Primary care initiatives focused on the secondary prevention and management of chronic pain: a scoping review of the Australian literature

Pippy Walker\textsuperscript{A,D}, Simone De Morgan\textsuperscript{A}, Duncan Sanders\textsuperscript{B}, Michael Nicholas\textsuperscript{B} and Fiona M. Blyth\textsuperscript{C}

\textsuperscript{A}The Australian Prevention Partnership Centre and Menzies Centre for Health Policy, School of Public Health, Faculty of Medicine and Health, University of Sydney, Charles Perkins Centre D17, Camperdown, NSW 2006, Australia.

\textsuperscript{B}Pain Management Research Institute, Sydney Medical School – Northern, Faculty of Medicine and Health, University of Sydney, Douglas Building, Royal North Shore Hospital, St Leonards, NSW 2065, Australia.

\textsuperscript{C}School of Public Health, Faculty of Medicine and Health, University of Sydney, Edward Ford Building A27, Camperdown, NSW 2006, Australia.

\textsuperscript{D}Corresponding author. Email: pippy.walker@sydney.edu.au
Appendix S1. Published Literature Search Terms (conducted April 2018)

Medline Search Strategy (MeSH terms)

1. exp PAIN/
2. exp Pain Management/
3. exp Pain Measurement/
4. pain.mp.
5. 1 or 2 or 3 or 4
6. exp Primary Health Care/
7. exp General Practice/
8. *health personnel/ or *allied health personnel/ or *community health workers/ or exp dental auxiliaries/ or *licensed practical nurses/ or *nurses' aides/ or *pharmacy technicians/ or *physical therapist assistants/ or *physician assistants/ or *audiologists/ or *case managers/ or exp dentists/ or exp nurses/ or *nutritionists/ or *occupational therapists/ or *optometrists/ or *pharmacists/ or *physical therapists/ or *general practitioners/ or *occupational health physicians/ or *physicians, family/ or *physicians, primary care/ or *physicians, women/ or *social workers/
9. "primary care adj.4".tw.
10. "primary healthcare".tw.
11. "general practice*".tw.
12. "medical practice*".tw.
14. "primary health network*".tw.
15. communit*.tw.
16. practitioner*.tw.
17. physician*.tw.
18. "pharmac*".tw.
19. chemist*.tw.
20. nurse*.tw.
49. dentist*.tw.
50. paramedic*.tw.
51. radiograph*.tw.
52. sonograph*.tw.
53. 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49 or 50 or 51 or 52
54. exp AUSTRALIA/
55. austral*.tw.
56. NSW.tw.
57. "New South Wales".tw.
58. Queensland*.tw.
60. Tasmania*.tw.
63. "South Australia"*.tw.
64. "Western Australia"*.tw.
65. 54 or 55 or 56 or 57 or 58 or 59 or 60 or 61 or 62 or 63 or 64
66. 5 and 53 and 65
67. limit 66 to yr="2007 -Current"

