Stroke: Keeping your world separate from mine

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Royal Brisbane and Women's Hospital
August 2014

Disclosures

Speakers honoraria &

Sponsorship

(flights, accommodation, conference registration)

Boehringer Ingelheim : Alteplase (tPA), Asasantin, Pradaxa

Bayer : Xarelto

Pfizer : Eliquis

BMS (Bristol-Myers Squibb) : Eliquis

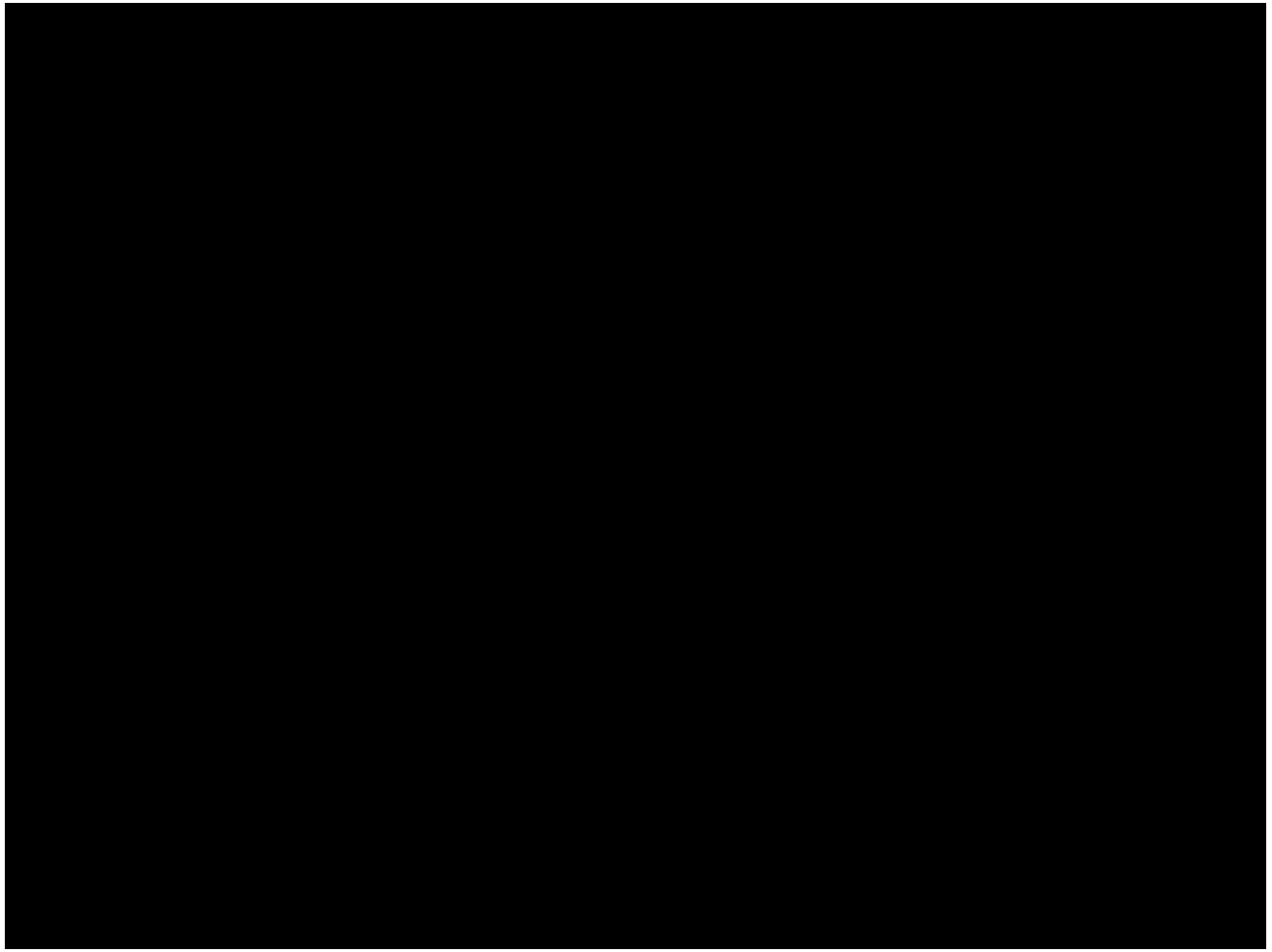
Astra Zenica : Brilinta

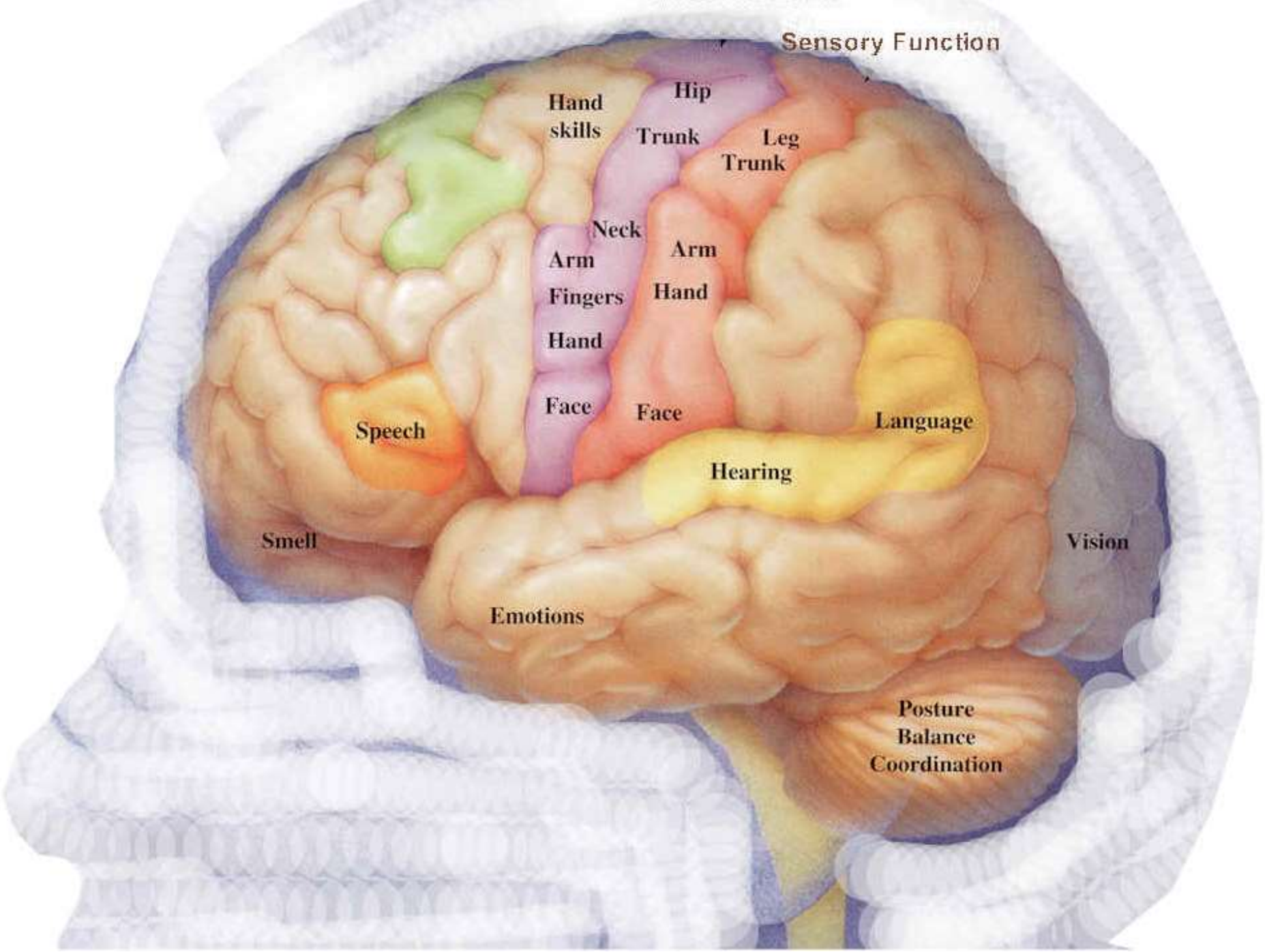
Covidien : Sequential Compression Devices

