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Vaccine-Preventable Hospitalisations in Adult Mental Health Service Users: A Population Study

Grant Sara, Patrick Gould

Equally Well Forum, July 2023

Acknowledgements

The traditional owners of the lands on which we meet, work and live

People who have used NSW hospital or community mental health services, whose data we use with gratitude and respect
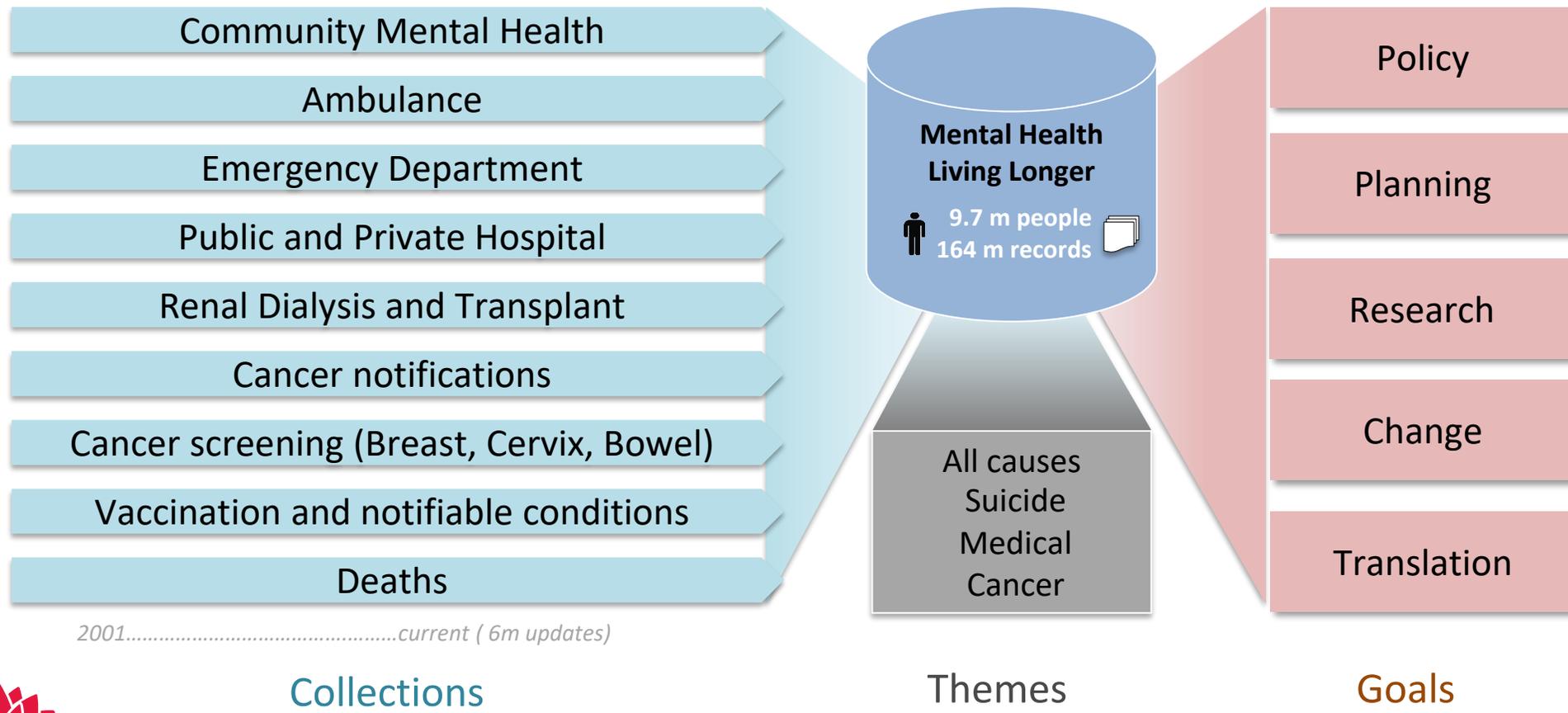
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Context

