



Risk factors for ischemic and intracerebral hemorrhagic **stroke** in Soidao hospital, chantaburi, Thailand : a retrospective study

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Advisers

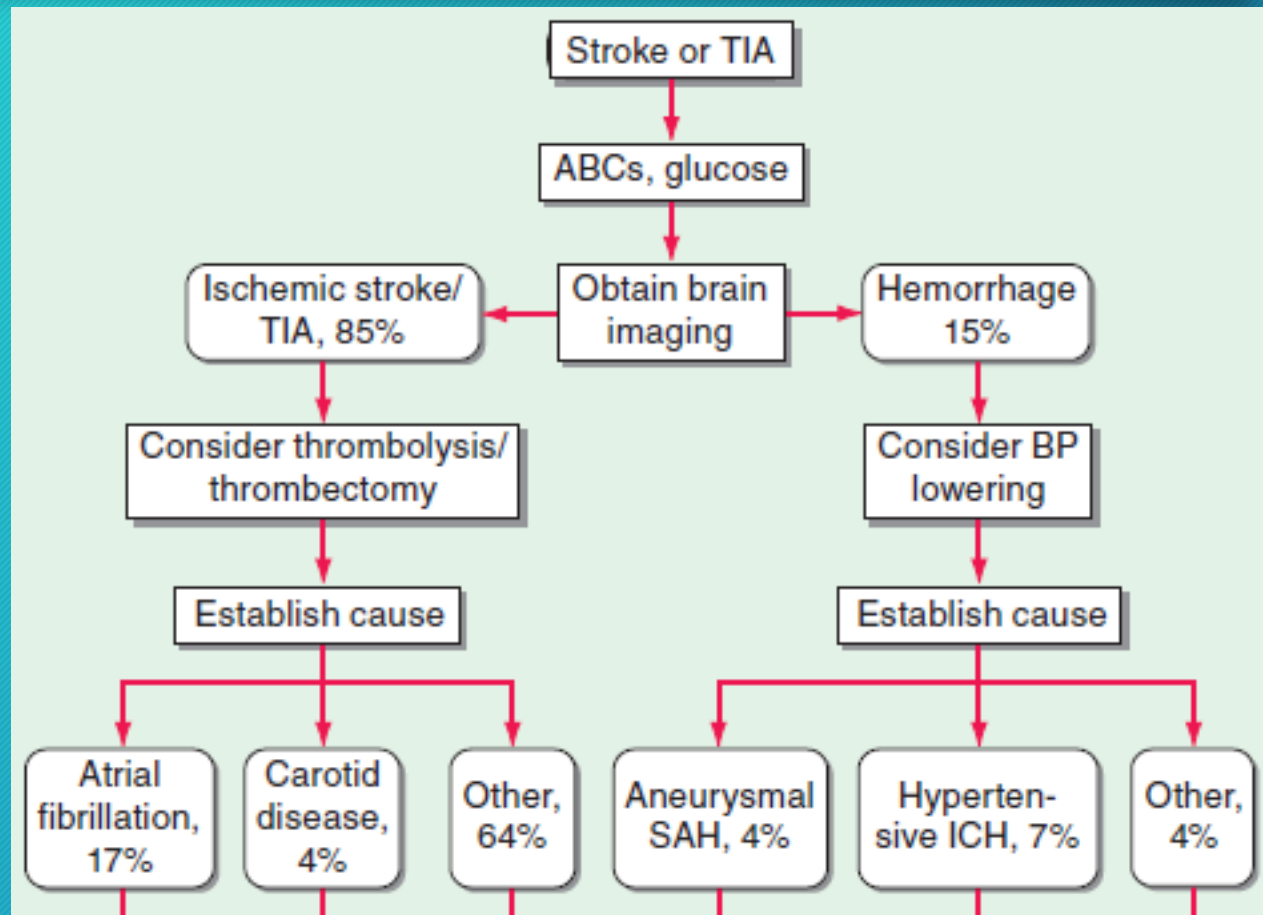
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What is a stroke?

- Stroke = cerebrovascular accident
- **abrupt onset** of a **neurologic deficit** that is attributable to a focal **vascular cause**
- brain imaging -> support the diagnosis
- **Stroke** : the neurologic signs and symptoms last for **>24 h** or **brain infarction** is demonstrated.
- TIA : all neurologic signs and symptoms resolve within 24 h without evidence of brain infarction on brain imaging

What is a stroke?



Why is stroke so important?

- Stroke is the second leading cause of death worldwide, causing 6.2 million deaths in 2011
- Strokes cause ~200,000 deaths each year in the United States and are a major cause of disability
- doubling in stroke deaths in the United States by 2030
- The disability-adjusted life year (DALY) is a measure of overall disease burden, expressed as the number of years lost due to ill-health, disability or early death.

ตารางแสดงโรคที่เป็นสาเหตุสำคัญของของการสูญเสีย Disability Adjusted Life Years (DALYs) ในประเทศไทยปี พ.ศ. 2542 (เพศชาย)

โรค	DALYs	ร้อยละ
1. เอดส์	960,086	17
2. อุบัติเหตุจราจร	510,909	9
3. หลอดเลือดสมอง	271,009	5
4. มะเร็งตับ	248,083	4
5. เบาหวาน	168,594	3
6. กล้ามเนื้อหัวใจขาดเลือด	159,188	3
7. ถุงลมปอดโป่งพอง	156,861	3
8. ถูกฆาตกรรม/ถูกทำร้าย	156,853	3
9. เสียชีวิต/ทำร้ายตัวเอง	147,988	3
10. ยาเสพติด	137,703	2

ที่มา: Burden of disease and injuries in Thailand: Ministry of Public Health Nov 2002

(<http://203.157.19.191/index-burden.htm>)

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โรค	DALYs	ร้อยละ
1. เอดส์	372,956	10
2. หลอดเลือดสมอง	282,509	7
3.. เบาหวาน	267,155	7
4. โรคซึมเศร้า	145,336	4
5. มะเร็งตับ	118,384	3
6. ข้อเข่าเสื่อม	117,994	3
7. โอลิตาง(ขาดธาตุเหล็ก)	112,990	3
8. อุบัติเหตุจราจร	108,449	3
9. กล้ามเนื้อหัวใจขาดเลือด	102,863	3
10. ต้อกระจก	96,091	2

ที่มา: Burden of disease and injuries in Thailand: Ministry of Public Health Nov 2002

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Why is stroke so important?

- medical and surgical interventions, as well as lifestyle modifications, are available for preventing stroke
- Identification and control of modifiable risk factors are the best strategy to reduce the burden of stroke, and the total number of strokes could be reduced

Risk factors

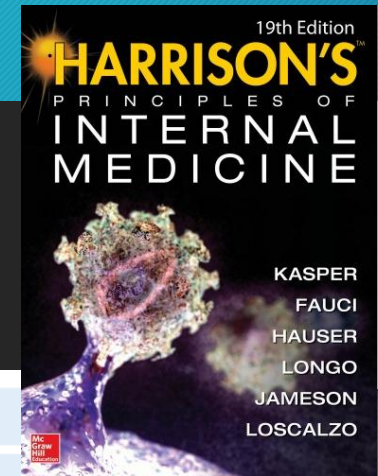
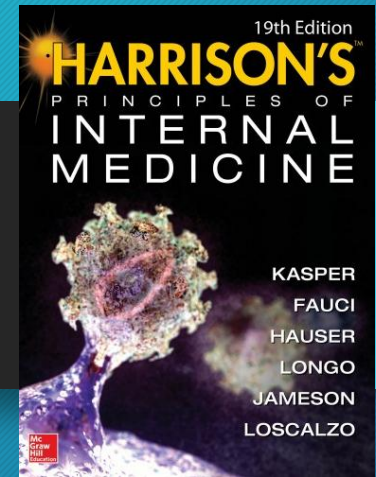


TABLE 446-4 RISK FACTORS FOR STROKE

Risk Factor	Relative Risk	Relative Risk Reduction with Treatment	Number Needed to Treat ^a	
			Primary Prevention	Secondary Prevention
Hypertension	2–5	38%	100–300	50–100
Atrial fibrillation	1.8–2.9	68% warfarin, 21% aspirin	20–83	13
Diabetes	1.8–6	No proven effect		
Smoking	1.8	50% at 1 year, baseline risk at 5 years postcessation		
Hyperlipidemia	1.8–2.6	16–30%	560	230
Asymptomatic carotid stenosis	2.0	53%	85	N/A
Symptomatic carotid stenosis (70–99%)		65% at 2 years	N/A	12
Symptomatic carotid stenosis (50–69%)		29% at 5 years	N/A	77

^aNumber needed to treat to prevent one stroke annually. Prevention of other cardiovascular outcomes is not considered here.