Concepts

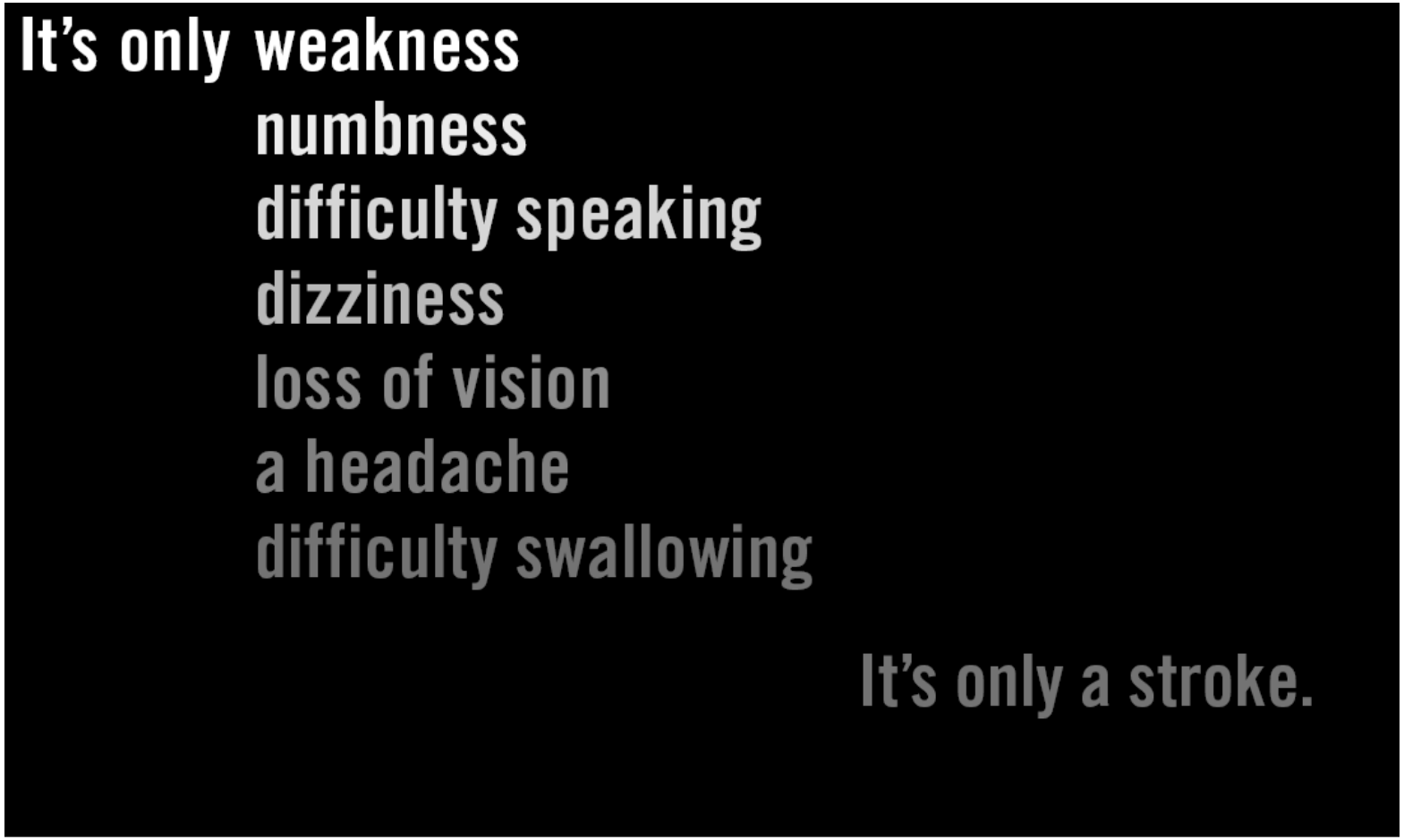
- Primary Prevention vs. Secondary prevention
- Absolute risk
  - Per 1000 patient years; or 50 people for 20y
  - Your chance per year
- Relative risk
  - Your chance compared with another's chance

What is a “Stroke”

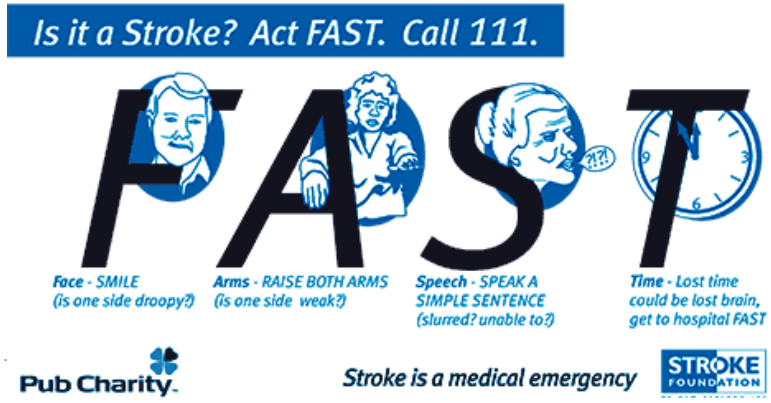



Sensory Function
Hand skills
Hip
Trunk
Leg
Trunk
Neck
Arm
Fingers
Hand
Arm
Hand
Face
Face
Speech
Language
Hearing
Smell
Vision
Emotions
Posture
Balance
Coordination

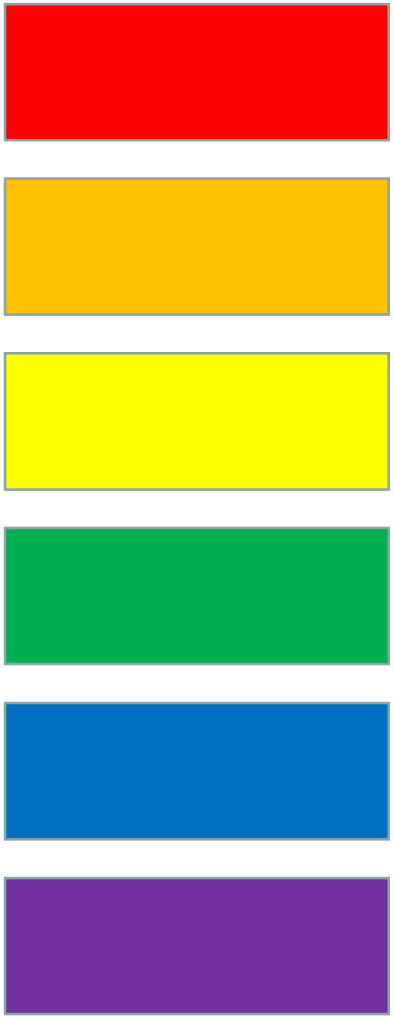
1. Signs and symptoms of stroke



The *FAST* campaign – a public education tool in use internationally



What is your stroke ‘risk’



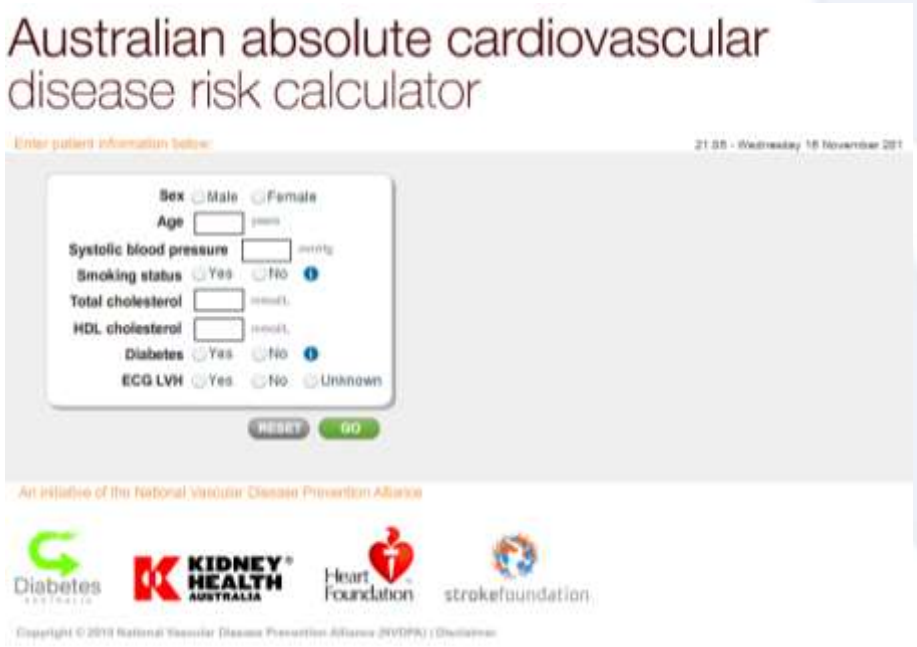
http://strokefoundation.com.au/health-professionals/tools-and-resources/facts-and-figures-about-stroke/

Primary Prevention

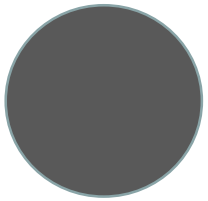
Guidelines for the assessment of

Absolute cardiovascular disease **risk**

http://www.strokefoundation.com.au/general-practice



What happens after a stroke?

