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Using big data to understand patterns of care for musculoskeletal conditions in general practice

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WISER HEALTHCARE
A RESEARCH COLLABORATION FOR REDUCING OVERDIAGNOSIS AND OVERTREATMENT

Background

- Musculoskeletal conditions are a major cause of disability globally [1]

  1/5 of visits to a general practitioner is for a musculoskeletal condition [2]

[1] Vos T et al. *The Lancet* 390.10100 (2017): 1211-1259.

[2] Britt H et al. General practice series no. 41. Sydney University Press, 2016.

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Aims

- To explore the utility of the POLAR database to investigate patterns of care for patients with musculoskeletal conditions by general practitioners
    - General practitioner visits
    - Radiology tests
    - Medication prescriptions for pain relief
    - Referrals to other relevant health care practitioners
- Goal is to compare current practice with evidence-based guidance and work collaboratively with practices to optimise care and patient outcomes

Methods

Study Design:

- Retrospective longitudinal cohort study

Sample:

- Using de-identified data from Outcome Health's POLAR data space system
- Extracts patient-related information from electronic medical records of 302 general practices within 3 Primary Health Networks within Victoria, Australia


WESTERN NSW
MURRUMBIDGEE
AUSTRALIAN CAPITAL TERRITORY
SOUTH EASTERN NSW
COUNTRY SA
MURRAY
WESTERN VICTORIA
GIPPSLAND
EASTERN MELBOURNE
SOUTH EASTERN MELBOURNE
Victoria
Primary Health Networks
Boundaries - May 2015
0 25 50 75 100 km

POLAR database

Cohort:

- 10.5 million patient records
- 166,000 provider records
- 302 practice records
- 84 million activity records
- 27 million diagnoses records

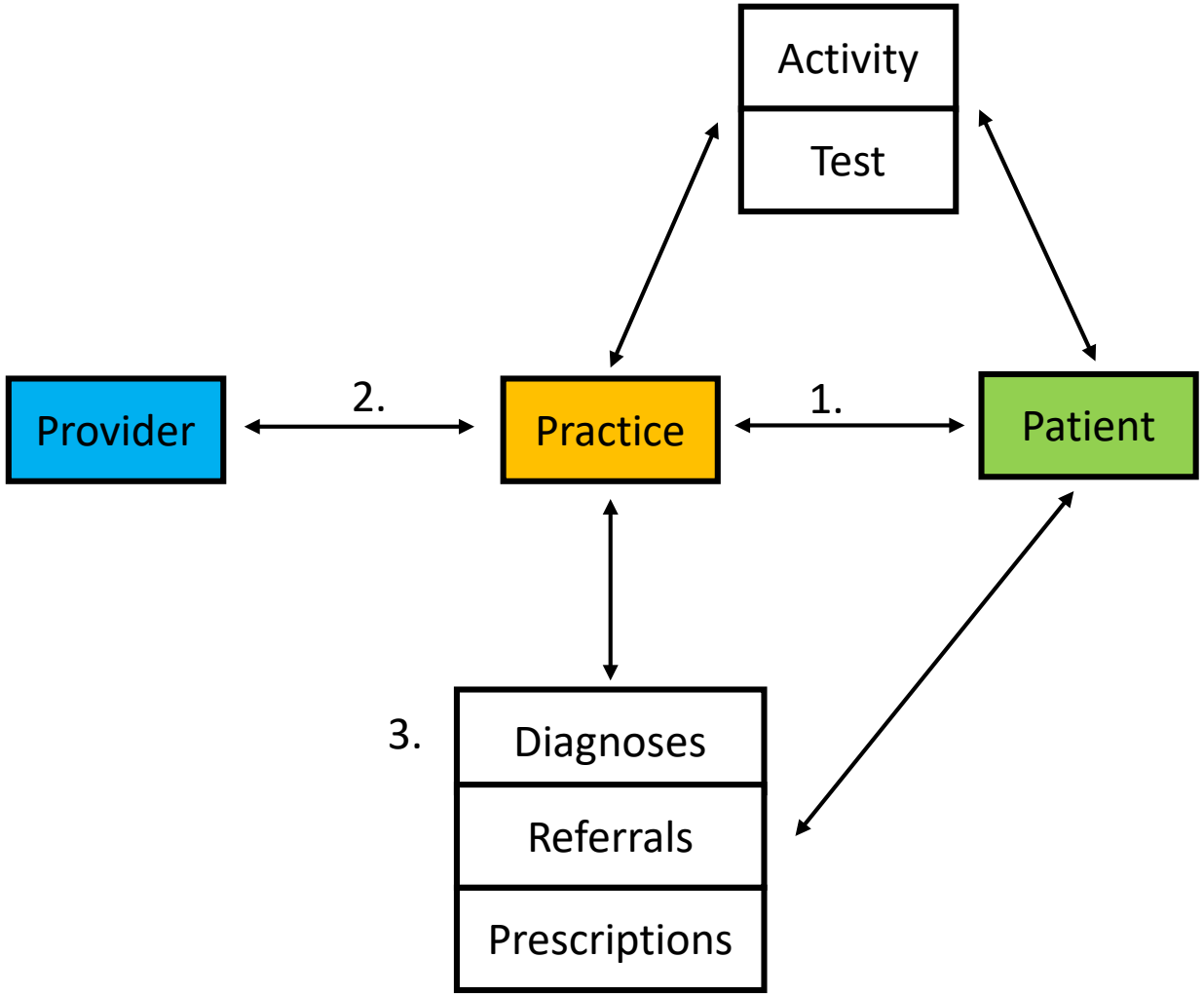
Management:

