

# Clinical Challenges and the wellbeing of a person with diabetes

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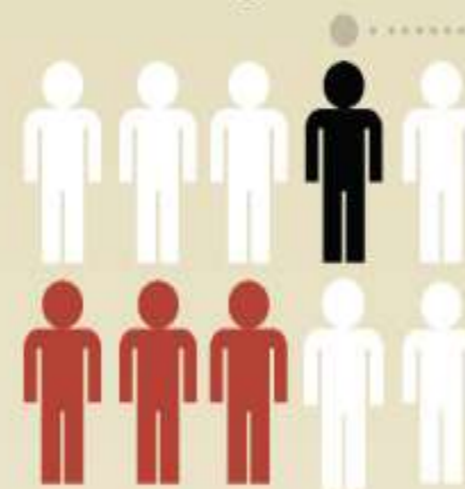
# DIABETES IN CANADA

Every **3 minutes** another Canadian is diagnosed with diabetes.

**29%** of Canadians are currently **living with diabetes or prediabetes.**



This will rise to **33%** by **2025** if current trends continue.



At least  
**1 in 10**

deaths in Canadian adults was attributable to diabetes in 2008/09.

**TODAY 3.4 million** Canadians are estimated to be living with diabetes.

Diabetes is costing the country  
**\$14 billion** per year



**2025** That number is expected to reach more than **5 million** people in the next 10 years.

In 10 years it will cost approximately  
**\$17.5 billion** per year



# What are the quality indicators?

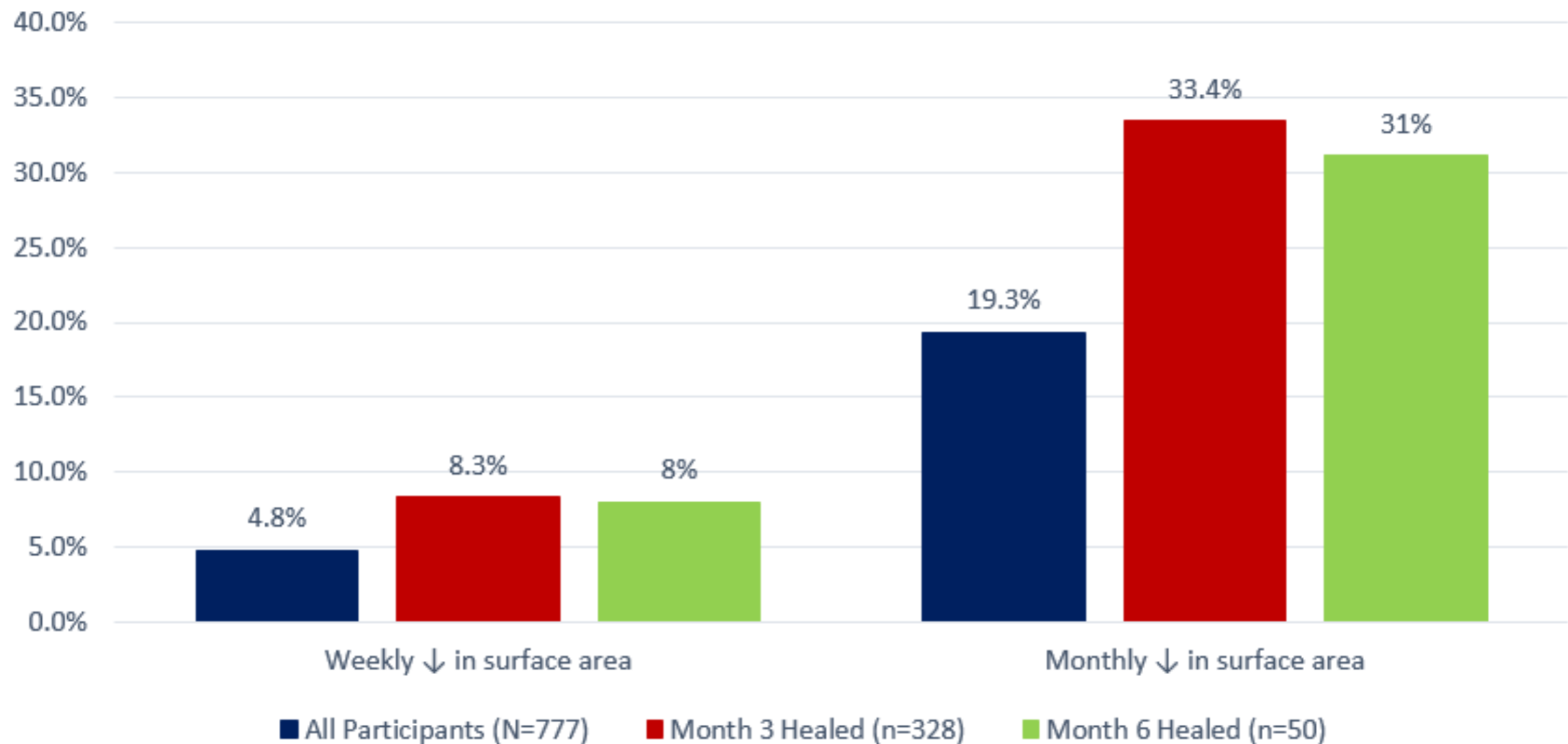
- ⦿ Pain reduction,
- ⦿ Physical function and ambulation,
- ⦿ Infection reduction, Reduced bioburden
- ⦿ Time to heal and Percent wound area reduction in 4-8 weeks.
- ⦿ Reduced social isolation, Reduced depression
- ⦿ Reduced recurrence
- ⦿ Amputation reduction
- ⦿ Cost of treatment