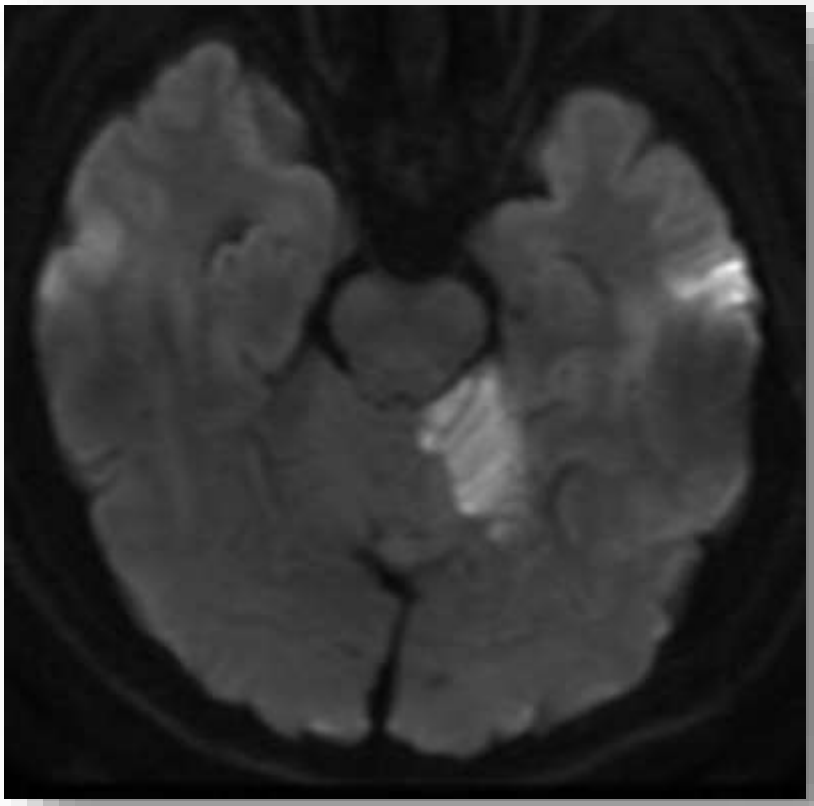


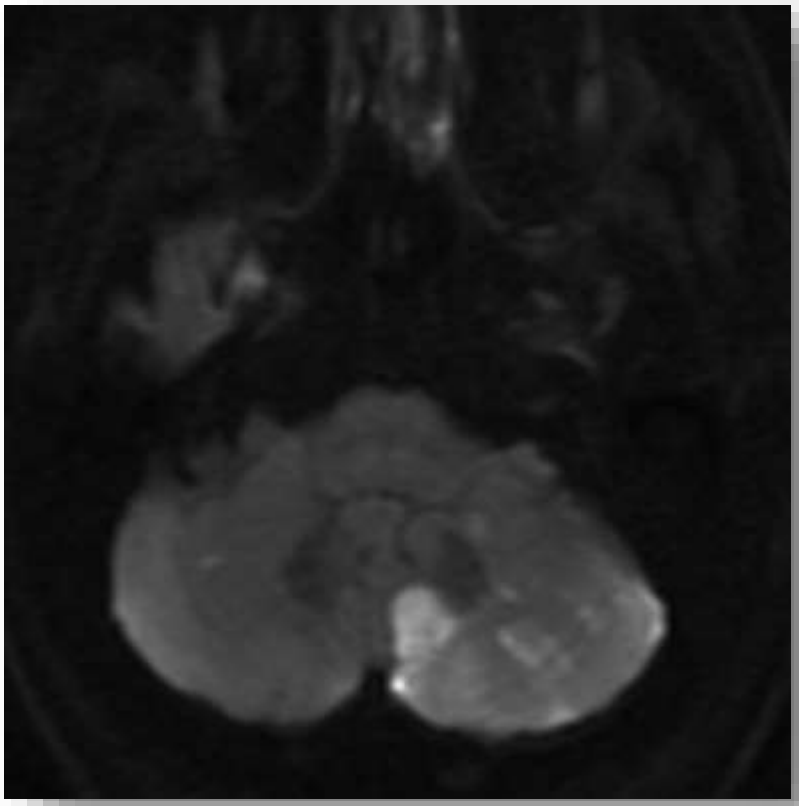
Overall, minor stroke (0.47) was considered by patients to be slightly worse than major bleeding (0.60); however, moderate stroke (0.09) was rated to be about as bad as death (0), and major stroke (-0.36) was considered to be worse than death.

How we manage stroke in Australia, AIHW 06

LaHaye 2014

What does a stroke look like?





What does a stroke do to a person?

How can you avoid having a stroke?

MEDIA ALERT

EMBARGOED UNTIL Monday 5th May 2014 (00'01 AEST)

New results on the world's largest study on stroke risk factors presented at World Congress of Cardiology

Ten easily measurable and modifiable risk factors could explain 90 per cent of the risk of stroke in all regions

Melbourne (Monday 5 May) - Preliminary findings from the completed INTERSTROKE study presented for the first time today at the World Heart Federation's World Congress of Cardiology reported new and important results. INTERSTROKE evaluates the importance of risk factors for stroke and the first phase showed that 10 known risk factors are associated with about 90% of strokes. The new preliminary results confirm these findings in larger patient populations and further to the first phase, demonstrate an overall consistency in the collective importance of these risk factors around the world. This reinforces the fact that action is needed worldwide to control those 10 risk factors - hypertension, lipids, smoking, physical inactivity, abdominal obesity, cardiac causes, diet, alcohol, diabetes mellitus and psychosocial factors. Of these, hypertension is the most important.

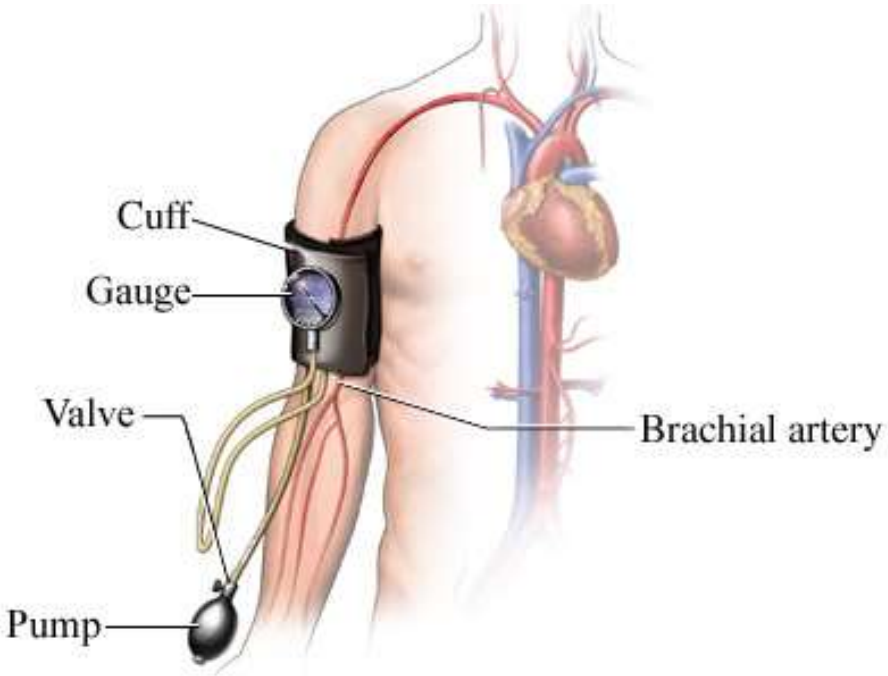
INTERSTROKE is the largest international study ever to evaluate the importance of both established and novel risk factors for stroke, which affects millions of people worldwide. Completed in March 2014, the much anticipated study led by Dr Martin O'Donnell (Population Health Research Institute, McMaster University and HRB-Clinical Research Facility, NUI Galway, Ireland) and Dr Salim Yusuf (Population Health Research Institute, McMaster University, Canada) included over 27,000 patients from 32 countries across the world. It involved an international collaboration of committed stroke physicians cardiologists and researchers, keen to build on the landmark INTERHEART study led by Dr Yusuf, which looked at modifiable risk factors for heart attacks.

