The Burden of Diabetes:

Impact on General Medical Inpatients at Western Health, Victoria

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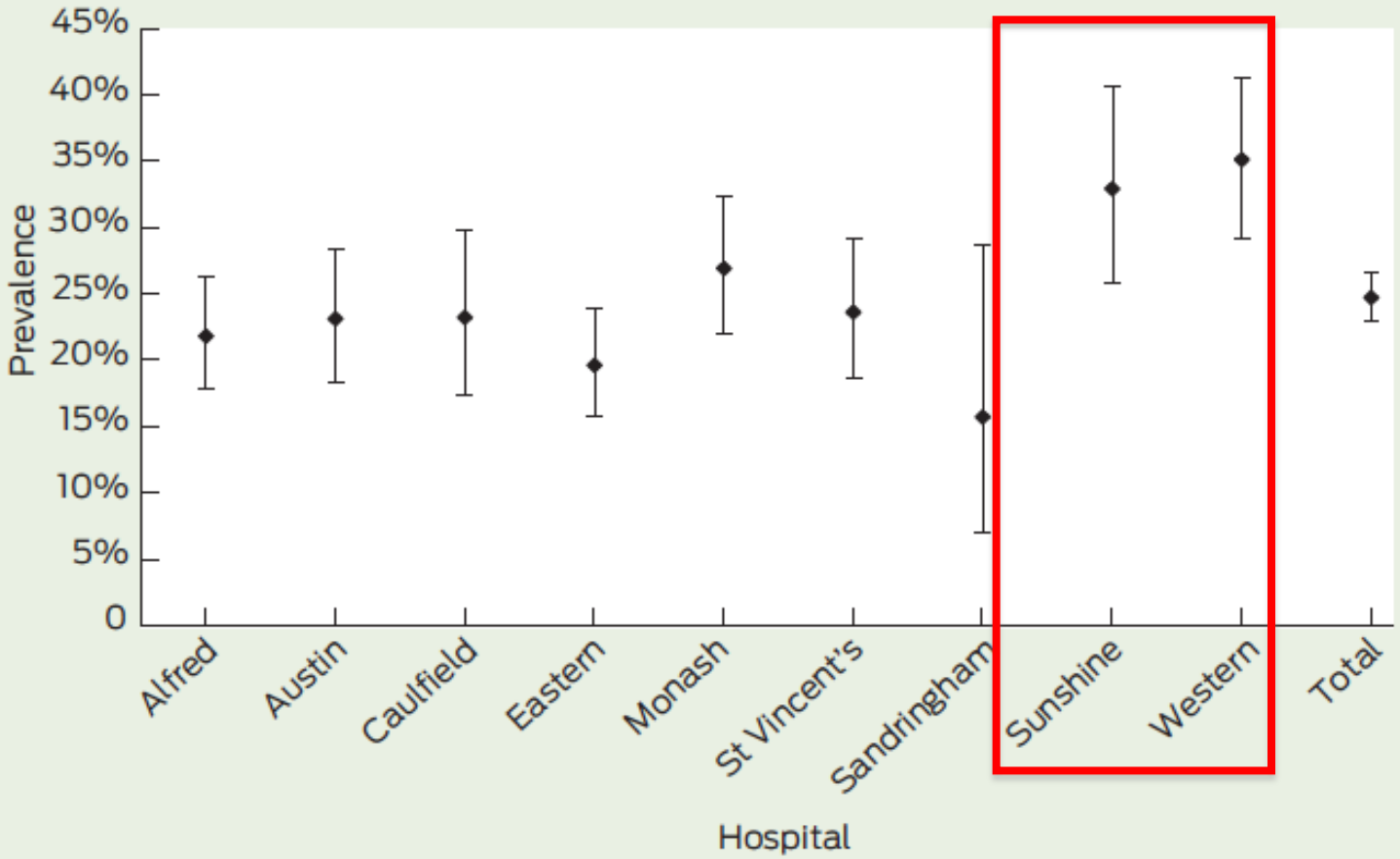
The High Burden of Inpatient Diabetes Mellitus: the Melbourne Public Hospitals Diabetes Inpatient Audit

- Bach et al. *MJA* 2014.