EMBASE Search Strategy (Emtree search terms – see Scopus)
1. exp pain/
2. exp pain assessment/
3. pain.mp.
4. 1 or 2 or 3
5. exp general practice/
6. exp general practitioner/
7. exp primary medical care/
8. exp primary health care/
9. exp community care/
10. exp health care personnel/
11. exp health practitioner/
12. paramedical personnel/ or *audiologist/ or *chiropractor/ or *dental assistant/ or *dentist/ or *dietitian/ or *nurse/ or *nursing assistant/ or *nursing staff/ or *occupational therapist/ or *occupational therapy assistant/ or *paramedical profession/ or *pharmacist/ or *pharmacy technician/ or *physiotherapist/ or *physiotherapist assistant/ or *speech language pathologist/
13. "primary care adj.4".tw.
15. "general practice".tw.
17. "family practice".tw.
18. "primary health network".tw.
19. communit*.tw.
20. practitioner*.tw.
22. "pharmac*".tw.
23. chemist*.tw.
24. nurse*.tw.
27. audiollog*.tw.
29. dietitian*.tw.
30. nutritionist*.tw.
31. "exercise physiology*".tw.
32. hydrotherapist*.tw.
33. "occupational therapy*".tw.
34. osteopath*.tw.
35. physiotherapist*.tw.
36. "physical therapist*".tw.
37. psychologist*.tw.
38. counselor*.tw.
39. "social work*".tw.
40. "welfare officer*".tw.
41. podiatrist*.tw.
42. "speech pathology*".tw.
43. "speech therapist*".tw.
44. chiropodist*.tw.
45. naturopath*.tw.
46. acupuncturist*.tw.
47. "massage therapist*".tw.
48. homeopath*.tw.
49. therapist*.tw.
50. herbalist*.tw.
51. hypnotherapist*.tw.
52. optometrist*.tw.
53. dentist*.tw.
54. paramedic*.tw.
55. radiographer*.tw.
56. sonograph*.tw.
57. 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49 or 50 or 51 or 52 or 53 or 54 or 55 or 56
58. exp Australia/
59. austral*.tw.
60. NSW.tw.
61. "New South Wales".tw.
63. Victoria*.tw.
64. Tasmania*.tw.
66. "Northern Territory".tw.
67. "South Australia".tw.
68. "Western Australia".tw.
69. 58 or 59 or 60 or 61 or 62 or 63 or 64 or 65 or 66 or 67 or 68 or 69
70. 4 and 57 and 69
71. limit 70 to yr="2007 -Current"

**CIINAHL Search Strategy**

S61 S3 AND S47 AND S59  Limiters - Published Date: 20070101-
S60 S3 AND S47 AND S59
S59 S48 OR S49 OR S50 OR S51 OR S52 OR S53 OR S54 OR S55 OR S56 OR S57 OR S58
S58 ""Western Australia""
S57 ""South Australia""
S56 ""Northern Territory"
S55 ""Australian Capital Territory""
"Tasmania*"
"Victoria*"
"Queensland*"
"New South Wales"
"NSW"
"austral*"
(MH "Australia+")
S4 OR S5 OR S6 OR S7 OR S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15 OR S16 OR S17 OR S18 OR S19 OR S20 OR S21 OR S22 OR S23 OR S24 OR S25 OR S26 OR S27 OR S28 OR S29 OR S30 OR S31 OR S32 OR S33 OR S34 OR S35 OR S36 OR S37 OR S38 OR S39 OR S40 OR S41 OR S42 OR S43 OR S44 OR S45 OR S46
"sonograph*"
"radiograph*"
"paramedic*"
"dentist*"
"optometr*"
"hypnotherapist*"
"herbalist*"
"therapist*"
"homeopath*"
"massage therapist*"
"acupunctur*"
"naturopath*"
"chirop*"
"speech therapist*"
"speech patholog*"
"podiatr*"
S30 "welfare officer*"
S29 "social work*"
S28 "counsel*"
S27 "psycholog*"
S26 "physical therapist*"
S25 "physiotherap*"
S24 "osteopath*"
S23 "occupational therap*"
S22 "dietitian*"
S21 "diabetes educat*"
S20 "audiolog*"
S19 "health worker*"
S18 "allied health"
S17 "chemist*"
S16 "physician*"
S15 "practitioner*"
S14 "communit*"
S13 "primary health network*"
S12 "family practice*"
S11 "medical practice*"
S10 "general practice*"
S9 "primary healthcare"
S8 "primary care"
S7 (MM "Rural Health Personnel")
S6 (MM "Audiologists") OR (MH "Dental Auxiliaries") OR (MM "Dietetic Technicians, Registered") OR (MM "Dietitians") OR (MM "Nursing Assistants") OR (MM "Occupational Therapy Assistants") OR (MM "Occupational Therapists") OR (MM "Ophthalmic Technologists") OR (MM
"Pharmacy Technicians") OR (MM "Physician Assistants") OR (MM "Recreational Therapists") OR (MM "Social Workers") OR (MM "Speech-Language Pathology Assistants") OR (MM "Acupuncturists") OR (MM "Chiropractors") OR (MM "Aromatherapists") OR (MM "Herbalists") OR (MM "Massage Therapists") OR (MM "Reiki Practitioners") OR (MM "Case Managers") OR (MH "Dentists+") OR (MH "Expert Clinicians+") OR (MH "Mental Health Personnel+") OR (MH "Nursing Manpower+") OR (MM "Osteopaths") OR (MM "Podiatrists") OR (MM " Physicians, Women") OR (MM " Radiologists")
S5 (MM "Primary Health Care")
S4 (MM "Family Practice")
S3 S1 OR S2
S2 "pain.mp"
S1 (MH "Pain+")