▶ Vaccine-preventable illnesses are an important cause of illness and death

▶ Studying preventable hospitalisations in NSW, we found very high rates of vaccine-preventable admissions in mental health service users

This study asks:

▶ **What is the rate of vaccine preventable hospitalisation (VPH) for NSW adults who have had recent contact with mental health services?**

▶ **How does this rate differ for different types of VPH?**

▶ **How do LHD rates vary?**

Mental Health Living Longer data linkage project

Linking NSW Health data to understand and reduce premature mortality in NSW mental health service users

Collections

- Community Mental Health
- Ambulance
- Emergency Department
- Public and Private Hospital
- Renal Dialysis and Transplant
- Cancer notifications
- Cancer screening (Breast, Cervix, Bowel)
- Vaccination and notifiable conditions
- Deaths

2001……………………………………………current (6m updates)

Mental Health Living Longer

9.7 m people
164 m records

Themes

All causes
Suicide
Medical
Cancer

Goals

- Policy
- Planning
- Research
- Change
- Translation

Methods

Hepatitis B
Chronic Hepatitis B
Acute Hepatitis B
Respiratory infections
Influenza
COVID *
Haemophilus pneumonia
Streptococcus pneumoniae
Pertussis
Diphtheria
Other
Zoster (Shingles)
Varicella
Mumps
Measles
Haemophilus meningitis
Rubella
Rotaviral enteritis
Acute poliomyelitis
Tetanus
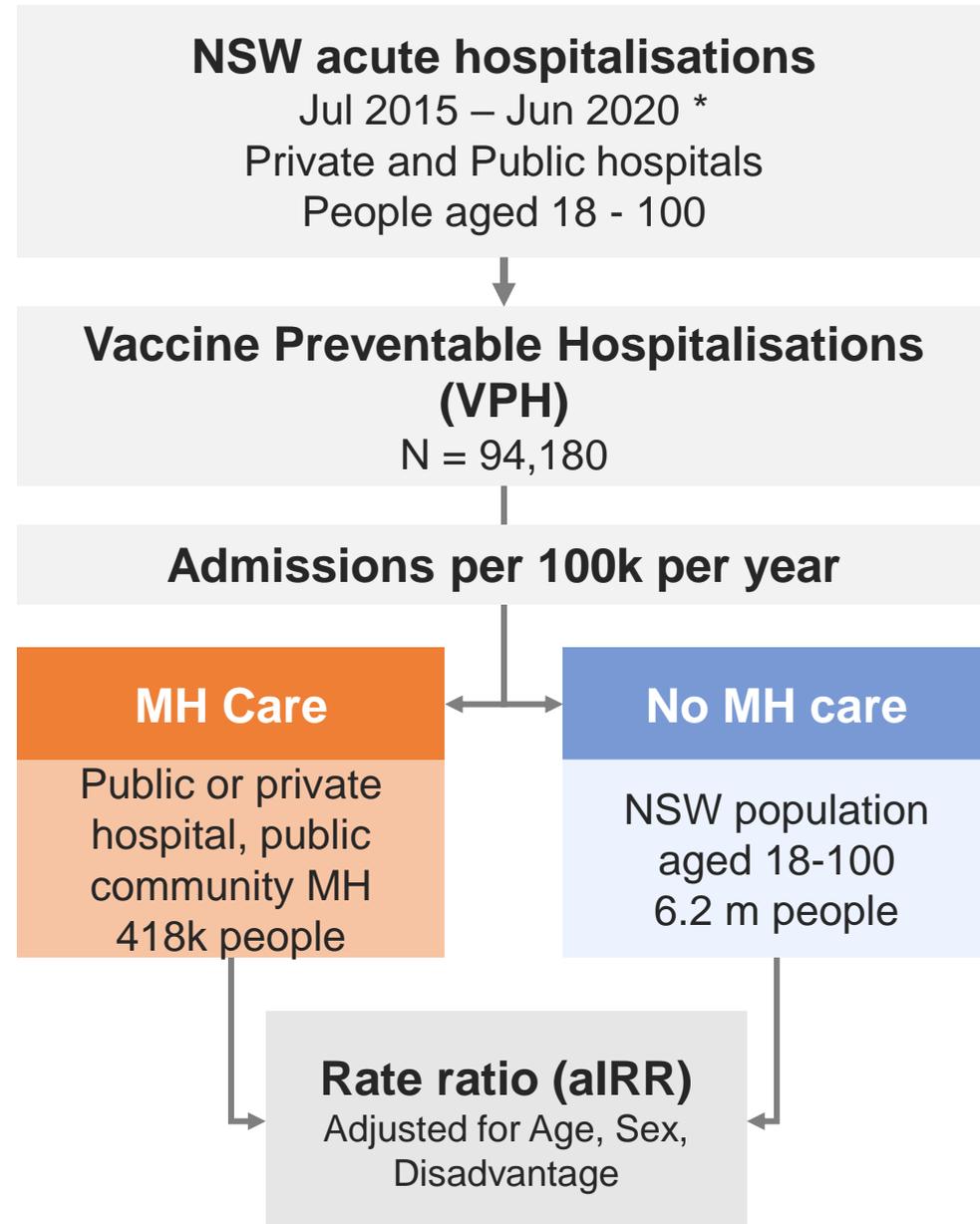
** COVID analysis done separately
(Jul 2020 – Sept 2021)
Public hospital admissions only*

