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What is the evidence for stroke units?

Professor Dominique Cadilhac

Stroke and Ageing Research, School of Clinical Sciences at Monash Health, Monash University

@DominiqueCad

Background

Cochrane review of RCTs prove SU care is effective[1]

- 28 trials, 5855 participants comparing SU care with alternative care
- Patients who received care in a SU were less likely to be dead or dependent at 12 months post stroke compared to medical ward care (OR 0.79, 95% CI 0.68, 0.90)
    - 57 fewer dead or dependent per 1000 patients with stroke
- Benefits of SU care apparent regardless of stroke type, severity, age or gender

but these trial data are now old…

Estimates from real world settings are relevant (e.g AuSCR and national audit)

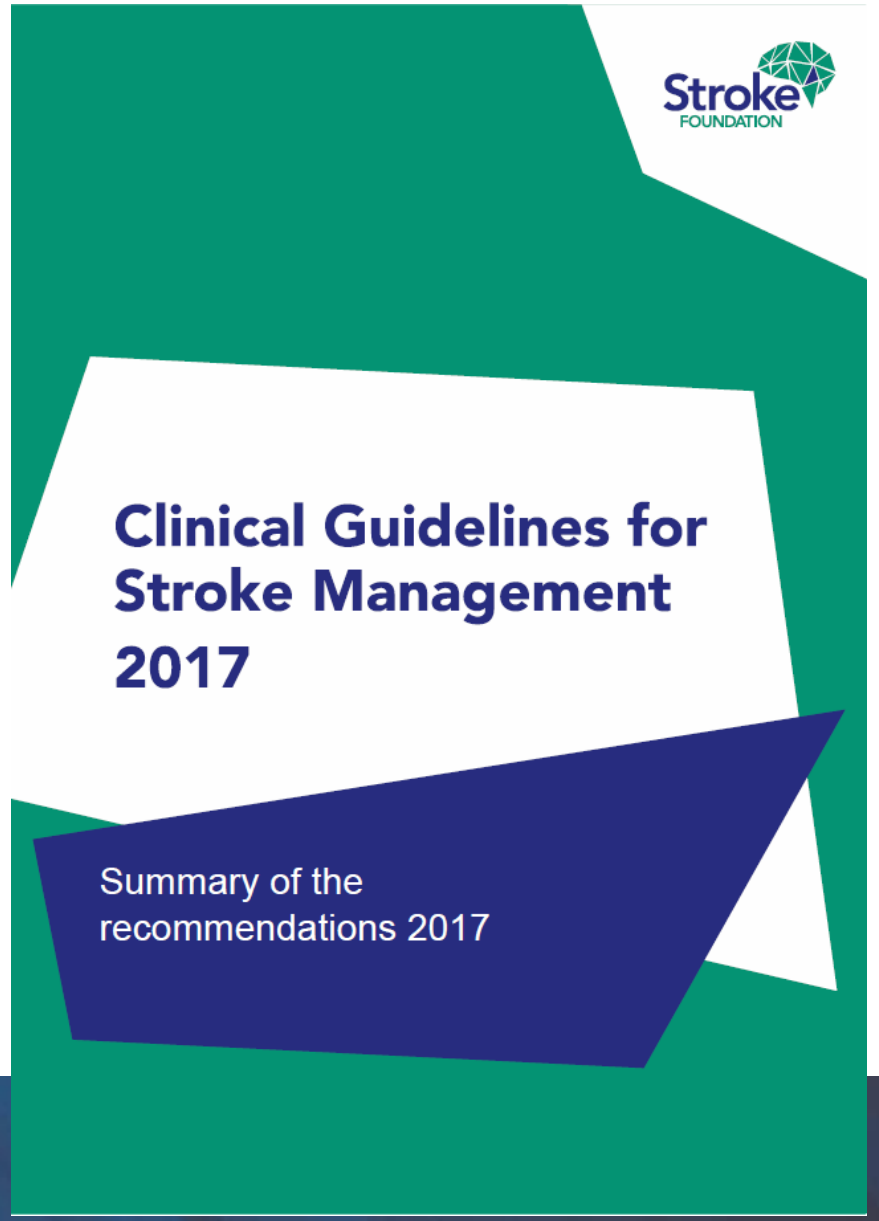
1. Stroke Unit Trialists' Collaboration, *Cochrane Database of Systematic Reviews.* 2013

Clinical guidelines

"All patients with stroke should be admitted to hospital and be treated in a stroke unit with an interdisciplinary team"

SU criteria (Acute Services Framework)[2]

- Co-located beds within geographically defined unit
- Dedicated, interprofessional team with special interest in stroke &/or rehabilitation
- Interprofessional team meet at least once per week to discuss patient care
- Regular programs of staff education and training relating to stroke



2. Australian National Acute Stroke Services Framework 2015

Clinical guidelines

- Evidence from Australia that SU care is cost-effective when compared to care on a general ward
  - $16372 per patient with severe complications avoided over 28 weeks (Australia)[3]
  - $1288 per DALY avoided over lifetime (Australia)[4]
  - $6747 per QALY gained over lifetime (New Zealand)[5]

