

STROKE “BRAIN ATTACK”

ASK A DOCTOR SERIES

3/28/14

Dr. Hemang Shah

Kernodle Clinic

Alamance Regional Medical Center

FIRST DAY OF MEDICAL SCHOOL

History

- Hippocrates – 2400 years ago
- Apoplexy – struck down by violence

Trepanation

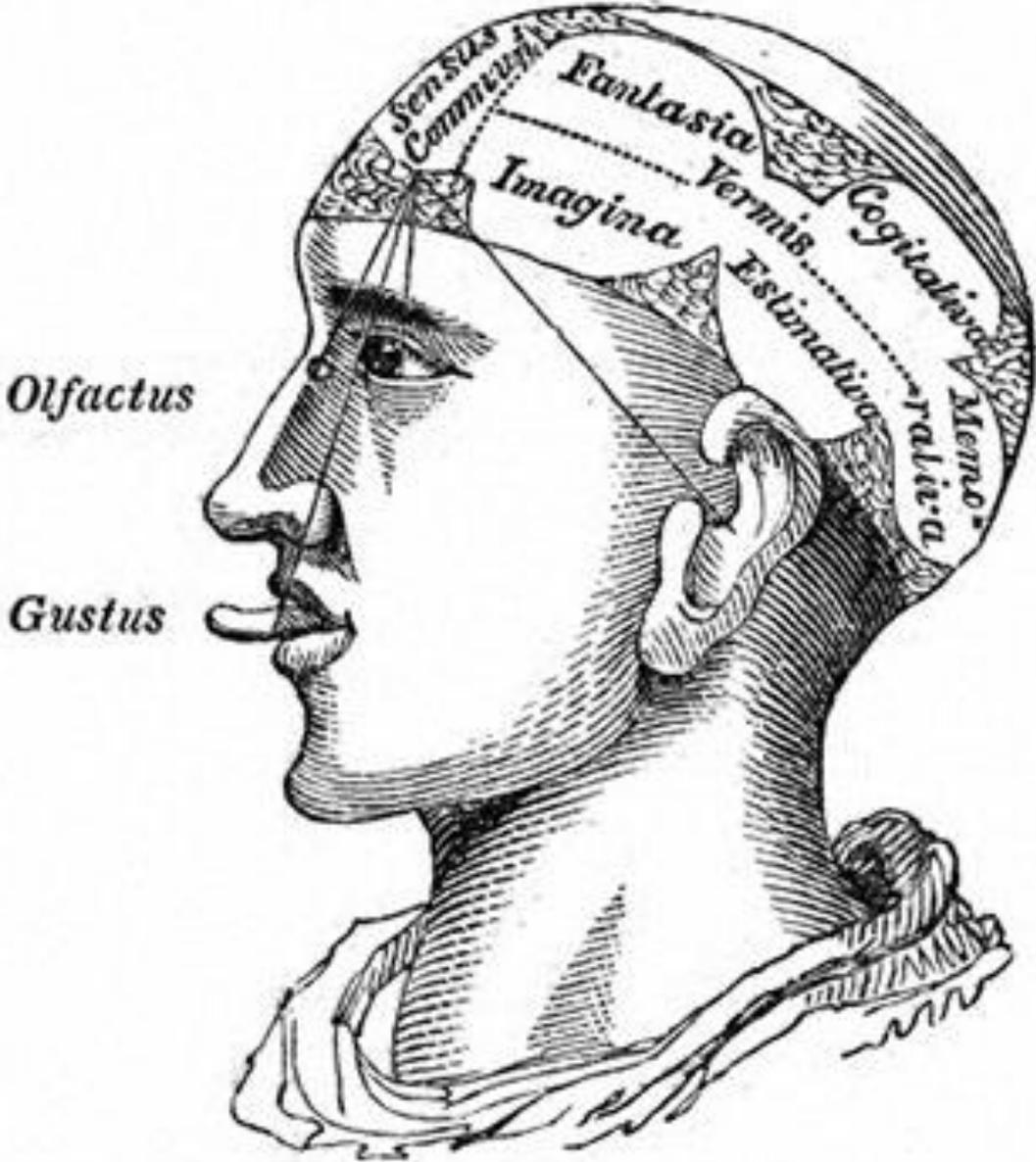


Science Museum, London, Wellcome Images.

*Chirurgia
quam citissime
administranda*



Phrenology





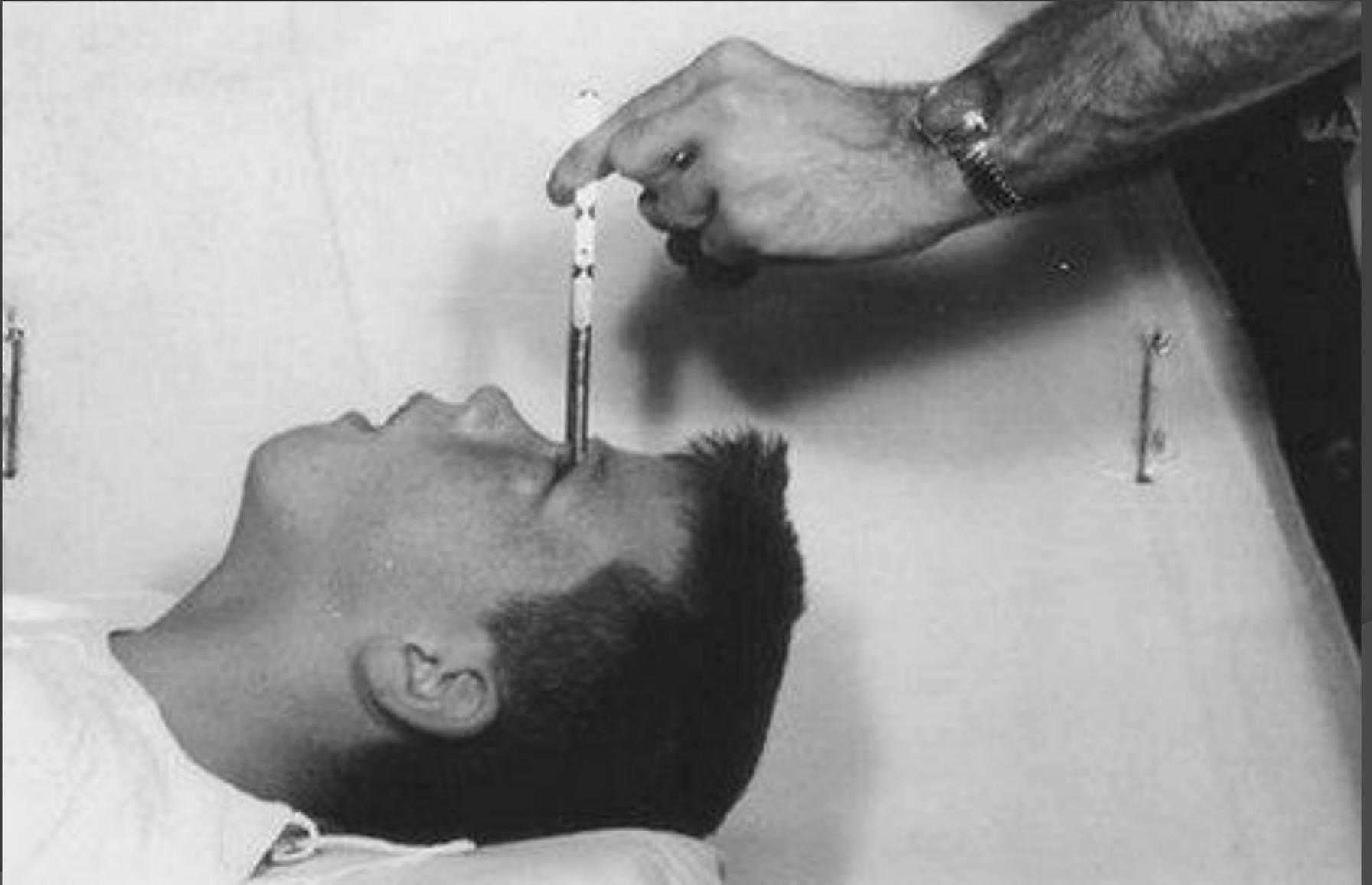
Cupping



Blood letting



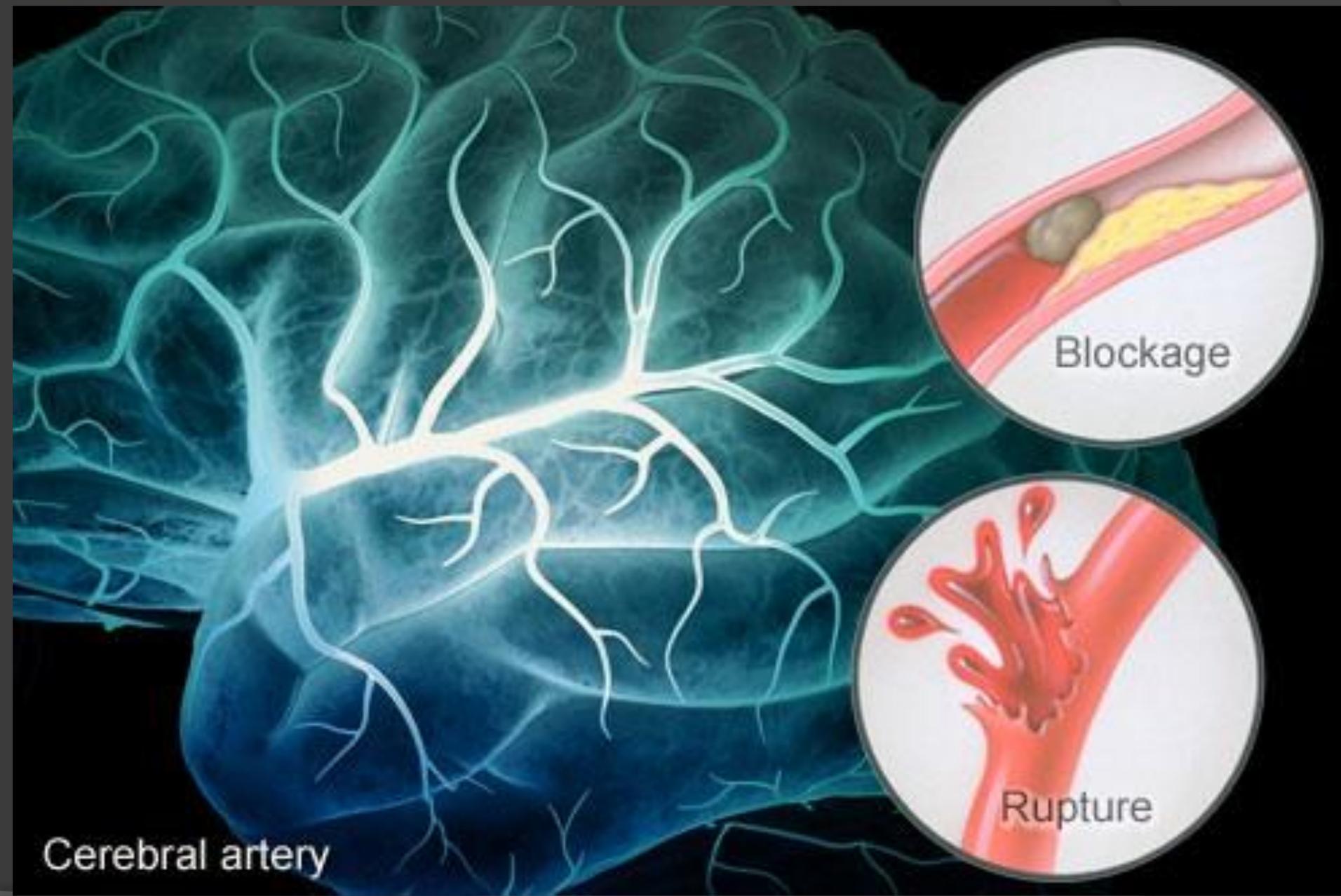
Lobotomy



BRAIN ANATOMY

<http://www.g2conline.org/2022>





Cerebral artery

Blockage

Rupture



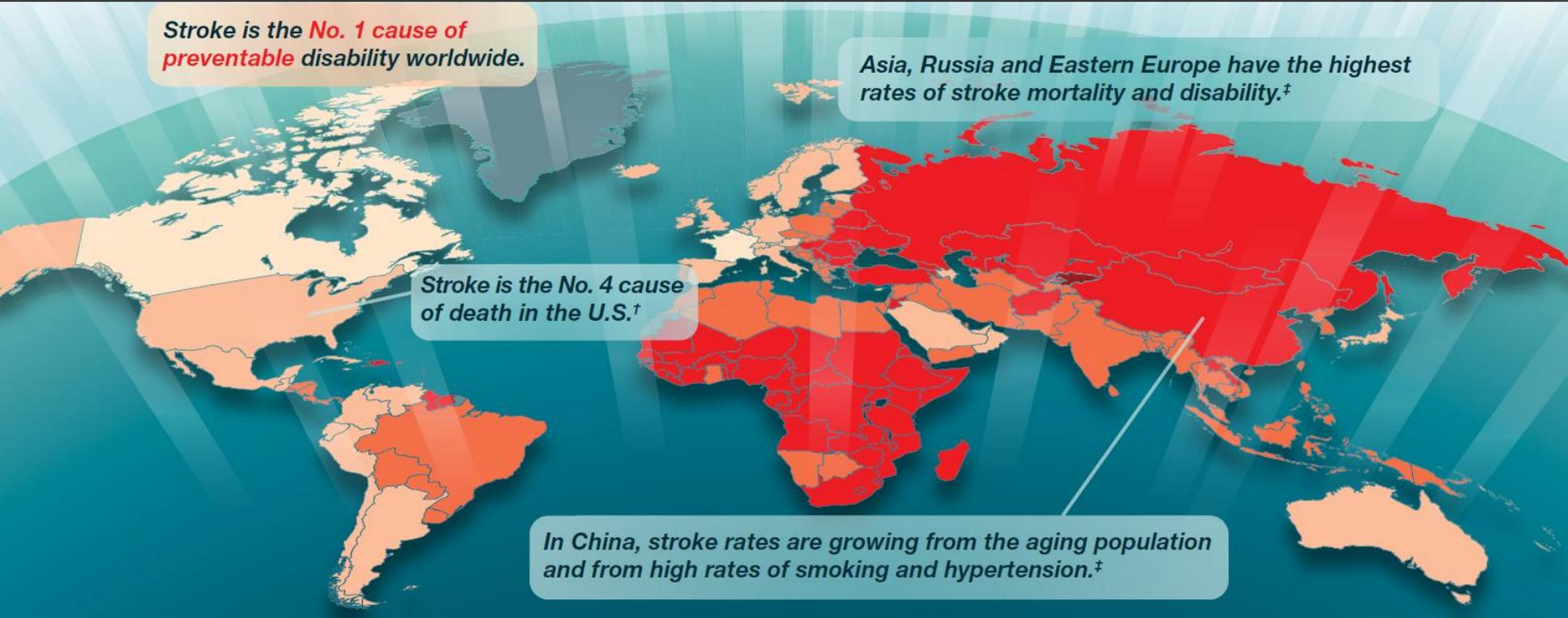
Hemorrhagic stroke

Stroke is the **No. 1** cause of **preventable** disability worldwide.

Asia, Russia and Eastern Europe have the highest rates of stroke mortality and disability.‡

Stroke is the **No. 4** cause of death in the U.S.†

In China, stroke rates are growing from the aging population and from high rates of smoking and hypertension.‡



1 in 6 people will have a stroke in their lifetime.¹



15 million people experience a stroke each year. **6 million of them do not survive.**²

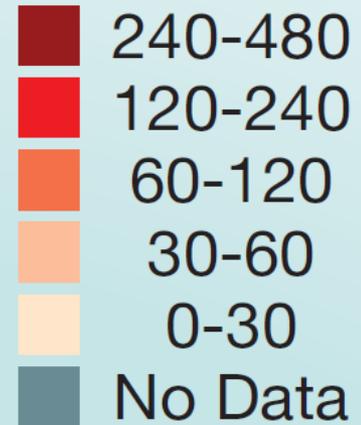


Every six seconds someone dies from a stroke, worldwide.³



Stroke Deaths

(per 100,000)



Anthony, 2011. <http://circ.ahajournals.org/content/124/3/314.full>

**Stroke is largely preventable,
treatable and beatable.**

Learn more at StrokeAssociation.org



**Together
to End Stroke™**

STROKE—Preventable, Treatable, Beatable

Americans paid about **\$73.7 billion** in 2010 for stroke-related medical costs and disability

On average **every 4 minutes** someone **dies of stroke**

A leading cause of long-term **disability** among adults in the U.S.

#4 cause of death among adults in the U.S.