1 Diabetes prevalence (95% CI) in inpatients at Melbourne metropolitan hospitals



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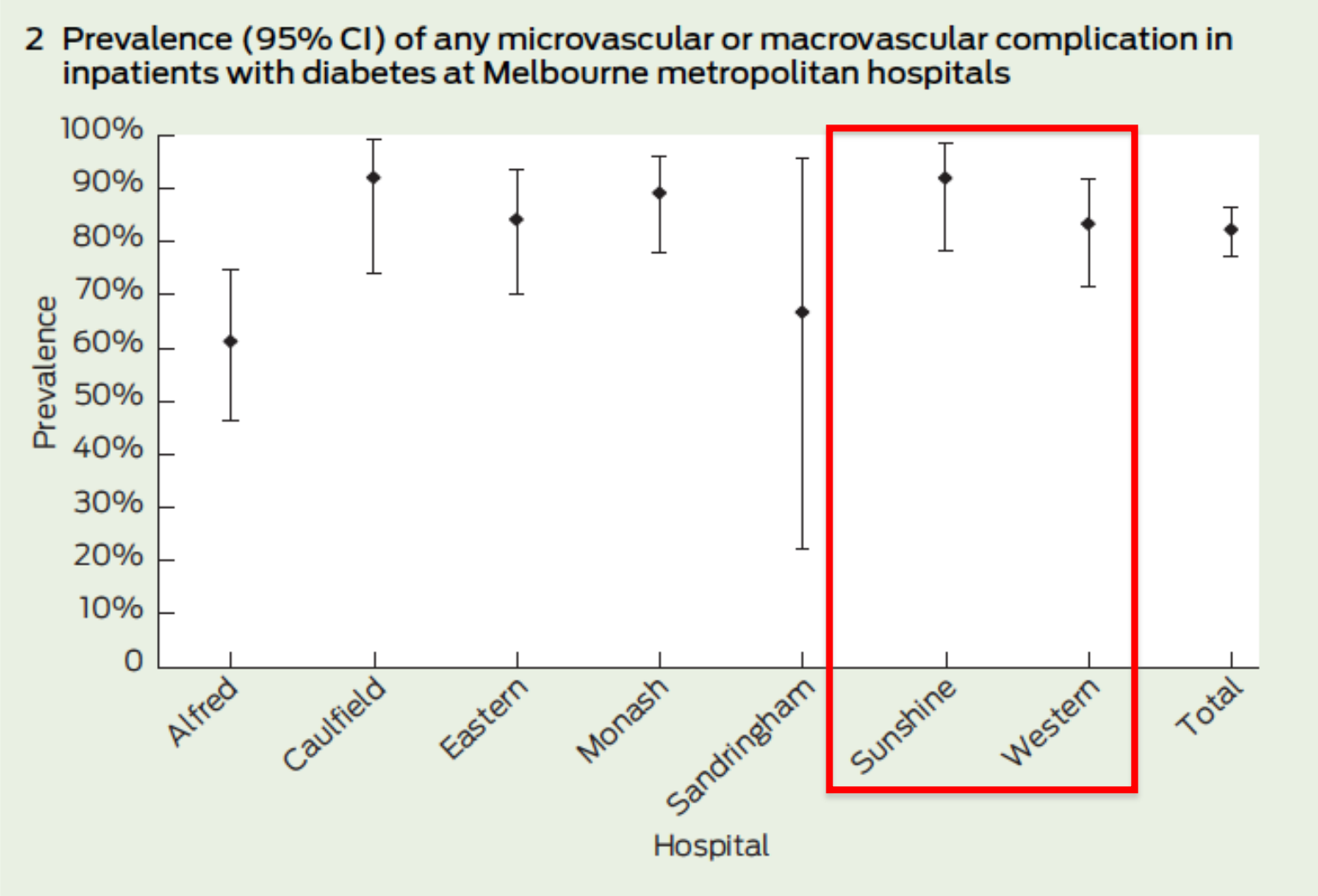

Aims:

To determine the overall impact of diabetes mellitus (DM) and its complications on:

1) Length of stay (LOS)

2) Cost associated with hospitalization

in a General Medicine (GM) population

Methods:

- Retrospective case-control study
- All adult GM admissions
- July 1, 2012 – June 30, 2013
- 2x Campuses: Sunshine and Footscray
- Data collected:

  - demography

  - social factors and

  - ICD-10 codes (mapped to modified Charlson's Comorbidity Index)

Methods:

- Patients with DM were compared with non-DM
- Key outcomes assessed:
  - **prolonged LOS (>7days),** *and*
  - **individual clinical costing (ICC)** (determined by WH clinical costing unit)
- For patients with >1 admission during 12 months, data from each admission was aggregated into a single record.