NSW acute hospitalisations
Jul 2015 – Jun 2020 *
Private and Public hospitals
People aged 18 - 100

Vaccine Preventable Hospitalisations (VPH)
N = 94,180

Admissions per 100k per year

MH Care
Public or private hospital, public community MH
418k people

No MH care
NSW population aged 18-100
6.2 m people

Rate ratio (aIRR)
Adjusted for Age, Sex, Disadvantage

Mental health service users had **3.2x** more vaccine-preventable hospital admissions

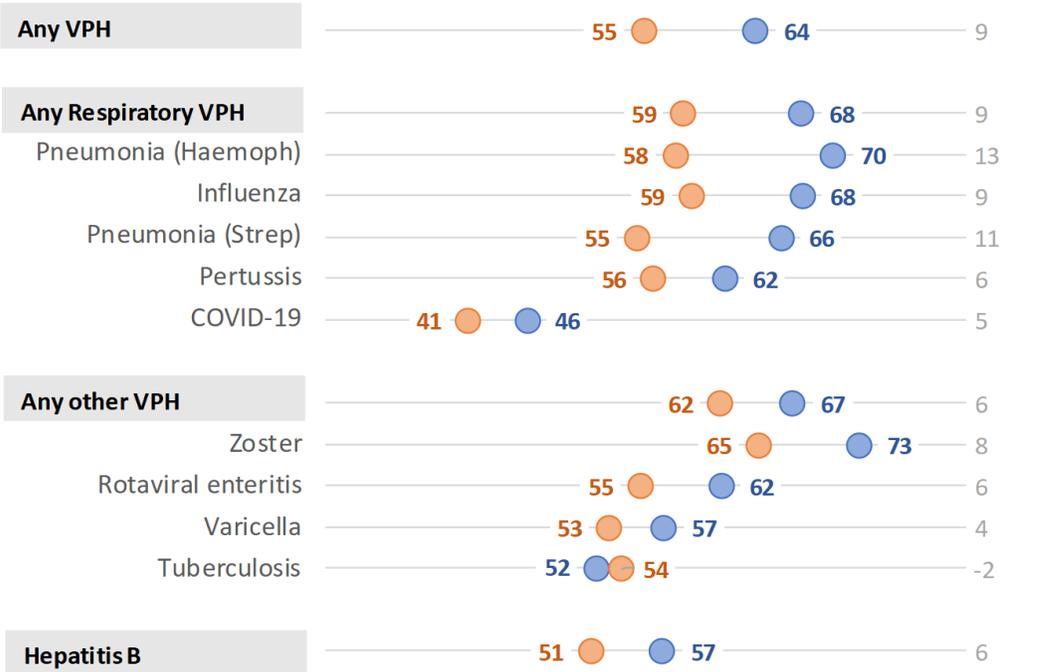**Vaccine Preventable Hospitalisation rate (Episodes per 100k person years)**