Kills 128,000 people a year. That's about one of every 19 deaths

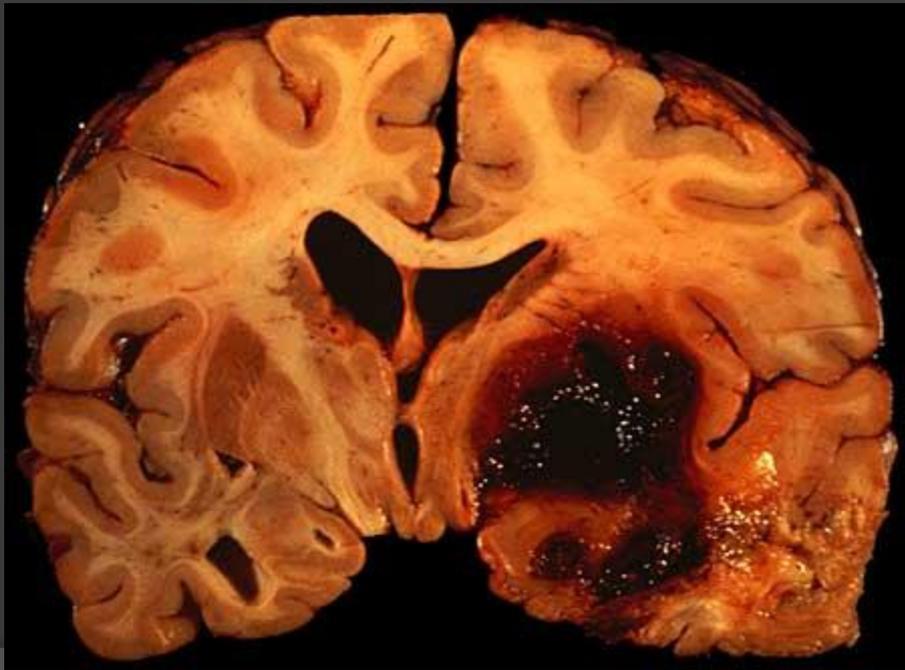
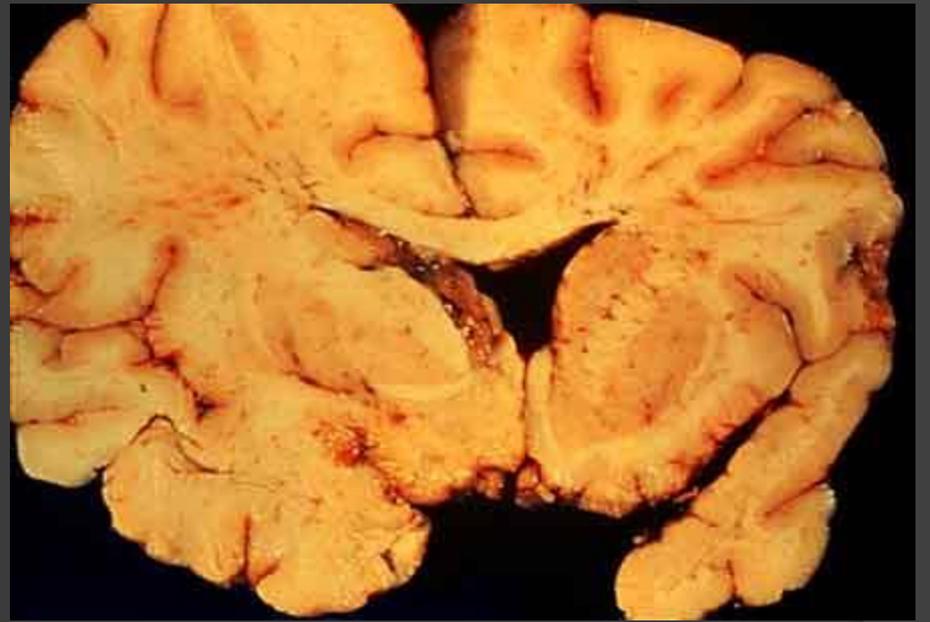
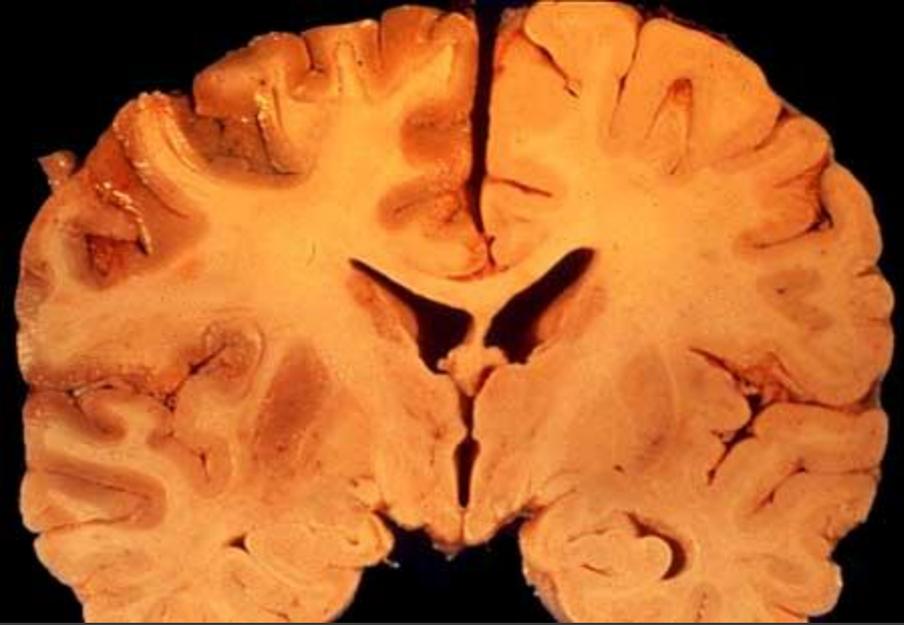
Every **40 seconds** someone has a **stroke**

About **795,000** Americans each year **suffer** a new or recurrent **stroke**

About **40%** of stroke deaths occur in **males** | About **60%** of stroke deaths occur in **females**

80% can be **prevented**

PREVENTION



Recognizing Stroke

SPOT A STROKE

FAST

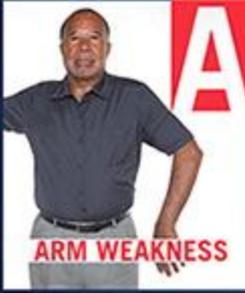
FACE **ARM** **SPEECH** **TIME**
DROOPING WEAKNESS DIFFICULTY TO CALL 911

Learn more

 
American Heart Association American Stroke Association
Together to End Stroke™



SPOT A STROKE

 F	 A	 S	 T
FACE DROOPING	ARM WEAKNESS	SPEECH DIFFICULTY	TIME TO CALL 911

Stroke Warning Signs and Symptoms

<http://www.strokecenter.org/radiology/patients/2290>

Intraparenchymal hematoma, lobar, multiple small

<http://www.strokecenter.org/radiology/patients/2793>

Infarct, middle cerebral artery with hemorrhagic conversion; Hemi-craniectomy

<http://www.strokecenter.org/radiology/patients/5335/studies/1409/series/2615>

Epidural hematoma

<http://www.strokecenter.org/radiology/patients/44303/studies/1451>

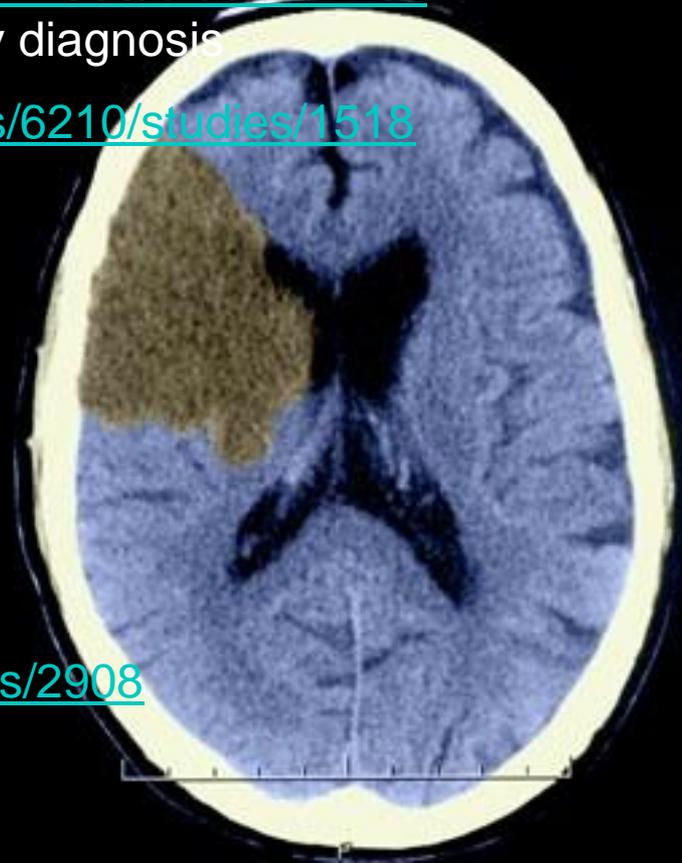
View CT, MRI, and Angiogram case studies by diagnosis

<http://www.strokecenter.org/radiology/patients/6210/studies/1518>

Infarct, middle cerebral artery



Ischemic stroke



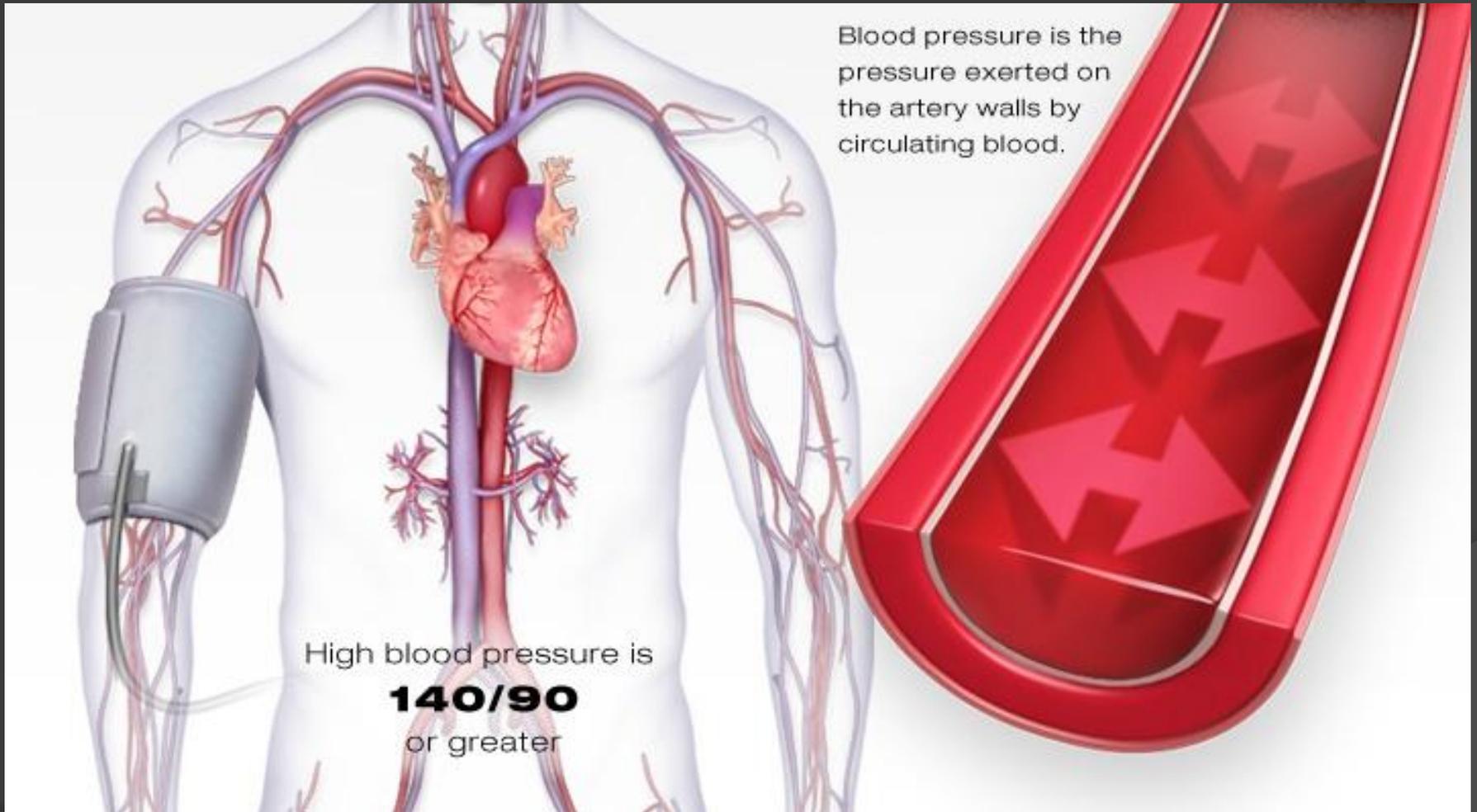
<http://www.strokecenter.org/radiology/patients/2908>

Ischemic infarct – right occipital

Stroke Risk Factors

- ◉ Modifiable
- ◉ High Blood Pressure
- ◉ Diabetes
- ◉ High Cholesterol
- ◉ Carotid Stenosis
- ◉ Smoking
- ◉ Heart Conditions (A.fib, valve, recent MI, CHF)
- ◉ Obesity
- ◉ Physical inactivity
- ◉ Excessive alcohol
- ◉ Recreational drug use
- ◉ Migraine with aura
- ◉ Hormone Replacement Therapy
- ◉ Non Modifiable
- ◉ Age
- ◉ Sex
- ◉ Genes
- ◉ Family History of stroke

Hypertension



DASH Diet

IN BRIEF:

Your Guide To Lowering Your Blood Pressure With DASH



What you eat affects your chances of developing high blood pressure (hypertension). Research shows that high blood pressure can be prevented—and lowered—by following the Dietary Approaches to Stop Hypertension (DASH) eating plan, which includes eating less salt and sodium.

High blood pressure, which is blood pressure higher than 140/90 mmHg,* affects more than 65 million—or 1 out of every 3—American adults. Another 59 million Americans have prehypertension, which is blood pressure between 120/80 and 140/89 mmHg. This increases their chances of developing high blood pressure and its complications.

High blood pressure is dangerous because it makes your heart work too hard, hardens the walls of your arteries, and can cause the brain to hemorrhage or the kidneys to function poorly or not at all. If not controlled, high blood pressure can lead to heart and kidney disease, stroke, and blindness.

* Blood pressure is usually measured in milligrams of mercury, or mmHg.

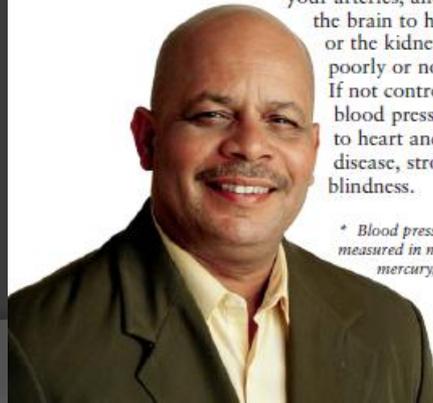
But high blood pressure can be prevented—and lowered—if you take these steps:

- Follow a healthy eating plan, such as DASH, that includes foods lower in salt and sodium.
- Maintain a healthy weight.
- Be moderately physically active for at least 30 minutes on most days of the week.
- If you drink alcoholic beverages, do so in moderation.

If you already have high blood pressure and your doctor has prescribed medicine, take your medicine, as directed, and also follow these steps.

The DASH Eating Plan

The DASH eating plan is rich in fruits, vegetables, fat-free or low-fat milk and milk products, whole grains, fish, poultry, beans, seeds, and nuts. It also contains less salt and sodium; sweets, added sugars, and sugar-containing beverages; fats; and red meats than the typical American diet. This heart healthy way of eating is also lower in saturated fat, *trans* fat, and cholesterol and rich in nutrients that are associated with lowering blood pressure—mainly potassium, magnesium, and calcium, protein, and fiber.



U.S. Department of Health and Human Services
National Institutes of Health
National Heart, Lung, and Blood Institute



SYS
mmHg

145

DIA
mmHg

84

PULSE
/min

82

AM

8:24

START
STOP

MEMORY

PREVENTION

Lowering your systolic by 20 mmHg and lowering your diastolic blood pressure by 10 mmHg may **decrease your risk of stroke** and ischemic heart disease **by about 50%**

The **American Heart Association** recommends a **daily limit** of **1500 mg of sodium.**

WOMEN FACE HIGHER RISK OF STROKE



Together to End Stroke™

NEW GUIDELINE OFFERS WAYS TO LOWER YOUR RISK

WOMEN HAVE MORE STROKES THAN MEN, AND STROKE KILLS MORE WOMEN THAN MEN.

Talk to your healthcare provider about how to lower your risk, using the below information from the new American Heart Association/American Stroke Association prevention guidelines.



1 in 5 WOMEN has a **STROKE** at some point in her life

Stroke **RISK GOES UP** due to ...



PREGNANCY

About 3 out of 10,000 pregnant women have a stroke during pregnancy compared to 2 out of 10,000 young women who are not pregnant.