- 30.5 million referrals
- 131.5 million tests including imaging
- 103.9 million medication prescriptions

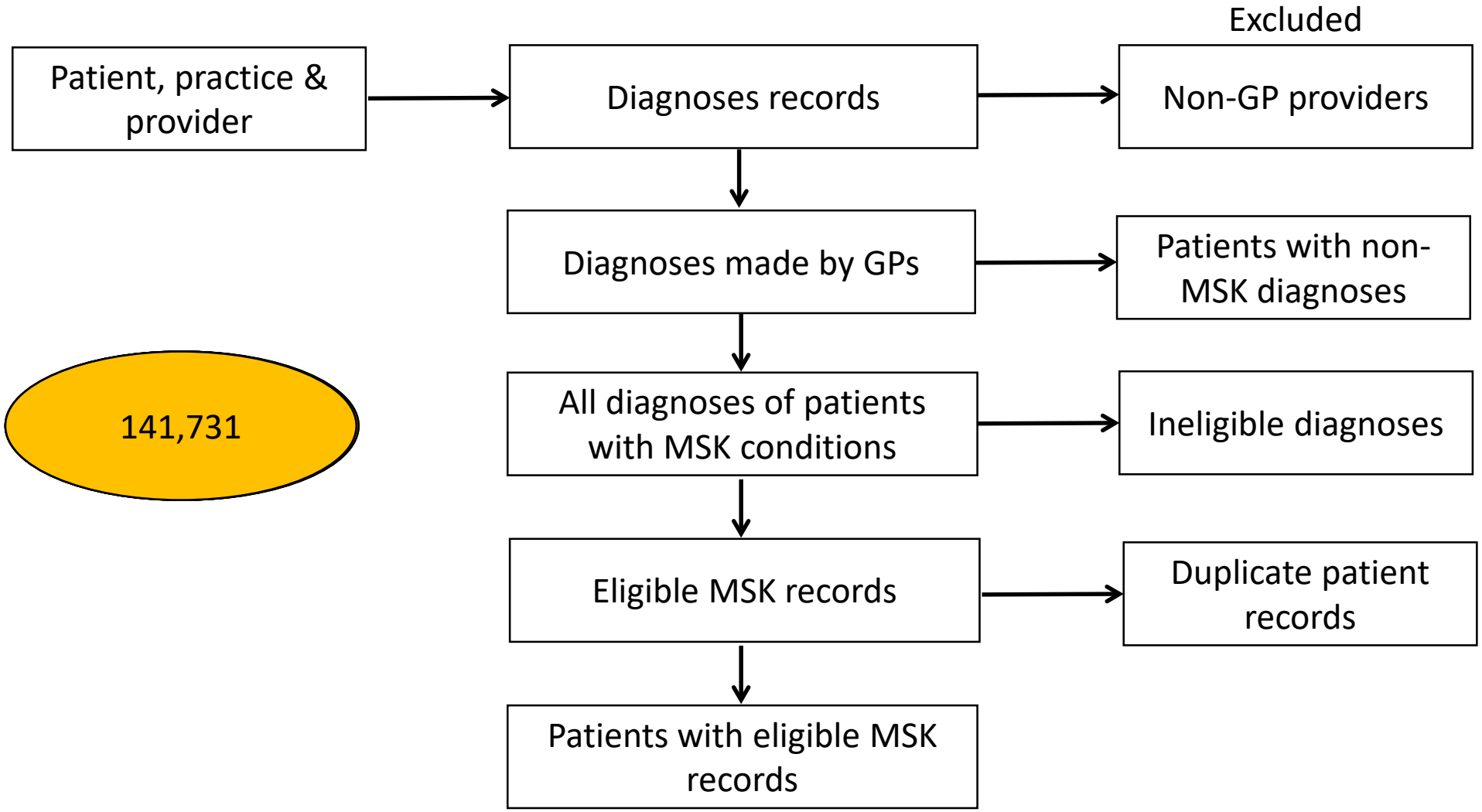
Eligibility Criteria

Diagnoses: 2014-2018	Activity	Referrals	Prescriptions	Radiology tests
Low back (>18 years)	Encounter	Orthopaedic	Simple analgesics	Lumbar x-ray
Knee (>45 years)	Surgery	Neurosurgery	Anti-inflammatories	Lumbar CT
Shoulder (>45 years)	Visit	Rheumatology	Opioids	Lumbar MRI
Neck (>45 years)	GP	Sports medicine	Chondroitin	Knee x-ray
		Pain management	Glucosamine	Knee CT
Exclude:		Geriatrics		Knee MRI
Fracture (except lumbar)		Neurology		Shoulder x-ray
Dislocation		Rehabilitation		Shoulder ultrasound
Amputation		Physiotherapy		Shoulder MRI
Lesion		Chiropractor		Neck x-ray
Synovectomy		Osteopathy		Neck ultrasound
Synovitis		Massage		Neck MRI
Cauda equina		Exercise		
		Radiology		