Risk factors



Hypertension is the leading cause of primary ICH. Prevention is aimed at reducing chronic hypertension, eliminating excessive alcohol use, and discontinuing use of illicit drugs such as cocaine and amphetamines. Patients with amyloid angiopathy should generally avoid OACs, but antiplatelet agents may be administered if there is an indication based on atherothrombotic vascular disease.

Risk factors

AHA/ASA Guideline

Guidelines for the Primary Prevention of Stroke A Statement for Healthcare Professionals From the American Heart Association/American Stroke Association

Assessing the Risk of

1. The use of a risk calculator (ACC CV Risk Calculator) can help identify individuals who may benefit from therapeutic treatment on the basis of possible risk, the results need to be interpreted in the context of the overall risk profile (Evidence B).

TABLE: RISK FACTORS INCLUDED TO CALCULATE 10-YEAR AND LIFETIME RISK OF ASCVD^{2,a}

Risk Factor	Options
Sex	Male or female
Age (y)	Range, ^b 20-79
Race	African American or white/others
Total cholesterol (mg/dL)	Range, 130-320
HDL-C (mg/dL)	Range, 20-100
Systolic blood pressure (mm Hg)	Range, 90-200
Treatment for high blood pressure	Yes or No
Diabetes	Yes or No
Smoker	Yes or No

ASCVD = atherosclerotic cardiovascular disease; HDL-C = high-density lipoprotein cholesterol.

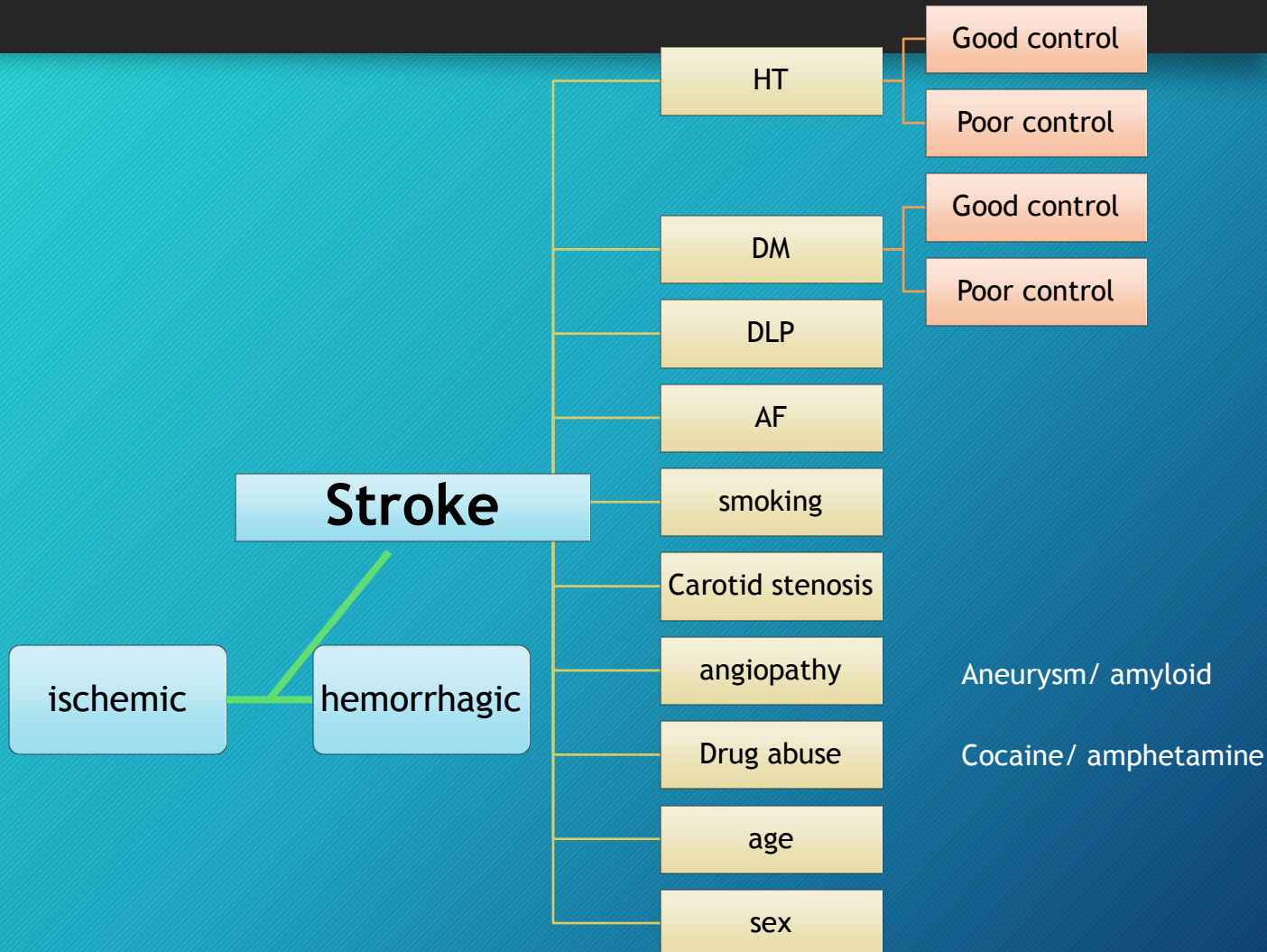
^aRisk calculator is intended for individuals aged 20 to 79 years who do not have clinical ASCVD and who have a low-density lipoprotein cholesterol level <190 mg/dL; factors are unequally weighted.

^bAge range is 20-59 years for lifetime risk calculation.

Objectives

- เพื่อศึกษาความชุกของปัจจัยเสี่ยงต่างในผู้ป่วยหลอดเลือดสมอง ที่เข้ารับบริการที่โรงพยาบาล สอยดาว จันทบุรี ในปีงบประมาณ 2557 และ 2558
- เพื่อศึกษาความชุกของโรคเบาหวานและความดันที่ควบคุมได้ดีกับไม่ดีในผู้ป่วยหลอดเลือดสมอง ที่เข้ารับบริการที่โรงพยาบาล สอยดาว จันทบุรี ในปีงบประมาณ 2557 และ 2558
- เบาหวานควบคุมได้ดี
 - Fasting Plasma Glucose (FPG) 2 ครั้งสุดท้ายติดต่อกัน 70 - 130 มก./ดล.
- ความดันควบคุมได้ดี
 - ที่ไม่มีเบาหวานร่วม มีระดับความดันโลหิต 2 ครั้งสุดท้ายติดต่อกัน <140/90 มม.ปรอท.
 - ที่มีเบาหวานร่วม มีระดับความดันโลหิต 2 ครั้งสุดท้ายติดต่อกัน <140/80

Study design

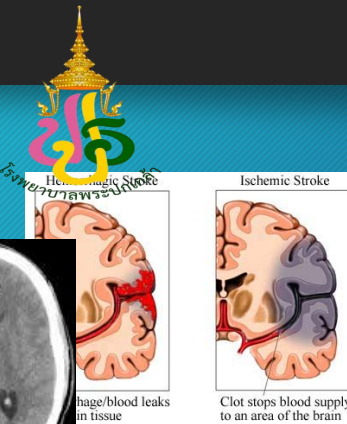
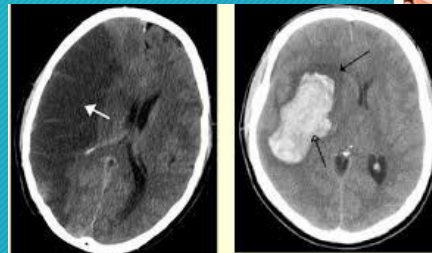


Working process

• Suspected stroke



• Confirmed stroke



• Enrolled new case

- HosXP
- New Dx I600-I699



• Reviewed diagnosis

- PPK 11
- Confirmed I600-I699, +/- CT

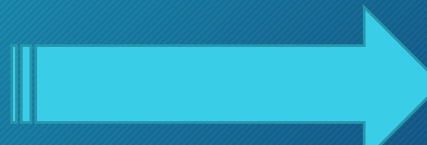
• included case



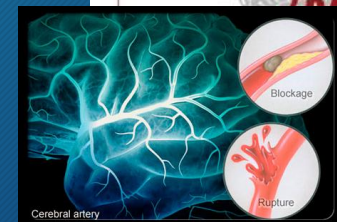
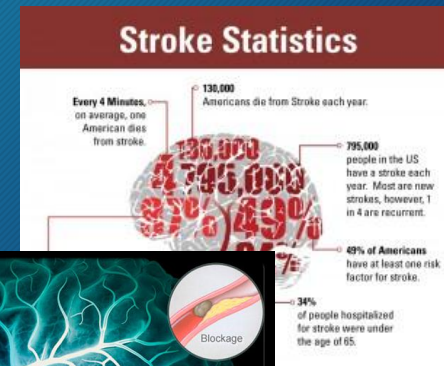
• Excluded case

