

Syncope and Falls in the Elderly

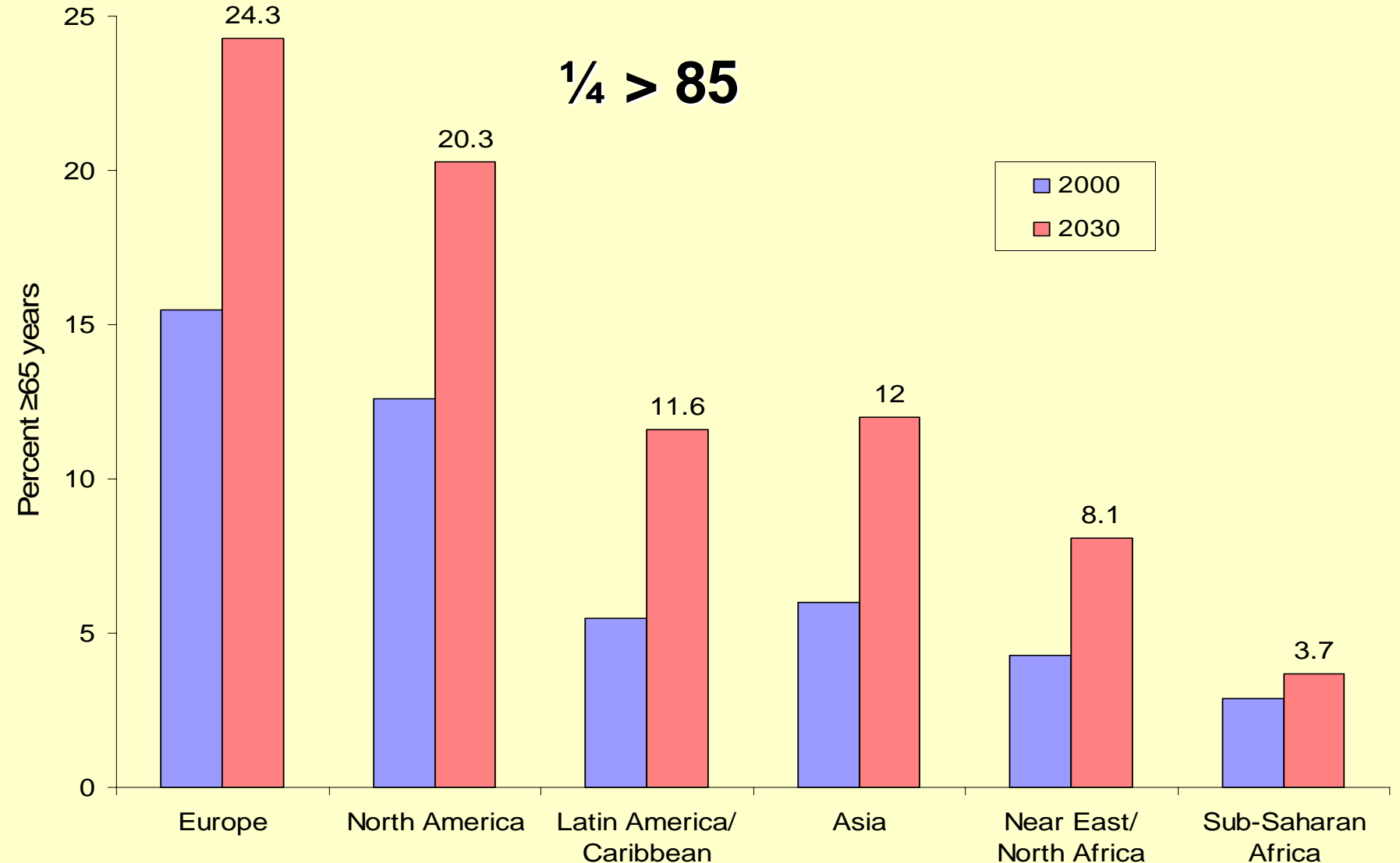
Professor Rose Anne Kenny
Trinity College,
Dublin
Ireland

Syncope and Falls in the Elderly

- Ageing demographics
- Why prevalence syncope high in elderly
- What's different about syncope in elderly
- Overlap between syncope and falls
- What are consequences of syncope