- Well within the usual willingness-to-pay thresholds

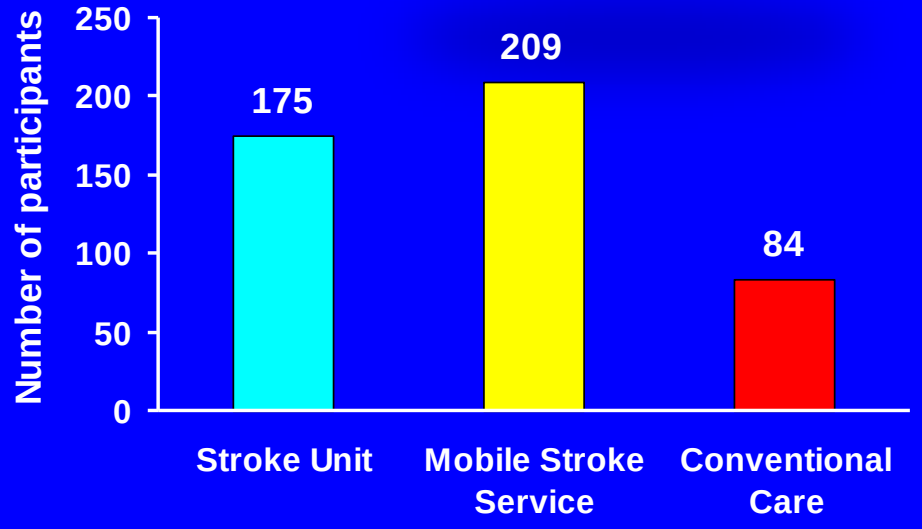
3. Moodie et al, *Stroke*. 2006; 4. Mihalopoulos et al*, Int J Technol Assess Health Care*. 2005; 5. Te Ao et al, *International Journal of Stroke.* 2012

SCOPES

Stroke Care Outcomes Providing Effective Services

- First Australian evaluation examining the quality of stroke care and service integration between acute and post acute settings
- 8 metropolitan hospitals
- 468 participants with ischaemic or ICH stroke admitted within 3 days of onset

- Funding: Victorian State Government and Stroke Foundation to inform thinking about stroke service systems
- Project: 1998-2000
- Further funding: 2 year follow-up



Why greater adherence to important

TABLE 3. Patient Level Adherence to Applicable Processes of Care by Stroke Service

	Stroke Unit (n=175)	Mobile Service (n=209)	Conventional Care (n=84)	*P**
Overall adherence				
i/n	1491/2001	1559/2391	483/921	SU *vs* MS <0.001
%	75	65	52	SU *vs* CC <0.001
Adherence category†				
Thorough (n-I ≤1)	59 (34%)	27 (13%)	3 (4%)	<0.001
Complete (n-I ≤0)	19 (11%)	11 (5%)	0 (0%)	0.003

n indicates number of applicable PoC; i, number of PoC adhered to; MS, mobile service; CC,

Conclusion—Adherence to key PoC was higher in SUs than in other models. For all patients, adherence to PoC was associated with improved mortality at discharge and trends found with independence at home, providing support for the need to increase access to stroke units. **(*Stroke*. 2004;35:1035-1040.)**

Does improving care make a difference?