+



PREECLAMPSIA

This is a term for high blood pressure that develops during pregnancy, and it doubles the risk of stroke later in life.



BIRTH CONTROL PILLS

May double the risk of stroke, especially in women with high blood pressure.



HORMONE REPLACEMENT THERAPY

Once thought to lower stroke risk, this in fact increases the risk.



MIGRAINES WITH AURA + SMOKING

Strokes are more common in women with migraines with aura who also smoke.



ATRIAL FIBRILLATION

Quadruples stroke risk and is more common in women than men after age 75.

LOWER YOUR RISK for stroke by ...

Pregnant women with very high blood pressure should be treated with safe blood pressure medications.

Talk to your healthcare provider about whether you should follow the guideline recommendation of low-dose aspirin starting in the second trimester (week 12) to lower preeclampsia risk.

Women should be screened for high blood pressure before taking birth control pills. Women should not smoke, and they should also be aware that smoking and the use of oral contraceptives increases the risk of stroke.

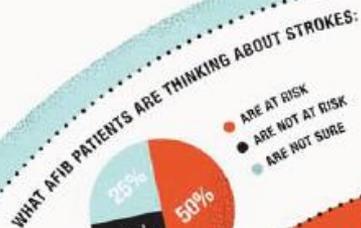
Hormone replacement therapy should not be used to prevent stroke in postmenopausal women.

Smokers who have migraines with aura should quit to avoid higher stroke risk.

All women over age 75 should be screened for atrial fibrillation.



BRIDGE THE AFIB-STROKE KNOWLEDGE GAP BY ASSESSING YOUR PATIENTS' RISK AND TALKING TO THEM ABOUT STROKE.



15% TO 20% OF ALL STROKES ARE ATTRIBUTABLE TO ATRIAL FIBRILLATION.

86%

report that they do know the definition of a stroke...

...but only

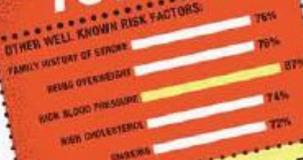
61% actually do.

+

90%

OF ATRIAL FIBRILLATION PATIENTS GET THEIR AFIB INFORMATION FROM THEIR DOCTOR OR HOSPITAL.

75% OF AFIB PATIENTS SAY THAT AFIB IS A RISK FACTOR FOR STROKE.

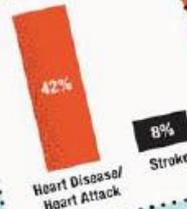


HALF

OF ATRIAL FIBRILLATION PATIENTS UNDERSTAND THAT ATRIAL FIBRILLATION INCREASES THE RISK OF STROKE BY 57%.

PATIENTS WITH ATRIAL FIBRILLATION ARE 5 TIMES MORE AT RISK FOR STROKE.

WHAT AFIB PATIENTS SAY THEIR GREATEST HEALTH CONCERN IS:



84%

OF AFIB PATIENTS TRUST THEIR DOCTOR TO EDUCATE THEM ABOUT THEIR HEALTH RISK.

66%

of Afib patients say their HCP has talked to them about their stroke risk.



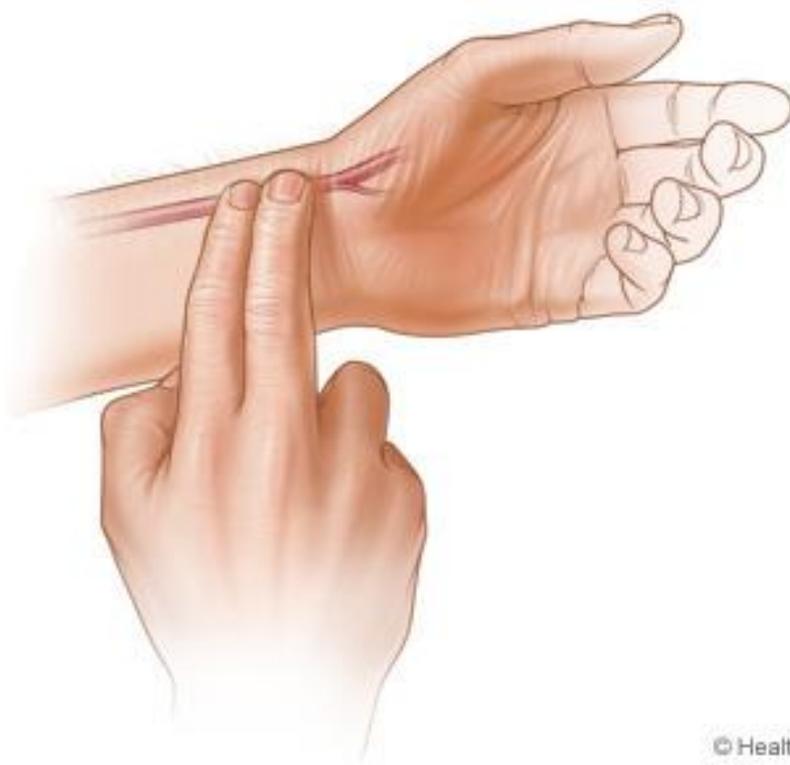
ATRIAL FIBRILLATION (AFIB) AFFECTS AN ESTIMATED 2.7M AMERICANS.



64% OF ATRIAL FIBRILLATION PATIENTS KNOW THAT EVERYONE WITH AFIB IS AT RISK FOR STROKE.

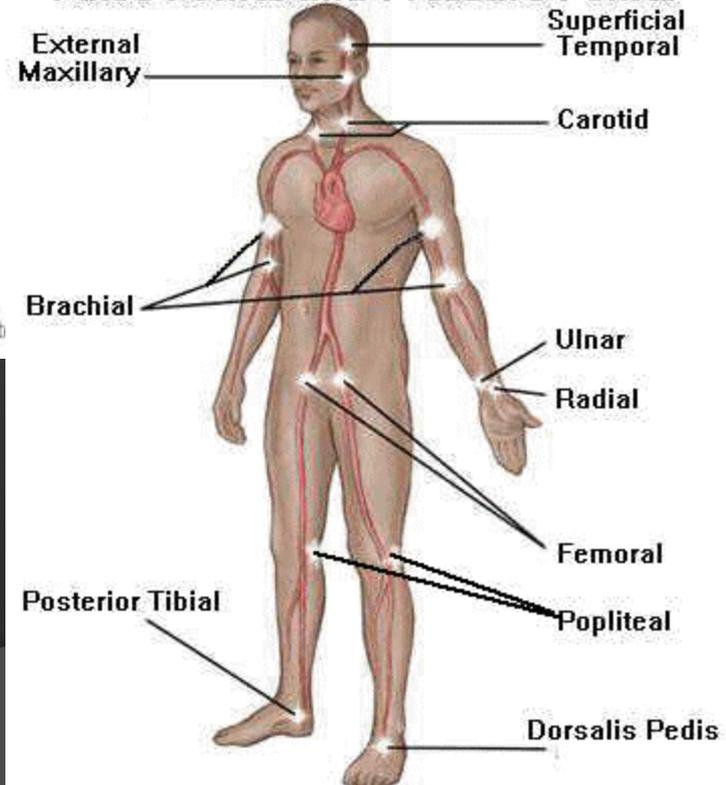
A

Let's learn to check a pulse



© Healthwise, Incorporated

Pulse Points and Pressure Points





ECG tracing of a normal heart rhythm.



In atrial fibrillation, the tracing shows tiny, irregular "fibrillation" waves between heartbeats. The rhythm is irregular and erratic.



Warfarin (Coumadin) Alternatives

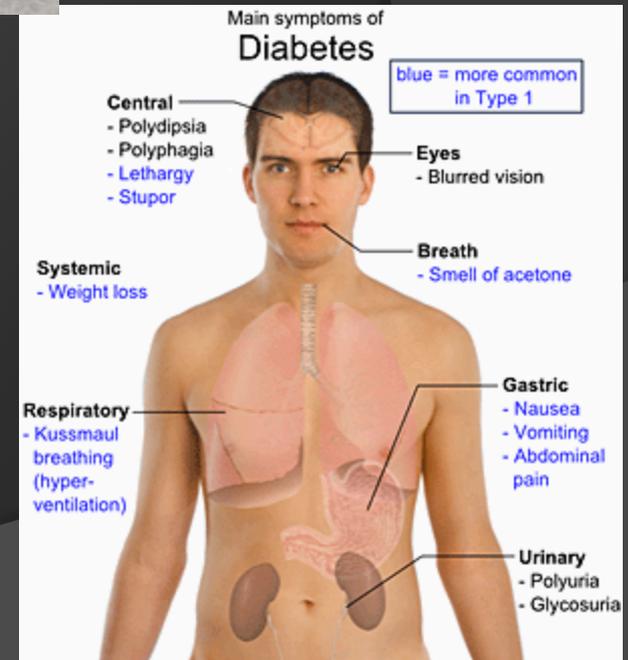
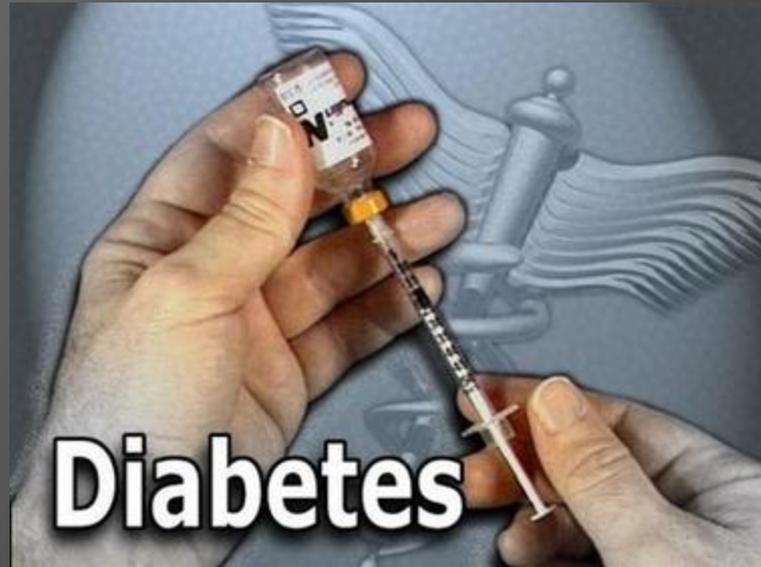


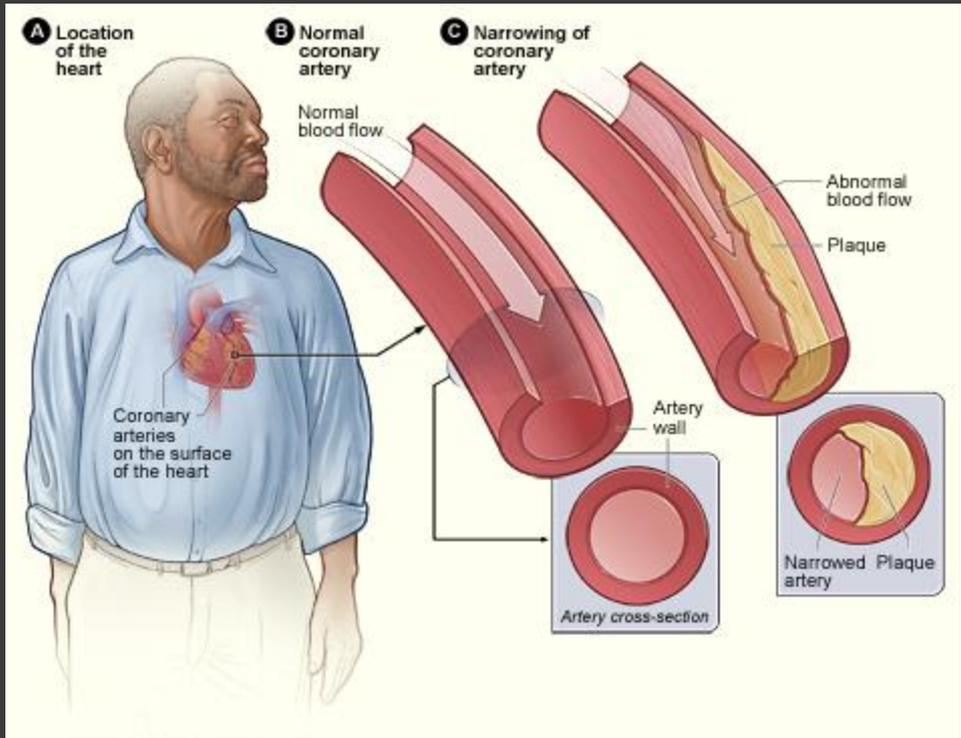
Eliquis[®]
(apixaban) tablets

 **Xarelto**
rivaroxaban tablets

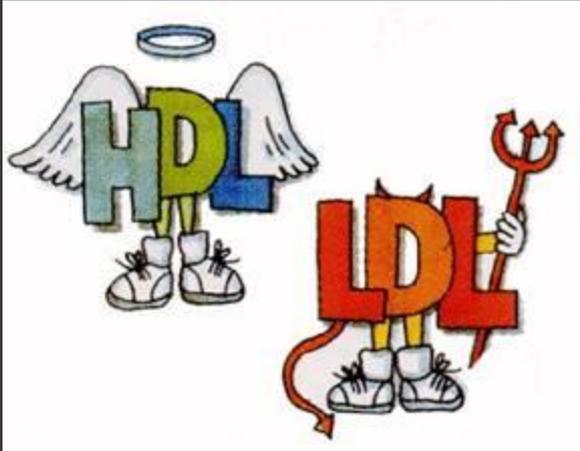
The logo for Xarelto features a stylized graphic on the left consisting of a grid of squares in shades of grey and purple, forming a triangular shape. To the right of this graphic, the word "Xarelto" is written in a large, bold, purple, sans-serif font. Below "Xarelto", the words "rivaroxaban tablets" are written in a smaller, grey, sans-serif font.