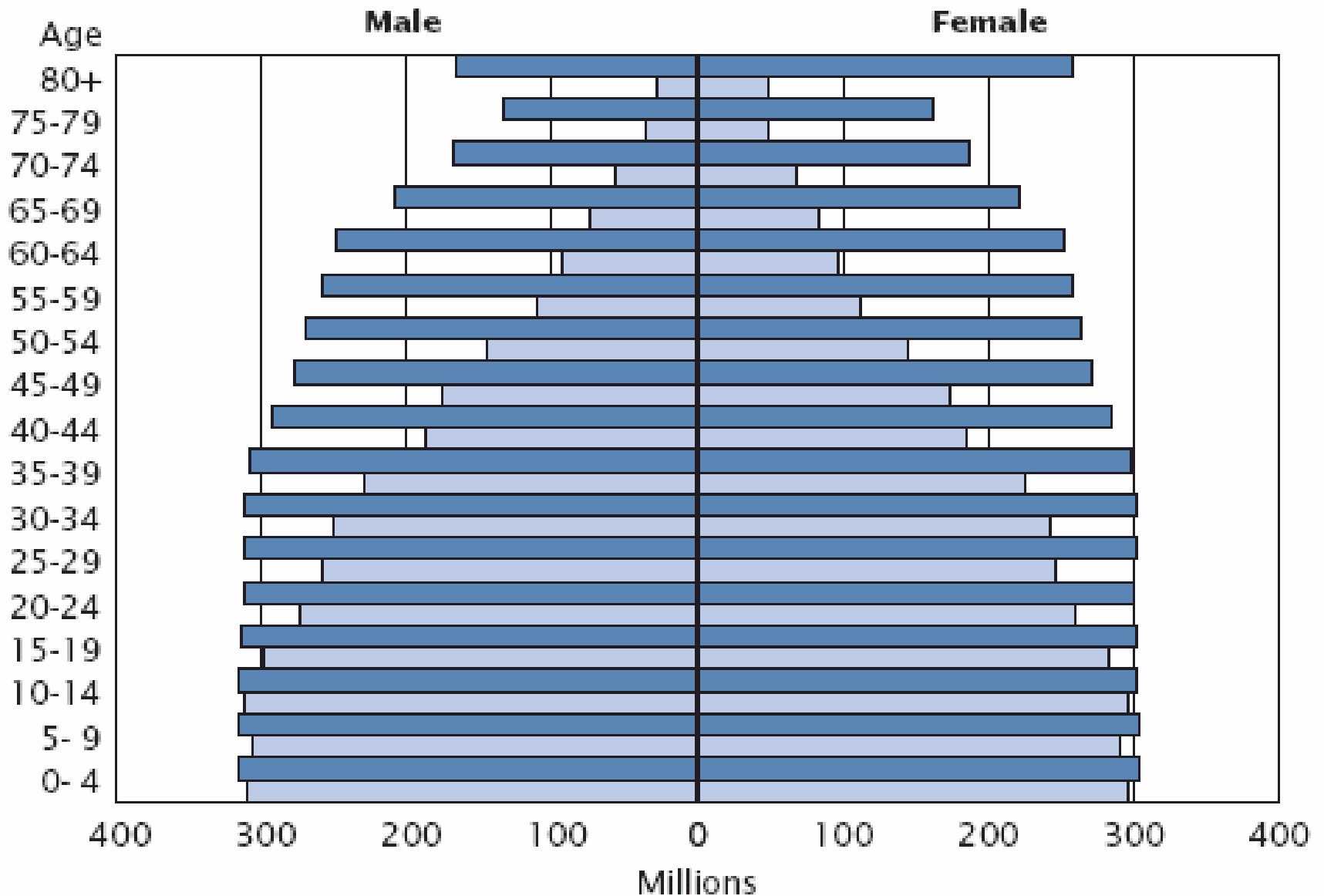
Percentage of population aged 65 years and older, 2000 and projected for 2030

$\frac{1}{4} > 85$



Global population will change markedly over the next 50 years.

2050
2002



Source: U.S. Census Bureau, International Programs Center, International Data Base.