Legend: Rest of NSW Population, Mental Health Care

Category	Rest of NSW Population	Mental Health Care
Any VPH	285	727
Respiratory	156	335
Hepatitis B	90	334
Other	43	70

Incidence Rate Ratio

Legend: Crude IRR, Adjusted IRR

Category	Crude IRR	Adjusted IRR
Any VPH	2.6	3.2
Respiratory	2.1	2.8
Hepatitis B	3.7	4.4
Other	1.6	2.2

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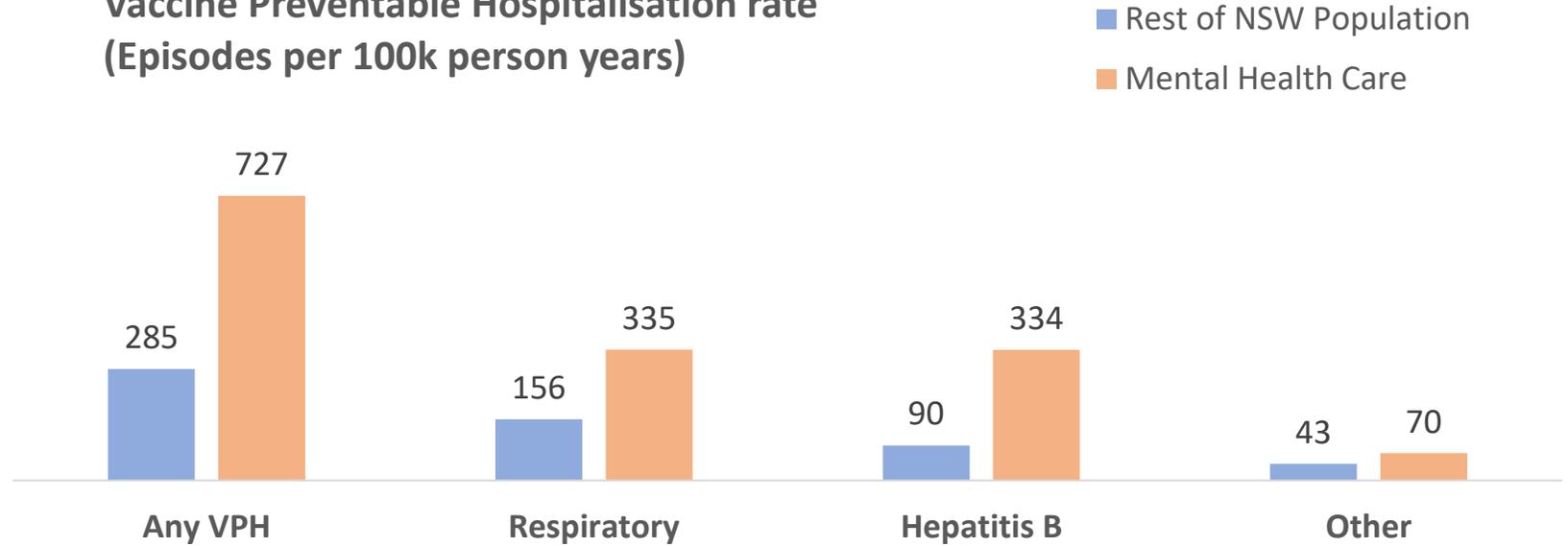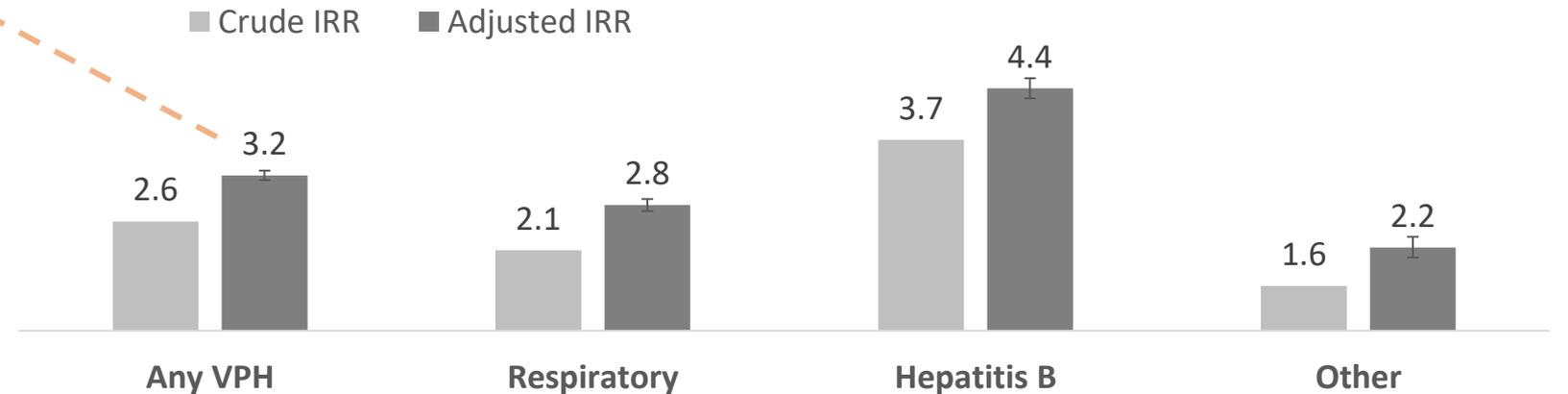
Particularly high risks in mental health service users aged 35 - 65