Diabetes

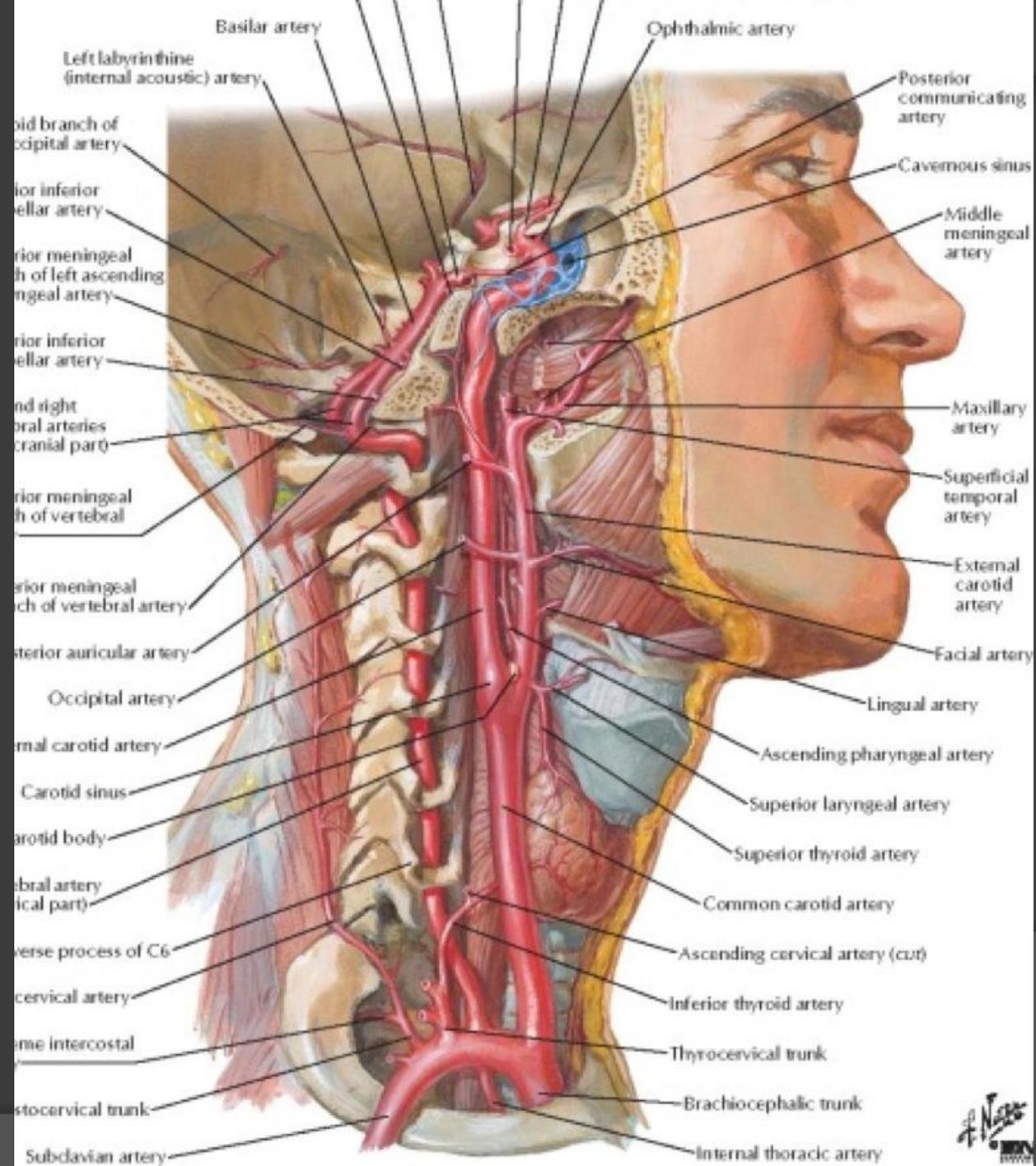




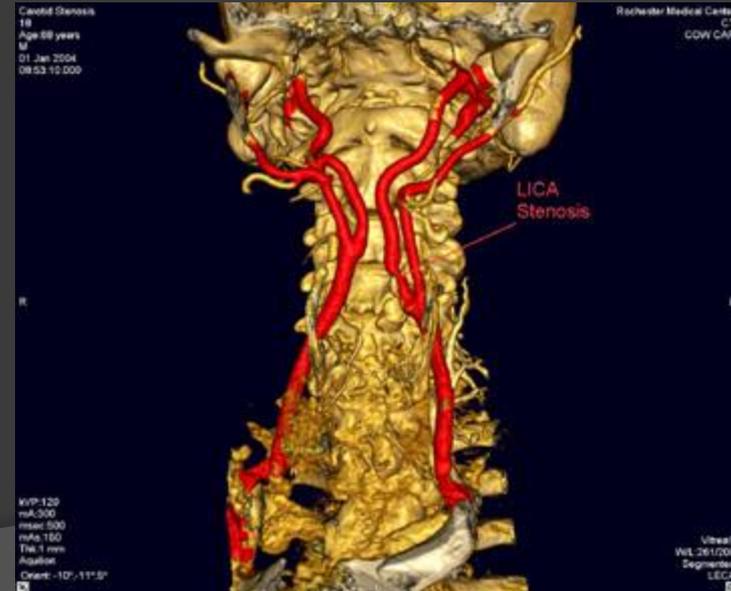
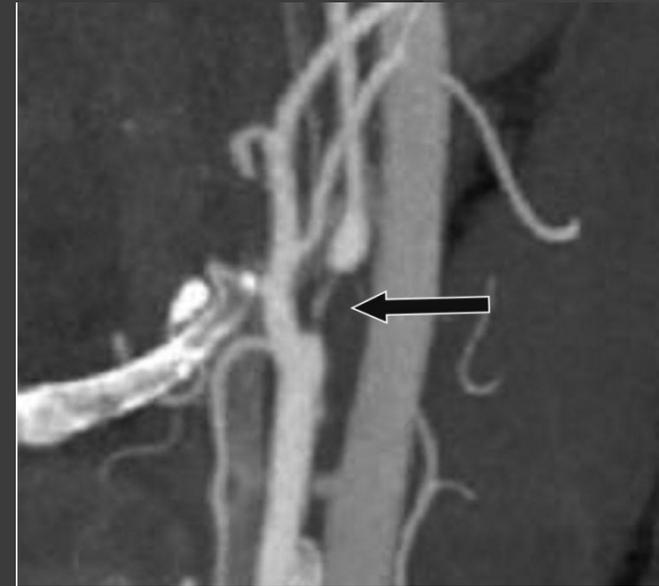
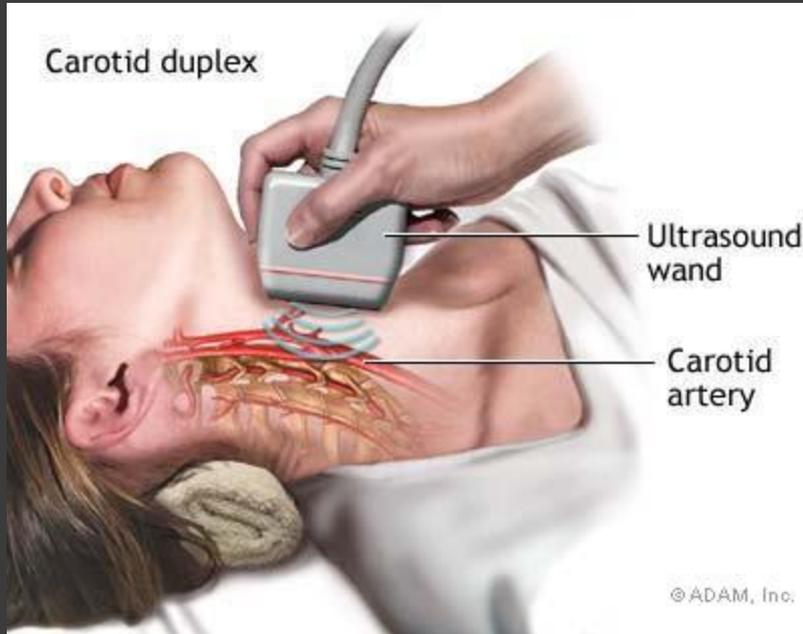
Cholesterol



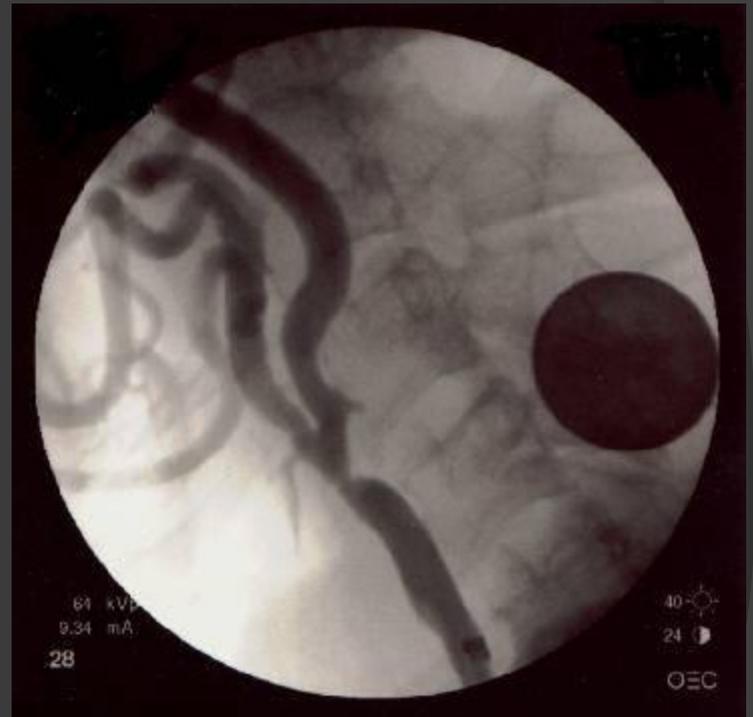
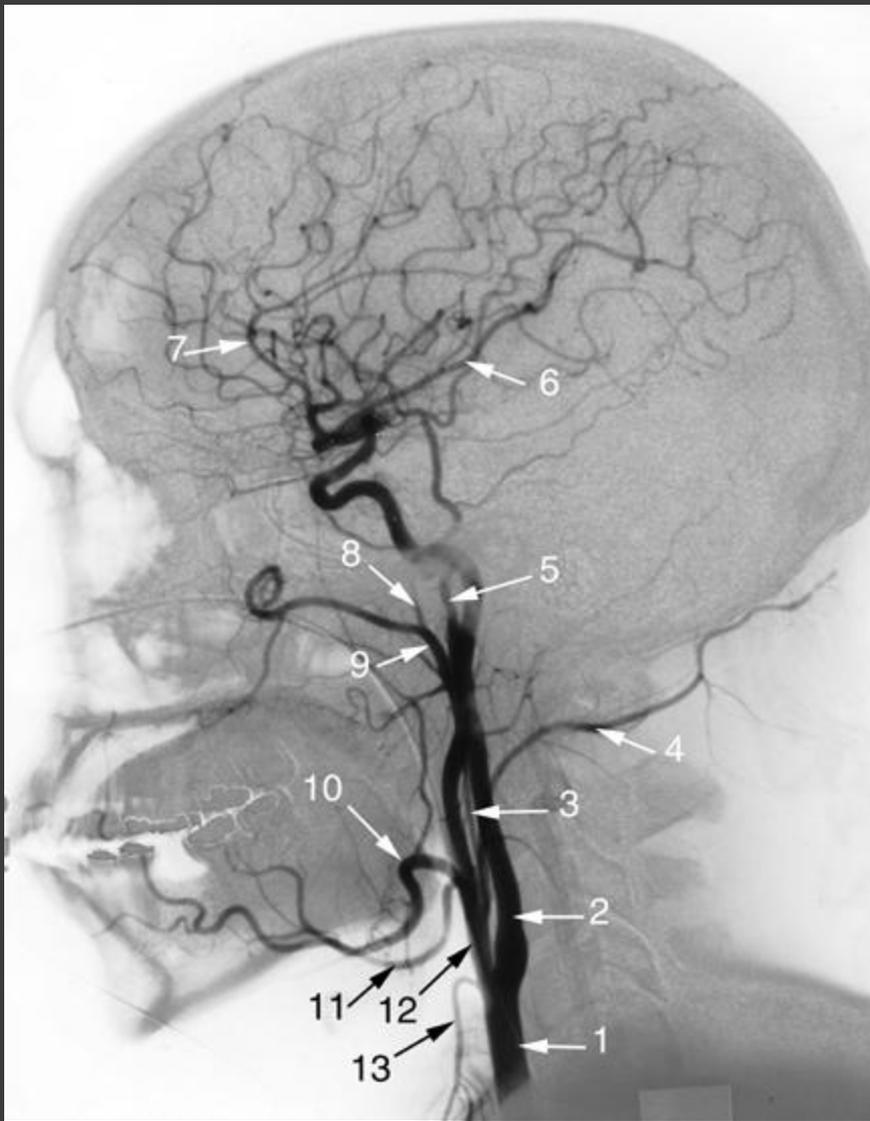
Look at the iPad



Diagnosing Carotid Stenosis







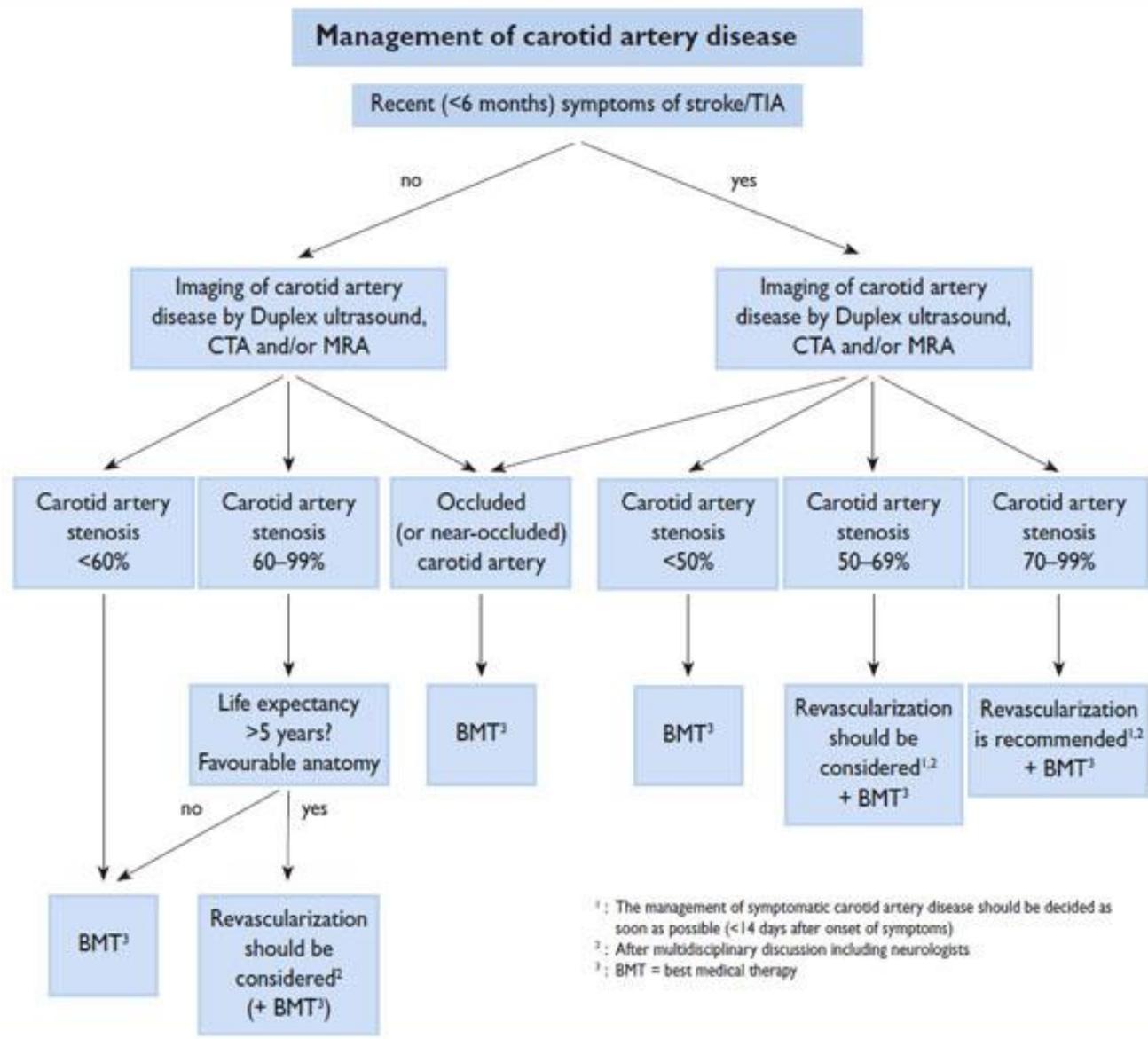


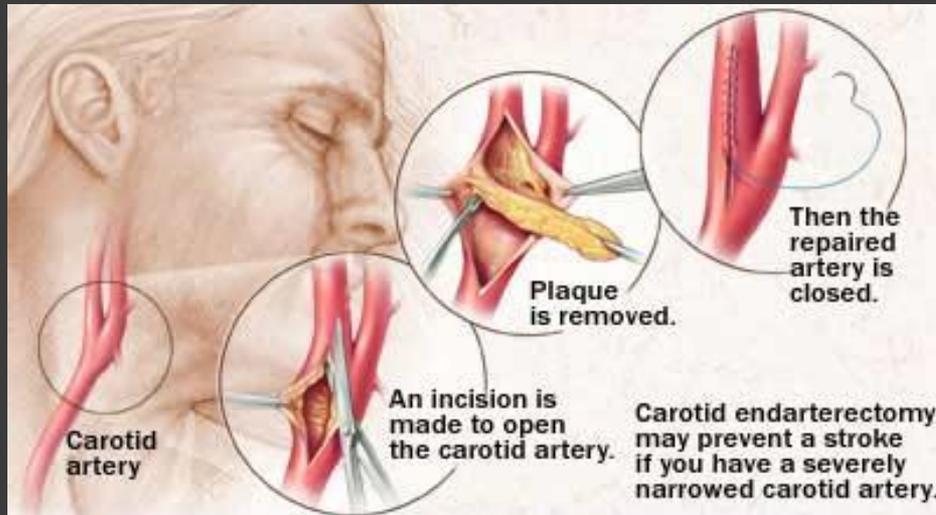
Figure 1 Algorithm for the management of extracranial carotid artery disease.