Processes of care- PoC

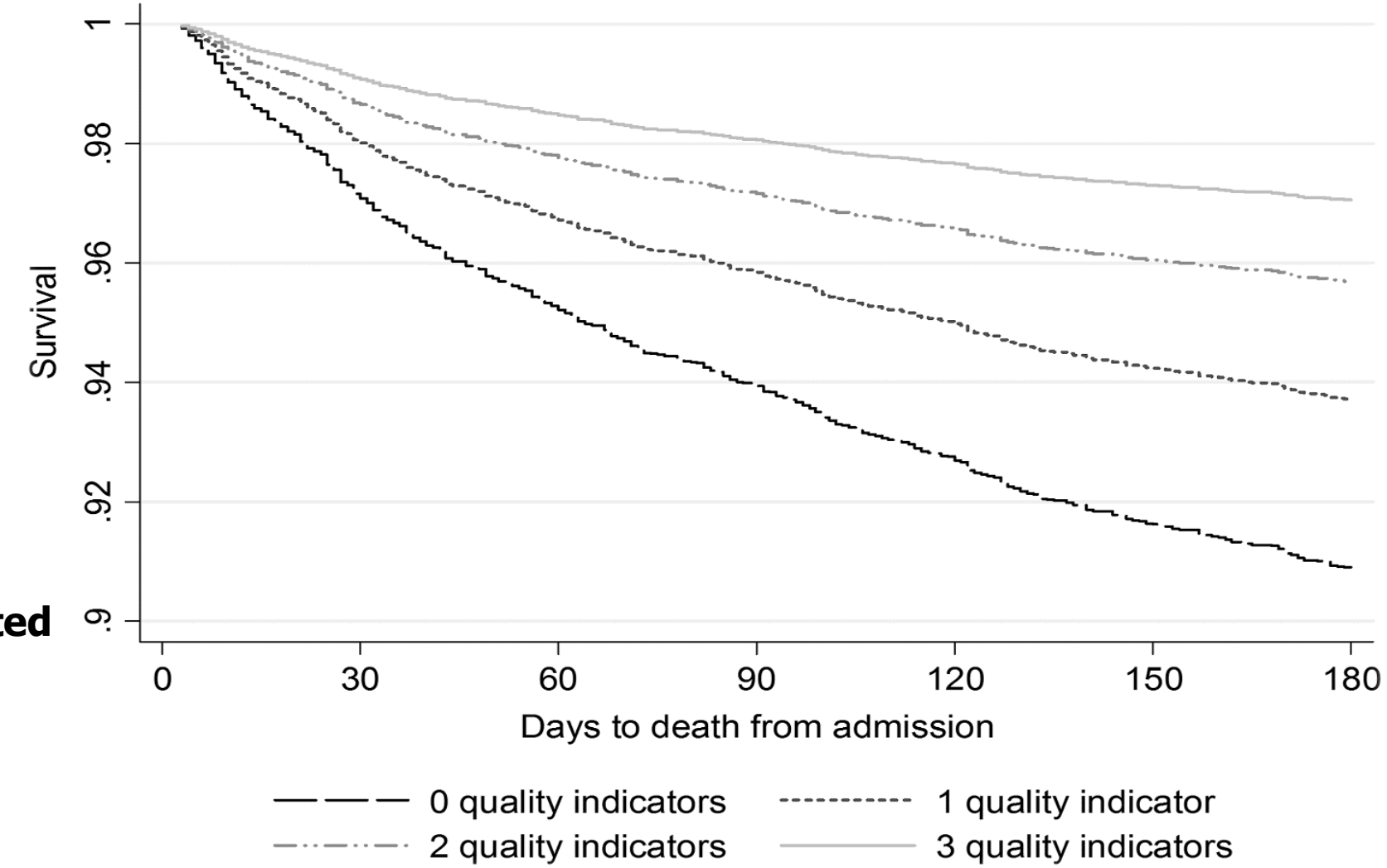
- Access to SU
- Antihypertensives on D/C
- Discharge care plan

Within 180 days (if received all PoC)

70% reduced hazard of death

18-point increase in quality-of-life (QOL)

SU care most strongly associated with greater survival and QOL improvements



Cadilhac DA et al, Stroke.2017

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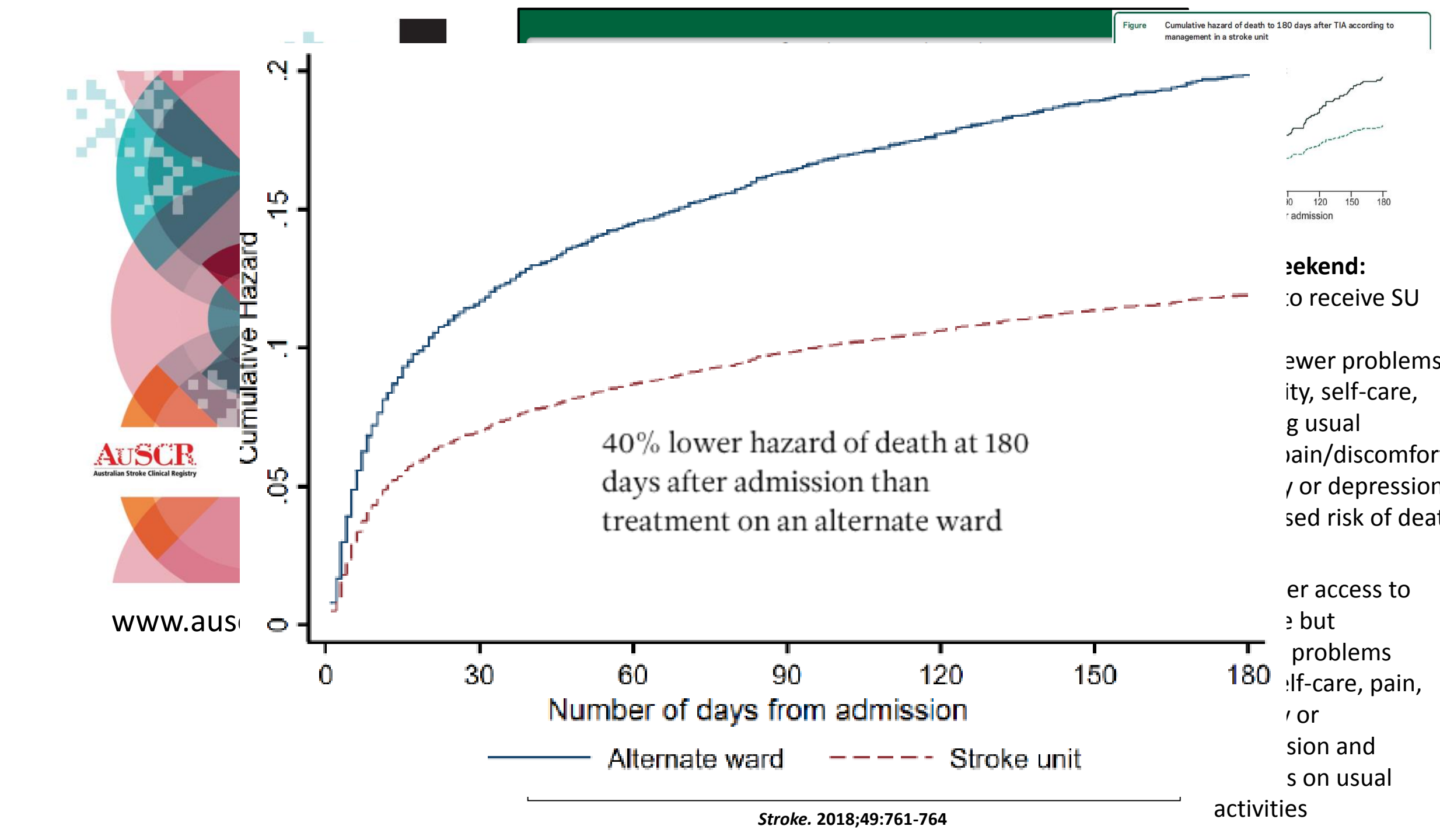