Average age at admission

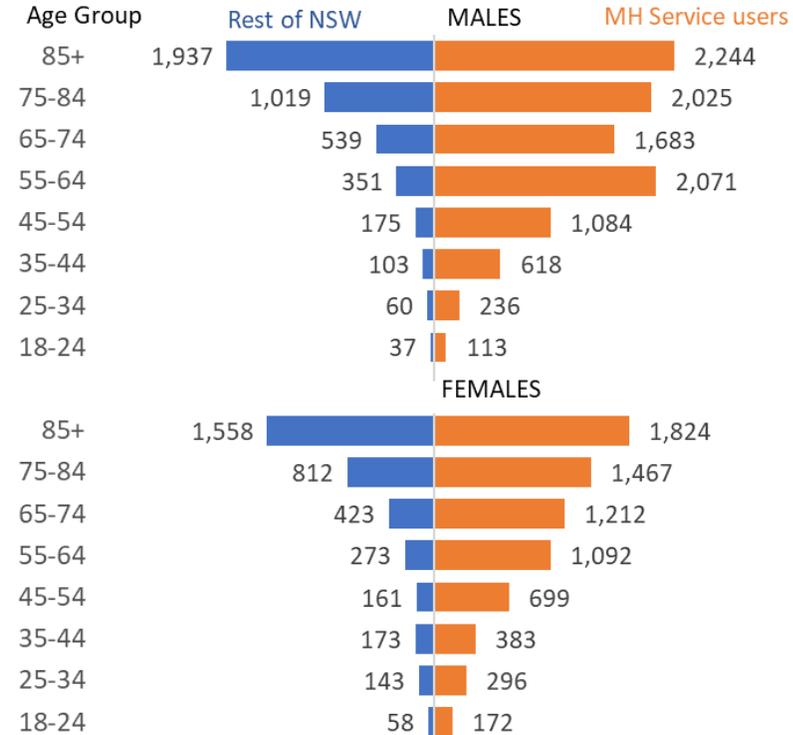|	MH service users	Other NSW residents	Gap (yrs)
Any VPH	55	64	9
Any Respiratory VPH	59	68	9
Pneumonia (Haemoph)	58	70	13
Influenza	59	68	9
Pneumonia (Strep)	55	66	11
Pertussis	56	62	6
COVID-19	41	46	5
Any other VPH	62	67	6
Zoster	65	73	8
Rotaviral enteritis	55	62	6
Varicella	53	57	4
Tuberculosis	52	54	-2
Hepatitis B	51	57	6