CTA = computed tomography angiography;

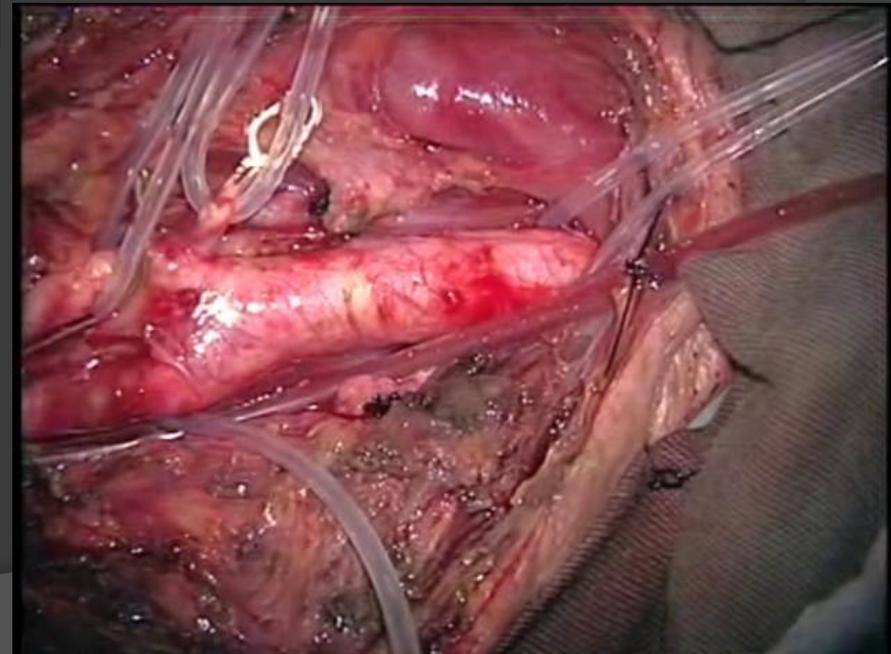
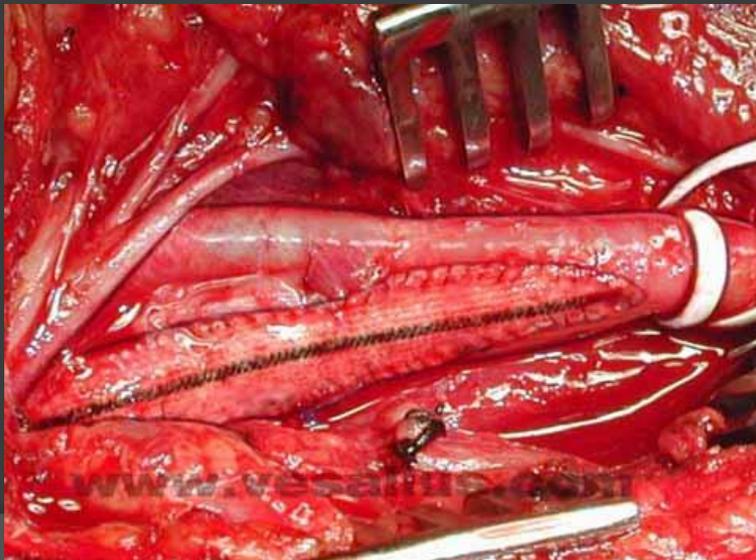
MRA = magnetic resonance angiography;

TIA = transient ischaemic attack.

Carotid EndArterectomy - CEA

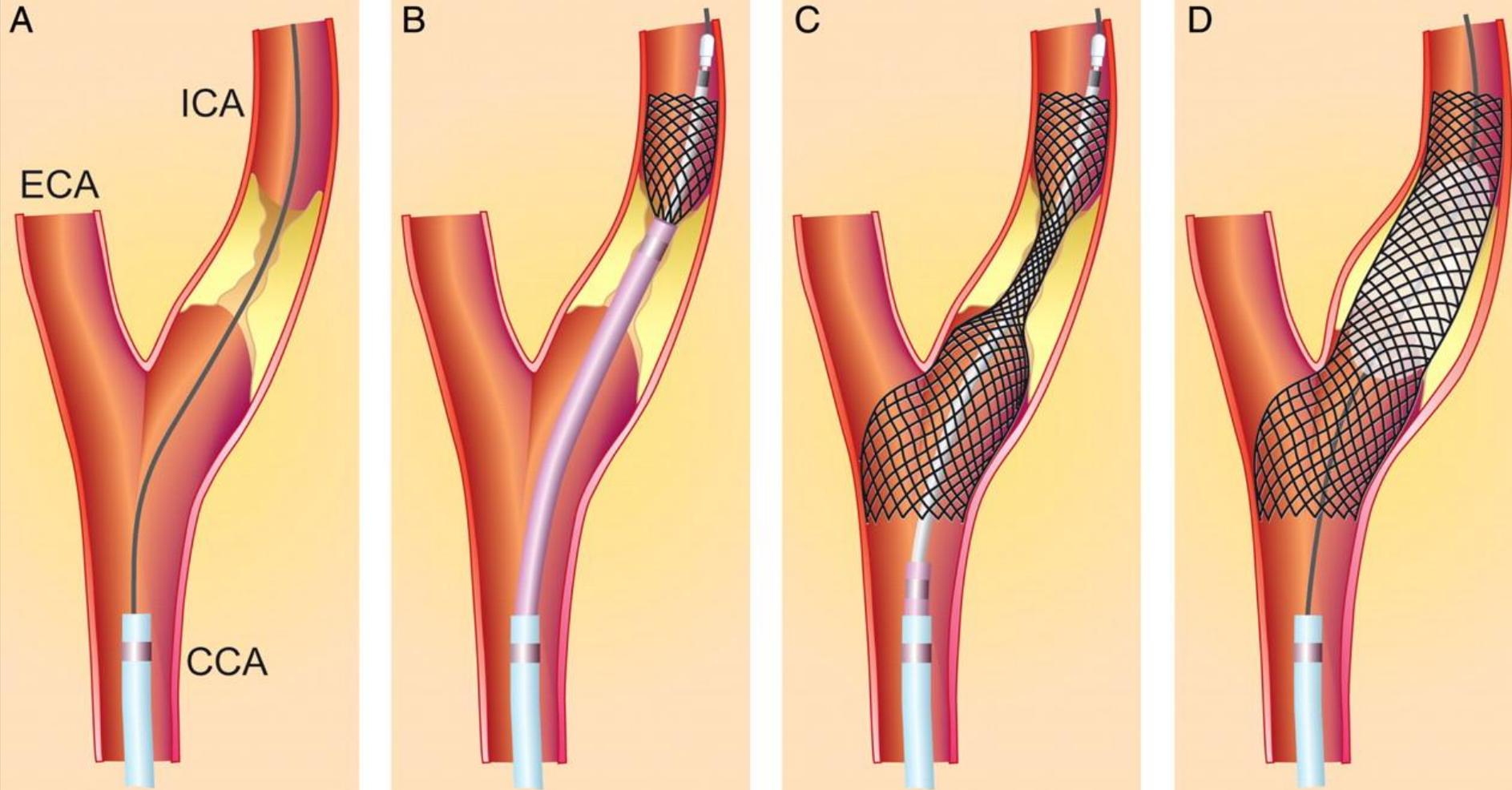


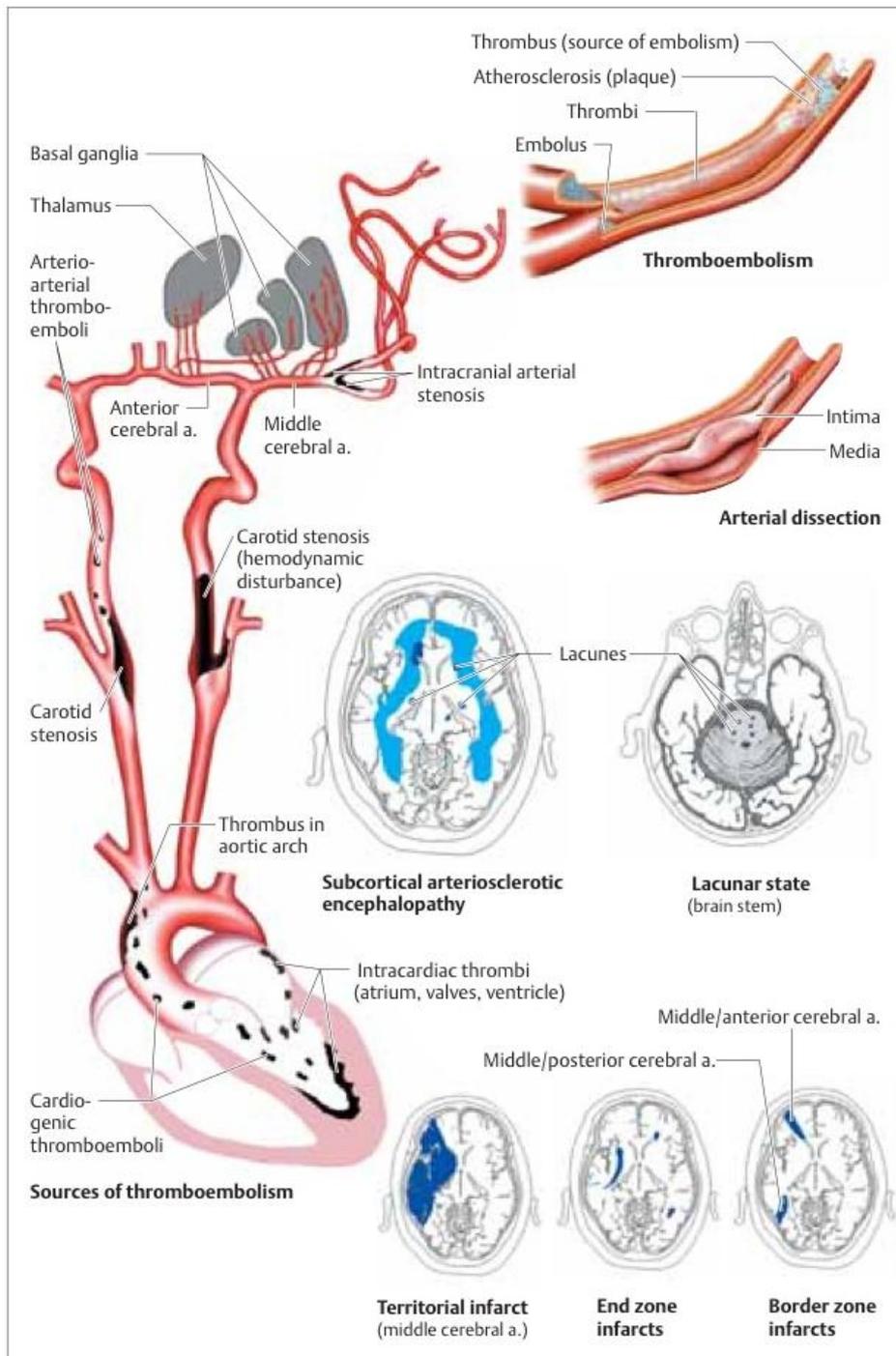
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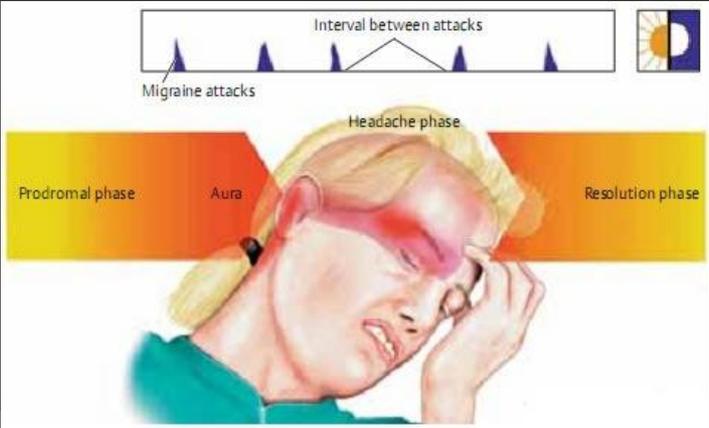
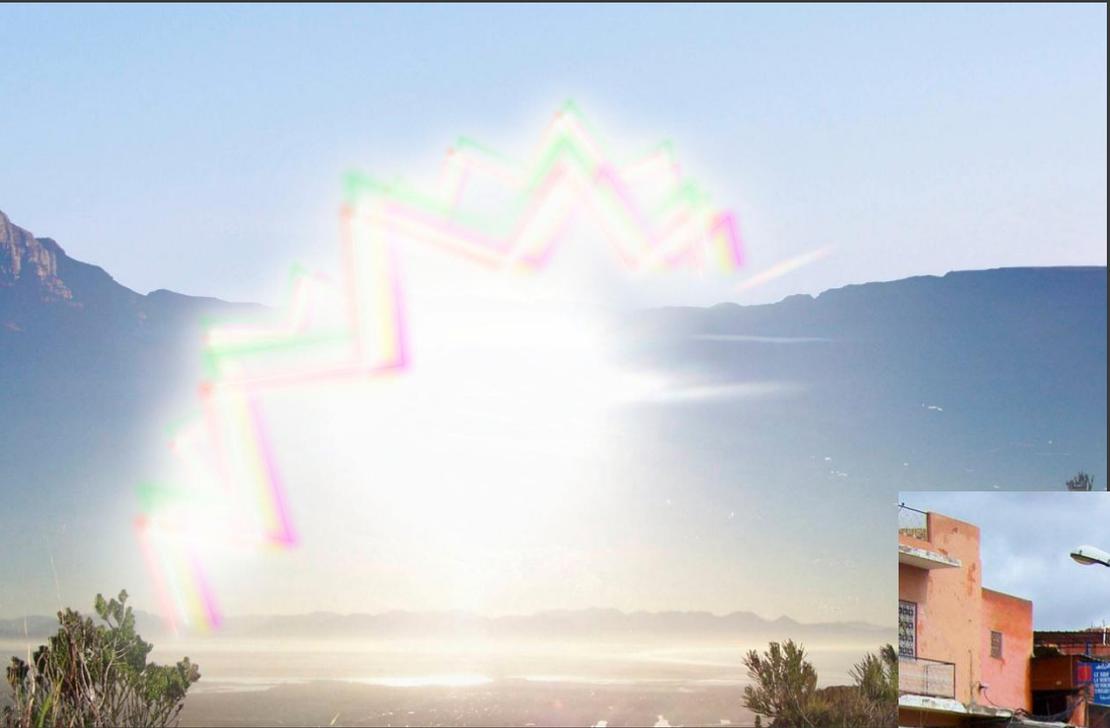


Carotid Stenting

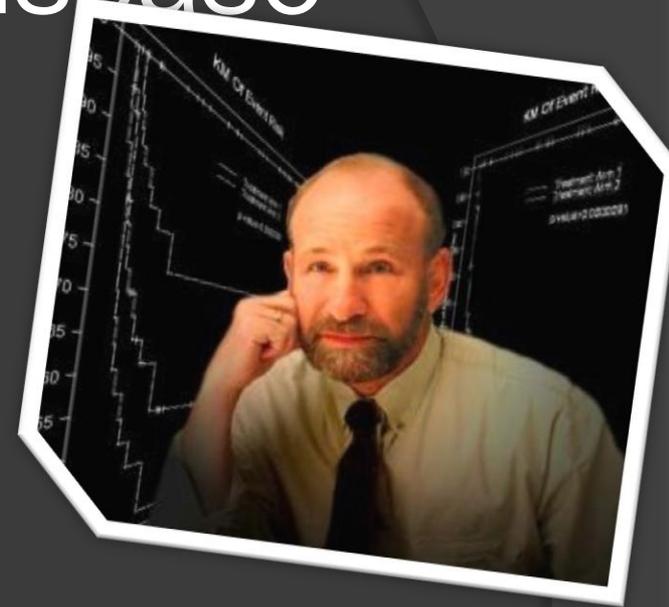
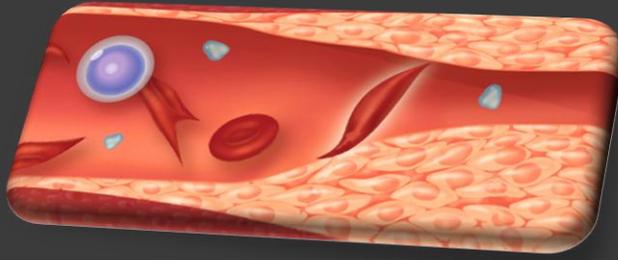




Migraine with Aura and Stroke



Stroke in Sickle Cell Disease



Before transfusion

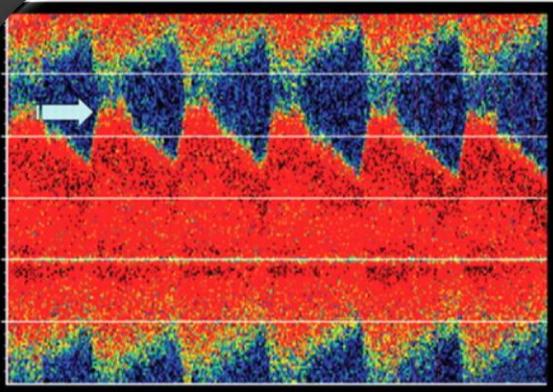
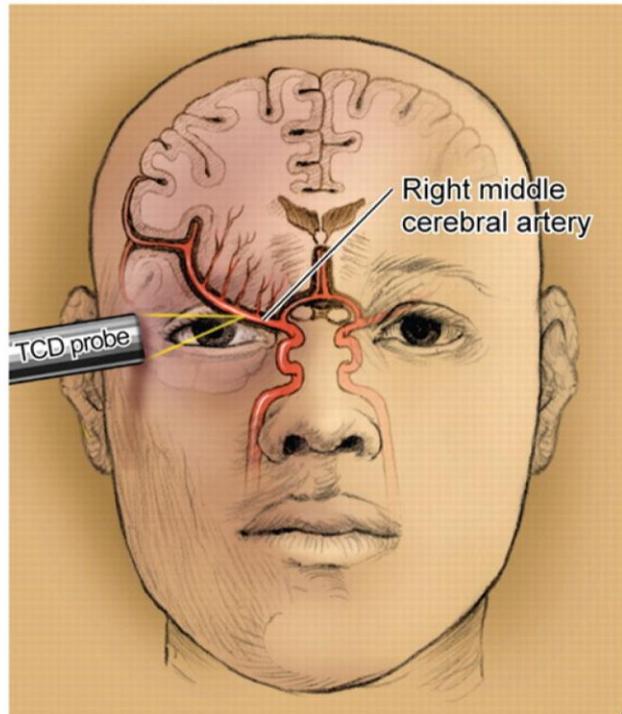
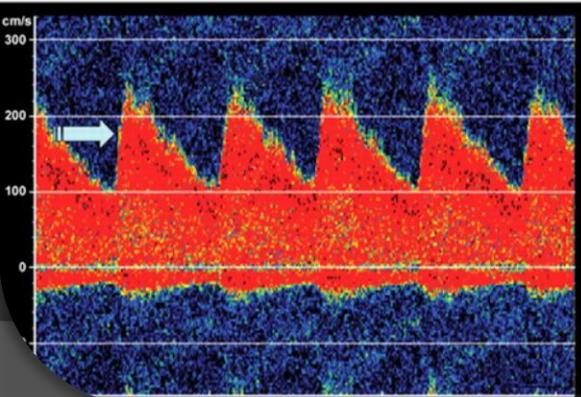