***Stroke.* 2018;49:761-764**

Neuro
-epidemiology

Original Paper

Treatment and Outcomes of Working Aged Adults with Stroke: Results from a National Prospective Registry

Lannin N.A.[a,b] · Anderson C.S.[c,d] · Kim J.[e,f] · Kilkenny M.[e,f] · Bernhardt J.[f] · Levi C.[g] · Dewey H.M.[h] · Bladin C.[f,h] · Hand P.[i] · Castley H.[j] · Hill K.[k] · Faux S.[l] · Grimley R.[m] · Grabsch B.[f] · Middleton S.[j,n] · Donnan G.[f] · Cadilhac D.A.[e,f]
Author affiliations

Keywords: Stroke · Young adult · Registries · Stroke registries

Neuroepidemiology 2017;49:113–120

No difference in SU access for younger vs ≥ 65 years

Younger patients had a 74% greater odds of having lower HRQoL compared to an equivalent aged-matched general population (adjusted OR 1.74, 95% CI 1.56-1.93)

Self-reported anxiety/depression at 90-180 day follow-up

- 48% of patients aged 18-64 years
- 47% of patients aged 65+ years
- 13% greater odds of anxiety/depression after adjustment

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Journal of Stroke and Cerebrovascular Diseases 2019

Outcomes for Patients With In-Hospital Stroke: A Multicenter Study From the Australian Stroke Clinical Registry (AuSCR)

Dominique A. Cadilhac, PhD,*,†,[1] Monique F. Kilkenny, PhD,*,†,[1]
Natasha A. Lannin, PhD,‡,§ Helen M. Dewey, PhD,‖ Christopher R. Levi, MBBS,¶
Kelvin Hill, BAppSc,** Brenda Grabsch, BSW,† Rohan Grimley, MBBS,*,††
David Blacker, MBBS,‡‡ Amanda G. Thrift, PhD,* Sandy Middleton, PhD,§§
Craig S. Anderson, PhD,‖ ‖,¶¶ and Geoffrey A. Donnan, MD†,
On behalf of the Australian Stroke Clinical Registry Consortium

Reduced hazard of death at 7 and 30 days if treated in a SU compared to those who did not receive SU care

AuSCR
Australian Stroke Clinical Registry

Is time on the SU also important?

BMJ Open;8:e022536.doi:10.1136/bmjopen-2018-022536

90% of time on a SU is a relevant indicator of the quality of stroke care:

- **better patient outcomes including shorter length of stay, fewer severe complications and less discharges to aged care.**

Factors associated with spending 90% of time on the SU:

- **early transfer to the SU, having at least 10 beds on the SU, and a stroke coordinator.**

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Stroke unit care nationally and in Victoria. The current state

Professor Dominique Cadilhac

Stroke and Ageing Research, School of Clinical Sciences at Monash Health, Monash University

@DominiqueCad

National access to stroke units

In 2017, 75% hospitals in Australia reported having an acute SU

Does you hospital have a stroke unit	Yes N=95 n (%)	No N=32 n (%)
National Acute Stroke Services Framework Criteria for SU		
1. Co-located beds within a geographically defined unit	95 (100)	6 (19)
2. Dedicated, interprofessional team with members who have a special interest in stroke	95 (100)	16 (50)
3. Interprofessional team meets at least once per week to discuss patient care	88 (93)	25 (78)
4. Regular programs of staff education and training related to stroke	89 (94)	15 (47)
Meet all criteria from Framework	**82 (86)**	**3 (9)**