# What is wound healing?

- ⦿ 30% reduction in 4 weeks? for all wounds?
- ⦿ A retrospective, secondary data analysis of 777 patients with lower leg ulcers from the Wounds Studies database was used consisting of 6 studies (2 randomized control trials, 2 cohort studies, and 2 pre-post evaluations of evidence-based practice implementation) conducted prospectively between 1999 and 2009, examining the treatment and delivery of care for patients with leg ulcers in Canada.

# Venous leg ulcers

## healing rate (% surface area reduction)



# What about pressure injuries?

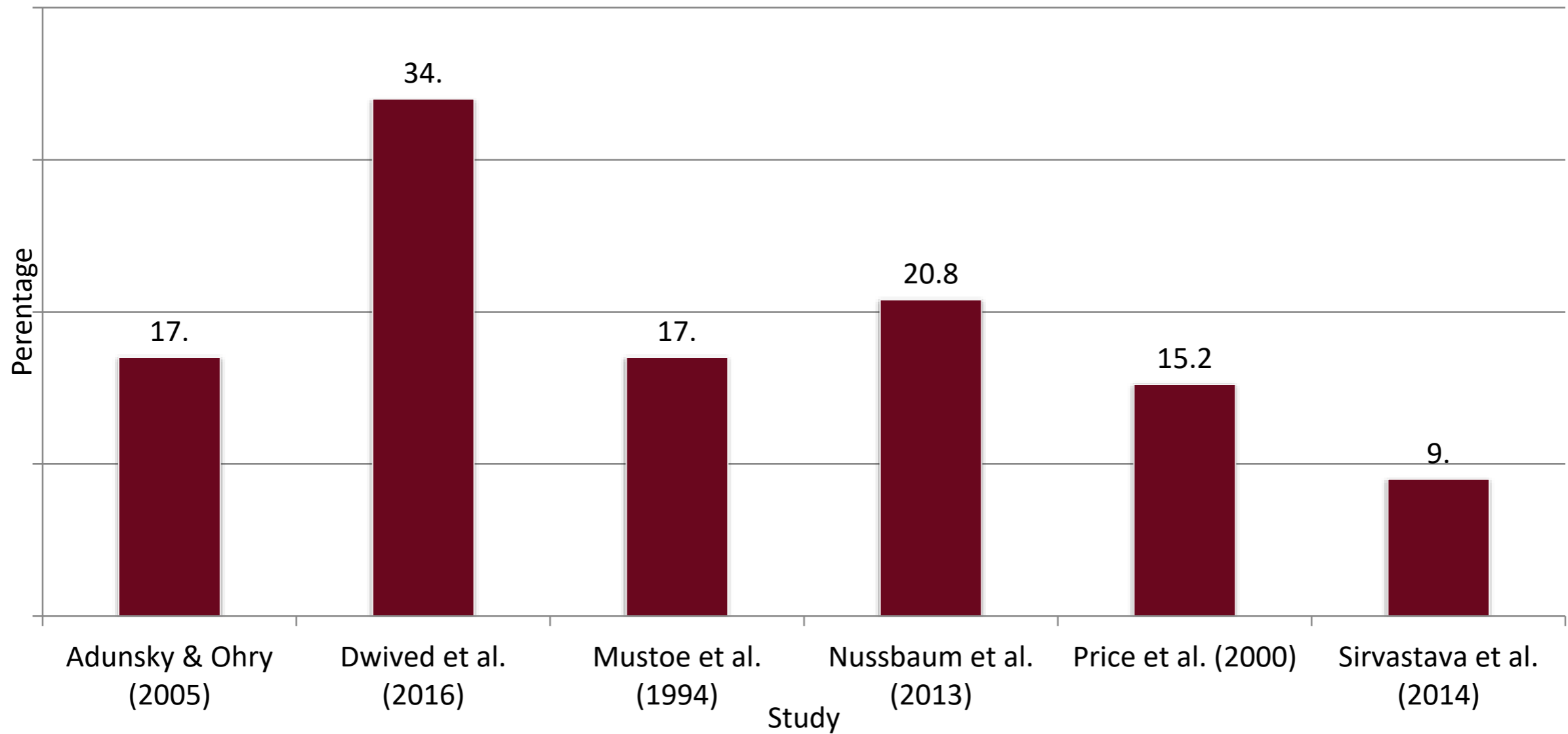


- ⦿ Scoping review: Stage 3 and Stage 4 pressure injuries (pressure ulcer, bed sores, pressure injury, decubitus ulcer, pressure sore)
- ⦿ 7 Studies met inclusion criteria
- ⦿ 6 randomized studies and 1 non-randomized
- ⦿ 134 patients in the control groups and standard wound care groups