Diagram of transcranial Doppler examination

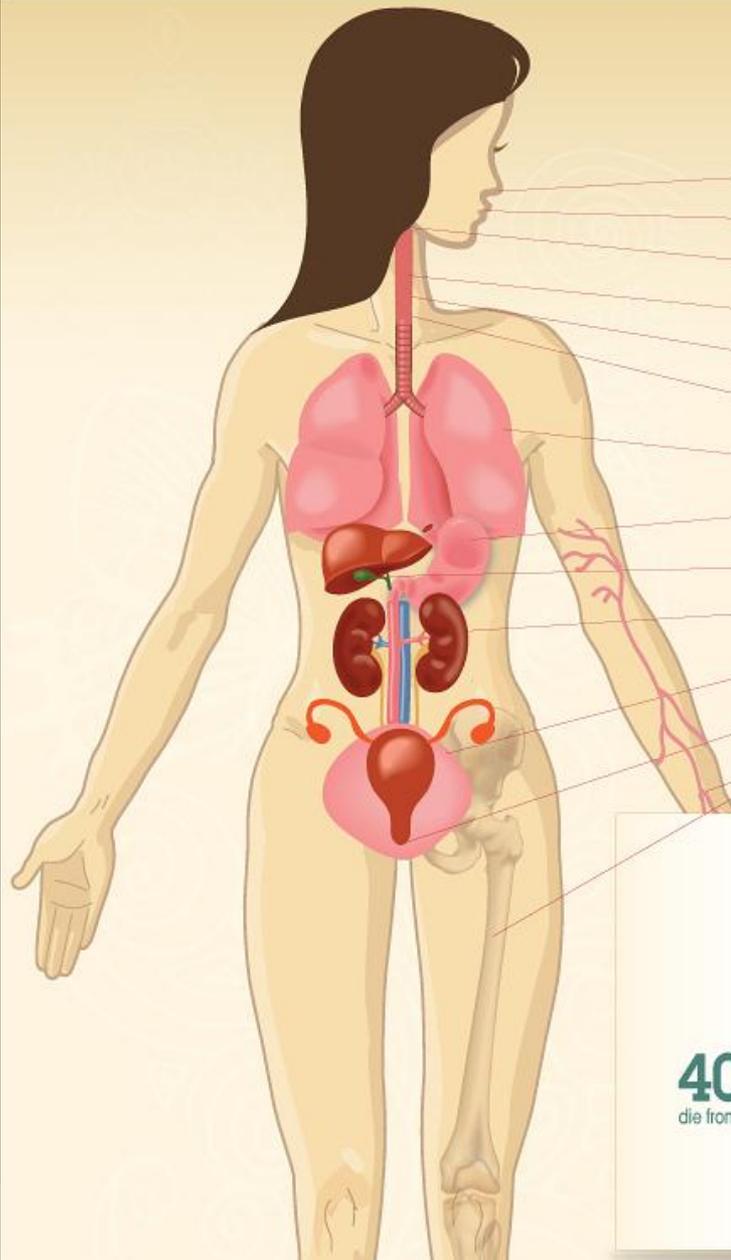


After transfusion



S M O K I N G

CIGARETTE SMOKE AFFECTS YOUR BODY



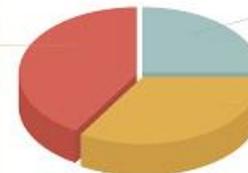
SMOKING CAUSES CANCER¹ OF THE:

- ▶ Nose
- ▶ Mouth
- ▶ Larynx (voice box)
- ▶ Trachea
- ▶ Esophagus
- ▶ Throat
- ▶ Lungs
- ▶ Stomach
- ▶ Pancreas
- ▶ Kidneys
- ▶ Bladder
- ▶ Cervix
- ▶ Bone marrow and blood²

443,000

People die prematurely in the United States each year due to smoking cigarettes or being exposed to cigarette smoke³

40%
die from cancer



25%
die from lung disease

35%
die from heart disease
or stroke

AUTOIMMUNE SYSTEM

- ⦿ Crohn's Disease⁴
- ⦿ Rheumatoid Arthritis⁵

HEART

- ⦿ Plaque Buildup in Your Arteries⁶
- ⦿ Aneurysms⁷
- ⦿ Coronary Heart Disease⁸
- ⦿ Heart Attack⁹
- ⦿ Peripheral Arterial Disease¹⁰
- ⦿ Stroke¹¹

BONES

- ⦿ Osteoporosis¹²
- ⦿ Bone Loss¹³

VISION

- ⦿ Macular Degeneration¹⁴
- ⦿ Optic Nerve Damage¹⁵
- ⦿ Blindness¹⁶

BLOOD

- ⦿ Increased Blood Pressure¹⁷
- ⦿ Changes to Blood Chemistry¹⁸
- ⦿ Thickened Blood Vessels¹⁹

LUNGS

- ⦿ Chronic Obstructive Pulmonary Disease²⁰
- ⦿ Emphysema²¹
- ⦿ Chronic Bronchitis²²
- ⦿ Pneumonia²³



www.BeTobaccoFree.gov

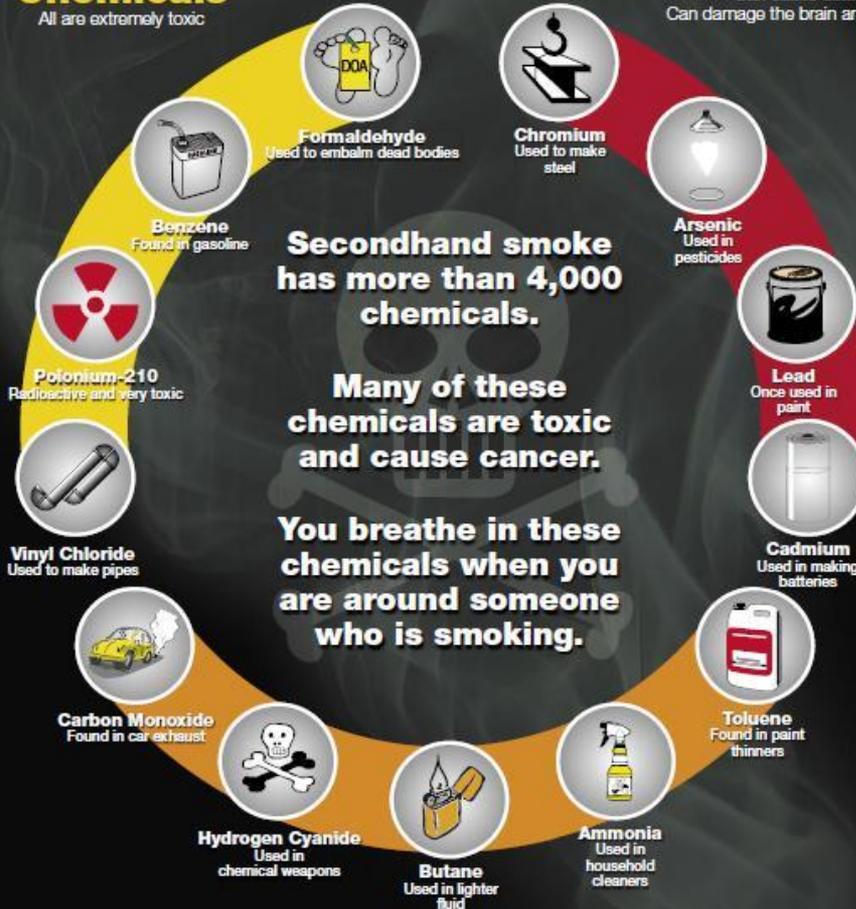
Secondhand Smoke is toxic

Cancer Causing Chemicals

All are extremely toxic

Toxic Metals

Can cause cancer
Can cause death
Can damage the brain and kidneys



Poison Gases

Can cause death
Can affect heart and respiratory functions
Can burn your throat, lungs, and eyes
Can cause unconsciousness

Secondhand smoke

It hurts you. It doesn't take much. It doesn't take long.





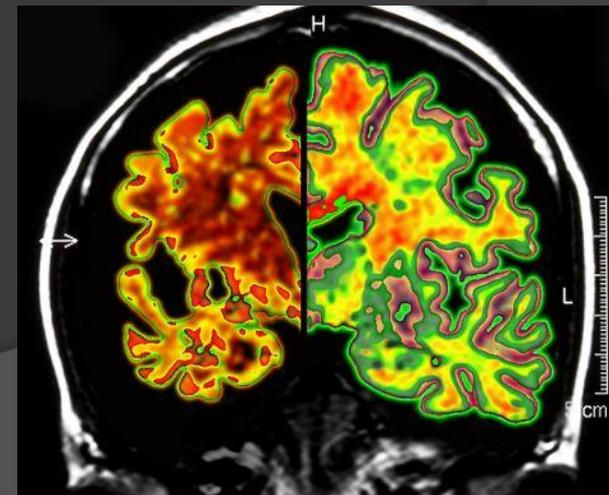
Smoking isn't just suicide. It's murder.



A TIP FROM A
FORMER
SMOKER

**BE CAREFUL
NOT TO CUT
YOUR STOMA.**

Shawn, Age 50, Diagnosed at 46
Washington State



Twin A

Twin B



GET ON THE PATH TO A HEALTHIER YOU! IF YOU QUIT SMOKING RIGHT NOW:

After 15 years

Your risk of coronary heart disease is the same as a non-smoker's

After 10 years

You are half as likely to die from lung cancer. Your risk of larynx or pancreatic cancer decreases

After 5 years

Your risk of cancer of the mouth, throat, esophagus, and bladder are cut in half

After 1 year

Your risk of coronary heart disease is cut in half

Within 9 months

You will cough less and breathe easier

Within 3 months

Your circulation and lung function improves

Within 12 hours

The carbon monoxide level in your blood drops to normal

Within 20 minutes

Your heart rate and blood pressure drop

- 1 Effect of smoking on arterial stiffness and pulse pressure amplification. Mahmood A, Feely J. *Hypertension*. 2003;41:183
- 2 US Surgeon General's Report, 1988, p. 282
- 3 US Surgeon General's Report, 1990, pp. 193, 194, 196, 285, 323
- 4 US Surgeon General's Report, 1990, pp. 285-287, 304
- 5 US Surgeon General's Report, 2010, p. 309
- 6 A Report of the Surgeon General: How Tobacco Smoke Causes Disease - The Biology and Behavioral Basis for Smoking-Attributable Disease Fact Sheet, 2010; and Tobacco Control: Reversal of Risk After Quitting Smoking. IARC Handbooks of Cancer Prevention, Vol. 11, 2007, p.341
- 7 A Report of the Surgeon General: How Tobacco Smoke Causes Disease - The Biology and Behavioral Basis for Smoking-Attributable Disease Fact Sheet, 2010; and US Surgeon General's Report, 1990, pp. vi, 155, 169
- 8 Tobacco Control: Reversal of Risk After Quitting Smoking. IARC Handbooks of Cancer Prevention, Vol. 11, 2007, p. 11