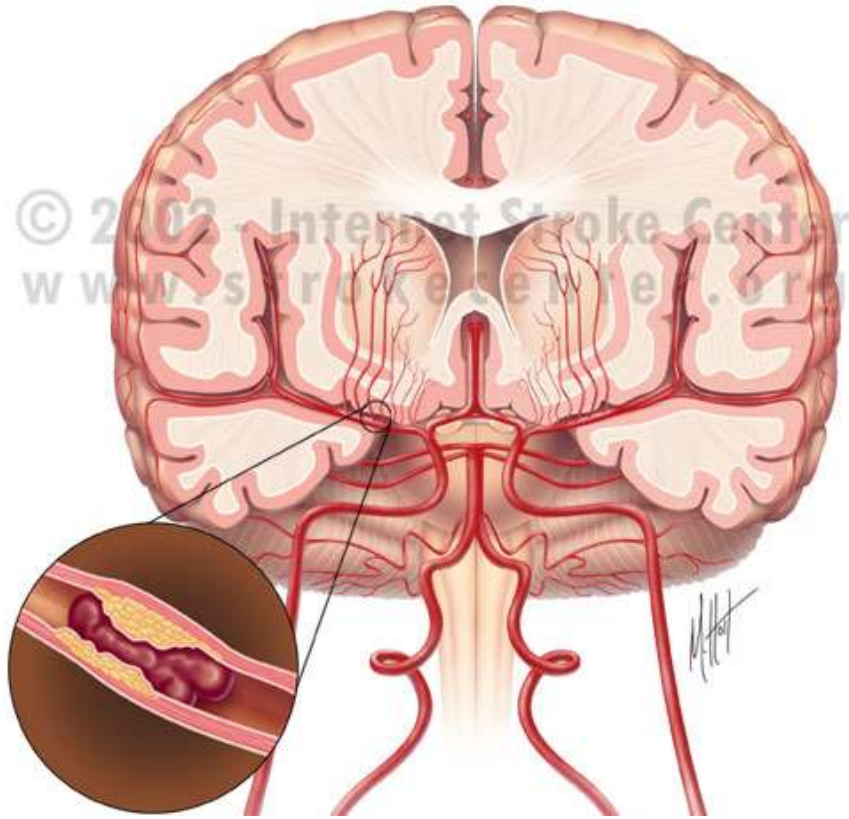
"The INTERSTROKE study represents an important resource to progress our understanding of the causes of stroke, both in estimating the contribution of known modifiable risk factors for stroke and in identifying and clarifying the role of new ones, such as genetics," said Dr O'Donnell. *"These results are the completion of eight years of work and, on behalf of the INTERSTROKE group, we are delighted to share them with colleagues from around the world today in this preliminary analysis. We especially look forward to sharing our full data results later this year and continuing to collaborate with colleagues globally to fight the battle against stroke, which is a leading cause of death and disability worldwide."*

Stroke kills nearly six million people per year and is the second leading cause of disability globally after dementia. For more information about stroke, its symptoms and causes go to: www.world-heart-federation.org/cardiovascular-health/stroke

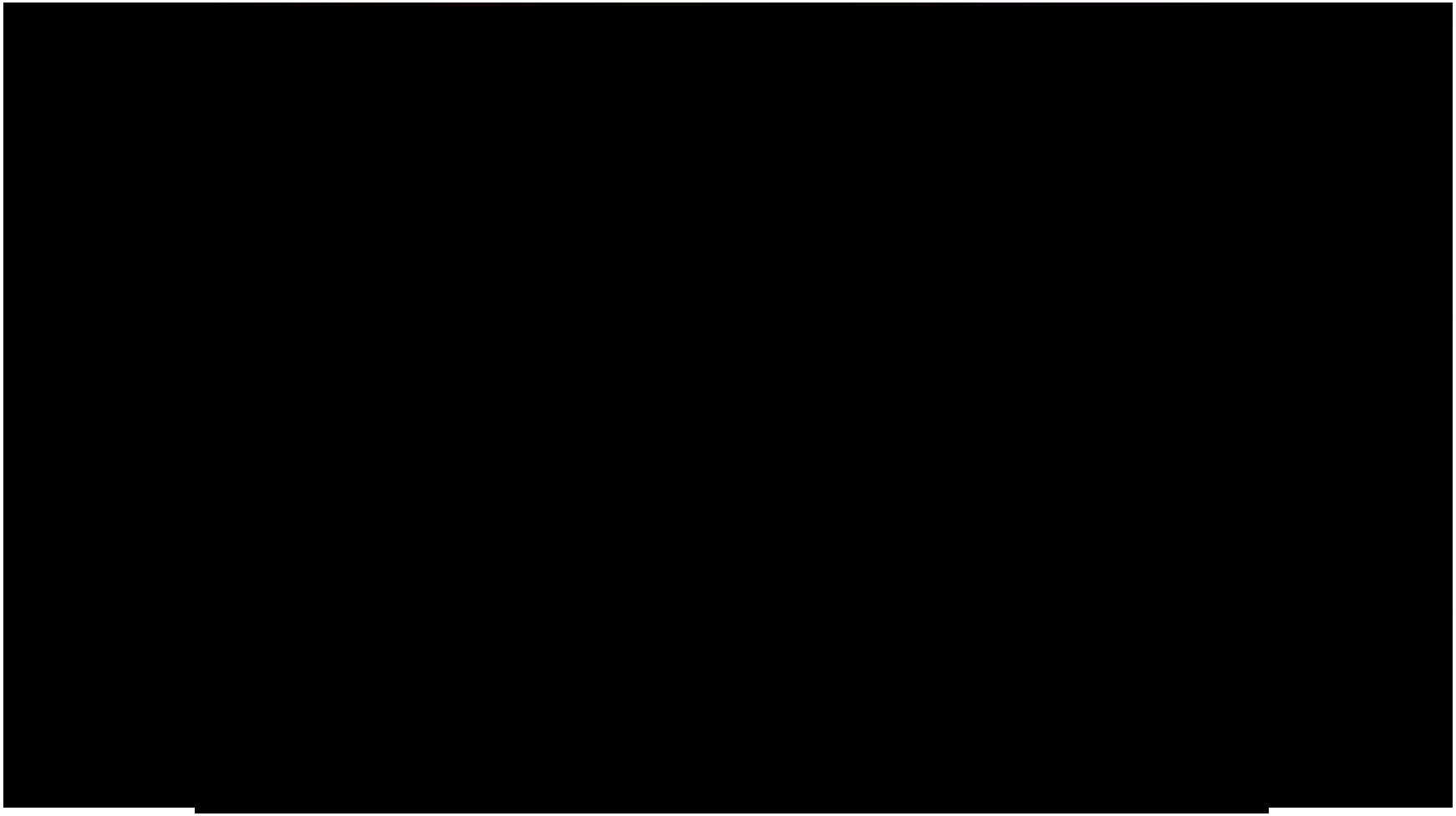
For more information: **WCC Press Office:**
Rosie Ireland on 44 7590 228701
Tara Farrell on 44 7769 362880
wcc@webershandwick.com