• Reviewed risk factors

• Pooled data



• Analysed data



Results

N 2557 = 152
N 2558 = 214

N 2557 = 77
N 2558 = 126

• Enrolled new case → • Reviewed

• included case

• Reviewed risk factors



• Pooled data

N 2557 = 75

N 2558 = 88

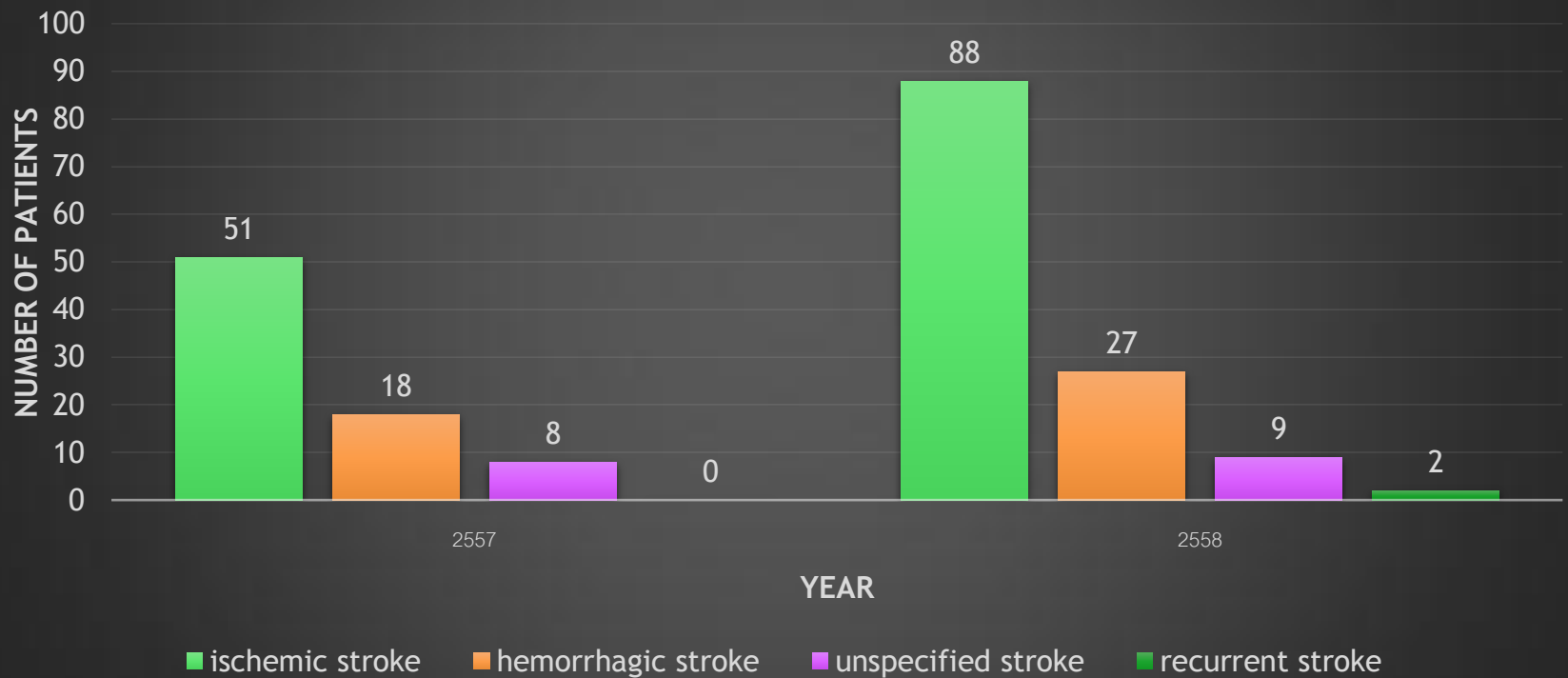
Not found	66	Not found	75
hypokalemia	1	TIA	3
Cord compression	1	infective myositis	1
MI	1	cataract	1
trauma	2	Dermatitis	1
CHF	1	myalgia	1
Thyrotoxicosis pp	1	headache	1
epilepsy	1	bell palsy	1
Cataract	1	MI	1
		GBS	1
		others	2

results

Year	female	male	total	Age (mean, SD)
2557	34	43	77	60.84, 13.71
2558	60	66	126	62.84, 13.40

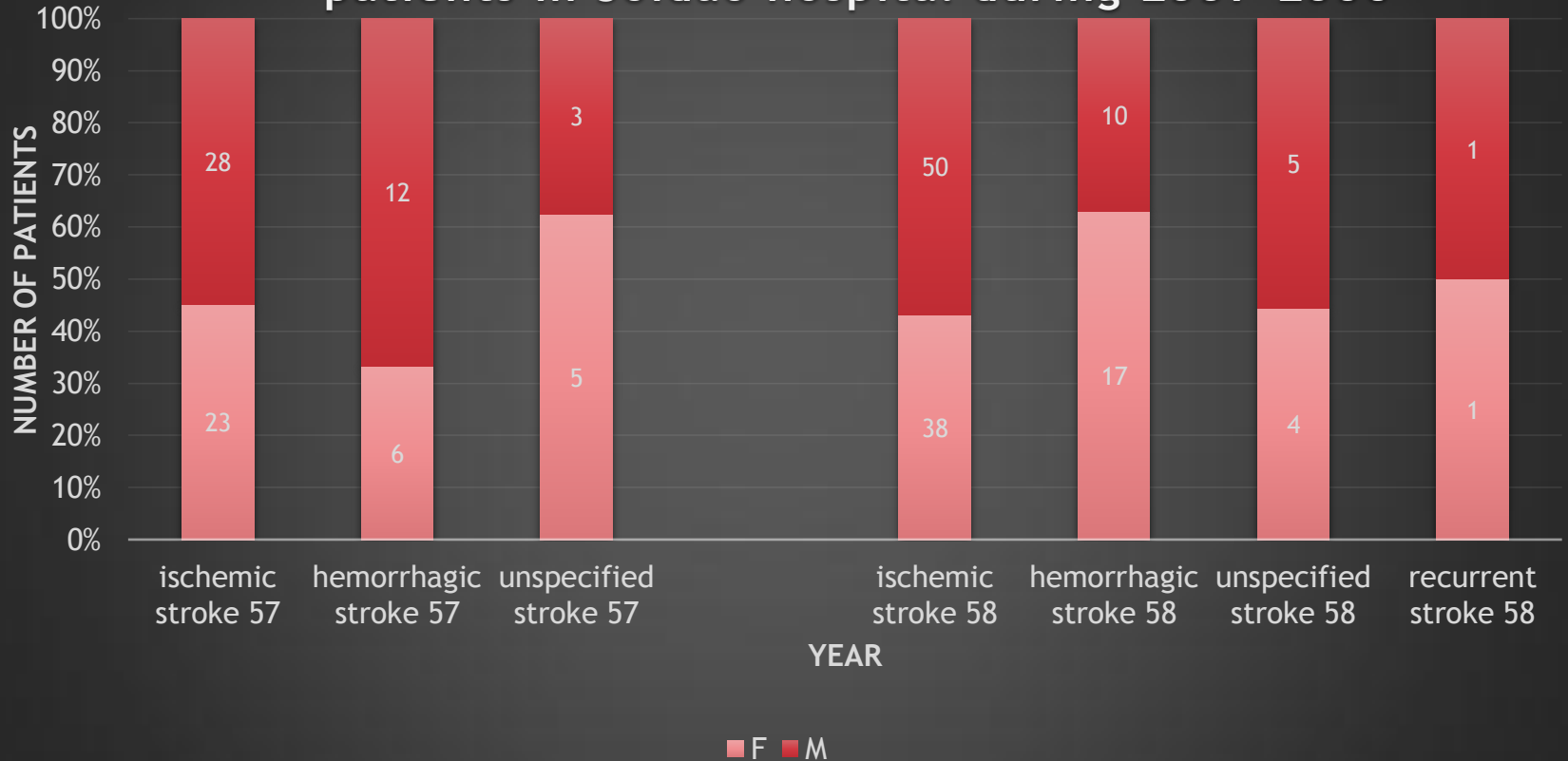
Results

The etiological distribution of stroke among patients in Soidao hospital during 2557-2558