Life expectancy in 2000 (Years)

Age	Male	Female
At birth	74	80
65 years	16	19
75 years	10	12
85 years	6	7

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Incidence

- Adults: 6.2 per 1000 person years
- 70-79 : 11 per 1000 person years
- > 80 19 per 1000 person years

Soteriades NEJM 2002

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Why more common in Ageing

- Age related physiology
- Comorbidity
- Medications
- Age related pathology- cardiac and neurodegeneration

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Age related Physiology:

- Baroreflex sensitivity
- Blood volume (xs Na renal wasting, renin-aldosterone, diuretics)
- Diastolic dysfunction
- Cerebral autoregulation
- Degeneration Cardiac Conduction Tissue

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Why more common in Ageing

Age related physiology

Comorbidity – cardiac, cerebral, locomotor

Medications – CV, psychotropics

Syncope and Falls in the Elderly

Causes >65

Secondary syncope facility- open access ER and GPs

OH – 30%

VVS- 30%

CSH- 20%

Arrhythmia-20%

More than one possible attributable cause

1/3

Alcock OShea 98

Syncope and Falls in the Elderly

Atypical presentations syncope

‘Syncope presenting as falls’

70% events > 70yrs unwitnessed,

No collateral history

Syncope and Falls in the Elderly

Recall inaccurate

- **cognitive impairment**
 - > 80s 40% cognitive impairment (memory)
 - 20% dementia
- **amnesia LOC (12% yng VVS, 30% old)**
 - ‘Syncope presenting as falls’**

Syncope and Falls in the Elderly

After 50 yrs

3% per year loss muscle strength

70- 74 yrs (Kings College London, 2002)

- 50% women, 15% men mount 30 cm step
- 80% women, 30% men 3 miles/hr 20min

Leads unstable gait and balance

Transient arrhythmias/low BP....falls

Syncope and Falls in the Elderly

Evidence association

1. Intervention trials for falls

Positive trial

no cognitive impairment

- Multifactorial (Close 1999, Davison& Kenny 2004)
- Single CICSHE (SAFEPACE1 2001)

Negative trial

Cognitive Impairment or dementia

- Multifactorial (Shaw&Kenny BMJ 2002)
- Single CICSHE (SAFEPACE2 subm)

Early Intervention

Syncope and Falls in the Elderly

Cardiovascular disorders presenting with Falls

- ***Carotid Sinus Hypersensitivity***
- ***Orthostatic hypotension***
- Vasovagal syncope
- Sick Sinus Syndrome
- Atrioventricular Block
- Ventricular Tachycardia / fibrillation

no	31 cases SSS/AVB	50 case control	p
Age	77	77	ns
Risk factors falls (>1)	60%	64%	ns
IHD	32%	76%	0.06
Fallers	39%	18%	0.06
Falls	134	12	0.01
Syncope Pats	42%	8%	<0.001
Syncope	185	8	<0.001
		Seifer Amer J Ger Card 02	

Syncope and Falls in the Elderly

Consequences of Falls and syncope in Elderly

- Injury
- Confidence
- Institutionalisation
- Cognitive impairment

Syncope and Falls in the Elderly

Injury

- 60% >70s recurrent syncope - fracture
- 25% fractures - hip (McIntosh 1993)
- Hip fractures - 45% previous level independence
- 20% 1 year mortality

Poor protective reflexes, osteoporosis

Syncope and Falls in the Elderly

Confidence / Institutionalization

In Europe falls are cited as principal reason for admissions to long term care in 40%

Syncope and Falls in the Elderly

Cognitive function

- 1504 CSH attributable falls/syncope
- 78 years
- 6 +/- 2 yrs follow up
- Comparison 350 community controls

