Definition of Stroke (中风)

- Sudden brain damage
- Lack of blood flow to the brain caused by a clot or rupture of a blood vessel

Ischemia = Clot 缺血
(makes up approximately 87% of all strokes)

Hemorrhage = Bleed 出血
(accounts for about 13% of strokes)
  - Bleeding around brain
  - Bleeding into brain
### Wrong Perceptions of Stroke

<table>
<thead>
<tr>
<th>Myth</th>
<th>Reality</th>
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<tbody>
<tr>
<td>Stroke is not preventable.</td>
<td>Up to 80% percent of strokes are preventable.</td>
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<td>Stroke cannot be treated.</td>
<td>可以预防</td>
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<td>Stroke only strikes the elderly.</td>
<td>Stroke requires emergency treatment.</td>
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<td>Stroke recovery ends after 6 months</td>
<td>急救有效</td>
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<td>Anyone can have a stroke.</td>
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<tr>
<td></td>
<td>任何年龄</td>
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<td></td>
<td>Stroke recovery can last a lifetime.</td>
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<td>有些恢复慢</td>
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</table>
Recognition and Response Challenges

- Don’t recognize stroke symptoms. 对中风症状认识不足
- Think that nothing can be done. 反正没有有效疗法
- Worry about cost. 担心医疗费用过高
- Think symptoms will go away on its own. 中风自己会好。
- Fear or don’t trust hospitals. 不信任医院或医生。
Stroke Facts

- 795,000 Americans suffer strokes each year.
- On average, someone suffers a stroke every 40 seconds in America.
- A leading cause of death in the United States.
- 134,000 deaths each year
- 6,400,000 stroke survivors
- Up to 80% of all strokes are preventable through risk factor management.

Figure 3. Age-adjusted death rates for the 10 leading causes of death: United States, 2012 and 2013

NOTES: Causes of death are ranked according to number of deaths. Access data table for Figure 3 at: http://www.cdc.gov/nchs/data/databriefs/db178_table.pdf#1.
Stroke Facts: a leading cause of disability

Top 10 Causes of Disability among US Adults

- Arthritis or rheumatism: 8.8
- Back or spine problems: 7.6
- Heart trouble: 3.0
- Lung or respiratory problem: 2.2
- Mental or emotional problem: 2.2
- Diabetes: 2.0
- Deafness or hearing problem: 1.9
- Stiffness or deformity of limbs/extremities: 1.6
- Blindness or vision problems: 1.5
- Stroke: 1.1

Number in millions (among 47.5 million Americans reporting a disability)
Stroke Facts: Increased Incidence in the elderly but affecting all ages

![Bar graph showing incidence of stroke in different age groups and locations.](chart.png)
Age standardized stroke incidence with standard error per 100,000 persons, 2010. Toronto, 多伦多华人

https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0175556
Be Stroke Smart

**Reduce:** stroke risk

**Recognize:** stroke symptoms

**Respond:** at the first sign of stroke, Call 911 immediately!

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预防，降低高危因素

及早认识中风发作

立即打911
Stroke Symptoms 中风症状

- Sudden and severe headache 突发剧烈头疼
- Sudden trouble seeing in one or both eyes 突发失明
- Sudden confusion 突发意识模糊
- Sudden trouble speaking 突发言语不清
- Sudden dizziness 突发头晕
- Sudden trouble walking 突发走路不稳
- Sudden numbness or weakness of face, arm or leg 突发麻木或无力

If you observe any of these symptoms, call 911 immediately. Every minute matters!
Stroke Strikes F.A.S.T.

• F = Face: ask the person to smile
• A = Arm: ask the person to raise both arms
• S = Speech: ask the person to speak a simple sentence
• T = Time: to call 911 immediately

Every minute matters!
Acute Stroke: Every minute counts!

Know Stroke | Act in Time

2 Million brain cells die every minute increasing the risk of permanent brain damage, disability or death.

Treatment within 3 hours of symptoms improves chances of recovery with little or no disability.