9 years younger average age

Biggest age gap for respiratory infections

NSW Vaccine Preventable Hospitalisations
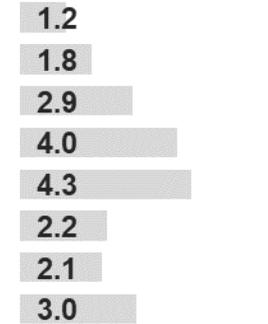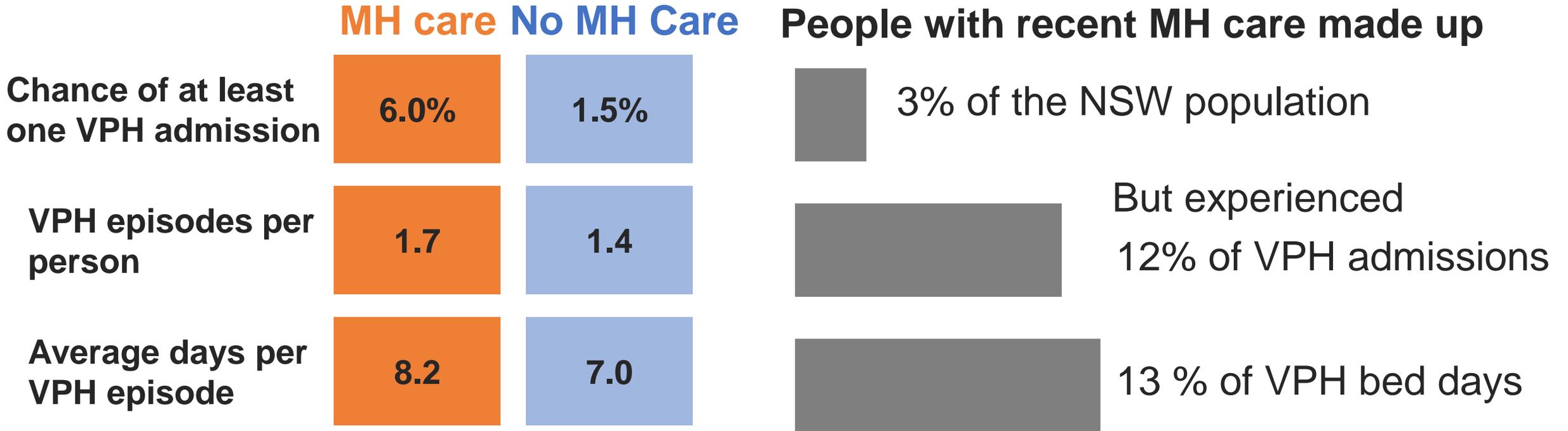### (Rate per 100k person years, 2015-2020)

MALES

Age Group	Rest of NSW	MH Service users	Relative Risk (aIRR) MALES
85+	1,937	2,244	1.2
75-84	1,019	2,025	2.0
65-74	539	1,683	3.1
55-64	351	2,071	5.9
45-54	175	1,084	6.2
35-44	103	618	6.0
25-34	60	236	3.9
18-24	37	113	3.1

FEMALES

Age Group	Rest of NSW	MH Service users	FEMALES
85+	1,558	1,824	1.2
75-84	812	1,467	1.8
65-74	423	1,212	2.9
55-64	273	1,092	4.0
45-54	161	699	4.3
35-44	173	383	2.2
25-34	143	296	2.1
18-24	58	172	3.0
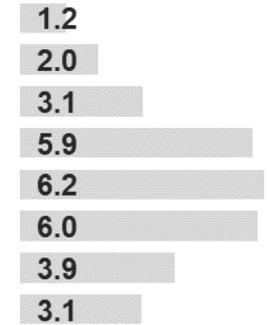
Personal and system impacts are considerable