AFTs, CSM supine / upright, detailed cognitive assessments

Hampton in press
Kerr Arch Intern Med 06

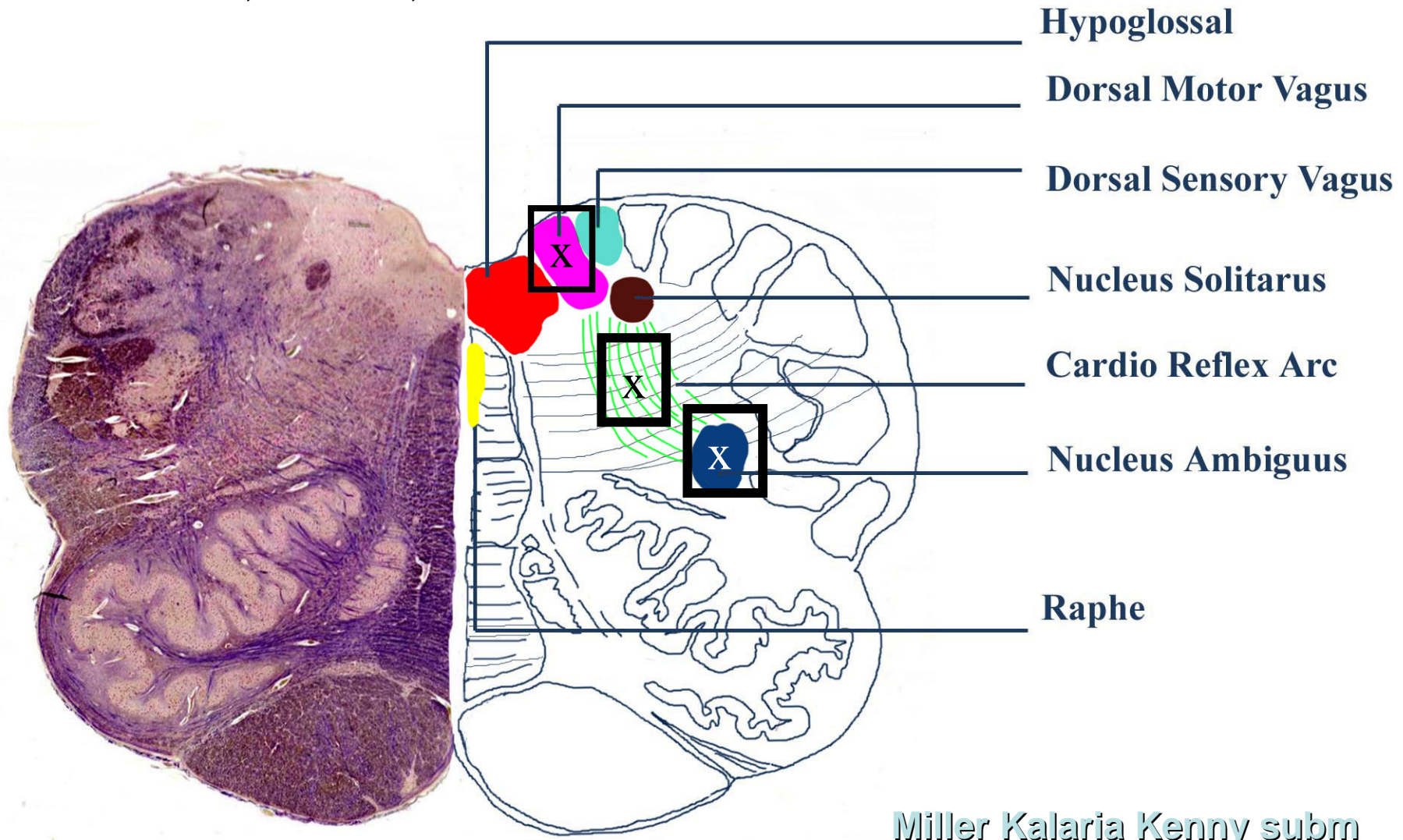
	CSH	Case Controls	P value Corrected CVRF, age, sex, residence
Dementia	14%	1%	0.000
Cognitive impairment – no Dementia	16%	4%	0.000
	30%	5%	

Hampton Kenny in press

Logistic regression of MMSE<24 on CSS, age, CVRF

	OR	95% CI	
Age	1.097	1.06 - 1.48	
CSH	4.395	1.50 - 12.8	
AF	1.180	0.61 - 2.29	
CVA	1.200	0.72 - 1.99	
HT	0.805	0.50 - 1.30	
IHD	0.749	0.46 - 1.22	
DM	1.133	0.48 - 2.65	