High blood pressure (Hypertension) causes both ischaemic and haemorrhagic stroke

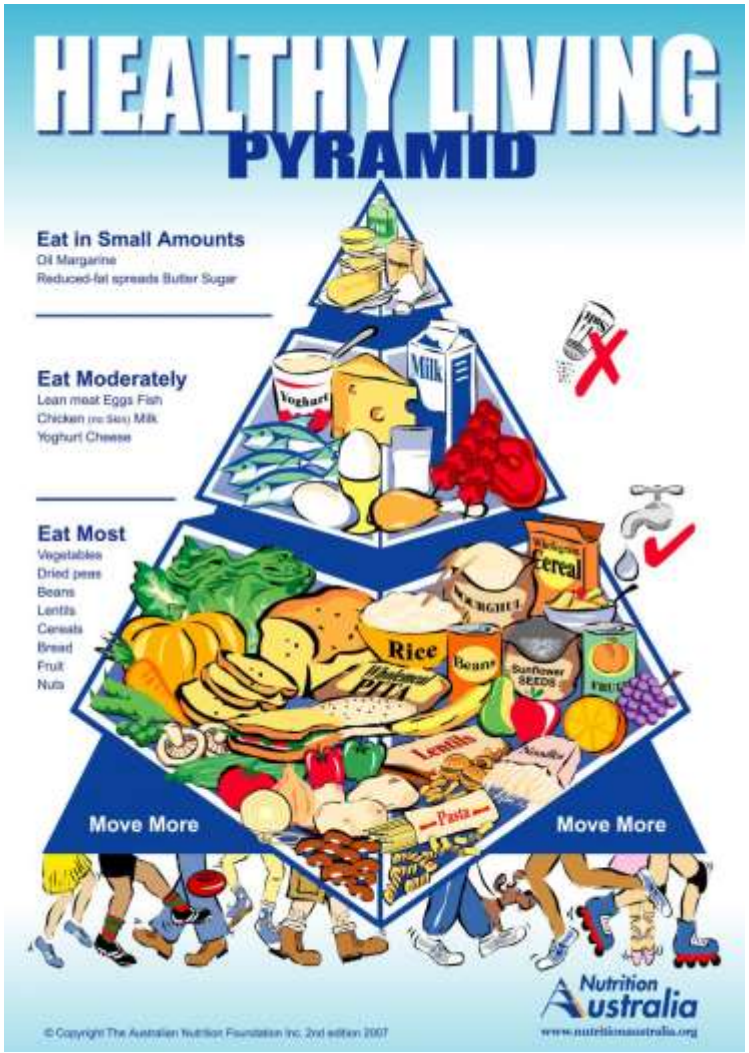




Cigarettes increase stroke risk



Diet, cholesterol



Heart Foundation Tick

The Heart Foundation Tick has been helping Australians make healthier food choices for 25 years. The easily recognisable front-of-pack logo highlights healthier food choices without the need to scrutinise nutrition information panels and ingredient lists.

As an independent not-for-profit program, Tick works with food manufacturers to make foods healthier. We do this by setting strict nutrient standards for foods which manufacturers are encouraged to meet by changing their product recipes.

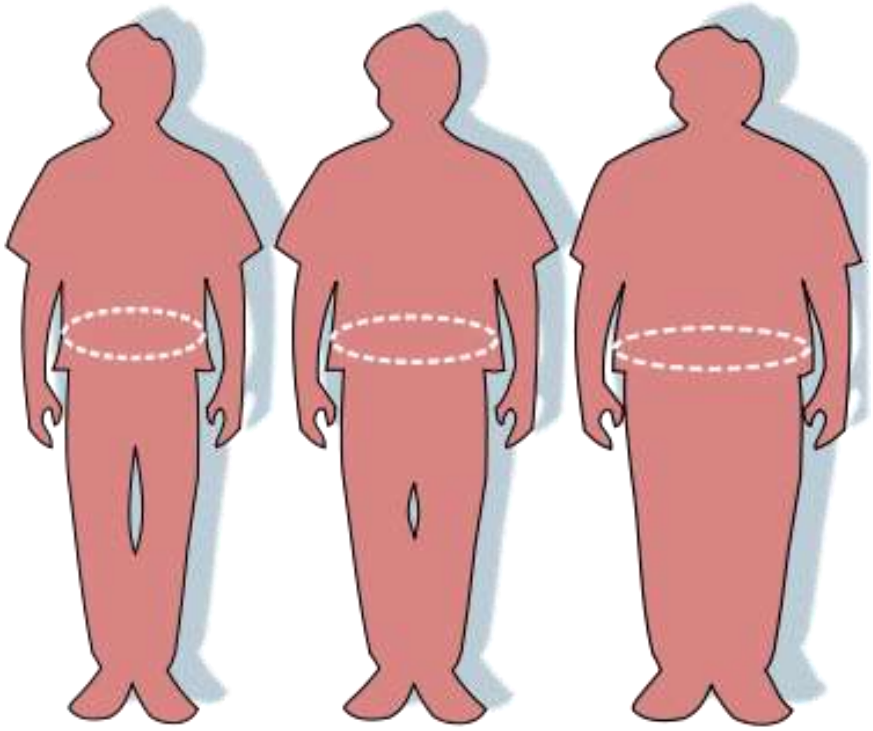
Once a food has met these standards, the manufacturer can apply to carry the Tick logo. This means that all Australians when shopping can easily identify foods that are lower in saturated fat, trans fat, sodium (salt), kilojoules (energy), and which contain more beneficial ingredients like fibre, calcium, wholegrains and vegetables.

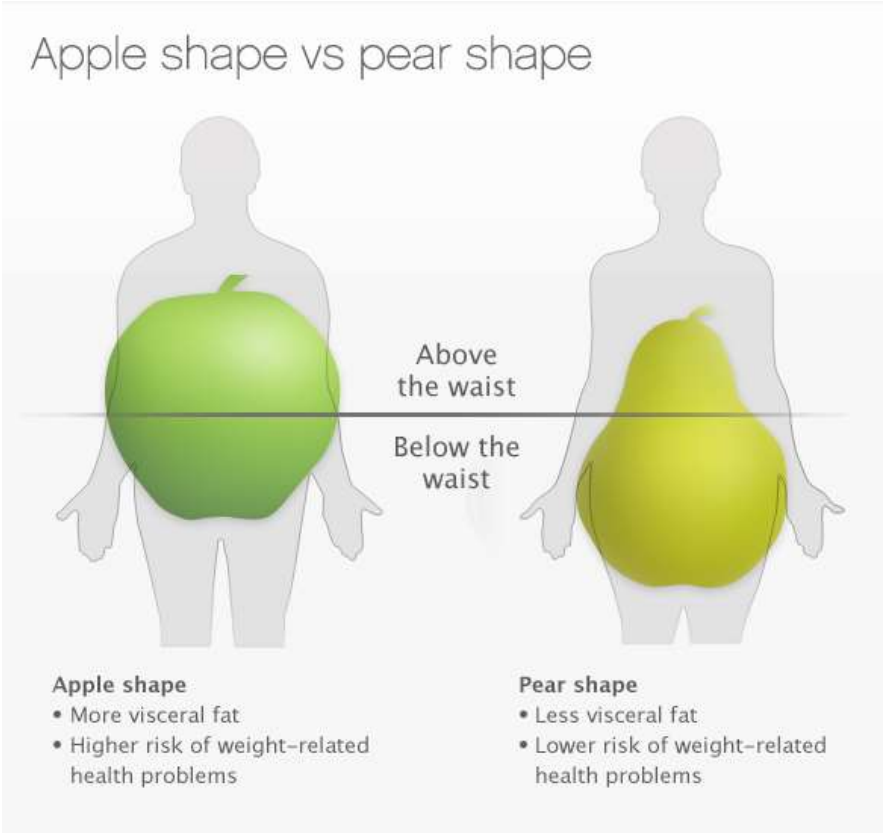
The Tick also appears on a range of healthy, everyday foods like bread, reduced fat milk, frozen vegetables, pasta, rice, breakfast cereals and, lean meat and canned fish. There are more than 2,000 products approved to use the Tick.

Exercise

Regular involvement in moderate or strenuous exercise 4h or more per week was associated with a 30% risk reduction

Abdominal obesity





Cardiac causes

- Atrial Fibrillation or Flutter
- Previous myocardial infarction (heart attack)
- Rheumatic heart disease
- Prosthetic heart valve

If you don’t know what these things are, that’s probably a good thing.