- ⦿ All studies included Stage 3 injuries and 6 studies included Stage 4 injuries

# RESULTS



Percentage of Surface Area Closure by Week 4



# Healthcare utilization in Ontario residents with diabetes who undergo lower limb amputation

Kevin Woo, PI

Elizabeth VanDenKerkhof, Tim Pauley, Farzana Haq, Genevieve Pare

Funding: MOHLTC Applied Health Research Question (AHRQ)



Data  
Discovery  
Better Health



# Objectives

1. Describe the demographic, clinical characteristics of patients with diabetes undergoing lower limb amputation in an acute care facility in Ontario.
2. Compare the frequency and risk of visits to ER and hospitalizations (for all cause) 1 & 5 years after sx, between patients who were discharged to rehab vs. home, while controlling for confounders.

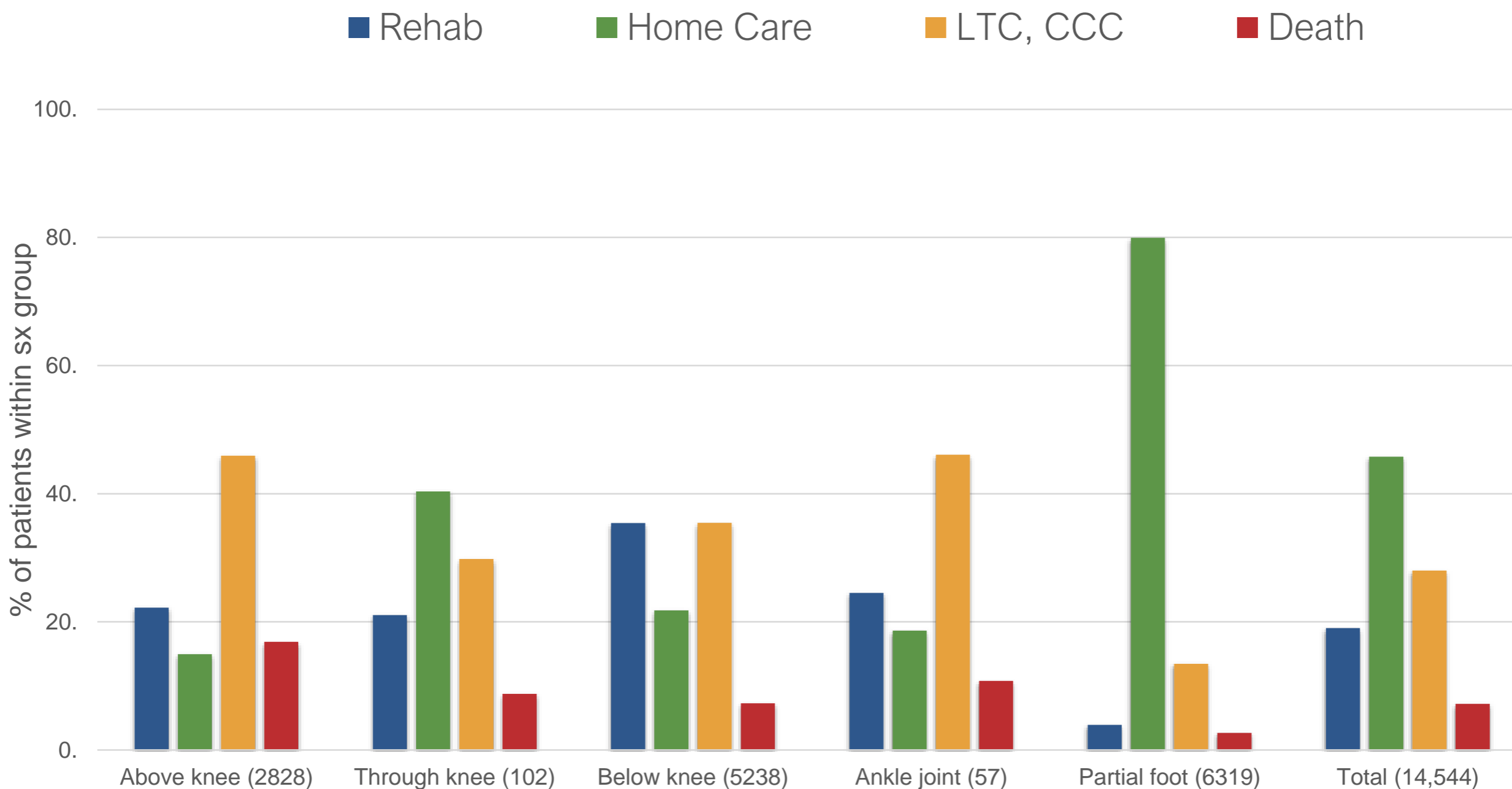
## Demographic and clinical characteristics (n=14,544)