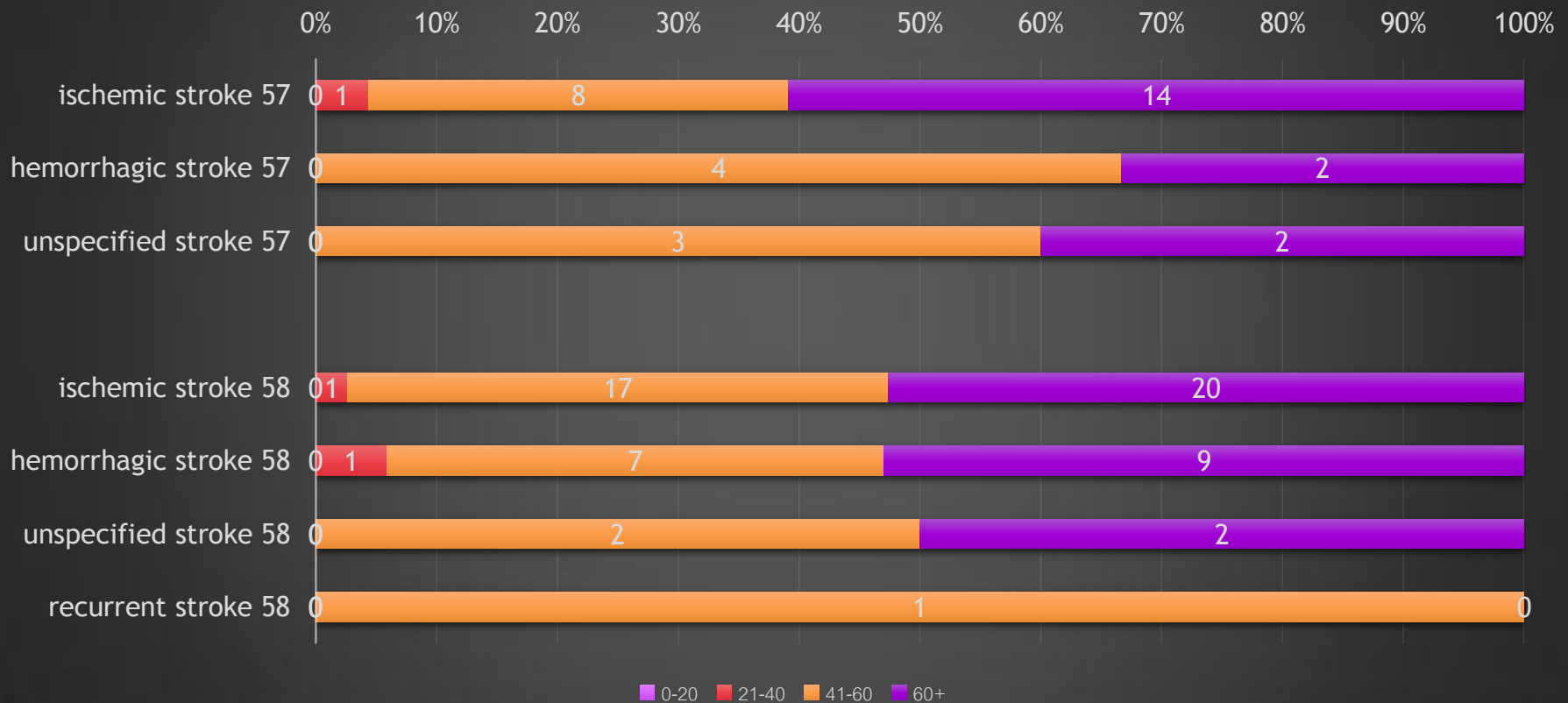
Results

The sex distribution of stroke among patients in Soidao hospital during 2557-2558



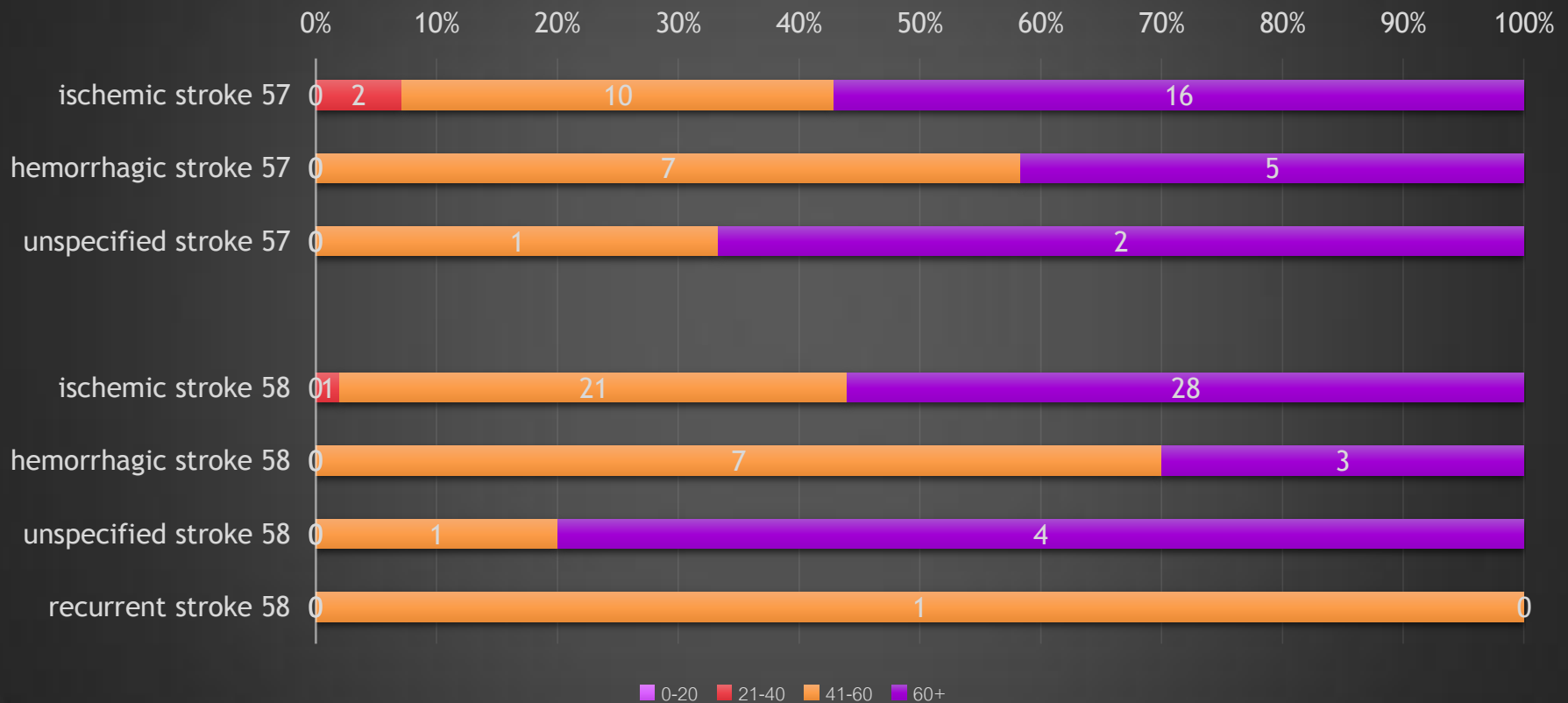
Results

The age distribution of stroke among female patients in Soidao hospital during 2557-2558



