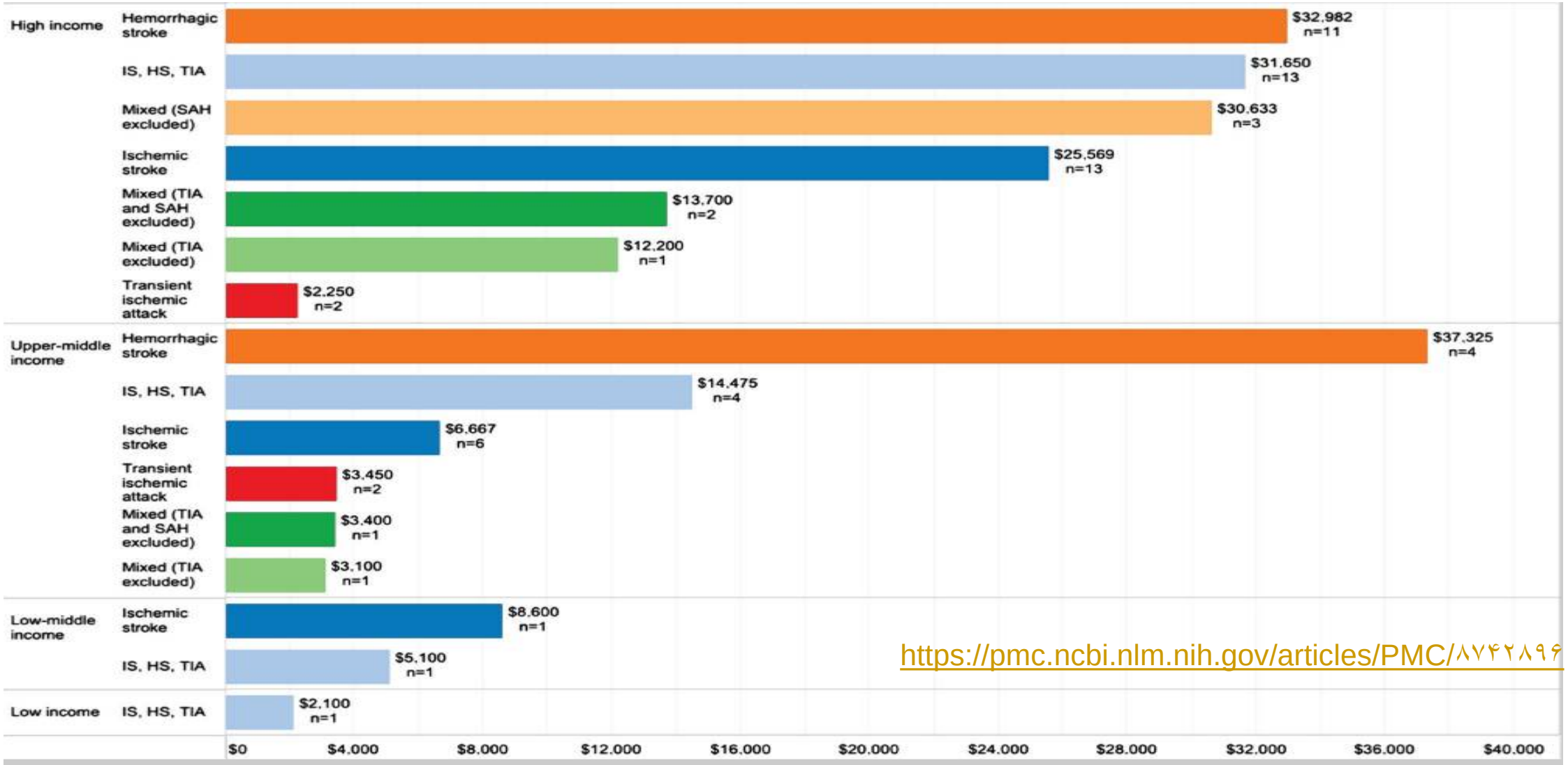
UNITED STATES ($59,900), FOLLOWED BY SWEDEN ($52,725) AND SPAIN ($41,950)



https://pmc.ncbi.nlm.nih.gov/articles/PMC/۸۷۴۲۸۹۶

PER PATIENT PER YEAR COSTS (USD 2020) BY COUNTRY

HEMORRHAGIC HIGHER COST



https://pmc.ncbi.nlm.nih.gov/articles/PMC/۸۷۴۲۸۹۶

ALL TYPES OF COSTS IN US$ FOR STROKES IN IRAN-2018 (PUB.2021)