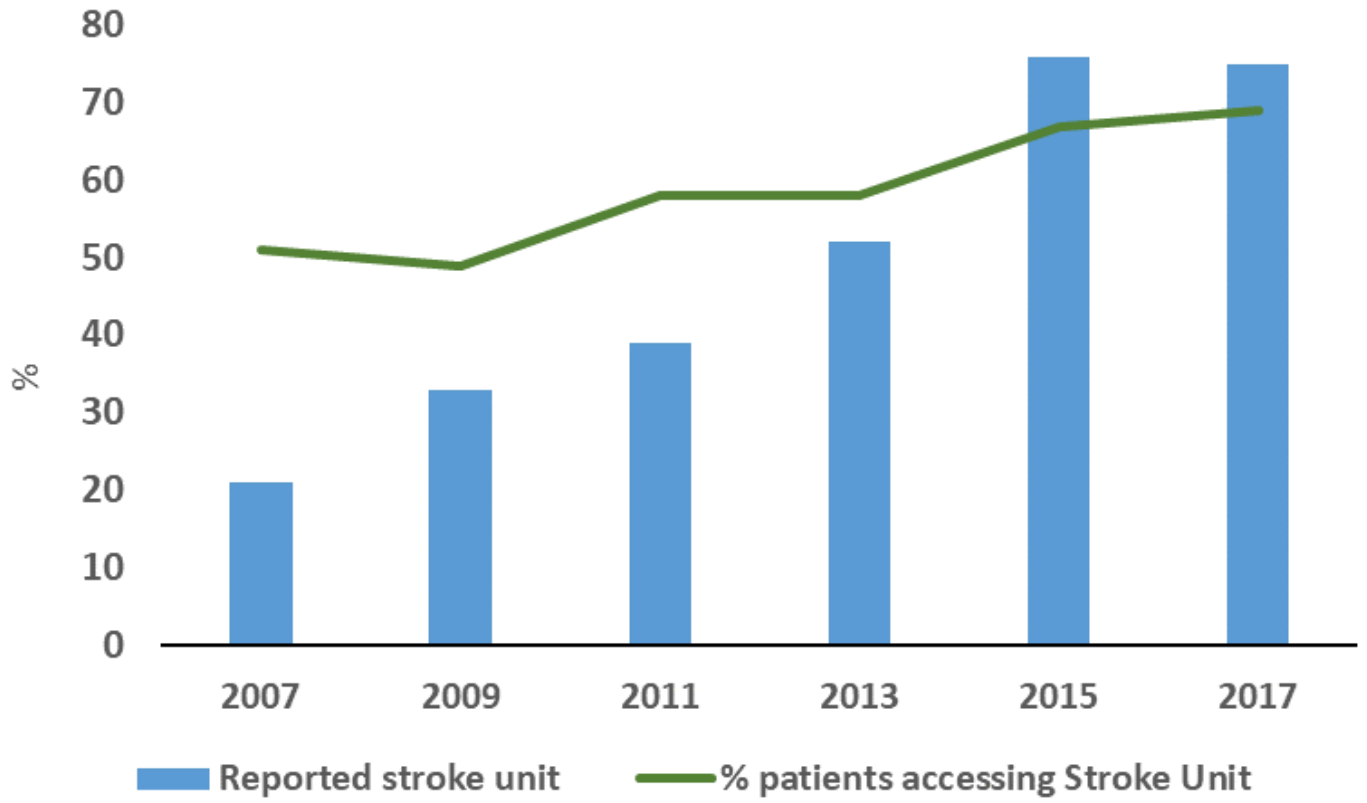
A total of 69% of patients accessed the SU in 2017

Access to stroke units in Victoria

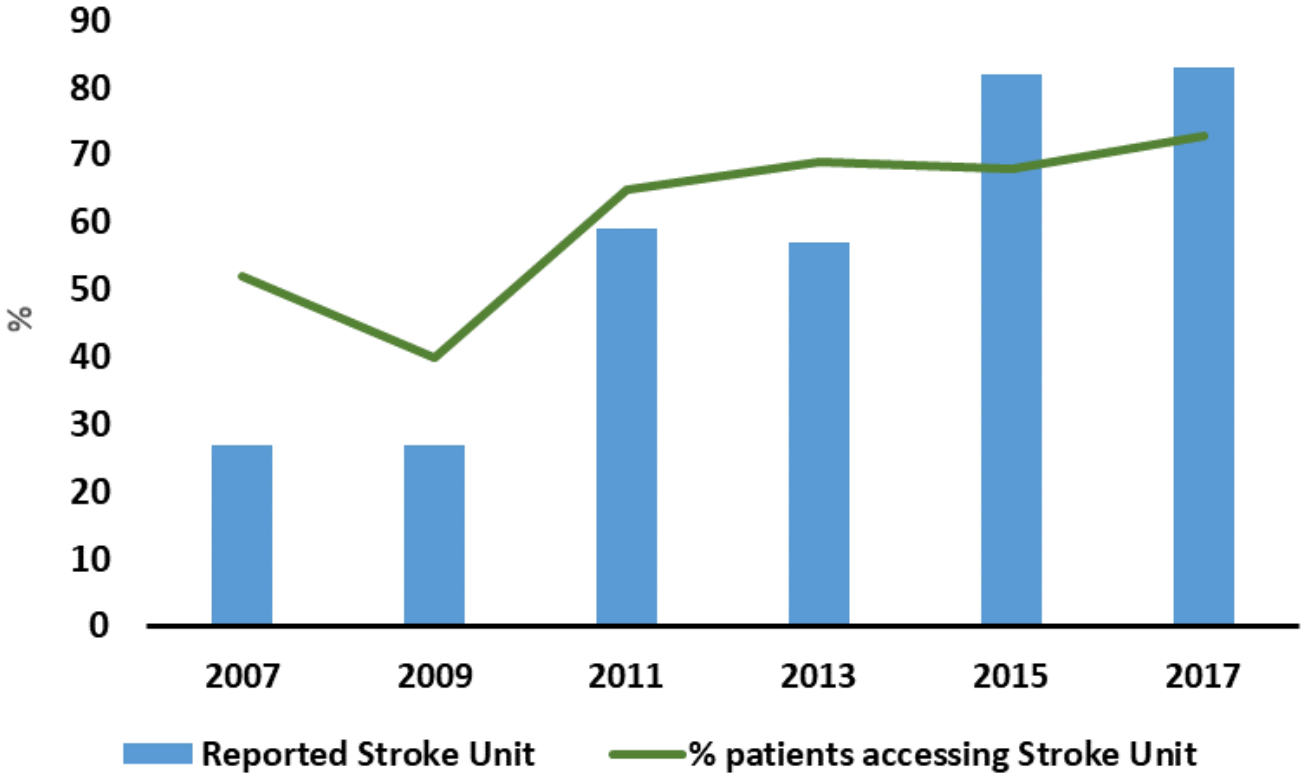
Does you hospital have a stroke unit	Yes N=25 n (%)	No N=5 n (%)
National Acute Stroke Services Framework Criteria for SU		
1. Co-located beds within a geographically defined unit	25 (100)	1 (20)
2. Dedicated, interprofessional team with members who have a special interest in stroke	25 (100)	2 (40)
3. Interprofessional team meets at least once per week to discuss patient care	21 (84)	4 (80)
4. Regular programs of staff education and training related to stroke	23 (92)	2 (40)
Meet all criteria from Framework	19 (76)	1 (20)