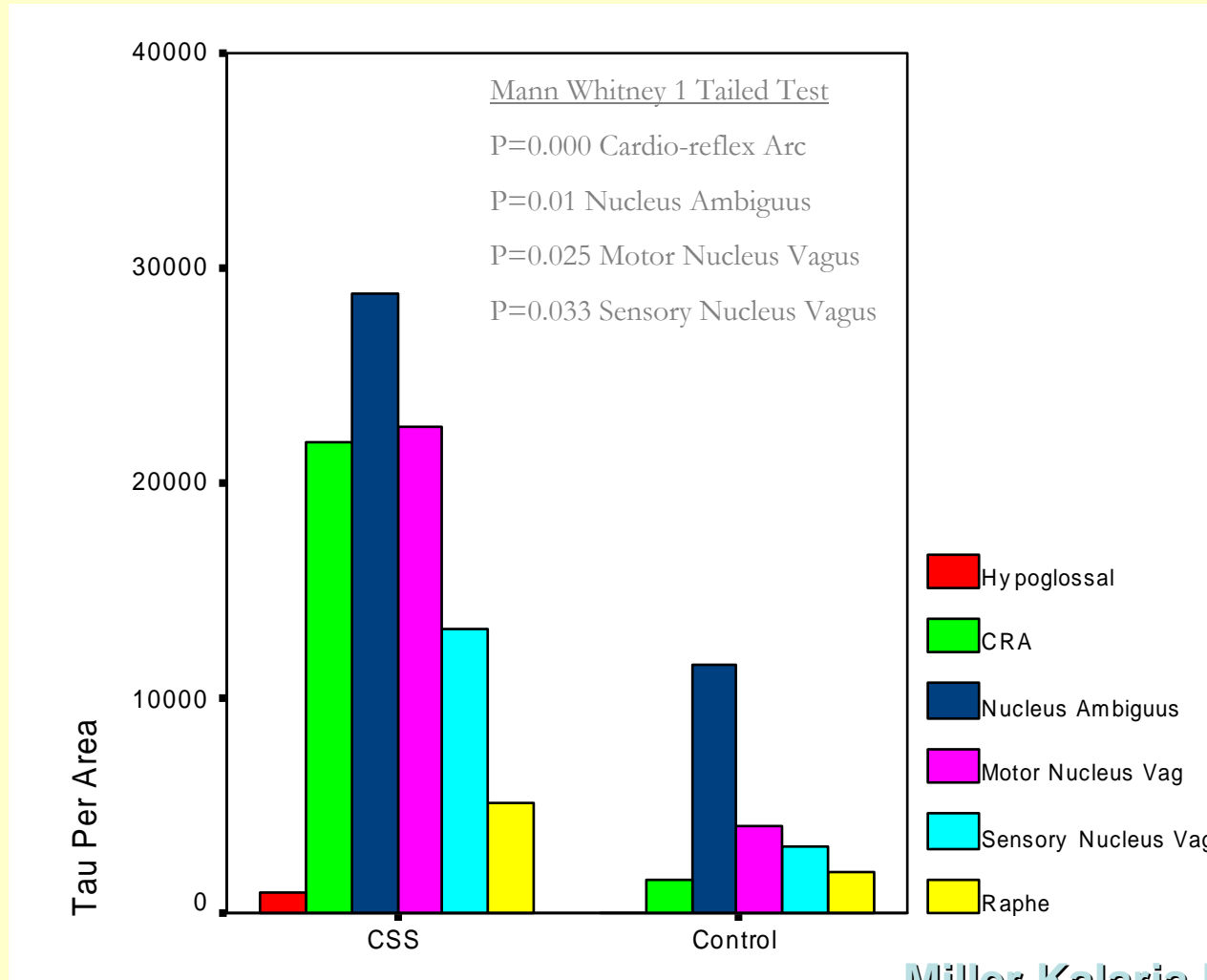
N=29 CSH, 13 OH, 11 controls



Miller Kalaria Kenny subm

Density TAU PROTEIN

NS Independent Braak
Staging Dementia



Miller Kalaria Kenny subm

Neuropathological abnormalities in 2 Syncope conditions-CSH,OH

Neurodegeneration

watershed
lesions

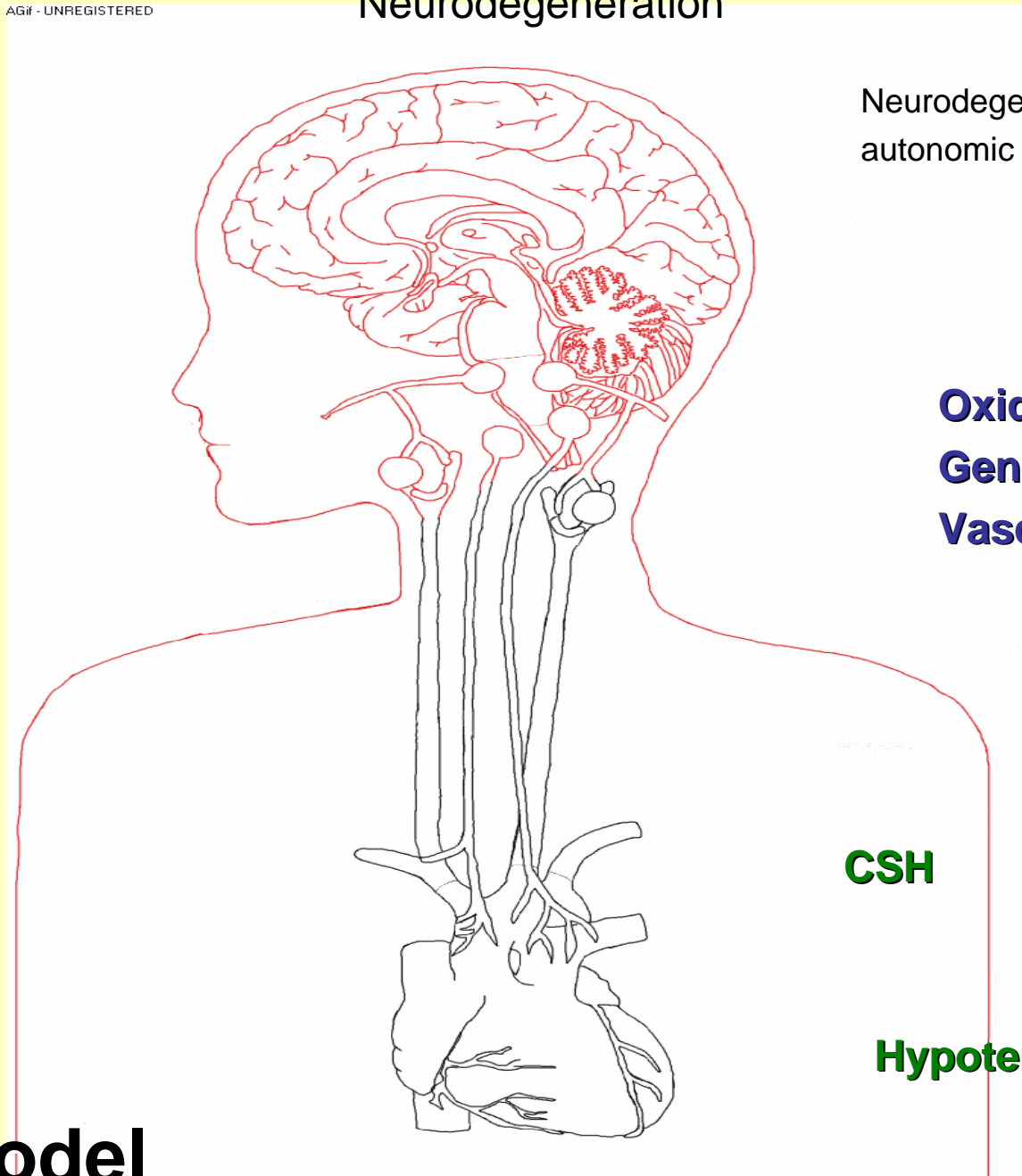
Neurodegeneration in key
autonomic nuclei in brainstem

Oxidative stress
Genetic
Vascular insult

CSH

Hypotension

CSH Model



Syncope and Falls in the Elderly

Summary

- Common- demographics
- Injuries
- More than one possible cause
- Atypical presentation
- Association cognitive impairment- ?cause
- Early intervention
- Prevent cognitive impairment and dementia

CSH/OH in community

persons > 65 - unselected representative
community sample

Subsample with no prior falls, syncope or
dizziness

	subsample
• CSH (39%)	(35%)
• CICS (6%)	(7%)
• OH (40%)	(38%)