Acute Stroke: call EMS 急叫救护车

- EMS professionals are trained to respond to medical emergencies such as a stroke.
- Studies show that calling 9-1-1 and getting EMS care may improve outcomes from a stroke.
  - Provide safe, quick transport which often means quicker treatment.
  - EMTs can prep the hospital to be ready for a stroke victim.
Acute Stroke Treatments 治疗

- Ischemic stroke (Brain clot)
  - Clot busting medication: t-PA (Tissue Plasminogen Activator)
  - Clot-removing devices: Merci Retriever, Penumbra
- Hemorrhagic Stroke (Brain bleed)
  - Maybe surgery to remove the bleed
  - Medication to stop the bleed
  - Clipping or coiling of the aneurysm
- The sooner patients arrive at the hospital, the sooner they'll get lifesaving treatment, the better chances of getting better even if they do not improve right away.
TIA (Mini Stroke 短暂性脑缺血发作)

- Symptoms of TIAs are the same as stroke.
- TIA symptoms can resolve within minutes or hours.
- Transient ischemic attack (TIA) is a warning sign of a future stroke。 Up to 40% of TIA patients will have a future stroke within the next week.
- It is important to seek immediate medical attention if you suspect that you are having or have had a TIA.
Who can have a stroke?

Risk Factors (non-modifiable)

- Age
- Gender
- Race
- Prior stroke
- Family history of stroke
Risk Factors – You can Control! 可控高危因素

- High blood pressure (hypertension) 高血压
- Hypercholesterolemia 高血脂
- Diabetes 糖尿病
- Smoking 吸烟
- Obesity 肥胖
- Heart disease 心脏病
  - Pump problem 心力衰竭
  - Rhythm problem—atrial fibrillation, “A Fib” 房颤
How Many Strokes Can be Prevented by Risk Factor Control in the United States?

- HTN: 360,000
- Cholesterol: 146,000
- Smoking: 90,000
- AF: 69,000
- Heavy Alcohol Use: 34,000

Based on an estimated 731,000 strokes annually

Adapted from Gorelick PB. Arch Neurol 1995;52:347-55.
High blood pressure 高血压

- 58 million Americans (30% of population)
- High risk
  - African Americans, Asians
  - Elderly
- Diastolic blood pressure reduction by 5-6 mmHg reduces stroke risk by 42%.
- Treating high blood pressure in elderly reduces risk by 36%.
- Goal <140 and <90 mmHg
  - For high risk persons (diabetes, kidney disease): <130 and <80 mmHg
Prevalence of High Blood Pressure in Americans by Age and Sex: 1999-2002
Awareness and Treatment of High Blood Pressure:

- 69% of persons are aware of their HTN status.
- 58% of persons are treated.
- 53% of those treated achieve guideline goal.
- Only 31% of all persons with HTN achieved guideline goal.

Stroke Prevention Guidelines

- Know your blood pressure. Have it checked at least monthly. 每月量血压
- Know your cholesterol number. If high, work with your doctor to control it. 了解自己的血脂
- If you are diabetic, control your diabetes. 注意糖尿病
- Watch for irregular heart rate. Find out if you have atrial fibrillation (AF). 注意房颤
Stroke Prevention Guidelines

- If you smoke, stop. 戒烟
- If you drink alcohol, do so in moderation. 不过量饮酒
- Include exercise in your daily routine (walking) 定期锻炼
- Enjoy a lower sodium (salt) and lower fat diet 低盐低脂饮食
- Watch your weight 控制体重
Trends of stroke incidence in USA (Age>65 yo)
Trends of medication usage in USA (Age>65 yo)
Stroke Recovery Facts:

- 10% of stroke survivors recover almost completely.
- 25% recover with minor impairments.
- 40% experience moderate to severe impairments requiring special care.
- 10% require care within either a skilled-care or other long-term care facility.
- 15% die shortly after the stroke.