Results: Patient Characteristics

Western Health

Mean age:
71±18 years

Characteristics	No Diabetes Mellitus Number (%)	With Diabetes Mellitus Number (%)	P value
Total	3,138 (67%)	1,519 (33%)	-
Sex (Males)	1,415 (45)	770 (51)	<0.001
Age group (years)			
<=60	864 (28)	208 (14)	<0.001
60-80	1,073 (34)	781 (51)	
>80	1,201 (38)	530 (35)	
Non-English speaking	667 (21)	539 (35)	<0.001
Partnered (married or de facto)	1,410 (45)	807 (53)	<0.001
Ever smoked	944 (30)	516 (34)	<0.001
Charlson's Co-morbidity Index			
0	1,556 (50)	0 (0)	<0.001
1-2	1,116 (36)	612 (40)	
>2	466 (15)	907 (60)	

Table 1: Characteristics of the 4,657 GIM patients by presence or absence of DM

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Table 1: Characteristics of the 4,657 GIM patients by presence or absence of DM

Results: Length of Stay

		Multivariable model	
	N(%)	Odds ratio(95%CI)	p-value
Diabetes Mellitus	1,519(32.6)	1.18(1.06,1.32)	0.003
Females	2,472(53.1)	0.93(0.83,1.04)	0.208
Age group(years)			
<=60	1,072(23.0)		
60-80	1,854(39.8)	1.44(1.25,1.67)	<0.001
>80	1,731(37.2)	1.45(1.23,1.70)	<0.001
English Speaking	3,451(74.1)	0.89(0.79,1.01)	0.065
Marital Status			
Separated/divorced	392(8.4)	1.09(0.89,1.32)	0.41
Single	606(29.2)	1.10(0.93,1.30)	0.269
Widowed	1,362(29.2)	1.17(1.02,1.34)	0.028
Smoker	1,460(31.4)	1.56(1.39,1.75)	<0.001

Table 2: Ordinal logistic regression analysis for the association between DM and length of stay: July 1, 2012 to June 30, 2013

Results: Individual Clinical Costing

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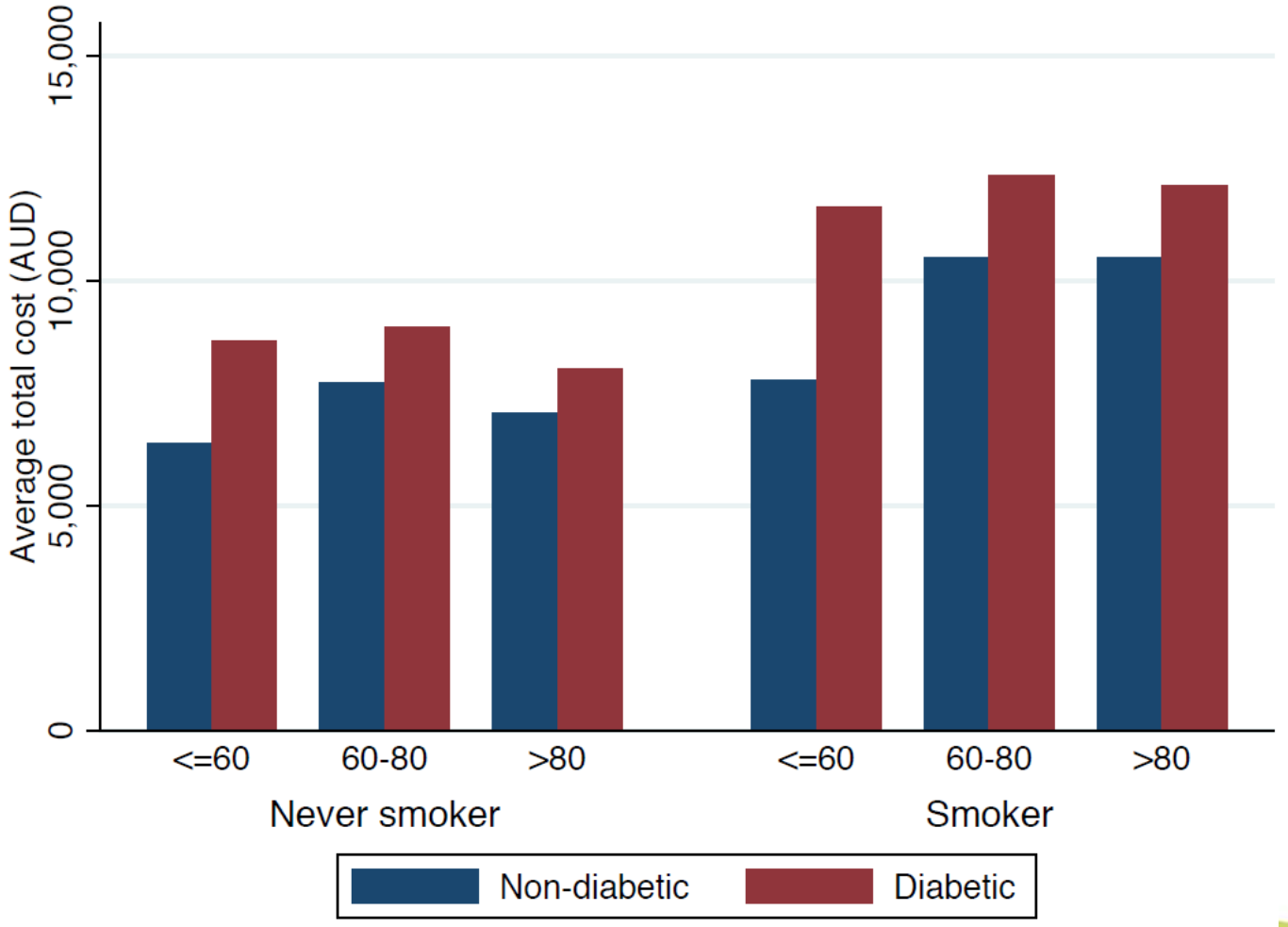
		Multivariable model	
	N(%)	Odds ratio(95%CI)	p-value
Diabetes Mellitus	1,519(32.6)	1.20(1.10,1.30)	<0.001
Females	2,472(53.1)	1.01(0.93,1.09)	0.821
Age group(years)			
<=60	1,072(23.0)		
60-80	1,854(39.8)	1.25(1.11,1.40)	<0.001
>80	1,731(37.2)	1.16(1.04,1.30)	0.008
English Speaking	3,451(74.1)	0.96(0.89,1.04)	0.291
Marital Status			
Separated/divorced	392(8.4)	1.13(0.97,1.32)	0.114
Single	606(29.2)	1.18(1.02,1.37)	0.023
Widowed	1,362(29.2)	1.05(0.96,1.15)	0.284
Smoker	1,460(31.4)	1.38(1.27,1.50)	<0.001