Type of costs	All studied patients costs	Per patient costs	Total costs for country
Direct medical costs	$433575	$223	$22300000
Transportation costs	$87300	$45	$4500000
Patient time costs	$95911	$49	$4900000
Disability costs	$1271088	$728	$54600000 (for 75000 survived patients in one year in Iran)
Mortality costs	$2193250	$11305	$282625000 (for 25000 death in on year in Iran)
Total annual costs	$4081124	$12350	$368925000

https://www.sciencedirect.com/science/article/pii/S۲۲۱۲۱۰۹۹۲۰۳۰۶۲۲۱

PREVENTION-LANCET 2021

In summary, although strokes are largely preventable, as indicated by declining incidence rates globally, stroke remained the second-leading cause of death.

Closing the gaps between high-income countries and low-income and middle-income countries in the adaptation and implementation of internationally recognized guidelines and recommendations for reducing stroke morbidity and mortality, with an **”emphasis on primary prevention strategies”**, is crucial to addressing the global stroke burden.

https://www.thelancet.com/article/S/۰-۰۰۲۵۲(۲۱)۴۴۲۲-۱۴۷۴fulltext

PREVENTION STRATEGIES

- **Primordial Prevention**

Risk factor reduction (through laws and national policy).

Underlying disease (physical activity; obesity, cardiovascular disease, type 2 diabetes, etc.)

- **Primary Prevention**

Prevent a disease from ever occurring. (**limit risk exposure** or increase the immunity by immunizations

- **Secondary Prevention**

Early disease detection: Secondary prevention often occurs in the form of screenings.