If you do – consult your doctor.

Diabetes


ACCU-CHEK®
Performa
memory
5.7
mmol/L


ONETOUCH
Ultra
HIGH
C
M

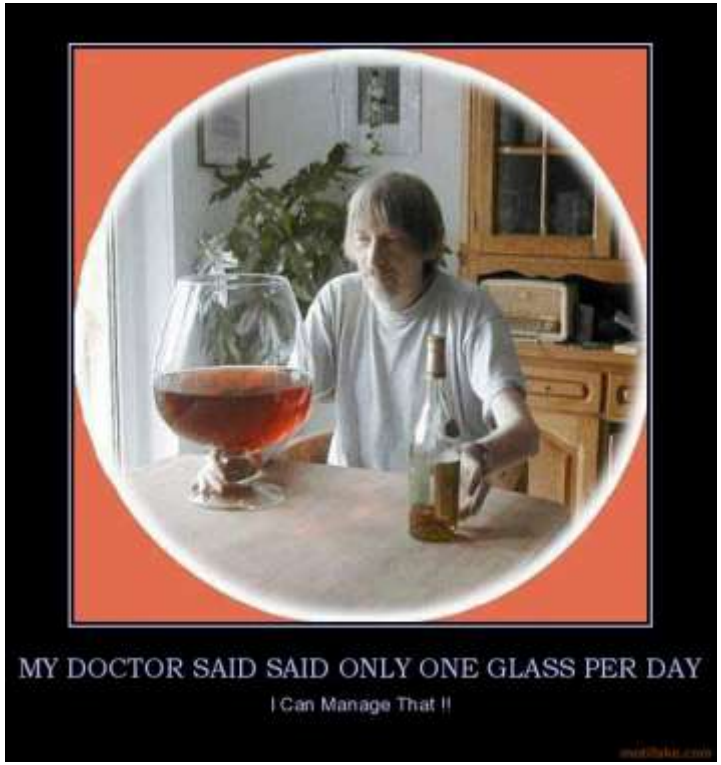

20
30
40
50
60
70
80
90
100
UNITS
USE U-100 INSULIN ONLY

Psychosocial factors

- Depression
- Stress
- Locus of control
- Life events

These are difficult risk factors to ‘treat’, but it’s worth doing if possible.

Alcohol



1-30 drinks per month = 20% less ischaemic stroke

Interstroke 2010

Other things that affect stroke risk

J Am Coll Cardiol, 2010; 55:2878-2886, doi:10.1016/j.jacc.2010.04.003 (Published online 27 May 2010).

EXPERT CONSENSUS DOCUMENT

Aspirin for Primary Prevention of Cardiovascular Events in People With Diabetes

American Diabetes Association American Heart Association American College of Cardiology Foundation,

Aspirin

diabetes, including any sex-specific differences. For now, we recommend the following:

- Low-dose (75 to 162 mg/day) aspirin use for prevention is reasonable for adults with diabetes and no previous history of vascular disease who are at increased CVD risk (10 year risk of CVD events over 10%) and who are not at increased risk for bleeding (based on a history of previous gastrointestinal bleeding or peptic ulcer disease or concurrent use of other medications that increase bleeding risk, such as NSAIDS or warfarin). Those adults with diabetes at increased CVD risk include most men over age 50 years and women over age 60 years who have one or more of the following additional major risk factors: smoking, hypertension, dyslipidemia, family history of premature CVD, and albuminuria. (ACCF/AHA Class IIa, Level of Evidence: B) (ADA Level of Evidence: C)
- Aspirin should not be recommended for CVD prevention for adults with diabetes at low CVD risk (men under age 50 years and women under 60 years with no major additional CVD risk factors; 10-year CVD risk under 5%) as the potential adverse effects from bleeding offset the potential benefits. (ACCF/AHA Class III, Level of Evidence: C) (ADA Level of Evidence: C)
- Low-dose (75 to 162 mg/day) aspirin use for prevention might be considered for those with diabetes at intermediate CVD risk (younger patients with one or more risk factors, or older patients with no risk factors, or patients with 10-year CVD risk of 5% to 10%) until further research is available. (ACCF/AHA Class IIb, Level of Evidence: C) (ADA Level of Evidence: E)

Hormone Replacement Therapy

Risks and Benefits of Estrogen Plus Progestin in Healthy Postmenopausal Women

Principal Results From the Women's Health Initiative Randomized Controlled Trial

(Prempro/Premia 2.5)

Relative Risk: 1.41 (95% CI 1.07-1.85) JAMA 2002

Absolute *Risk*: + 0.8 strokes per 1000 person years

Hormone Replacement Therapy

A CLINICAL TRIAL OF ESTROGEN-REPLACEMENT THERAPY AFTER ISCHEMIC STROKE

CATHERINE M. VISCOLI, PH.D., LAWRENCE M. BRASS, M.D., WALTER N. KERNAN, M.D., PHILIP M. SARREL, M.D., SAMY SUISSA, PH.D., AND RALPH I. HORWITZ, M.D.

(Estrace/Estrofem)
Relative Risk: 2.90 (95% CI 0.9-9.0)
Absolute Risk: ? +*9* strokes per 1000 person years (NS)

NEJM 2001

Hormone Replacement Therapy

There is (probably) a small increase in the risk of stroke with hormone replacement therapy, but the background rate is quite low

Therefore the likelihood of any one person having a stroke due to HRT is very low

(Under 1:100 p.a. after a stroke
Under 1:1000 p.a. with no stroke history)

The Oral Contraceptive Pill

About a million Australian women take the OCP

(e.g. Yaz, Yasmin, Diane)
Relative Risk: 1.93 (95% CI 1.35-2.74); controlled for smoking and BP
Absolute Risk: *+.04* strokes per 1000 person years

This equates to about 40 extra strokes per year in all of Australia.

1 in 24 000 per year

The Oral Contraceptive Pill

There is a small increase in the risk of stroke with
oral contraception with oestrogen, but the background rate is very low

Therefore the likelihood of any one person having a stroke
due to the OCP is very low (1:24000 p.a.)

40 strokes

Striking Statistics

- Americans are twice as likely to die from lightning than from a hurricane, tornado or flood.
- The Federal Emergency Management Agency estimates there are 20 deaths and 450 severe injuries from lightning each year in the Australia.

1 in 24 000

odds of winning Saturday Gold Lotto

Saturday Gold Lotto odds effective from Draw 3081, 29 January, 2011.

Division	Required to Win in A Single Game Panel	Odds based on 1 Game*
Division 1	6 winning numbers	8,145,060:1
Division 2	5 winning numbers + 1 or 2 supplementary numbers	678,755:1
Division 3	5 winning numbers	36,689:1
Division 4	4 winning numbers	733:1
Division 5	3 winning numbers + 1 or 2 supplementary numbers	297:1
Division 6	1 or 2 winning numbers + 2 supplementary numbers	144:1

Migraine

- Men: 1.37 (0.89-2.11)
- Women: 2.08 (1.13-3.84)
- No aura: 1.23 (0.9-1.69)
- With aura: 2.16 (1.53-3.03)
- With aura and smoking: 1.5 (1.1-2.3)
- With aura, smoking and OCP:

10.0 (1.4-73.7)

If you have migraine with aura, do not smoke and do not take the oral contraceptive pill

Schurks et al. BMJ 2009

Secondary Prevention

“Blood thinners”

- Aspirin
- Asasantin
- Plavix
- Iscover
- Clopidogrel
- Warfarin
- Eliquis
- Pradaxa
- Rivaroxaban

Randomised trial of a perindopril-based blood-pressure-lowering regimen among 6105 individuals with previous stroke or transient ischaemic attack

*PROGRESS Collaborative Group**

Lancet 2001

	Number of events: Active (n=3051)	Placebo (n=3054)	Favours active	Favours placebo	Relative risk reduction (95% CI)
Stroke subtypes					
Fatal or disabling	123	181			33% (15 to 46)
Not fatal or disabling	201	262			24% (9 to 37)
Ischaemic stroke	246	319			24% (10 to 35)
Cerebral haemorrhage	37	74			50% (26 to 67)
Stroke type unknown	42	51			18% (–24 to 45)
Total stroke	**307**	**420**			**28% (17 to 38)**