	MH care	No MH Care
Chance of at least one VPH admission	6.0%	1.5%
VPH episodes per person	1.7	1.4
Average days per VPH episode	8.2	7.0

Excludes admissions to MH units, non-acute admissions and very long hospital stays (>120 days)

People with recent MH care made up

3% of the NSW population

But experienced
12% of VPH admissions

13 % of VPH bed days

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9

VPH "gap" varies between health districts: 2.5 – 3.9 x

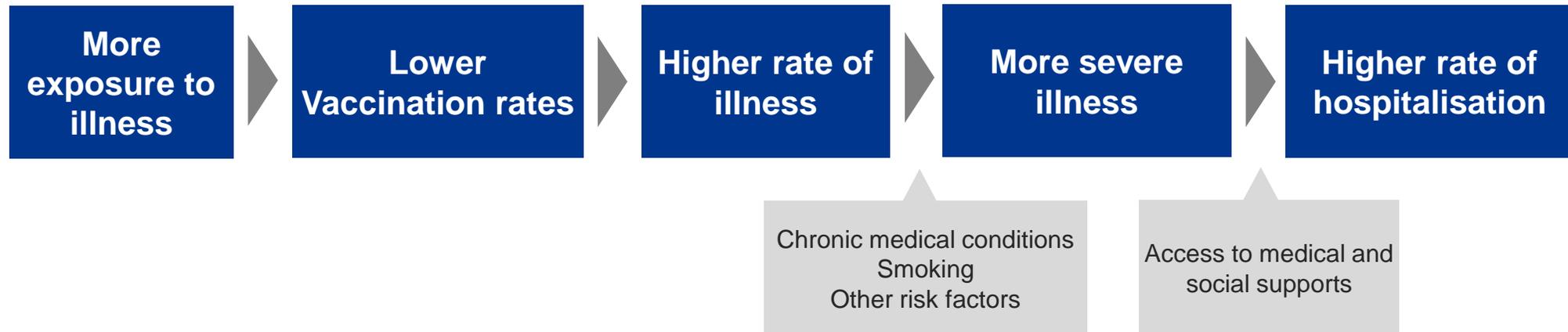Vaccine preventable hospitalisations by LHD: **Mental health consumers** compared to **rest of LHD population**

Higher rates in metro areas

LHD	aIRR	MH
LHD 1		405
LHD 2		348
LHD 3		292
LHD 4		283
LHD 5		253
LHD 6		249
LHD 7		246
LHD 8		245
LHD 9		240
LHD 10		232
LHD 11		231
LHD 12		214
LHD 13		131
LHD 14		129