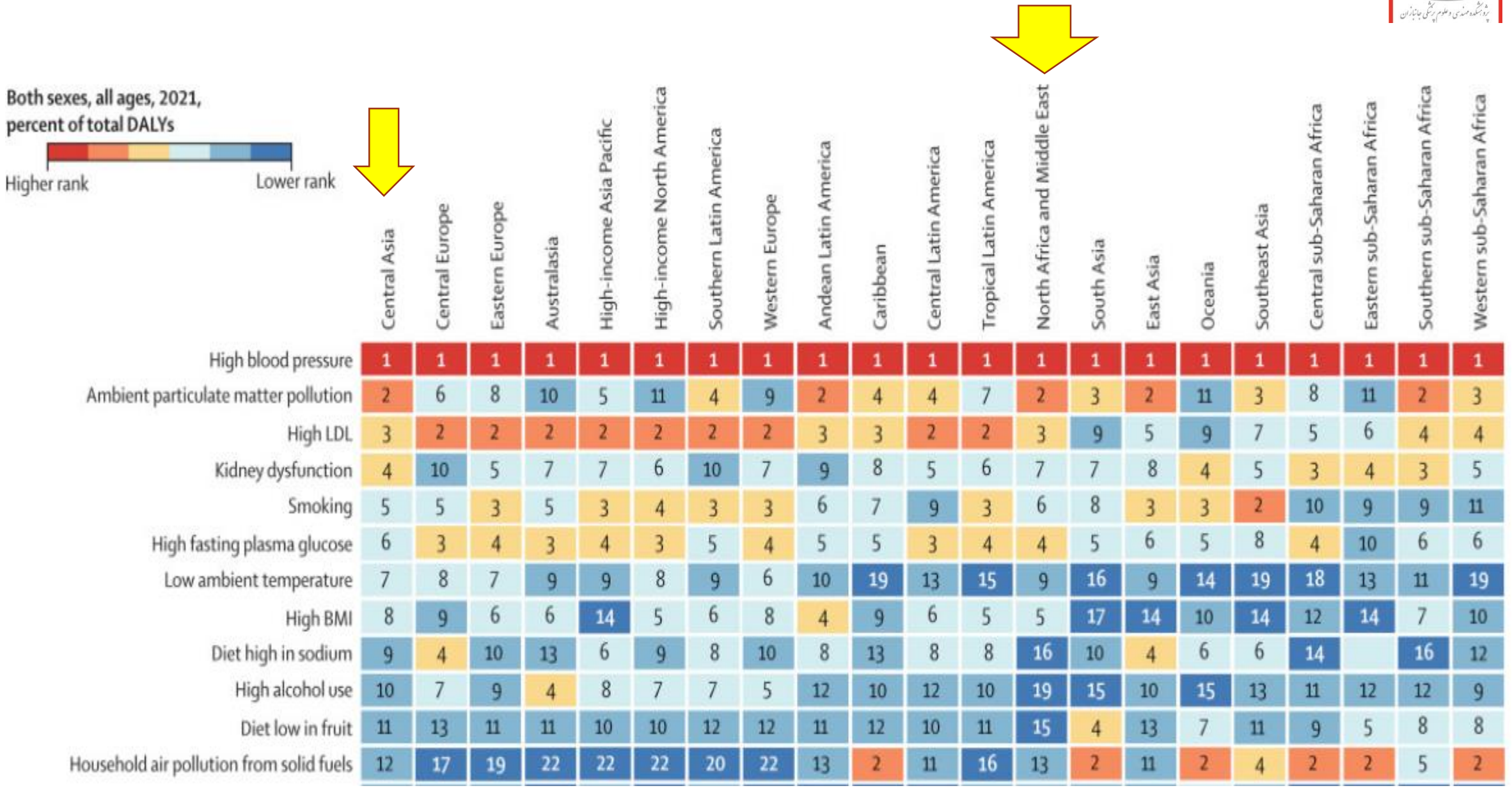
- **Tertiary Prevention**

Tertiary prevention targets symptomatic patients and aims to reduce the severity of the disease as well as any associated sequelae.

- **Quaternary Prevention**

Action taken to identify patients at risk of overmedicalization, to protect him from new medical invasion, and to suggest to him interventions, which are ethically acceptable. "an action taken to protect individuals (persons/patients) from medical interventions that are likely to cause more harm than good."

CVA FIXED & MODIFIABLE FACTORS



	Central Asia	Central Europe	Eastern Europe	Australasia	High-income Asia Pacific	High-income North America	Southern Latin America	Western Europe	Andean Latin America	Caribbean	Central Latin America	Tropical Latin America	North Africa and Middle East	South Asia	East Asia	Oceania	Southeast Asia	Central sub-Saharan Africa	Eastern sub-Saharan Africa	Southern sub-Saharan Africa	Western sub-Saharan Africa
High blood pressure	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Ambient particulate matter pollution	2	6	8	10	5	11	4	9	2	4	4	7	2	3	2	11	3	8	11	2	3
High LDL	3	2	2	2	2	2	2	2	3	3	2	2	3	9	5	9	7	5	6	4	4
Kidney dysfunction	4	10	5	7	7	6	10	7	9	8	5	6	7	7	8	4	5	3	4	3	5
Smoking	5	5	3	5	3	4	3	3	6	7	9	3	6	8	3	3	2	10	9	9	11
High fasting plasma glucose	6	3	4	3	4	3	5	4	5	5	3	4	4	5	6	5	8	4	10	6	6
Low ambient temperature	7	8	7	9	9	8	9	6	10	19	13	15	9	16	9	14	19	18	13	11	19
High BMI	8	9	6	6	14	5	6	8	4	9	6	5	5	17	14	10	14	12	14	7	10
Diet high in sodium	9	4	10	13	6	9	8	10	8	13	8	8	16	10	4	6	6	14		16	12
High alcohol use	10	7	9	4	8	7	7	5	12	10	12	10	19	15	10	15	13	11	12	12	9
Diet low in fruit	11	13	11	11	10	10	12	12	11	12	10	11	15	4	13	7	11	9	5	8	8
Household air pollution from solid fuels	12	17	19	22	22	22	20	22	13	2	11	16	13	2	11	2	4	2	2	5	2

PREVENTION, TREAT., REHAB. & BACK TO LIFE

- **Before stroke: Managing risks**
- **FAST – signs and symptoms of stroke**
- **Tracking progress**

world-stroke.org

Available for 70% of the world's population
Farsi translation- non

Public awareness, prevention, protocolled management contributed to a 46% reduction

https://www.world-stroke.org/world-stroke-day-campaign/life-after-stroke/post-stroke-checklist

POST-STROKE CHECKLIST (PSC):
IMPROVING LIFE AFTER STROKE

This Post-Stroke Checklist (PSC) has been developed to help healthcare professionals identify post-stroke problems amenable to treatment and/or referral. The PSC is a brief and easy-to-use tool, intended for completion with the patient and the help of a caregiver, if necessary. PSC administration provides a standardized approach for the identification of long-term problems in stroke survivors and facilitates appropriate referral for treatment.

INSTRUCTIONS FOR USE:

Please ask the patient each numbered question and indicate the answer in the "response" section. In general, if the response is NO, update the patient record and review at next assessment. If the response is YES, follow-up with the appropriate action. Please note that the actions described in this version are for guidance and the 'If Yes' and 'If No' text boxes (highlighted in yellow) can and should be edited for local implementation.