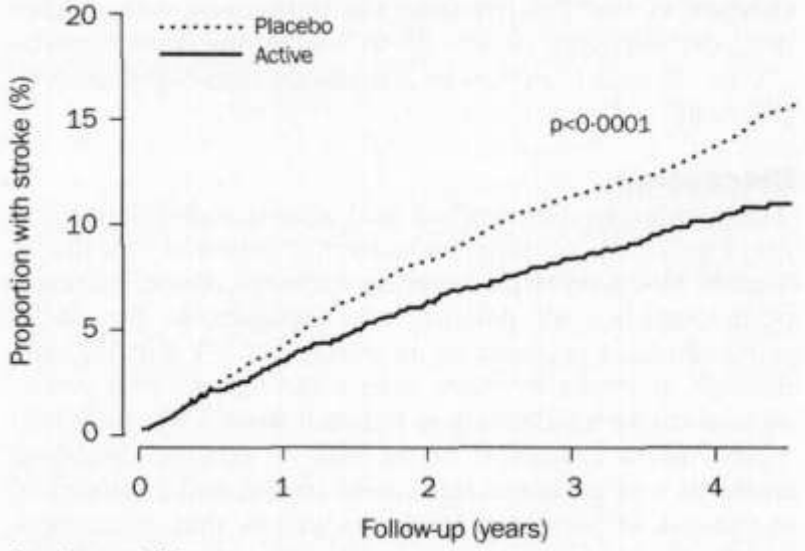


Figure 3: **Cumulative incidence of stroke among participants assigned active treatment and those assigned placebo**

Characteristic	Randomised treatment: Active (n=3051)	Placebo (n=3054)
Blood pressure and hypertension status		
Mean (SD) systolic blood pressure (mm Hg)	147 (19)	147 (19)
Mean (SD) diastolic blood pressure (mm Hg)	86 (11)	86 (11)

9.5 strokes prevented per 1000 person-years.

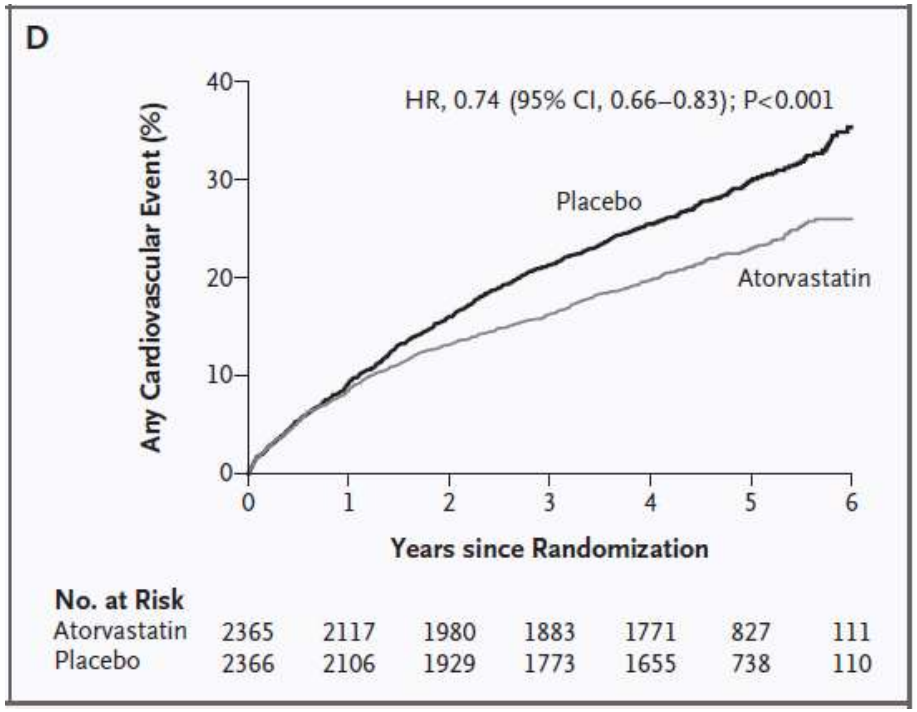
(table modified)

High-Dose Atorvastatin after Stroke or Transient Ischemic Attack

NEJM 2006

Table 3. Incidence of Adverse Events and Elevated Laboratory Values.*

Variable	Atorvastatin (N=2365)	Placebo (N=2366)
	no. (%)	
Adverse event		
Any adverse event	2199 (93.0)	2156 (91.1)
Any serious adverse event	988 (41.8)	975 (41.2)
Any adverse event resulting in discontinuation of study treatment	415 (17.5)	342 (14.5)
Musculoskeletal adverse events		
Myalgia	129 (5.5)	141 (6.0)
Myopathy	7 (0.3)	7 (0.3)
Rhabdomyolysis†	2 (0.1)	3 (0.1)



Average LDL 3.4 mmol/L
Average total chol 5.5 mmol/L

Figure 3. Kaplan–Meier Curves for Coronary and Cardiovascular Events.
Results are shown on an intention-to-treat basis with prespecified adjustments for geographic region, entry event (stroke or TIA), time since entry event, sex, and baseline age for the first occurrence of any coronary event (acute coronary event plus coronary revascularization procedure, unstable angina, or angina or ischemia requiring emergency hospitalization) (Panel A), any major coronary event (death from cardiac causes, nonfatal myocardial infarction, resuscitation after cardiac arrest) (Panel B), any major cardiovascular event (primary event plus any major coronary event) (Panel C), and any cardiovascular event (any of the former plus clinically significant peripheral vascular disease) (Panel D). HR denotes hazard ratio, and CI confidence interval.

3.9 fatal or nonfatal strokes prevented per 1000 person-years.
6.3 major cardiovascular events (stroke, heart attack, death, resuscitation from death)