But gaps in all areas
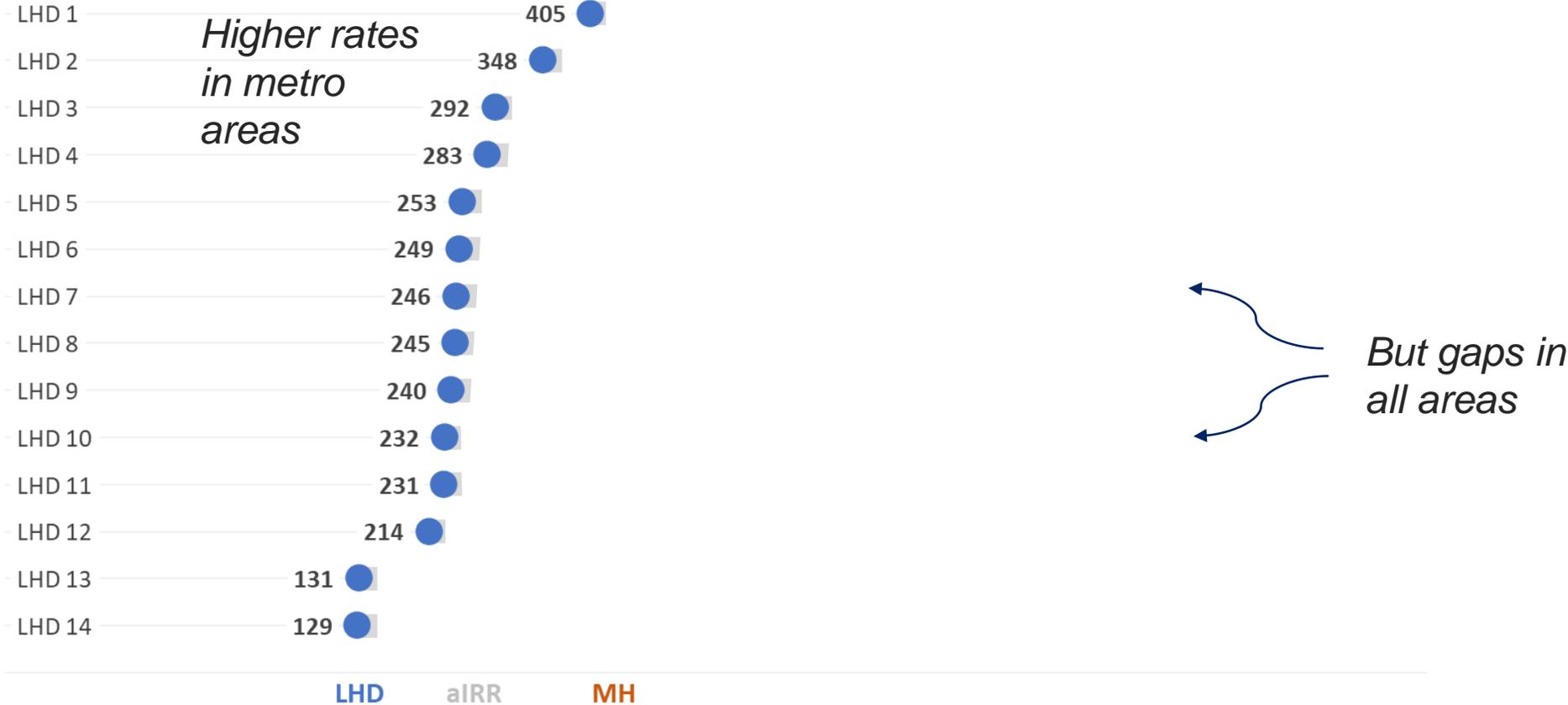
Gap figure is incidence rate ratio, adjusted for differences in age within each LHD (aIRR).

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Why do MH service users experience higher rates ?

▶ Likely to be many interacting factors

▶ Different factors for different people, places and illnesses

| More exposure to illness | ▶ | Lower Vaccination rates | ▶ | Higher rate of illness | ▶ | More severe illness | ▶ | Higher rate of hospitalisation |

Chronic medical conditions
Smoking
Other risk factors

Access to medical and social supports

▶ Understanding these could help to target improvement efforts

Next steps for this work

▶ More study planned … adding data on:
- ▶ Vaccination rates (AIR)
- ▶ Rates of selected conditions (NCIMS)

▶ Identify and support models which support vaccine access and equity

▶ Identify policy barriers and advocate for change

▶ Develop local reports to support improvement efforts

Thankyou

Mental Health Living Longer project team and collaborators

- ► Steering Committee (Chair: Sharon Smith)

- ► Aboriginal Sovereign Steering Committee (Co-chairs: Ashley Brown, Pauline Ferkula)

- ► Academic Advisory Group and collaborating researchers: Matthew Large, Jackie Curtis (UNSW), Faye McMillan (UTS), Tracey O'Brien, Richard Walton, David Currow (Cancer Institute NSW), Angela Webster, Nicole de la Mata, Nick Glozier (USyd), Philip Burgess (UQ), Parashar Ramanuj (National Orthopaedic Hospital, London), Niels Mulder (Erasmus, Netherlands)

- ► InforMH: Jenn Humphrey, Wendy Chen, Fred Wu, Patrick Gould

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