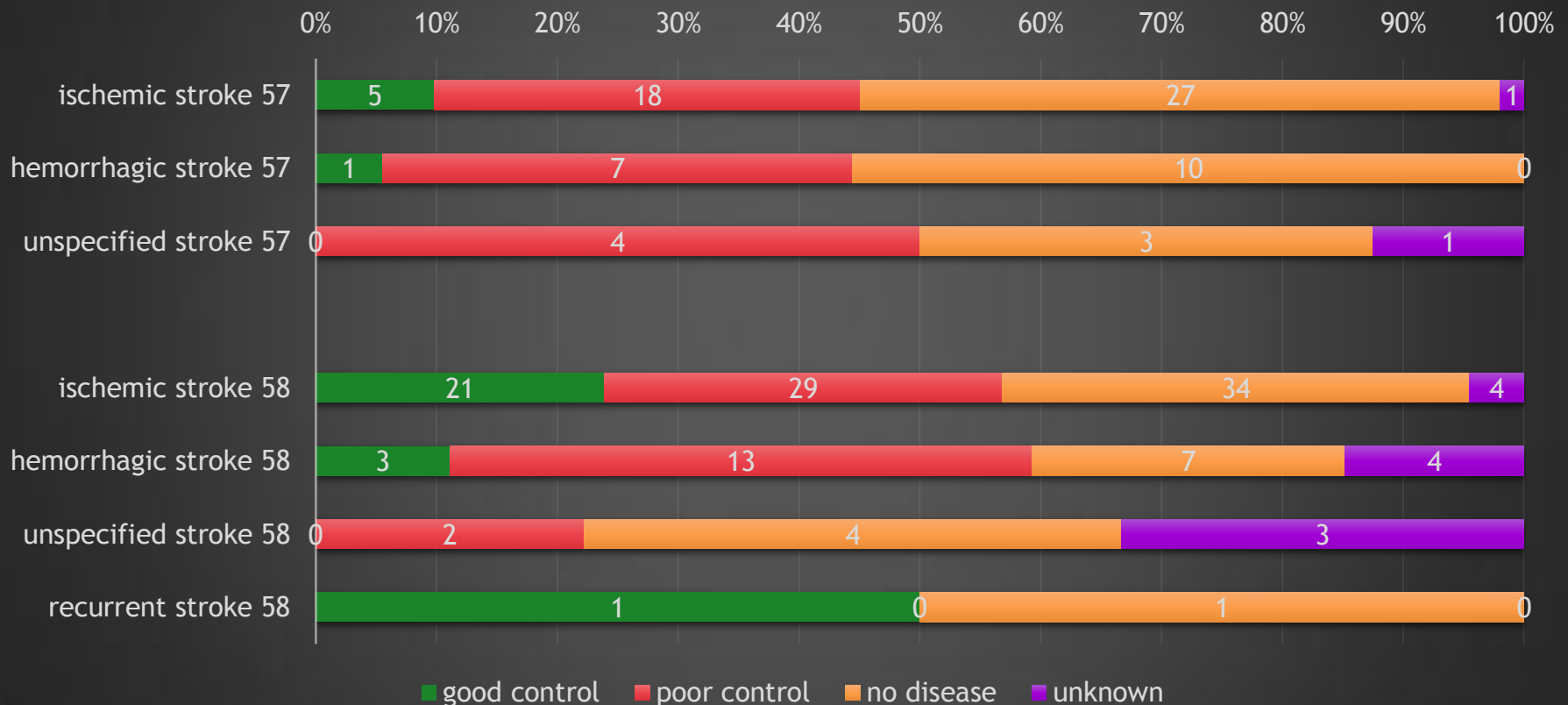
Results

The age distribution of stroke among male patients in Soidao hospital during 2557-2558



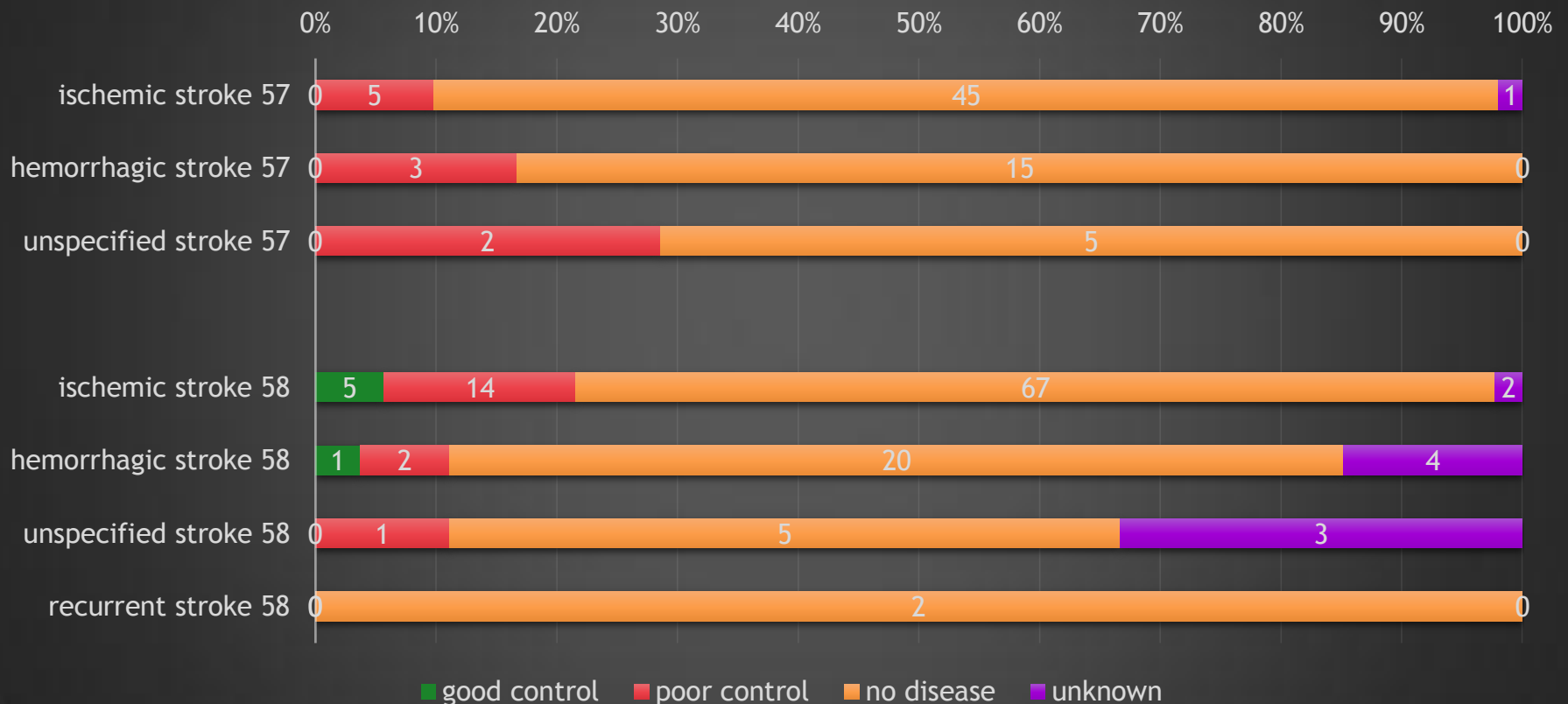
Results

the prevalence of hypertension for stroke among patients in Soidao hospital during 2557-2558