Emergency treatment

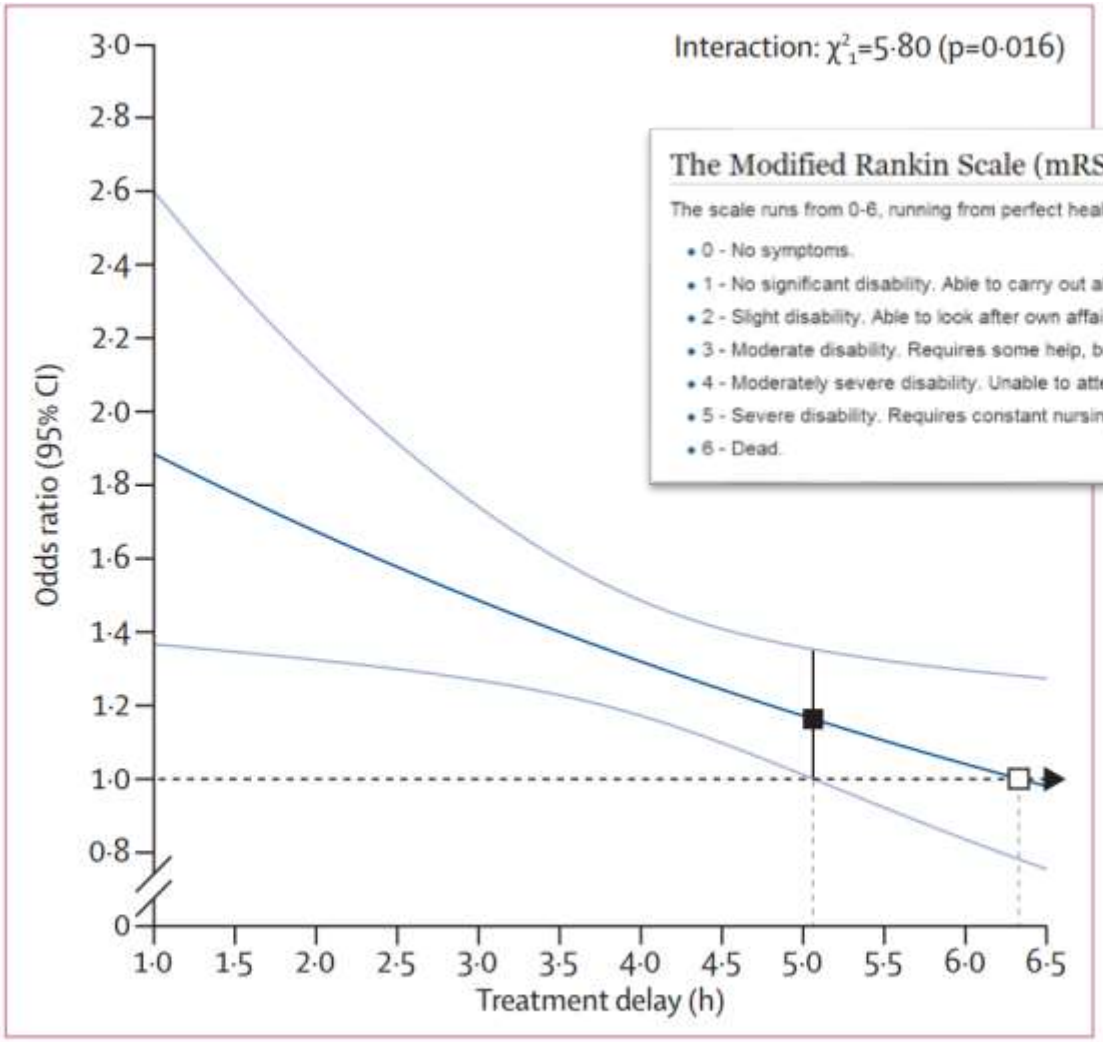
The *FAST* acronym used internationally

Emergency treatment

Time Is Brain—Quantified

Conclusions—Quantitative estimates of the pace of neural circuitry loss in human ischemic stroke emphasize the time urgency of stroke care. The typical patient loses 1.9 million neurons each minute in which stroke is untreated. **(*Stroke*. 2006;37:263-266.)**

Emergency treatment



The Modified Rankin Scale (mRS) [edit]

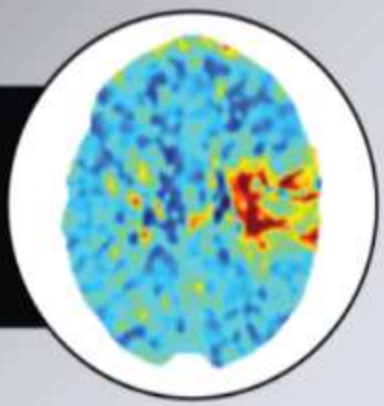
The scale runs from 0-6, running from perfect health without symptoms to death.

- 0 - No symptoms.
- 1 - No significant disability. Able to carry out all usual activities, despite some symptoms.
- 2 - Slight disability. Able to look after own affairs without assistance, but unable to carry out all previous activities.
- 3 - Moderate disability. Requires some help, but able to walk unassisted.
- 4 - Moderately severe disability. Unable to attend to own bodily needs without assistance, and unable to walk unassisted.
- 5 - Severe disability. Requires constant nursing care and attention, bedridden, incontinent.
- 6 - Dead.

Emberson et al. Lancet 2014

***Figure 1*: Effect of timing of alteplase treatment on good stroke outcome (mRS 0–1)**

TASTE



Tenecteplase versus Alteplase for Stroke Thrombolysis Evaluation

Stroke Research Program
Brain & Mental Health Priority Research Centre
University of Newcastle

Health
Hunter New England
Local Health Network

EXTEND - IA

Extending the time for Thrombolysis in Emergency Neurological Deficits – Intra-Arterial

A randomized controlled trial of intra-arterial reperfusion therapy after standard dose intravenous t-PA within 4.5 hours of stroke onset utilizing dual target imaging selection

Bruce Campbell

Co-PI and Medical Coordinator

Peter Mitchell

Co-PI and Head of Neurointervention

Stephen Davis and Geoffrey Donnan

Co-chairs

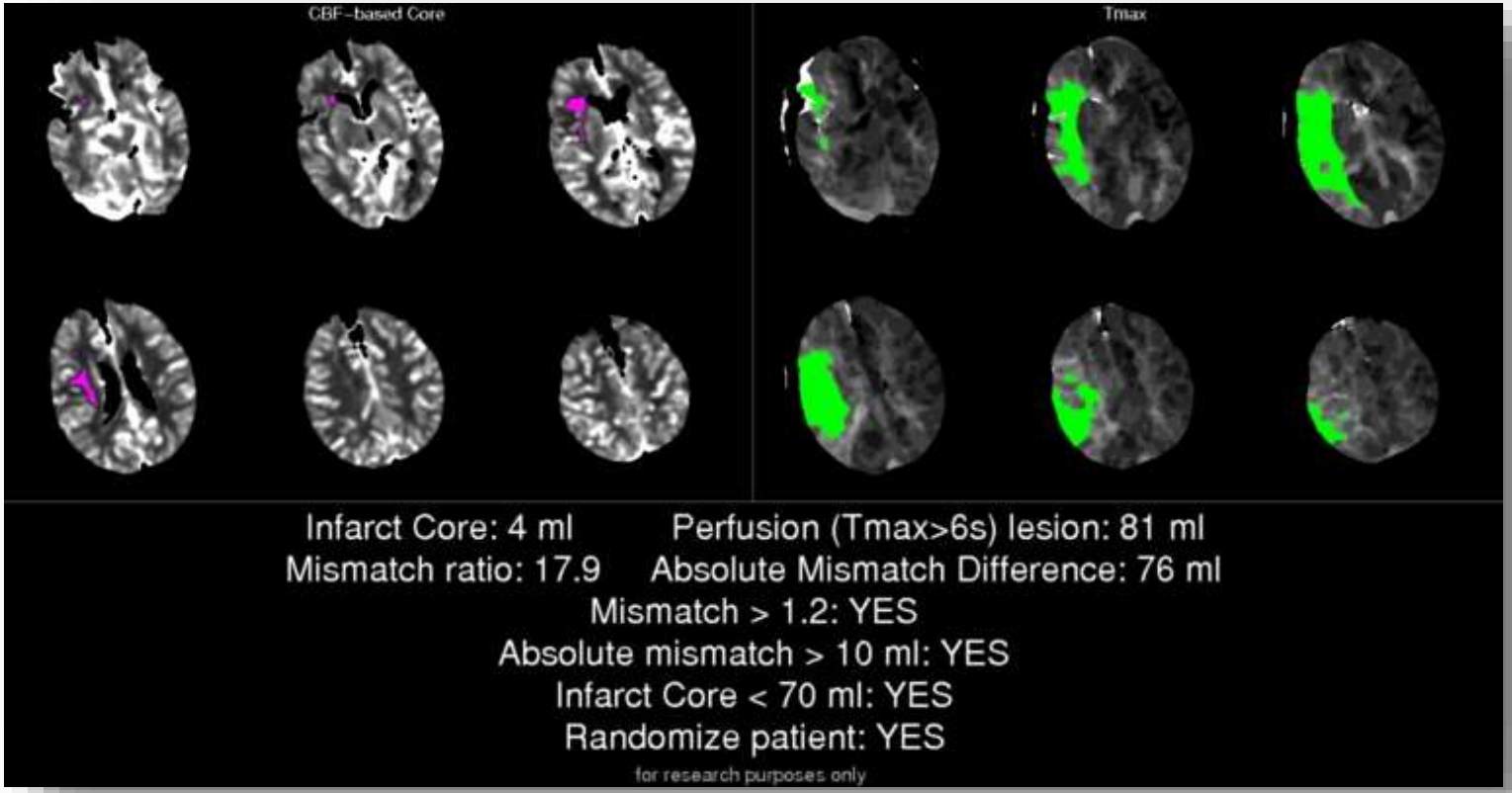
ClinicalTrials.gov NCT01492725

Acknowledging support from:

Solitaire FR™ device supplied free of charge by

EXTEND

Extending the time for **T**hrombolysis
in **E**mergency **N**eurological **D**eficits



MASTER STROKE
BUSINESS LUNCH
Supporting stroke research at RBWH

FRIDAY
12 SEPTEMBER
12pm - 4pm

GAMBARO'S FUNCTION CENTRE
Caxton St, Petrie Terrace
Tickets $150 each

An 'old-school' networking lunch to raise money for research into Stroke treatment and prevention at Queensland's largest hospital, RBWH.

Hosted by former Wallaby and Stroke survivor Dan Crowley

RBWH FOUNDATION

BOOK NOW
phone 07 3646 7588
or visit rbwhfoundation.com.au