- ⦿ 69% male; 31% female
- ⦿ Mean age= 67 (SD 12)
- ⦿ Duration of diabetes: mean= 11.7 years (SD 5.7)
- ⦿ 68% of all amputations were in diabetics (14,733/21,641)
- ⦿ 1,045 (7.2%) deaths post-op during their hospitalization.
- ⦿ Above knee amputation= 2,828 (19.4%).

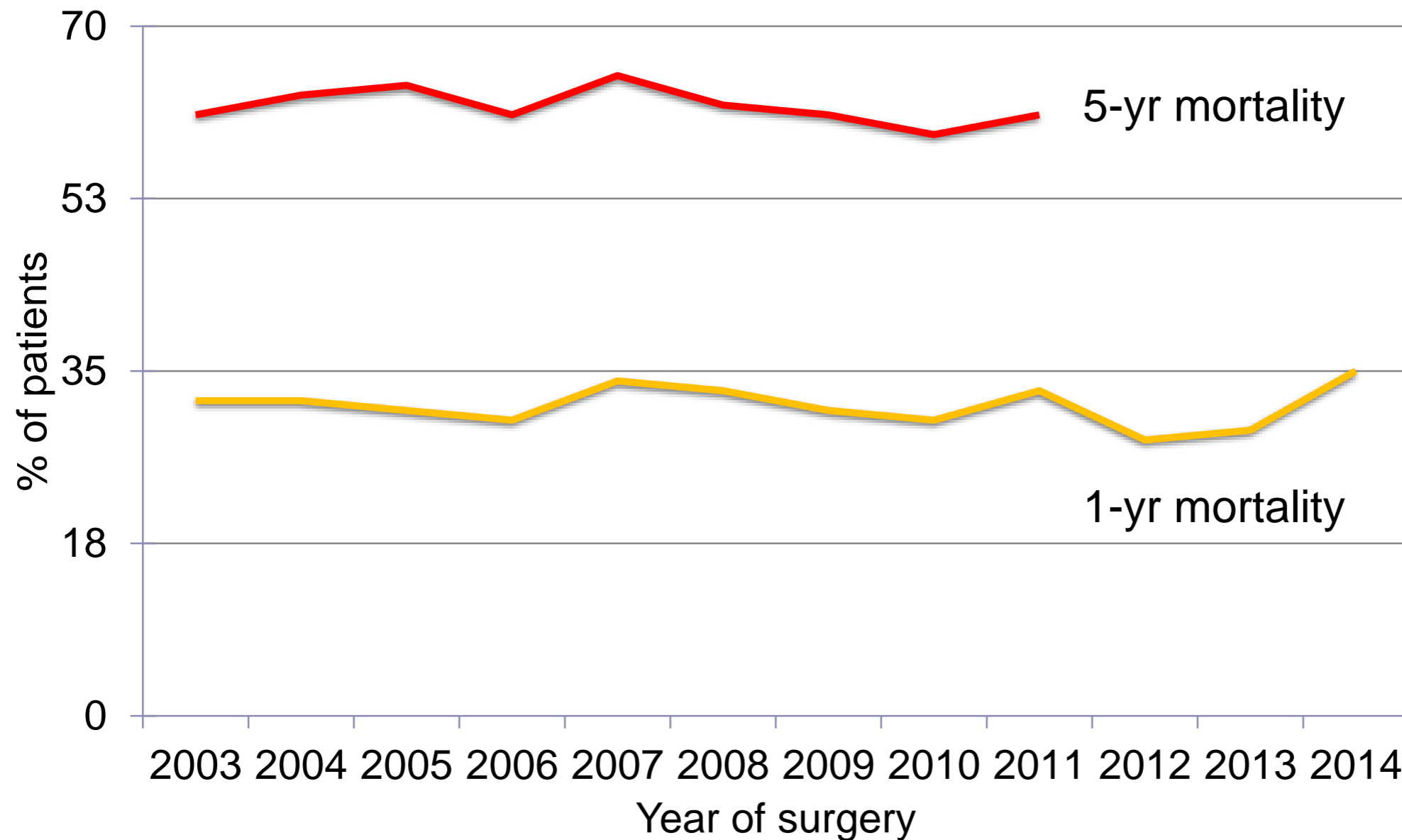


# Discharge destination by surgery types

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# Mortality: 1 and 5 year