Table 3: Generalised linear model to estimate multivariable associations with total clinical cost of inpatient care

Relationship between total cost, age and diabetes by smoking status



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Results: Individual Clinical Costing (ICC)

	DM	Non-DM
No. of patients	1519	3138
Mean ICC (per patient)	$9,911	$7,806
Total Cost (per year)	$15,054,809	$24,495,228

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Excess cost attributable to DM

=

Total additional annual cost of

~AUD$ 2.4 million

in the GM patients at WH

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Limitations

- Retrospective
- GM patients only
- Unidentified confounders

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- Retrospective
- GM patients only
- Unidentified confounders

Strengths

- Large sample size, dual centers
- Multivariable analysis for confounders
- Hospital expenditure: ACTUAL cost per patient

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Conclusions:

DM is extremely common among GM inpatients

DM is associated with ↑LOS and ↑cost

Future directions:

- To determine modifiable factors to ↓LOS and ↓costs
- To facilitate better long term outcomes via primary care and diabetes clinics
- To extend our study to include other specialty units

Acknowledgements

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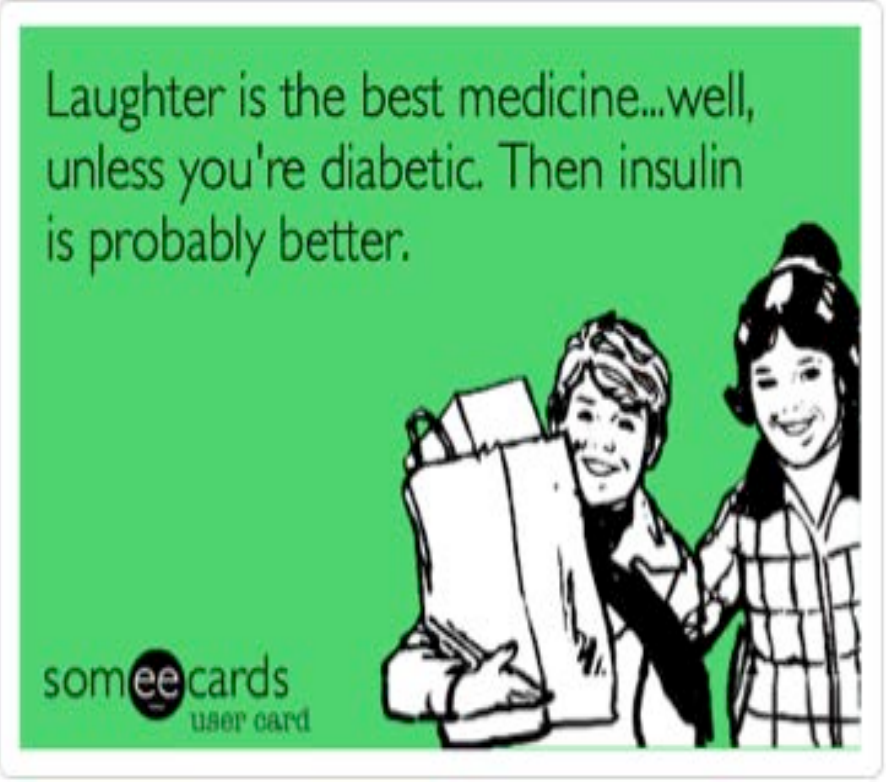
- A/Prof P Shane Hamblin
- Emily Karahalios
- Manmeet Singh



THANK YOU