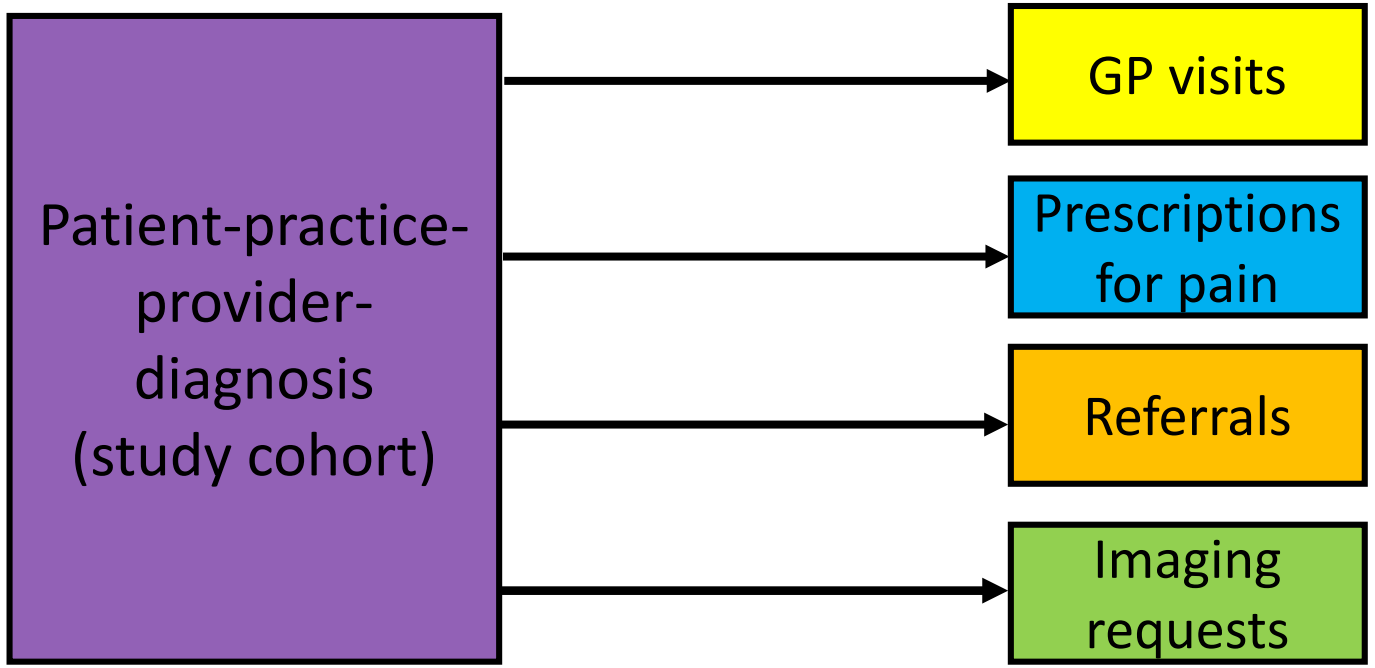
Tables linked by common fields



Selecting eligible study cohort



Merging study cohort with care options



Study cohort

Diagnosis	Patients	GP activity	Prescriptions	Referrals
Low back condition	80,918	1,133,835	535,489	85,114
Knee condition	33,840	532,920	237,453	49,992
Shoulder condition	27,677	456,896	195,274	39,135
Neck condition	15,622	261,135	119,020	23,517
Musculoskeletal condition*	141,731	2,384,786	897,593	163,445

* Patients may have multiple MSK conditions

Plan

Use the dataset to examine:

- Patterns and timing of care
- Health care utilisation
- Association between care and patient- and provider-related factors
- Prevalence of comorbidities and specific diagnoses

❖ Ultimately, to improve the provision of evidence-based care for people with musculoskeletal conditions in general practice

Discussion

- POLAR database has facilitated identification of GP visits, prescriptions for pain relief, imaging requests and related referrals for people with musculoskeletal conditions
- Dataset is representative of patient care by general practitioners in south-eastern Victoria
- No information about presenting complaint
- Missing data
- Unable to identify same patients who attend different practices

Conclusion

- Use of the POLAR database is a novel way to gain a broad picture of the patterns of care for musculoskeletal conditions in general practice

- Potential to use this database to explore the management of other conditions in general practice and link to other datasets (e.g. hospital administrative data)

Acknowledgements

Arthritis AUSTRALIA

OUTCOME HEALTH

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