1-yr and 5-yr mortality includes deaths in the year of surgery and the following year(s), therefore in some cases the follow-up could be up to 2 years, or up to 6 years, respectively.

# Major lower limb amputation – above, through and below knee, n=4092



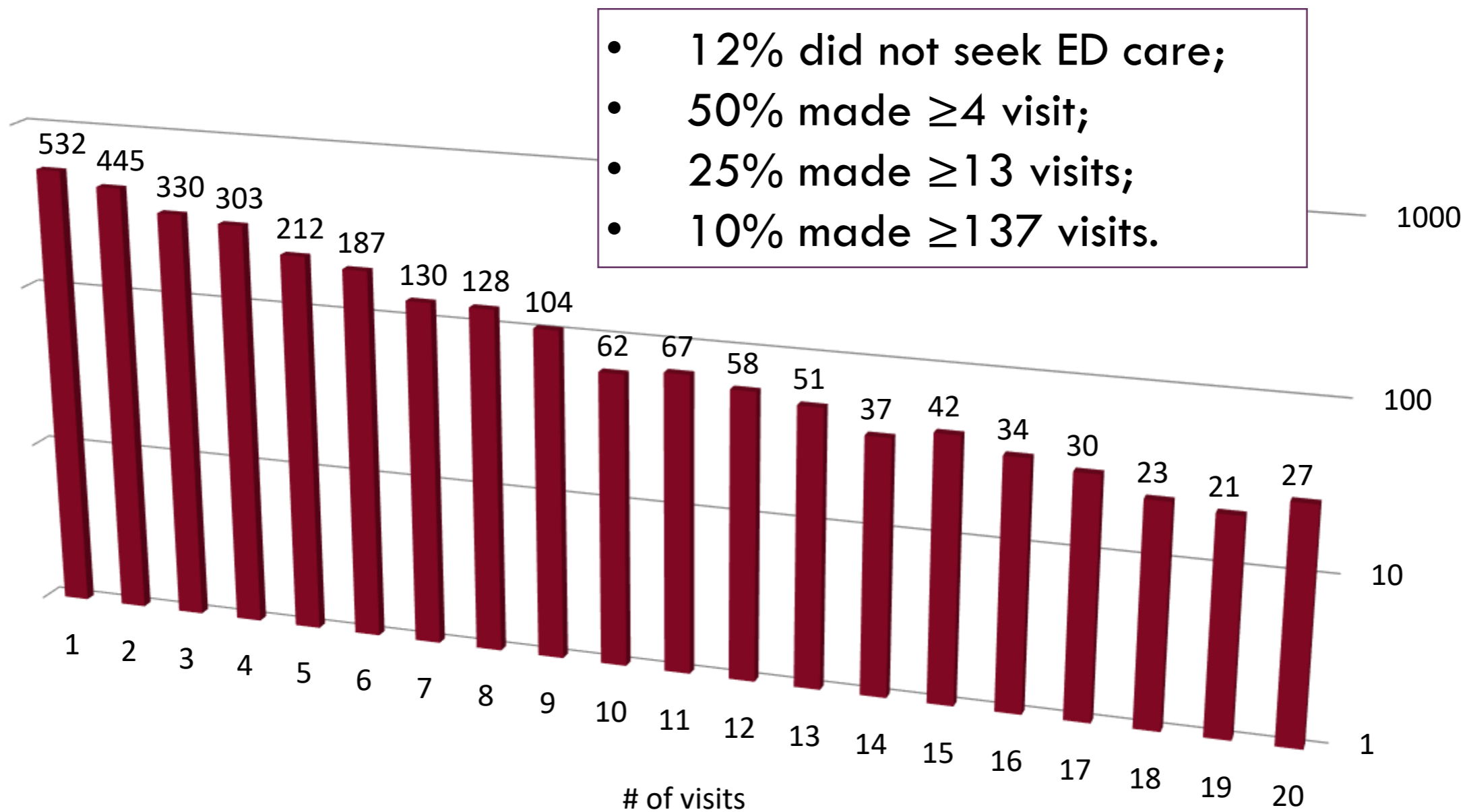
*39% patients were discharged home and 61% to a rehab facility*