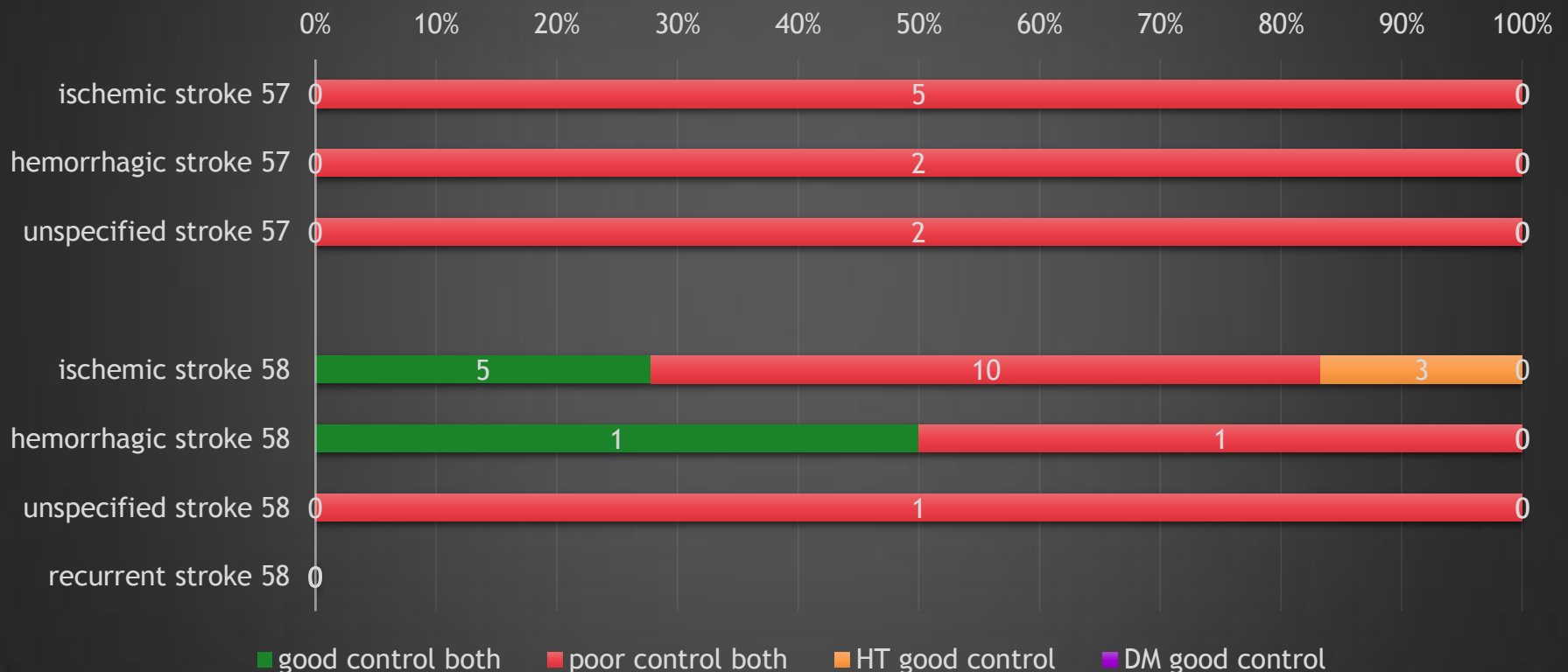
Results

the prevalence of diabetes for stroke among patients in Soidao hospital during 2557-2558



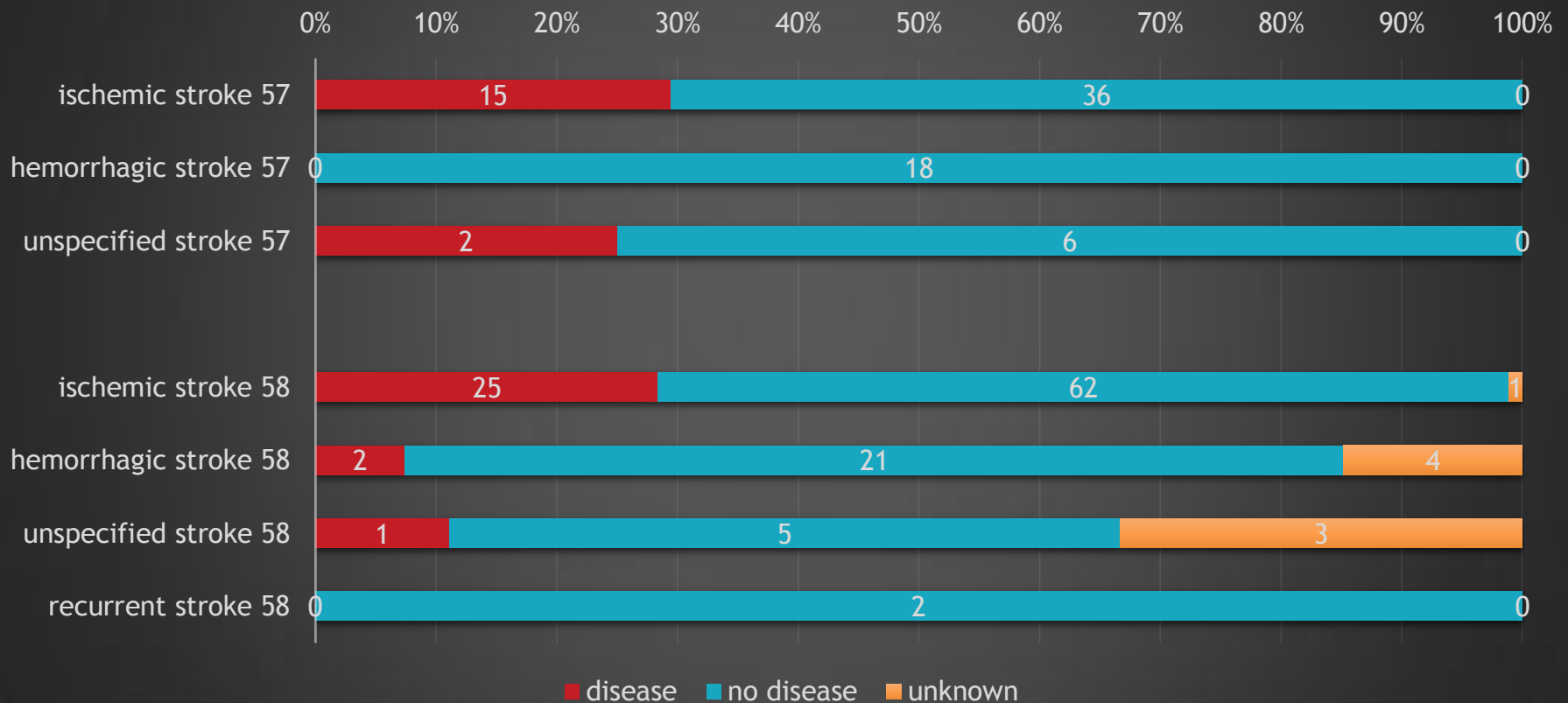
Results

the prevalence of both hypertension and diabetes for stroke among patients in Soidao hospital during 2557-2558



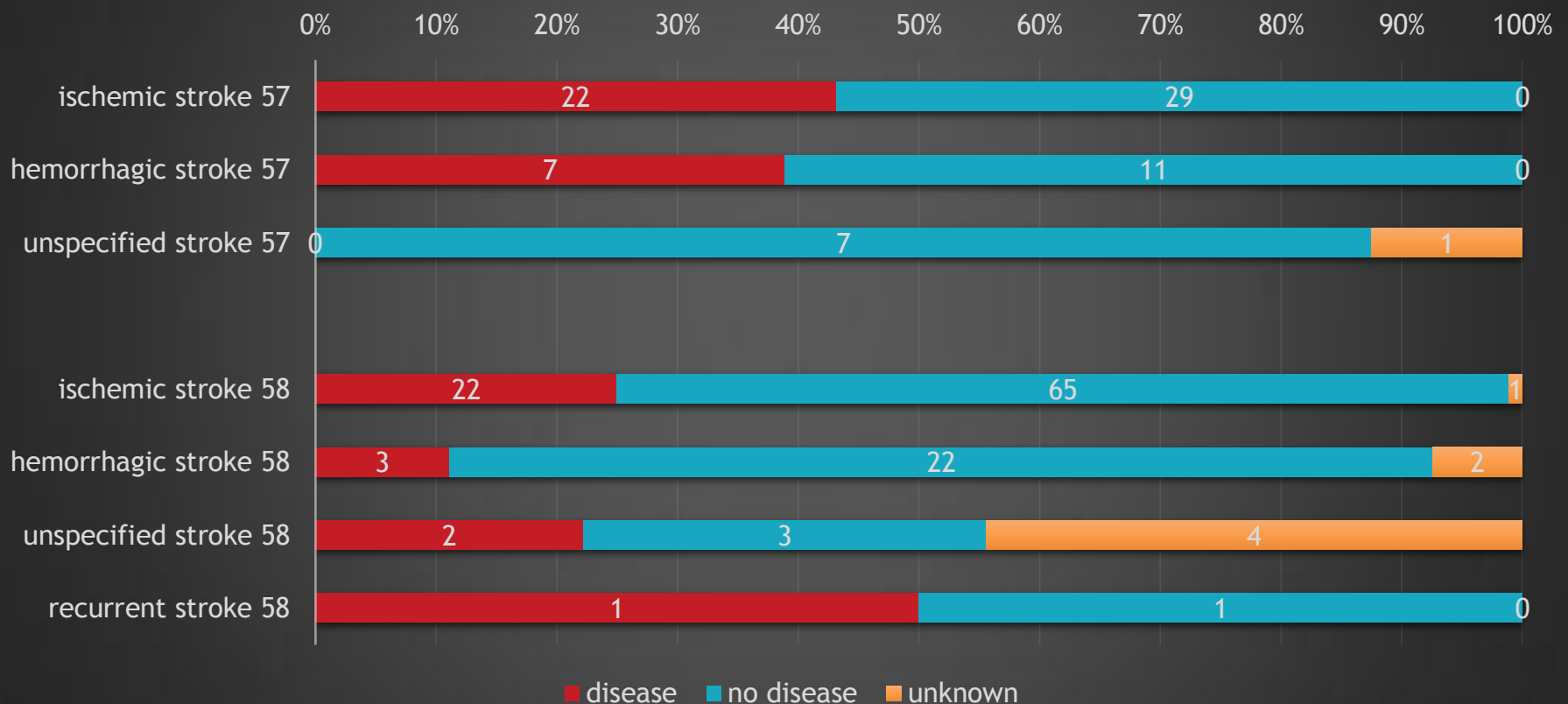
Results

the prevalence of dyslipidemia for stroke among patients in Soidao hospital during 2557-2558