Symptoms with CSH

Subsample

Symptoms

40%

36%

Syncope

42%

40%

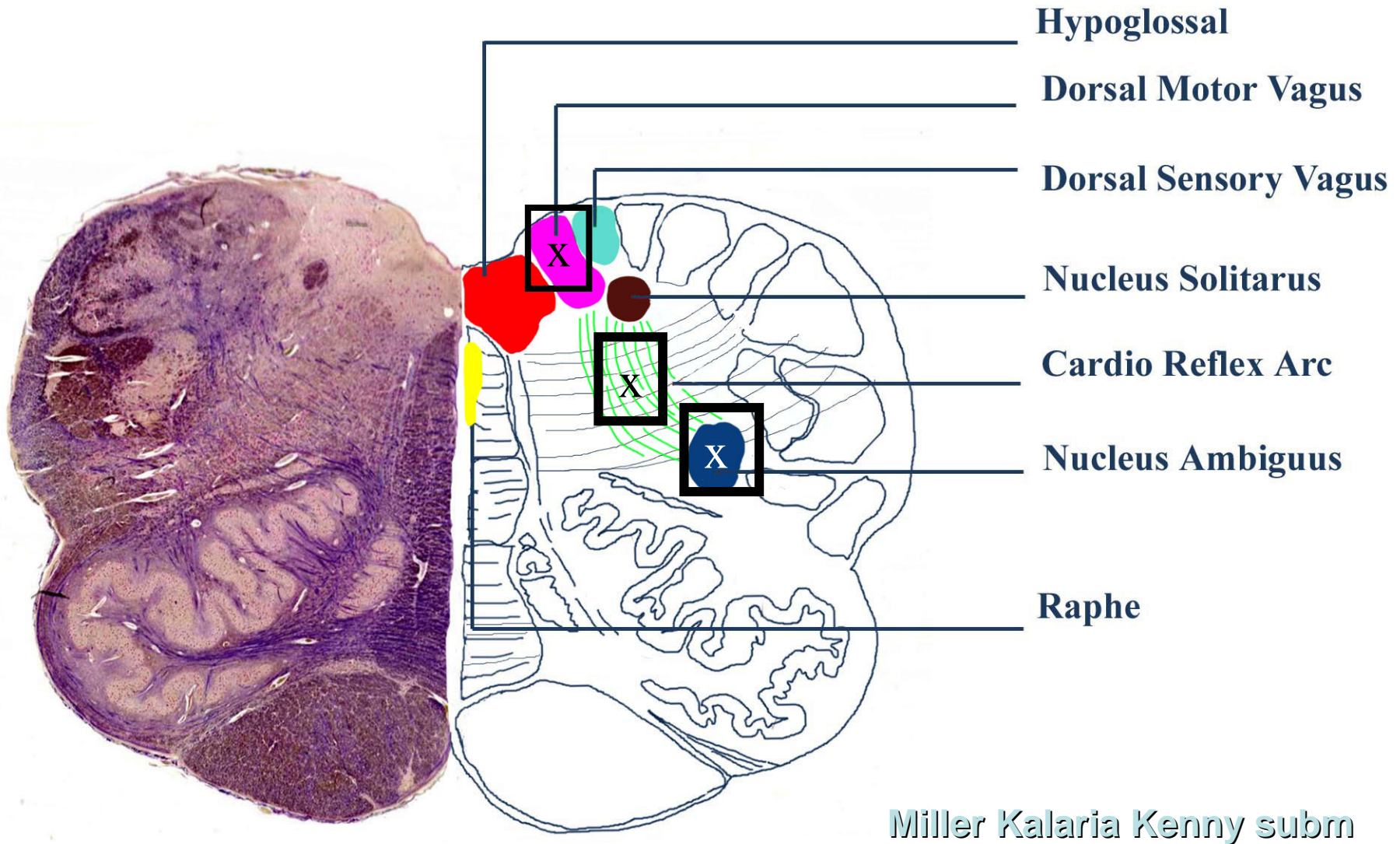
Presyncope/Dizziness

58%

60%

? Conversion to symptomatic CSH

N=29 CSS



Proximity to Brain Stem Reticular Formation