1. SECONDARY PREVENTION

Since your stroke or last assessment, have you received any advice on health related life style changes or medications for preventing another stroke?	NO	If **NO**, refer to a Primary Care Physician or Stroke Neurologist for risk factor assessment and treatment if appropriate
	YES	Observe Progress

2. ACTIVITIES OF DAILY LIVING (ADL)

Since your stroke or last assessment, are you finding it more difficult to take care of yourself?	NO	Observe Progress	
	YES	Do you have difficulty dressing, washing and/or bathing? Do you have difficulty preparing hot drinks and/or meals? Do you have difficulty getting outside?	If **YES** to any, refer to Primary Care Physician, Rehabilitation Physician or an appropriate therapist (i.e. OT or PT) for further assessment

3. MOBILITY

Since your stroke or last assessment, are you finding it more difficult to walk or move safely from bed to chair?	NO	Observe Progress	
	YES	Are you continuing to receive rehabilitation therapy?	If **YES**, update patient record and review at next assessment
			If **NO**, refer to Primary Care Physician, Rehabilitation Physician or an appropriate therapist (i.e. OT or PT) for further assessment

4. SPASTICITY

Since your stroke or last assessment, do you have increasing stiffness in your arms, hands, and/or legs?	NO	Observe Progress	
	YES	Is this interfering with activities of daily living, sleep or causing pain?	If **YES**, refer to a physician with an interest in post-stroke spasticity (i.e. Rehabilitation Physician or Stroke Neurologist) for further assessment
			If **NO**, update patient record and review at next assessment

5. PAIN

Since your stroke or last assessment, do you have any new pain?	NO	Observe Progress
	YES	If **YES**, refer to a physician with an interest in post-stroke pain for further assessment and diagnosis

6. INCONTINENCE

Since your stroke or last assessment, are you having more of a problem controlling your bladder or bowels?	NO	Observe Progress
	YES	If **YES**, refer to Healthcare Provider with an interest in incontinence

7. COMMUNICATION

Since your stroke or last assessment, are you finding it more difficult to communicate with others?	NO	Observe Progress
	YES	If **YES**, refer to specialist Speech and Language Pathologist for further assessment

8. MOOD

Since your stroke or last assessment, do you feel more anxious or depressed?	NO	Observe Progress
	YES	If **YES**, refer to a Physician or Psychologist with an interest in post-stroke mood changes for further assessment

9. COGNITION

Since your stroke or last assessment, are you finding it more difficult to think, concentrate, or remember things?	NO	Observe Progress	
	YES	Does this interfere with activity or participation?	If **YES**, refer to a Physician or Psychologist with an interest in post-stroke cognition for further assessment
			If **NO**, update patient record and review at next assessment

10. LIFE AFTER STROKE

Since your stroke or last assessment, are you finding things important to you more difficult to carry out (e.g. leisure activities, hobbies, work)	NO	Observe Progress
	YES	If **YES**, refer to a local stroke support group or a stroke association (i.e. The American Stroke Association or National Stroke Association)

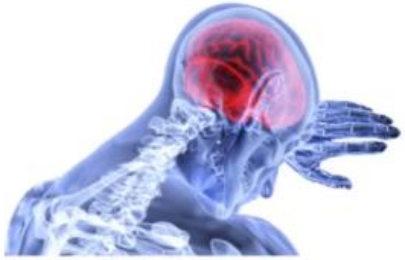
11. RELATIONSHIP WITH FAMILY

Since your stroke or last assessment, has your relationship with your family become more difficult or stressed?	NO	Observe Progress
	YES	If **YES**, schedule next Primary Care visit with patient and family member. If family member is present refer to a local stroke support group

https://www.world-stroke.org/world-stroke-day-campaign/life-after-stroke/post-stroke-checklist

C)

MASSAGE TO TAKE HOME



The global economic impact of stroke:

estimated by 2030: 1 trillion US$

Low & middle income country-Iran: More elderly & morbid & death

- **90% modifiable risk factors**
- **Risk assessment & Prevention of modifiable risks:**

Addressing key risk factors: HTN, LDL, Smoking, BMI, Na+, Alcohol

- **Post stroke health support**

The official flower of National Grandparents' Day is the forget-me-not, which blooms in the spring, small blue flowers that grow anywhere from 4 to 12 inches.

Represents remembrance and long-associated with dementia. People with dementia may experience memory loss, among other symptoms. This makes the forget-me-not the perfect flower to represent our cause.