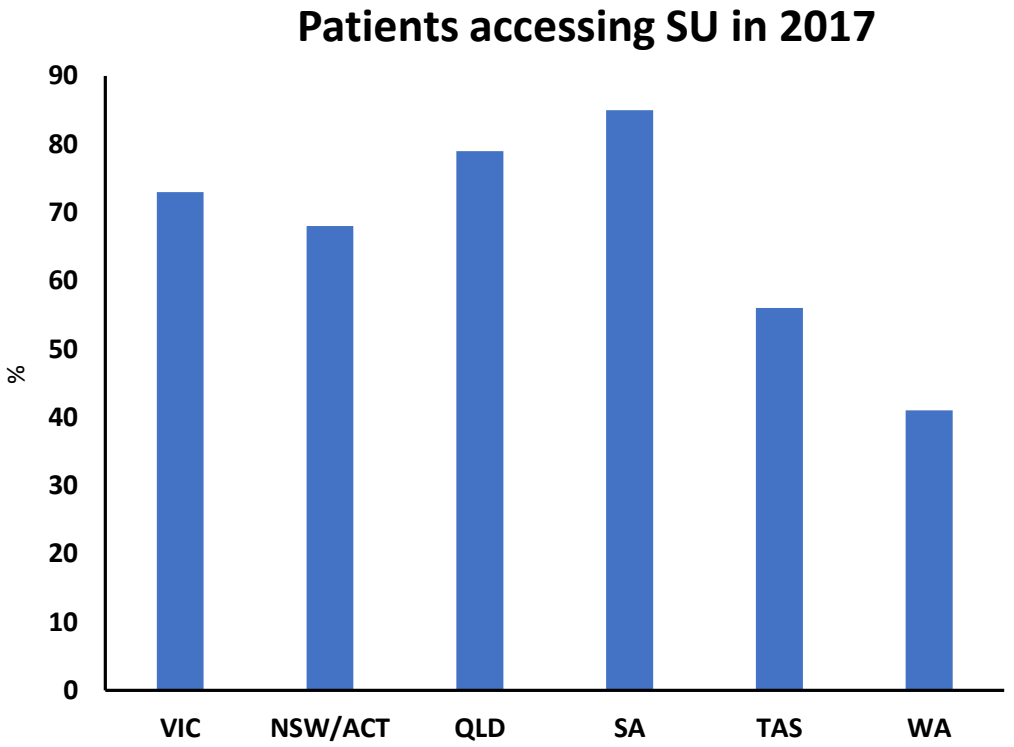
In Victoria, 73% of patients accessed the SU in 2017