www.BeTobaccoFree.gov

National Cancer Institute



Clearing
the Air

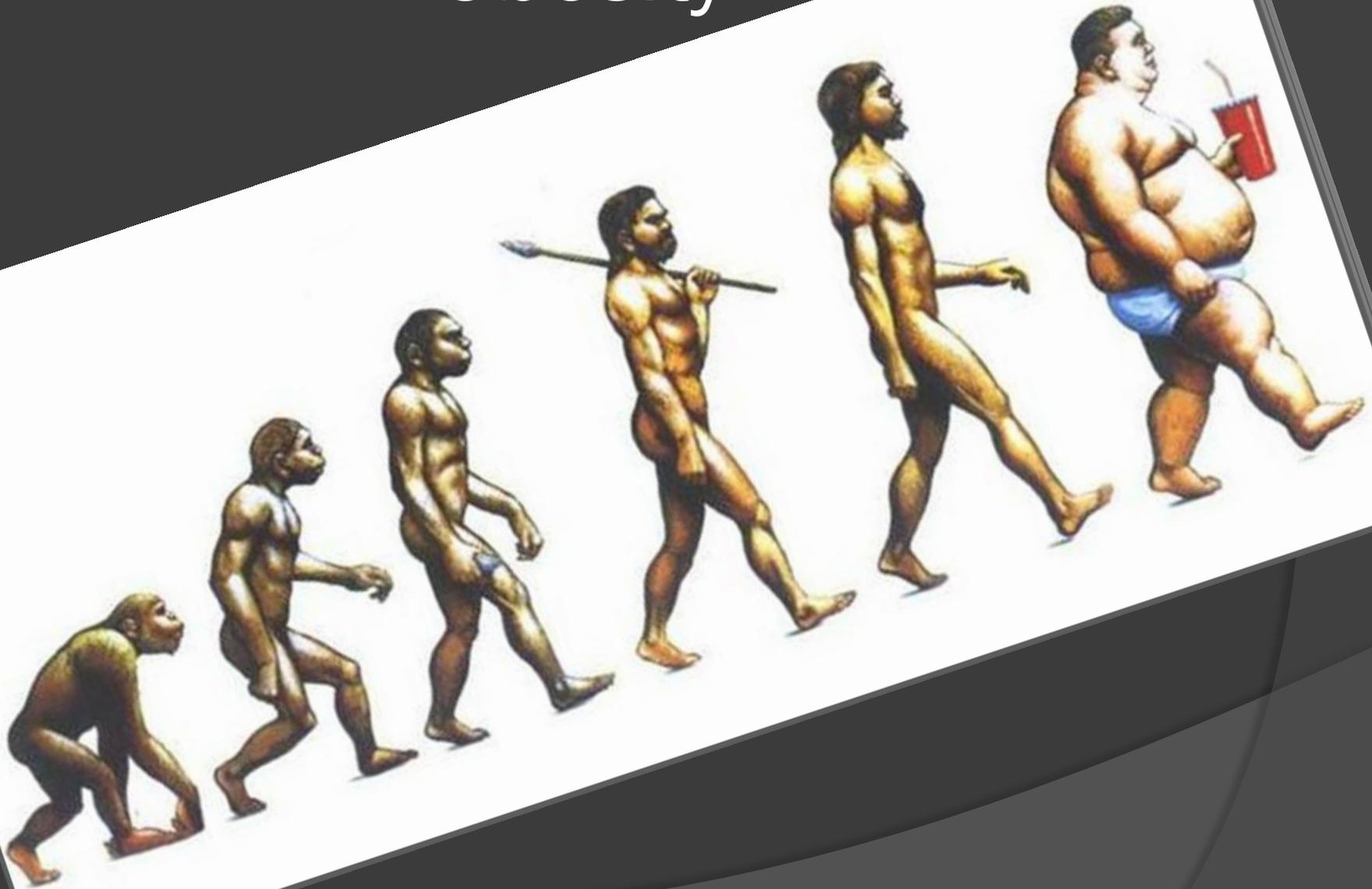
smokefree.gov



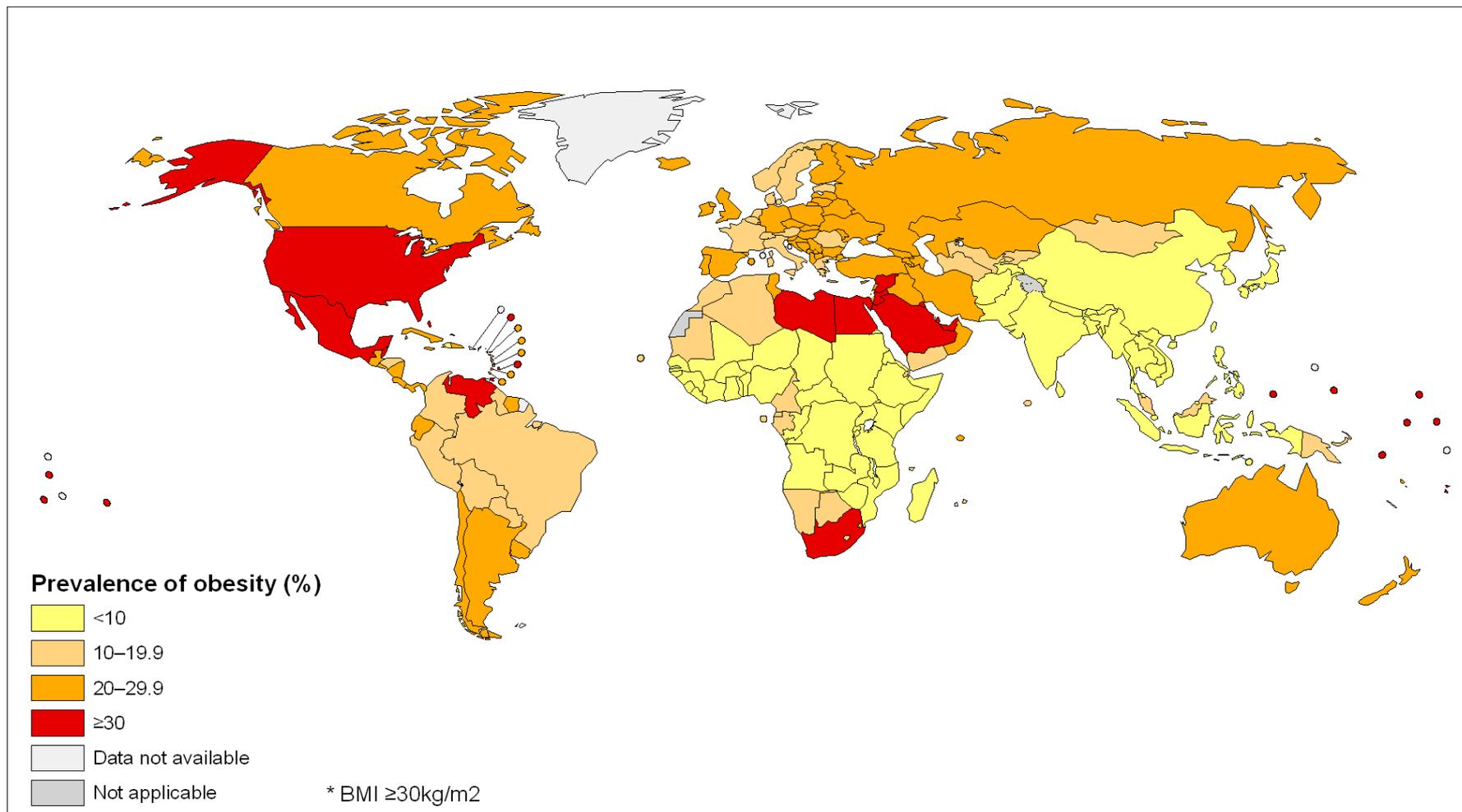
 smokefreeTXT

1-800-QUIT-NOW

Obesity



Prevalence of obesity*, ages 20+, age standardized Both sexes, 2008



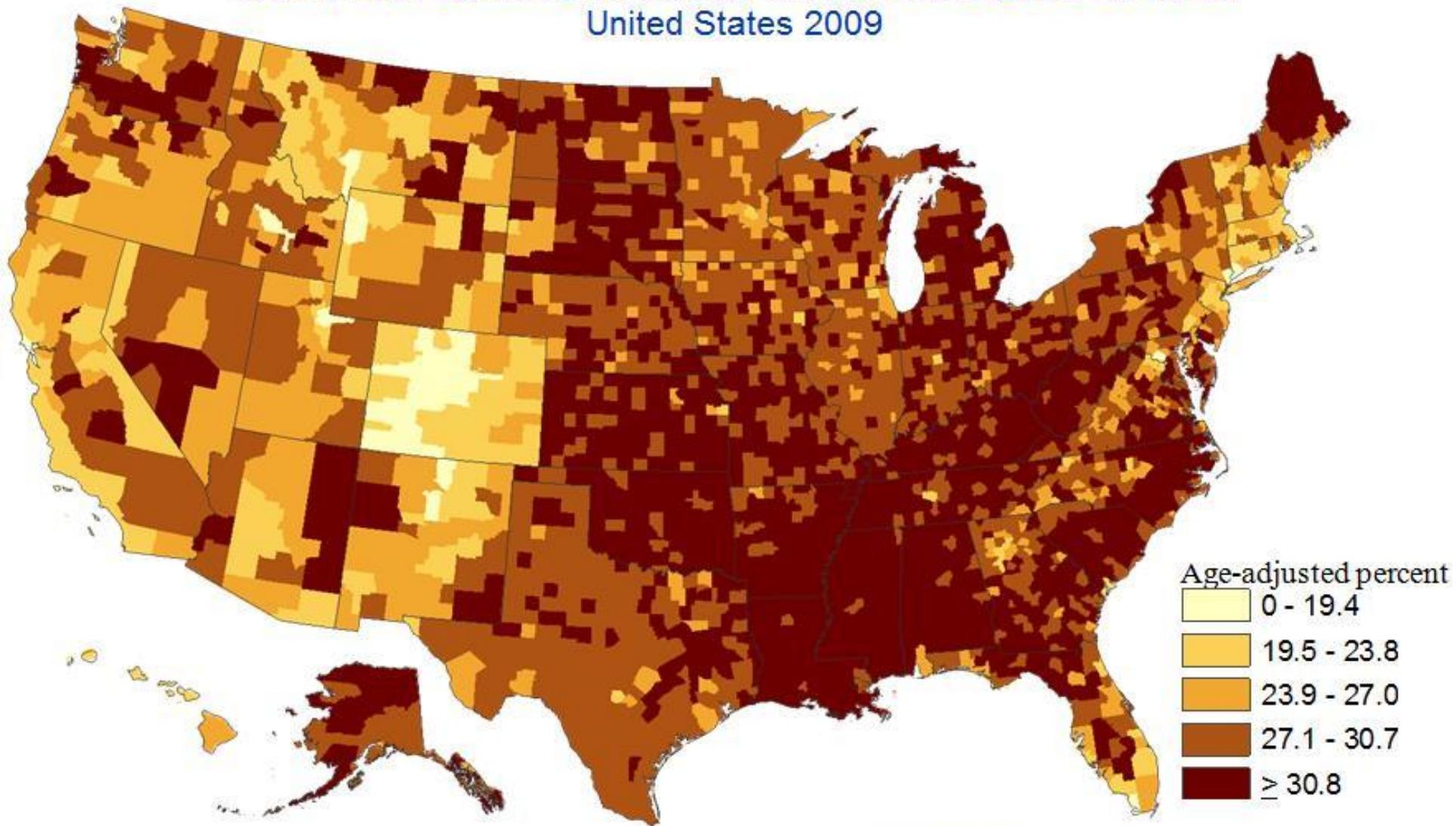
The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

Data Source: World Health Organization
Map Production: Public Health Information
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World Health Organization



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County-level Estimates of Obesity among Adults aged ≥ 20 years: United States 2009



www.cdc.gov/diabetes

http://apps.nccd.cdc.gov/DDT_STRS2/NationalDiabetesPrevalenceEstimates.aspx?mode=OBS

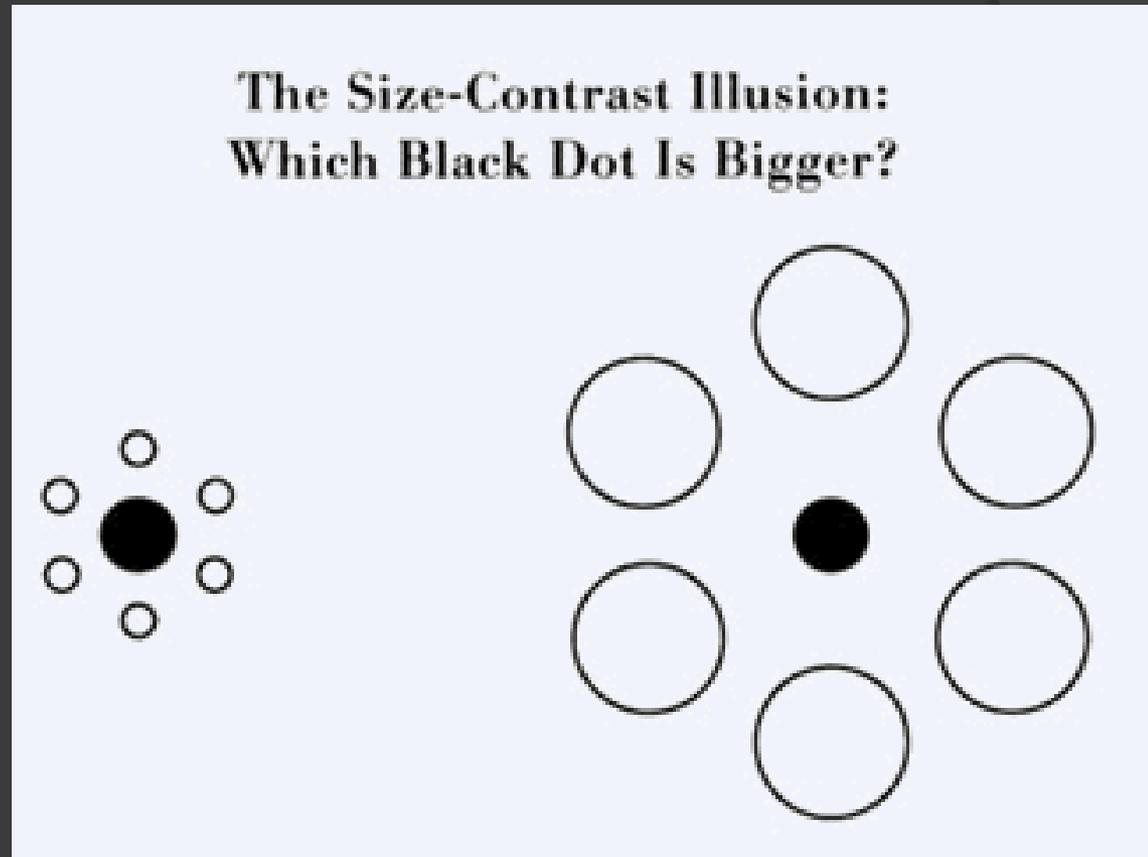
Know your BMI

Body Mass Index Table

	Normal						Overweight					Obese						Extreme Obesity																		
BMI	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
Height (inches)	Body Weight (pounds)																																			
58	91	96	100	105	110	115	119	124	129	134	138	143	148	153	158	162	167	172	177	181	186	191	196	201	205	210	215	220	224	229	234	239	244	248	253	258
59	94	99	104	109	114	119	124	128	133	138	143	148	153	158	163	168	173	178	183	188	193	198	203	208	212	217	222	227	232	237	242	247	252	257	262	267
60	97	102	107	112	118	123	128	133	138	143	148	153	158	163	168	174	179	184	189	194	199	204	209	215	220	225	230	235	240	245	250	255	261	266	271	276
61	100	106	111	116	122	127	132	137	143	148	153	158	164	169	174	180	185	190	195	201	206	211	217	222	227	232	238	243	248	254	259	264	269	275	280	285
62	104	109	115	120	126	131	136	142	147	153	158	164	169	175	180	186	191	196	202	207	213	218	224	229	235	240	246	251	256	262	267	273	278	284	289	295
63	107	113	118	124	130	135	141	146	152	158	163	169	175	180	186	191	197	203	208	214	220	225	231	237	242	248	254	259	265	270	278	282	287	293	299	304
64	110	116	122	128	134	140	145	151	157	163	169	174	180	186	192	197	204	209	215	221	227	232	238	244	250	256	262	267	273	279	285	291	296	302	308	314
65	114	120	126	132	138	144	150	156	162	168	174	180	186	192	198	204	210	216	222	228	234	240	246	252	258	264	270	276	282	288	294	300	306	312	318	324
66	118	124	130	136	142	148	155	161	167	173	179	186	192	198	204	210	216	223	229	235	241	247	253	260	266	272	278	284	291	297	303	309	315	322	328	334
67	121	127	134	140	146	153	159	166	172	178	185	191	198	204	211	217	223	230	236	242	249	255	261	268	274	280	287	293	299	306	312	319	325	331	338	344
68	125	131	138	144	151	158	164	171	177	184	190	197	203	210	216	223	230	236	243	249	256	262	269	276	282	289	295	302	308	315	322	328	335	341	348	354
69	128	135	142	149	155	162	169	176	182	189	196	203	209	216	223	230	236	243	250	257	263	270	277	284	291	297	304	311	318	324	331	338	345	351	358	365
70	132	139	146	153	160	167	174	181	188	195	202	209	216	222	229	236	243	250	257	264	271	278	285	292	299	306	313	320	327	334	341	348	355	362	369	376
71	136	143	150	157	165	172	179	186	193	200	208	215	222	229	236	243	250	257	265	272	279	286	293	301	308	315	322	329	338	343	351	358	365	372	379	386
72	140	147	154	162	169	177	184	191	199	206	213	221	228	235	242	250	258	265	272	279	287	294	302	309	316	324	331	338	346	353	361	368	375	383	390	397
73	144	151	159	166	174	182	189	197	204	212	219	227	235	242	250	257	265	272	280	288	295	302	310	318	325	333	340	348	355	363	371	378	386	393	401	408
74	148	155	163	171	179	186	194	202	210	218	225	233	241	249	256	264	272	280	287	295	303	311	319	326	334	342	350	358	365	373	381	389	396	404	412	420
75	152	160	168	176	184	192	200	208	216	224	232	240	248	256	264	272	279	287	295	303	311	319	327	335	343	351	359	367	375	383	391	399	407	415	423	431
76	156	164	172	180	189	197	205	213	221	230	238	246	254	263	271	279	287	295	304	312	320	328	336	344	353	361	369	377	385	394	402	410	418	426	435	443

Eat Right – easier said than done

- Plate size (portion size)
- Plate color
- Rearranging refrigerator
- Think about food 1 hr before hunger
- Listen to your stomach
- “Clean your plate”
- Don’t go hungry



Do I really need to be aware of portion sizes?

Portion size is no respecter of person, place or profession or if the person is hungry or likes the food.

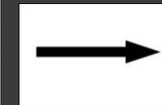
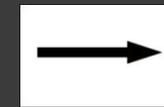
85 graduate students and professors were invited to an ice cream social. Those who were given larger serving bowl served themselves 31% more than those with the smaller bowl. Those who were given a larger bowl and serving utensil served themselves 53% ice cream than those who were given a small bowl and spoon.



Chicagoan moviegoers were given free medium or large buckets of stale popcorn. Even though the popcorn was stale and they were not hungry, those who were given the large bucket ate 51% more than those with the medium buckets.

Changing your environment to help your portion control

- Use smaller sized bowls, cups, and plates
- When buying bulk packages of food repackage them into serving sizes.



WHAT DOES IT ALL MEAN?

Someone who does not monitor their consumption is more susceptible to container sizes than someone who closely monitors their consumption

TIP: monitor the amount that you eat so that you do not fall prey to the large containers!

Decrease consumption by decreasing packaging sizes of unhealthy foods
Increase consumption by increasing packaging sizes of healthy foods

TIP: repackage unhealthy snacks into individual sized bags to prevent over consumption!

This can be especially important for children and the elderly who need the nutrients for continued growth

Buy in
Individual
Size



Buy in Family Size

Watch what you drink



- Drink water
- Carry a water bottle
- Don't stock the fridge with sugary drinks
- Beware of "healthy juices"
- Whipped cream on Coffee

Occasion	Instead of...	Calories	Try...	Calories
Morning coffee shop run	Medium café latte (16 ounces) made with whole milk	265	Small café latte (12 ounces) made with fat-free milk	125
Lunchtime combo meal	20-oz. bottle of nondiet cola with your lunch	227	Bottle of water or diet soda	0
Afternoon break	Sweetened lemon iced tea from the vending machine (16 ounces)	180	Sparkling water with natural lemon flavor (not sweetened)	0
Dinnertime	A glass of nondiet ginger ale with your meal (12 ounces)	124	Water with a slice of lemon or lime, or seltzer water with a splash of 100% fruit juice	0 calories for the water with fruit slice, or about 30 calories for seltzer water with 2 ounces of 100% orange juice.
Total beverage calories		796		125-155

Fast food Vs Home cooked food



Eat more weigh less

● Calorie density



Chips or pretzels
1.5 oz. pretzels
= 162 calories



Baby carrots with hummus
16 baby carrots
with 1 tbsp. hummus
= 75 calories

Make substitutions

Instead of...

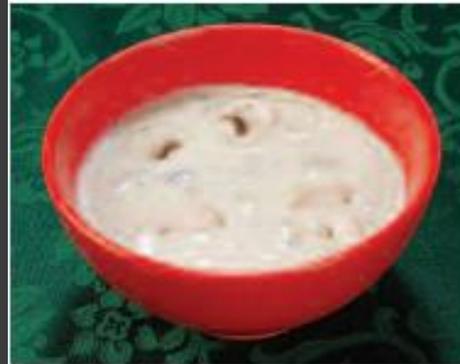


Fried chicken sandwich
with 1 tbsp. mayonnaise
= 599 calorie

Try...