\*includes through knee amputation

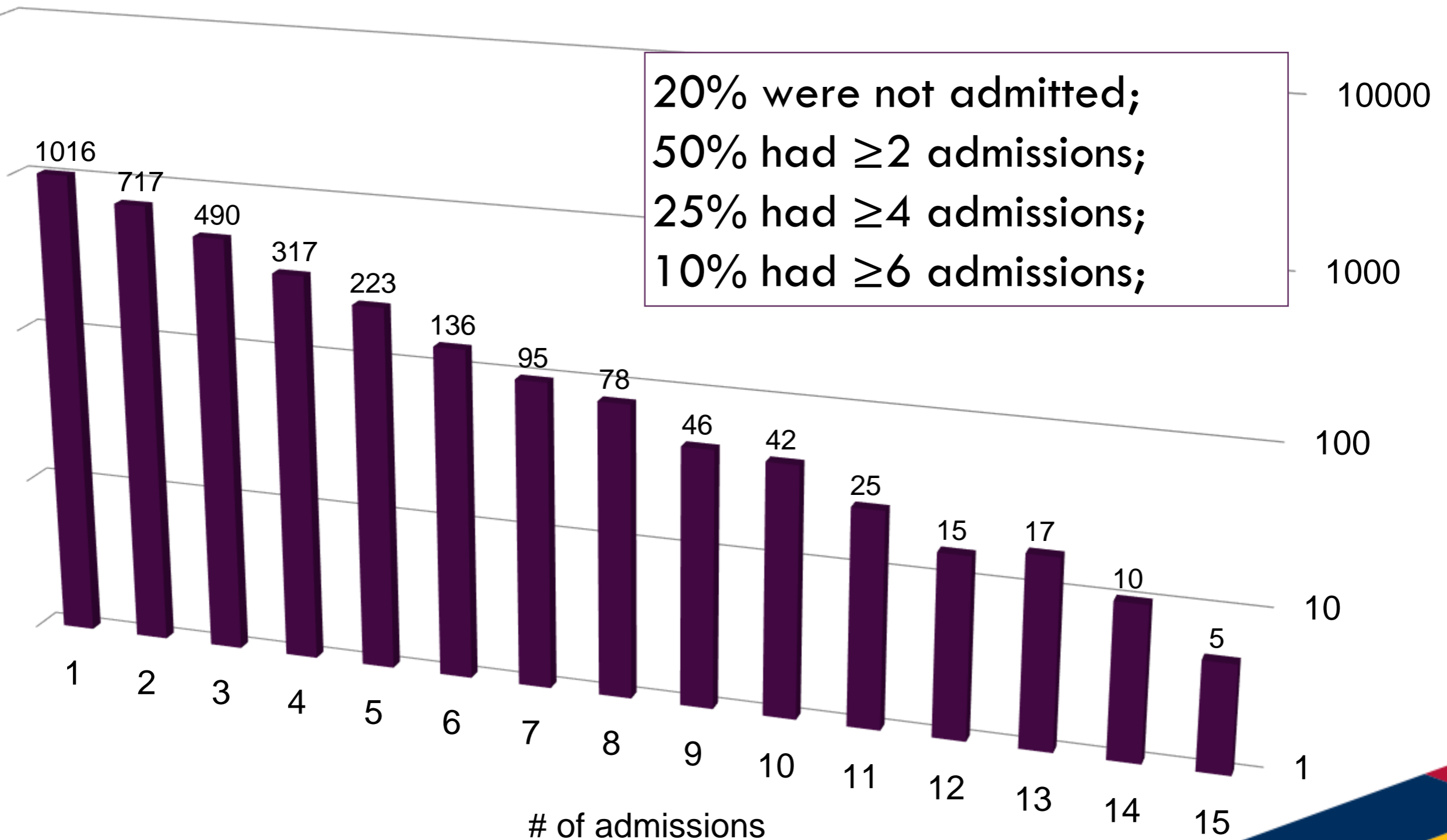
Variable	Home (n=1583)	Rehab (n=2509)
Mean (SD) age	64 (13)	67 (12)
Female (n (%))	431 (27)	728 (29)
Surgery		
Above knee*	442 (28)	653 (26)
Below knee	1141 (72)	1856 (74)
Major ADGs (med, IQR)	3 (2-4)	3 (2-4)
Duration diabetes (mean, SD)	11.2 (5.7)	11.7 (5.8)