Has stroke unit access changed over time

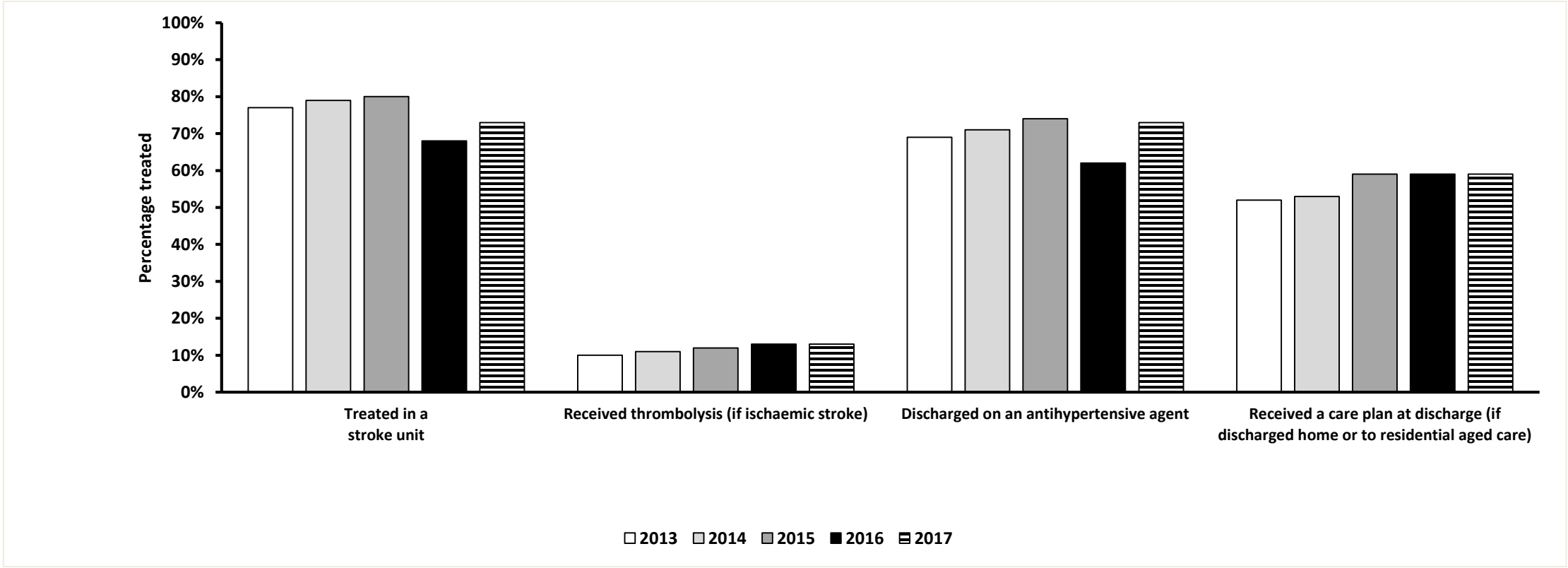


Stroke unit access in Victoria





Trends over time



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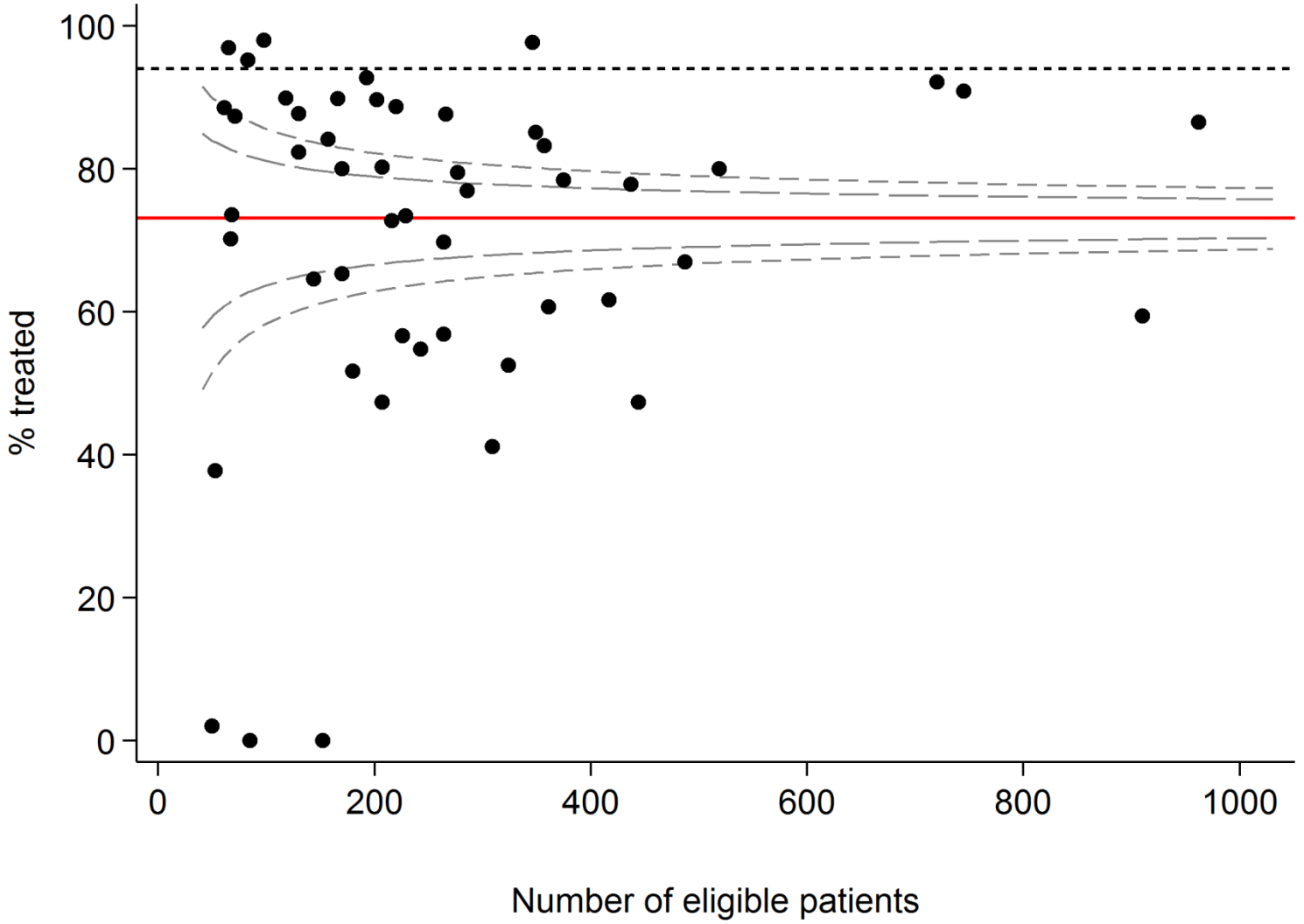
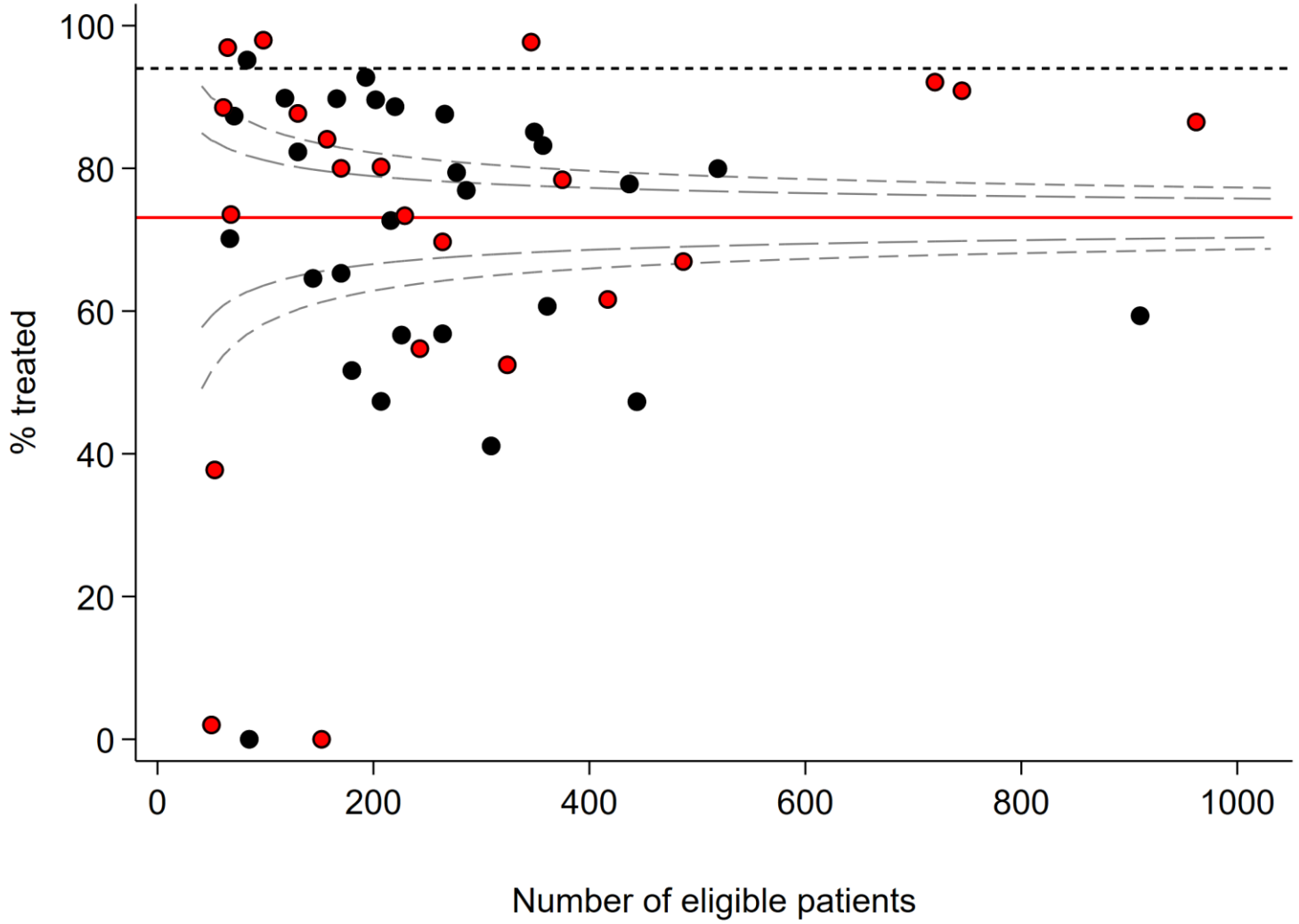
Management in a stroke unit by hospital



Management in a stroke unit- Victorian hospitals



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Discussion

Thanks to Tara Purvis and Joosup Kim for assistance with slides

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