Grilled chicken salad with low-fat dressing
2 cups lettuce, 2 oz. grilled chicken breast, 2 tbsp. light balsamic vinaigrette dressing
= 178 calories



Cream-based soup
1 cup mushroom bisque
= 400 cal



Broth-based soup
1 cup minestrone
= 112 calories



400 calories
of oil



400 calories
of chicken



400 calories
of vegetable

Be active

“Be active every day
with *Go4Life!*”

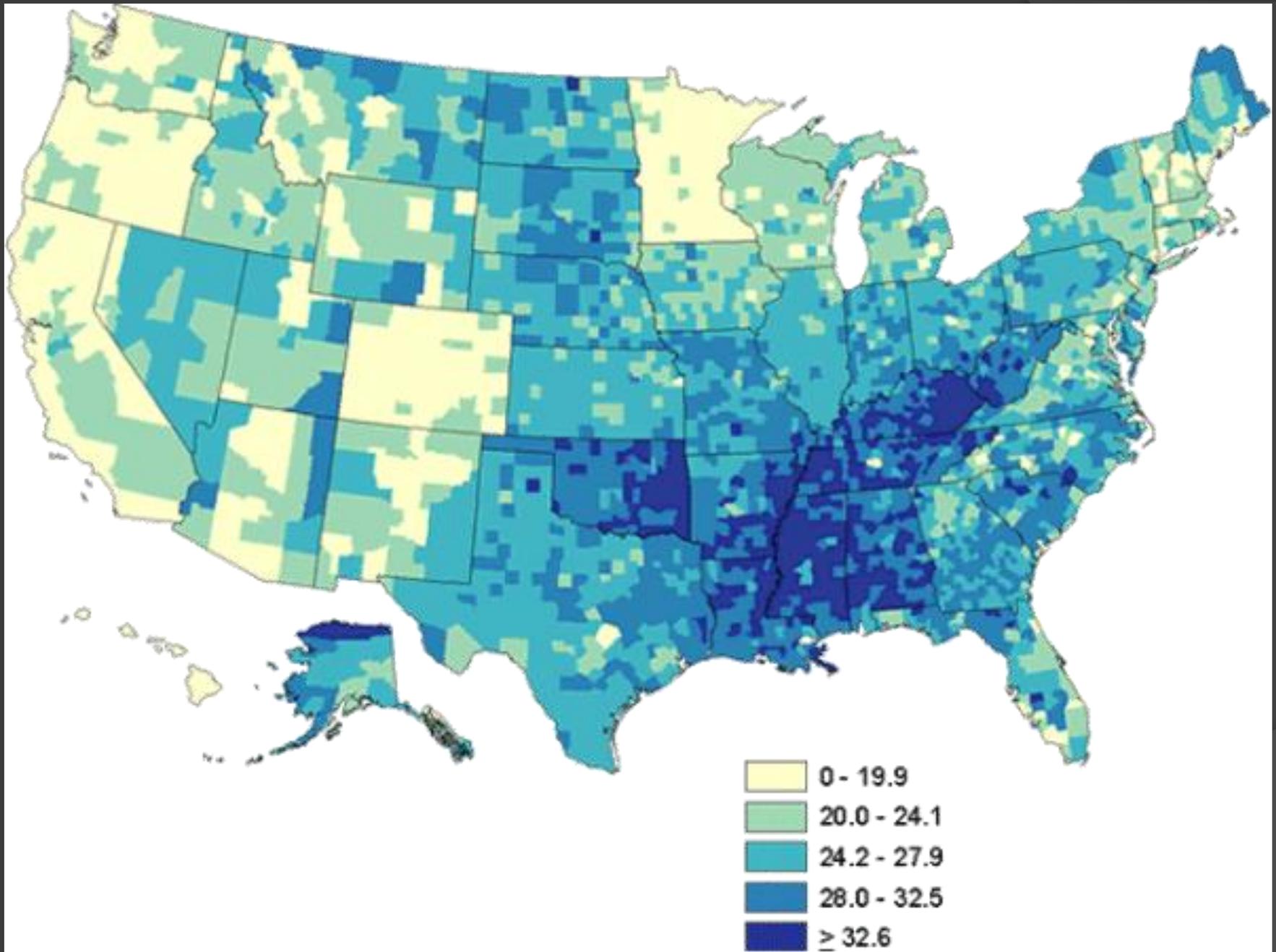
Find a physical activity you enjoy.

Adults need
at least **2.5 hours**
(150 minutes)
a week of physical
activity.



Vital^{cdc}signs™
www.cdc.gov/vitalsigns





2008 Age-Adjusted Estimates of the Percentage of Adults Who Are Physically Inactive

The Benefits of Physical Activity

- Control Your Weight
- Reduce Your Risk of Cardiovascular Disease
- Reduce your risk of Type 2 Diabetes and Metabolic Syndrome
- Reduce Your Risk of Some Cancers
- Strengthen Your Bones and Muscles
- Improve Your Mental Health and Mood
- Improve Your Ability to do Daily Activities and Prevent Falls
- Increase Your Chances of Living Longer and Better.

Overcoming Barriers

- ⦿ Lack of time
- ⦿ Social influence
- ⦿ Lack of energy
- ⦿ Lack of motivation
- ⦿ Fear of injury
- ⦿ Lack of skill
- ⦿ Weather conditions
- ⦿ Travel
- ⦿ Family obligations
- ⦿ Retirement years
- ⦿ Lack of resources



Have Fun



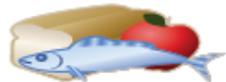
Prevent.

80%
of all strokes are
preventable.²

To reduce your risk for stroke, follow **Life's Simple 7™**:



Manage
Blood
Pressure



Eat
Better



Get
Physically
Active



Lose
Excess
Weight



Lower
Cholesterol



Reduce
Blood Sugar



Don't
Smoke

HOW TO SPOT A STROKE

American Heart Association | American Stroke Association
Together to End Stroke™

Nationally sponsored by



Immediate medical treatment can save lives, but **more than 1/3** of acute stroke patients **don't take an ambulance** to the hospital.¹

AMBULANCE

SPOT A STROKE

FAST

F	A	S	T
FACE	ARM	SPEECH	TIME TO
DROOPING	WEAKNESS	DIFFICULTY	CALL 9-1-1

KNOW THE SIGNS

FACE DROOPING
Does one side of the face droop or is it numb?

ARM WEAKNESS
Is one arm weak or numb? Ask the person to raise both arms. Does one arm drift downward?

SPEECH DIFFICULTY
Is speech slurred, is he or she unable to speak or hard to understand? Ask the person to repeat a simple sentence. Is the sentence repeated correctly?

TIME TO CALL 9-1-1
If the person shows any of these symptoms, even if the symptoms go away, call 9-1-1 and get him or her to the hospital immediately.

StrokeAssociation.org/warningsigns

¹Chang, Eric M. et al. Pathways of Emergency Medical Services Use and Its Association With Timely Stroke Treatment: Finding From Get With the Guidelines-Stroke. *Circulation*. 2013; 118.

Download the **FREE APP** and Be Ready



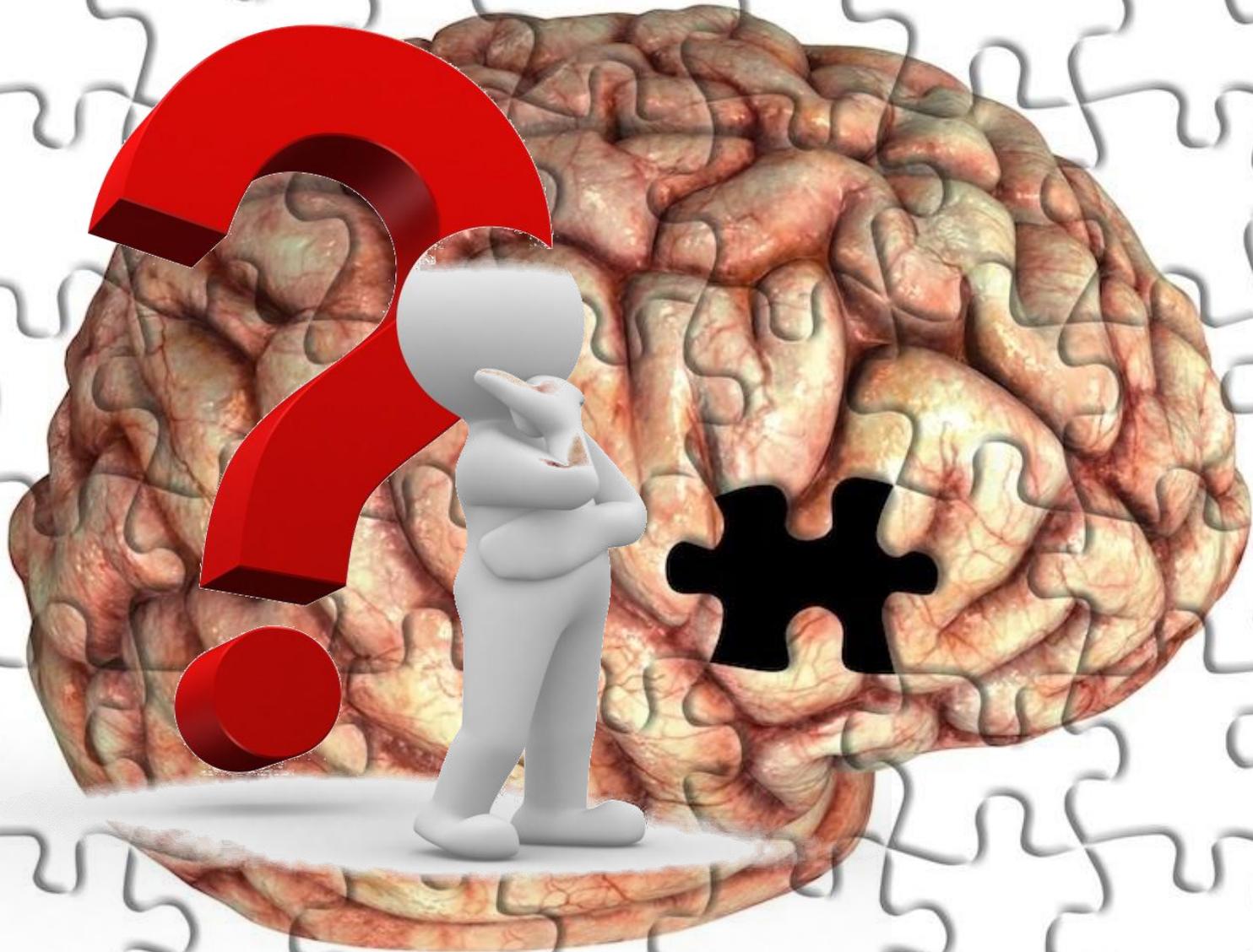
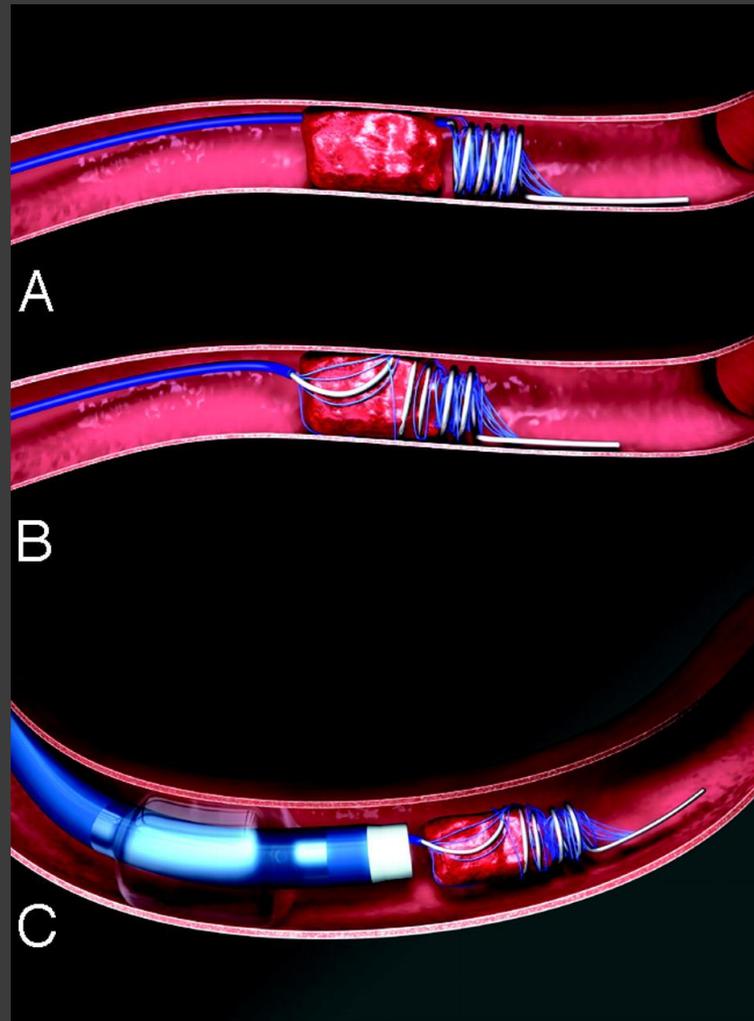


Illustration of the L5 thrombectomy device removing thrombus.

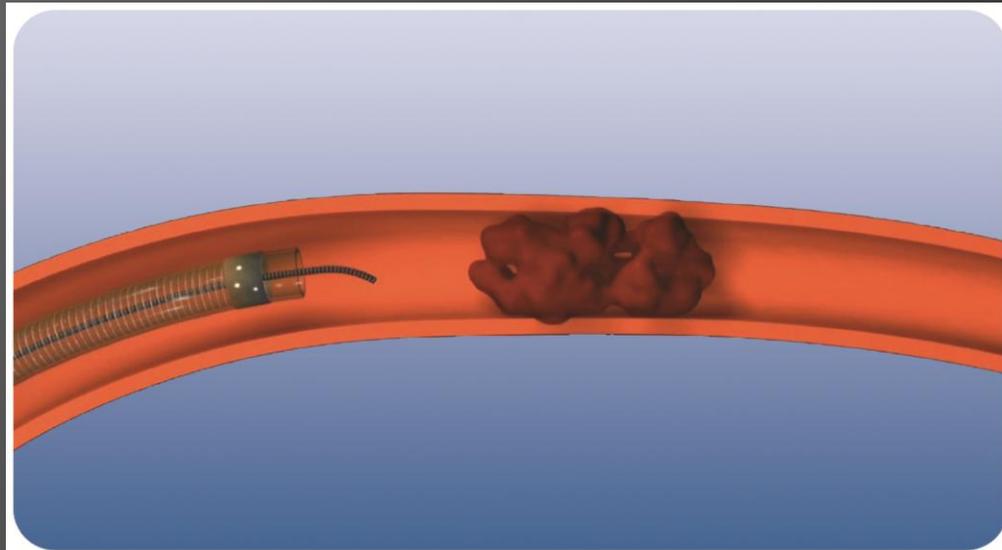


Smith W AJNR Am J Neuroradiol 2006;27:1177-1182

MERCI device

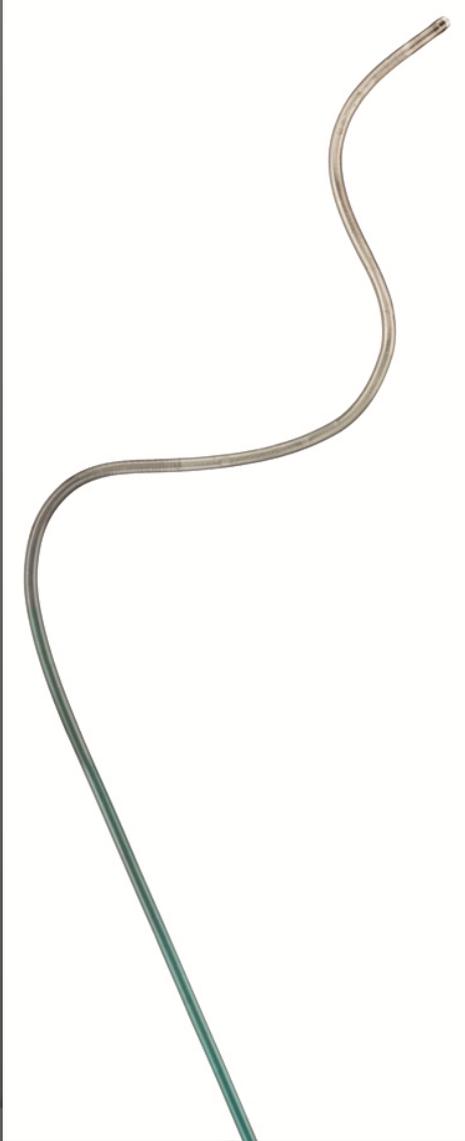
<http://www.youtube.com/watch?v=P2TNz-TnIA>

Penumbra Device



Place Reperfusion Catheter proximal to clot

Access Devices



Penumbra Coil 400™



Exceptionally Stable Occlusion

Frame/Fill

Fill

Fill/Finish



Complex
Standard



Complex
Soft



J
Soft



Complex
Extra Soft



Curve
Extra Soft

(3–32 mm)

(up to 25 cm)

(2–4 mm)