## Major lower limb amputation – above, through and below knee, n=4092: frequency distribution of 5-yr ED visits



# Major lower limb amputation – above, through and below knee, n=4092: Frequency distribution of 5-yr admissions



# High risk of 1 and 5 year ED use stratified by discharge status (cohort 2, n=4092)

\*Adjusted for age, sex, LHIN, income quintile, rurality, duration of diabetes, comorbidity

1-YR Emergency Department Visits						
Discharge status	No. (%) visits		Unadjusted		Adjusted*	
	0	≥1	RR	95% CI	RR	95% CI
Home (n=1583)	791 (50)	792 (50)	1.00		1.00	
Rehab (n=2509)	1347 (54)	1162 (46)	0.93	0.87-0.99	0.95	0.89-1.02

5-YR Emergency Department Visits						
Discharge status	No. (%) visits		Unadjusted		Adjusted*	
	≤3	≥4	RR	95% CI	RR	95% CI
Home (n=1583)	810 (51)	773 (49)	1.00		1.00	
Rehab (n=2509)	1287 (51)	1222 (49)	1.00	0.94-1.06	1.08	1.01-1.16



# High risk of 1 and 5 year admission stratified by discharge status (cohort 2, n=4092)



\*Adjusted for age, sex, LHIN, income quintile, rurality, duration of diabetes, comorbidity

1-YR Admissions						
Discharge status	No. (%) visits		Unadjusted		Adjusted*	
	0	≥1	RR	95% CI	RR	95% CI
Home (n=1583)	1218 (76)	365 (24)	1.00		1.00	
Rehab (n=2509)	1851 (74)	658 (26)	1.14	1.02-1.27	1.16	1.03-1.31

5-YR Admissions						
Discharge status	No. (%) visits		Unadjusted		Adjusted*	
	≤1	≥2	RR	95% CI	RR	95% CI
Home (n=1583)	1025 (65)	558 (35)	1.00		1.00	
Rehab (n=2509)	1543 (61)	966 (39)	1.09	1.01-1.19	1.13	1.03-1.24

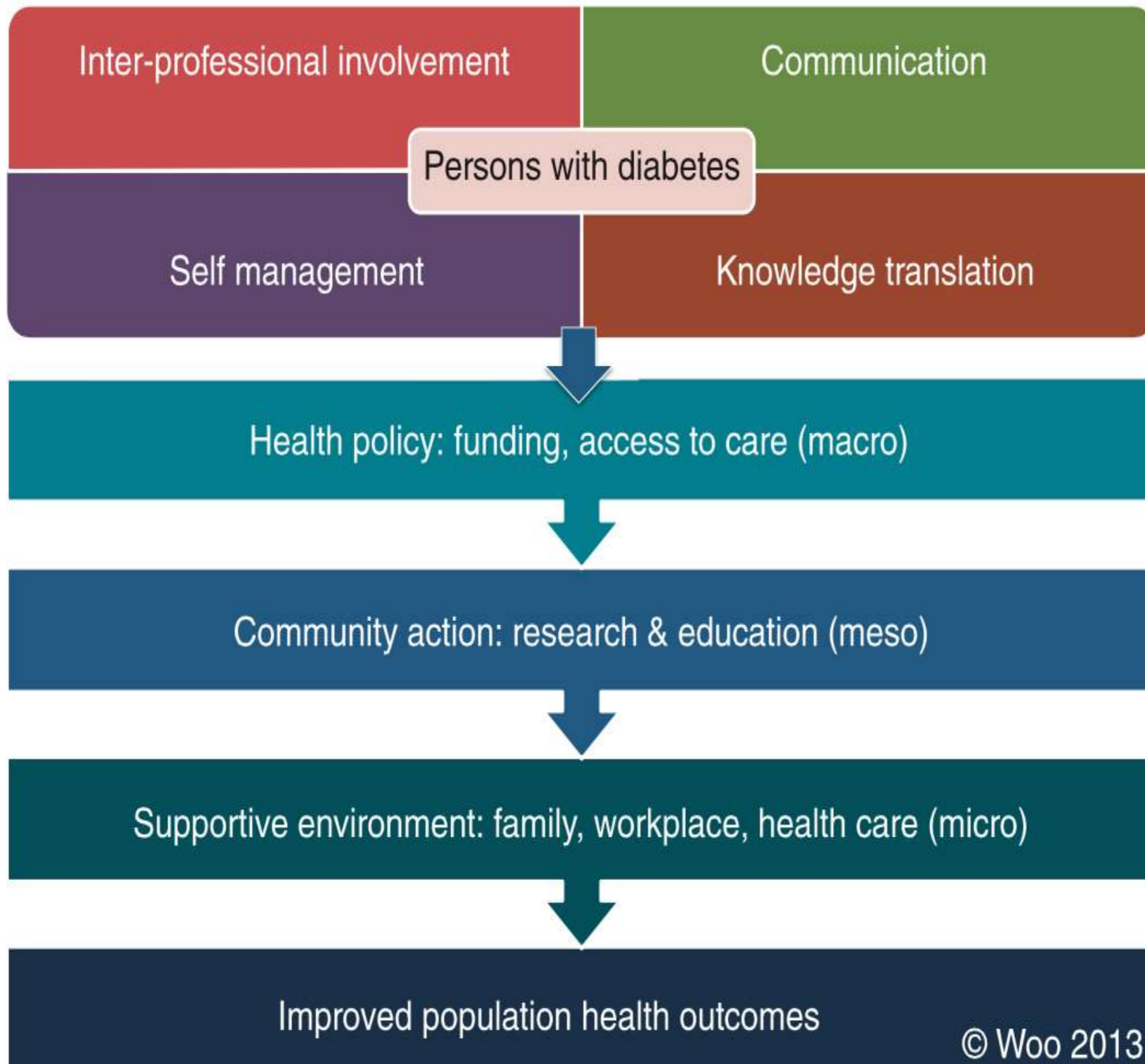
# Summary (cohort 2, n=4092)