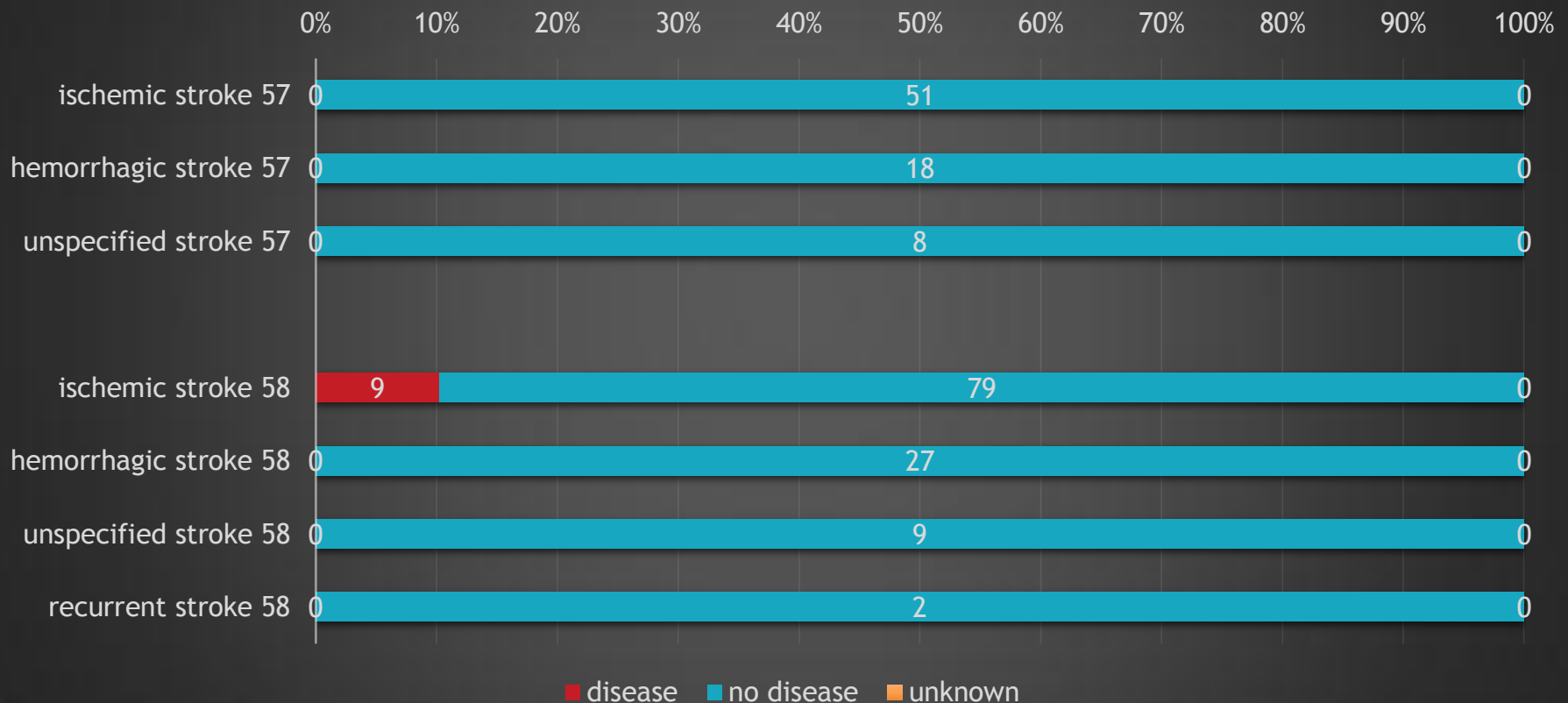
Results

the prevalence of smoking for stroke among patients in Soidao hospital during 2557-2558



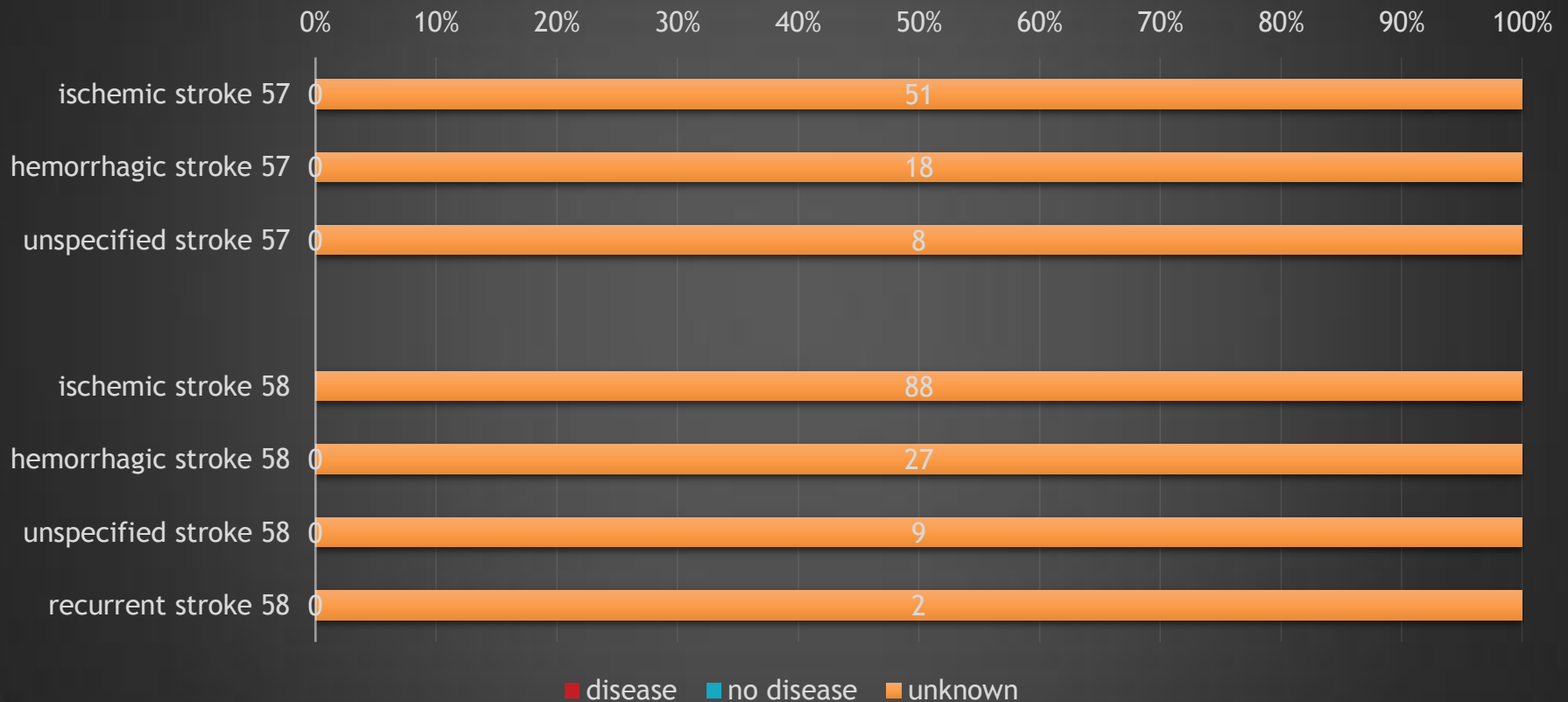
Results

the prevalence of atrial fibrillation for stroke among patients in Soidao hospital during 2557-2558