- ⊙ After controlling for confounders, e.g., morbidity, admission to rehab (vs. home):
  - Slightly reduced risk of 1-YR ED use (5%, NS)
  - 8% (1-16) increased risk of 5-YR ED use
  - 16% (3-31) increased risk of 1-YR admission
  - 15% (3-24) 5-YR increased risk of 5-YR admission

# Diabetes and self management



- ⦿ Management of diabetes requires comprehensive and lifelong behavioral modifications
- ⦿ People with diabetes are often portrayed as 'non-compliant' and blamed for their lack of will-power to make healthy choices.
- ⦿ Internalization of stigma may deepen the feelings of failure, embarrassment, disempowerment, low self-efficacy, and fear of being judged, preventing people from seeking help, discussing their difficulties openly (even with their health care providers), and adhering to self-care.



- ⦿ According to a 2012 survey, 61% of adult Internet users searched online and 39% used social media to obtain health information [1].
- ⦿ Posted messages and dialogues that were abstracted from 15 Facebook groups focused on diabetes management, almost 30% of the content was related to the exchange of emotional support among members of a virtual community [2].
- ⦿ Mobile health (mHealth) refers to the use of mobile phones and other wireless technology for disease management.

## Using social media to improve foot care

Friday November 21, 2014  
By Communications Staff



supplement editorial

## Online social support to address self-stigma

**F**oot complications are common in people with diabetes, and often result in chronic non-healing ulcers, severe infection, and leg amputation, placing a huge burden on the health-care system. Adherence to lifestyle modifications, involving diligent foot care, physical activities, dietary changes, smoking cessation, and frequent blood sugar testing, is pivotal to prevent these serious complications.<sup>1</sup> However, stigma that is experienced and internalised by individuals through interactions with other people in the workplace, health-care facilities, educational institutions, even in close interpersonal relationships, may influence the person's confidence, ability, and willingness to engage in self-management behaviours.<sup>2,4</sup>

Stigma is a complex social construct and it refers to negative characteristics and stereotypes that are often experienced by individuals with diabetes.<sup>3</sup> This is especially the case for people with foot ulcers. They are labeled as 'non-compliant' and blamed for allowing ulcers to develop due to their lack of self-control, will power, and competence to make healthy choices.<sup>4,5</sup>



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- ⊙ No study has examined the use of a smartphone software application as a community-based intervention to promote healthy lifestyle rehabilitation and reduce disability associated with diabetic foot disease



# Outcomes?

- ⦿ Online foot club: better knowledge in diabetes, higher levels of empowerment, and express lower self-stigma.
- ⦿ Next step: APP
- ⦿ Self management foot app for skin assessment
- ⦿ Developing countries: Ethiopia, Nigeria