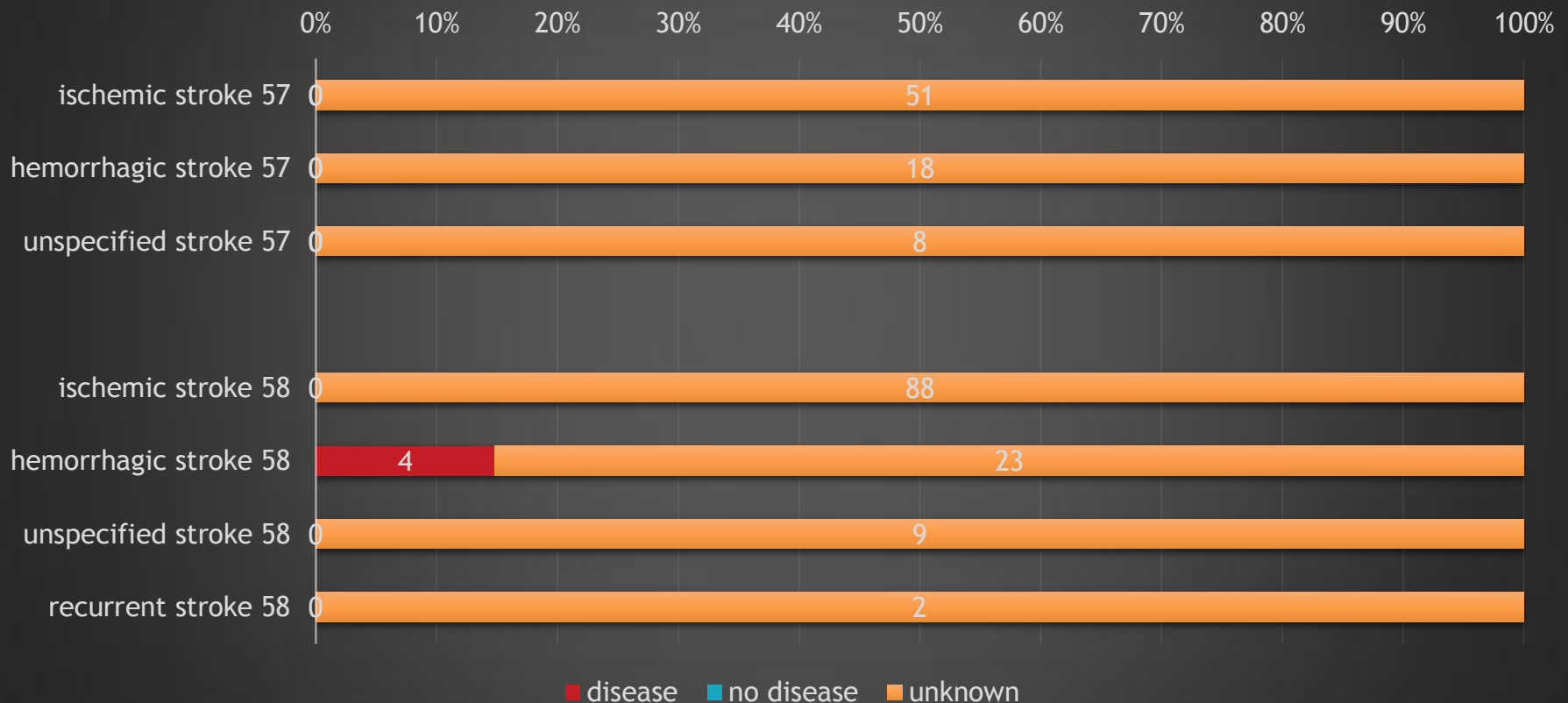
Results

the prevalence of carotid stenosis for stroke among patients in Soidao hospital during 2557-2558



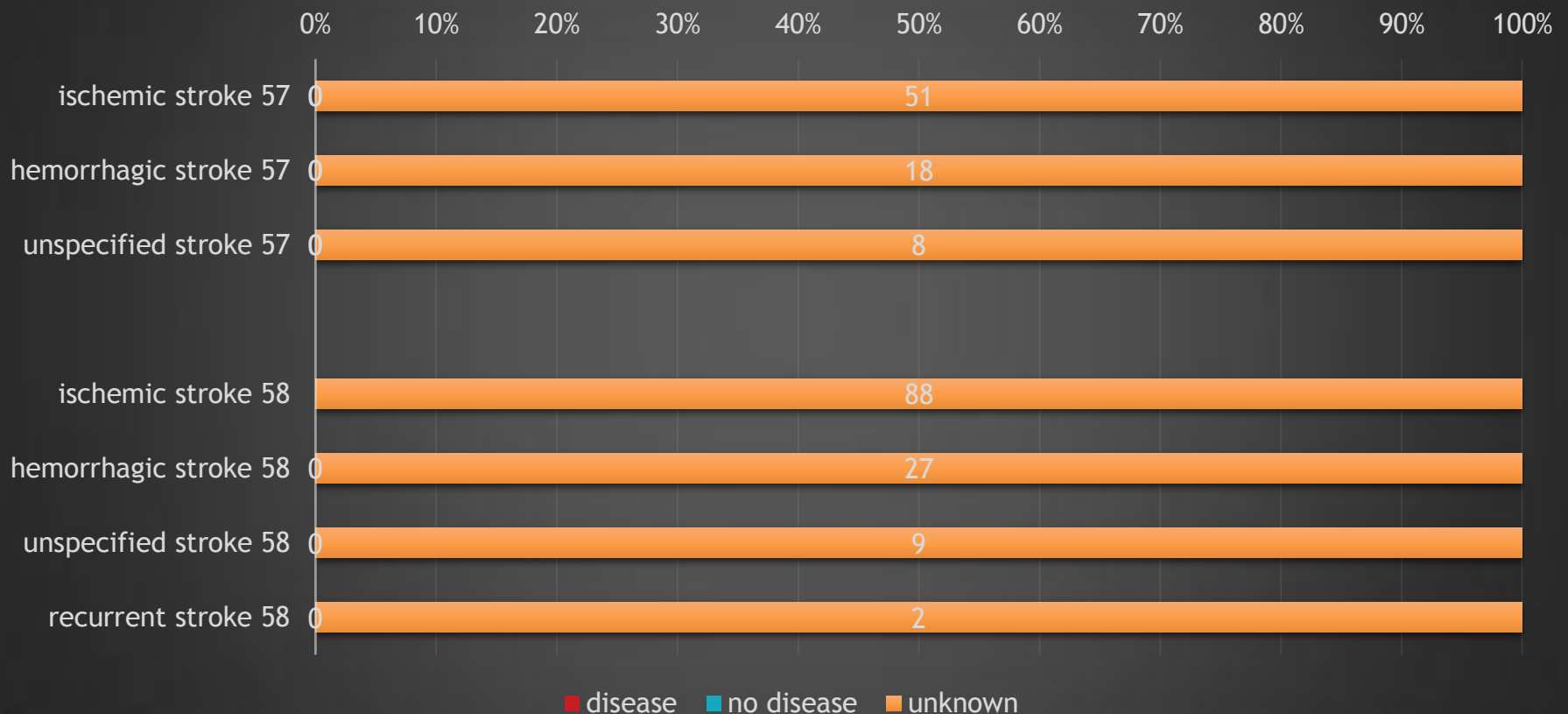
Results

the prevalence of angiopathy (eg. aneurysm) for stroke among patients in Soidao hospital during 2557-2558



Results

the prevalence of drug abuse (eg. Cocaine, amphetamine) for stroke among patients in Soidao hospital during 2557-2558



Discussion

- Descriptive study : retrospective study
 - Prevalence only
 - Population
 - No control group
- Analysis program
 - Excel 2013 based
 - 2 epidemiologists approved
 - Double checked : 2 methods -> countifs vs if- sum
 - Random human checked

Discussion

- Not found
 - Old stroke
 - Not referred
 - Not diagnosed -> blank ICD
 - Missed ?
 - Death?
- Etiology vs Location
 - Thrombosis, embolic, poor perfusion
 - MCA, subcortical, basal ganglion, interventricular
 - Clinician's factor

Discussion

- Refer out
 - I64 Stroke, not specified as haemorrhage or infarction
- Refer in
 - **I64 Stroke, not specified as haemorrhage or infarction**
 - I69.4 Sequelae of stroke, not specified as haemorrhage or infarction
 - **I61 Intracerebral haemorrhage**
 - I61.0 Intracerebral haemorrhage in hemisphere, subcortical
 - I61.5 Intracerebral haemorrhage, intraventricular
 - I61.9 Intracerebral haemorrhage, unspecified
 - **I63 Cerebral infarction**
 - I63.3 Cerebral infarction due to thrombosis of cerebral arteries
 - I63.4 Cerebral infarction due to embolism of cerebral arteries
 - I63.9 Cerebral infarction, unspecified

Discussion

- Unknown status
 - No screening
- No disease vs Good control/ well control
 - Free for disease
 - Long time ago
 - No time limited
- DLP

Limitations

- Study design
- Database : HosXp vs PPK 11
- Clinician's factor -> diagnosis
- Investigation -> underlying disease, risk factor
- Time limitation -> add control group

Suggestions

- Idealism
- Review CT scan
- Add control group -> case - control study



•THANK YOU