Cochrane Search Strategy

#1 MeSH descriptor: [Pain] explode all trees
#2 pain:ti,ab,kw (Word variations have been searched)
#3 MeSH descriptor: [Pain Management] explode all trees
#4 #1 or #2 or #3
#5 MeSH descriptor: [Primary Health Care] explode all trees
#6 MeSH descriptor: [General Practice] explode all trees
#7 MeSH descriptor: [Case Managers] explode all trees
#8 MeSH descriptor: [Occupational Therapists] explode all trees
#9 MeSH descriptor: [Community Health Workers] explode all trees
#10 MeSH descriptor: [Dental Auxiliaries] explode all trees
#11 MeSH descriptor: [Nurses' Aides] explode all trees
#12 MeSH descriptor: [Pharmacy Technicians] explode all trees
#13 MeSH descriptor: [Physical Therapist Assistants] explode all trees
#14 MeSH descriptor: [Dentists] explode all trees
#15 MeSH descriptor: [Nurses] explode all trees
#16 MeSH descriptor: [Pharmacists] explode all trees
#17 MeSH descriptor: [Physicians, Family] explode all trees
#18 MeSH descriptor: [Physicians, Women] explode all trees
#19 MeSH descriptor: [Occupational Health Physicians] explode all trees
#20 MeSH descriptor: [Osteopathic Physicians] explode all trees
#21 MeSH descriptor: [General Practitioners] explode all trees
#22 MeSH descriptor: [Physicians, Primary Care] explode all trees
#23 MeSH descriptor: [Physical Therapists] explode all trees
#24 MeSH descriptor: [Nutritionists] explode all trees
#25 MeSH descriptor: [Community Health Services] explode all trees
#26 MeSH descriptor: [Social Work] explode all trees
#27 MeSH descriptor: [Counseling] explode all trees
#28 MeSH descriptor: [Pharmaceutical Services] explode all trees
#29 MeSH descriptor: [Nursing Care] explode all trees

#30 "primary care":ti,ab,kw (Word variations have been searched)
#31 "primary healthcare":ti,ab,kw (Word variations have been searched)
#32 "general practice*":ti,ab,kw (Word variations have been searched)
#33 "medical practice*":ti,ab,kw (Word variations have been searched)
#34 "family practice*":ti,ab,kw (Word variations have been searched)
#35 "primary health network*":ti,ab,kw (Word variations have been searched)
#36 communit*:ti,ab,kw (Word variations have been searched)
#37 practitioner*:ti,ab,kw (Word variations have been searched)
#38 physician*:ti,ab,kw (Word variations have been searched)
#39 pharmac*:ti,ab,kw (Word variations have been searched)
#40 chemist*:ti,ab,kw (Word variations have been searched)
#41 nurse*:ti,ab,kw (Word variations have been searched)
"allied health".ti,ab,kw (Word variations have been searched)
"health worker".ti,ab,kw (Word variations have been searched)
audiolog*.ti,ab,kw (Word variations have been searched)
"diabetes educat".ti,ab,kw (Word variations have been searched)
dietitian*.ti,ab,kw (Word variations have been searched)
nutritionist*.ti,ab,kw (Word variations have been searched)
"exercise physiolog".ti,ab,kw (Word variations have been searched)
hydrotherapist*.ti,ab,kw (Word variations have been searched)
"occupational therap".ti,ab,kw (Word variations have been searched)
osteopath*.ti,ab,kw (Word variations have been searched)
physiotherap*.ti,ab,kw (Word variations have been searched)
"physical therapist".ti,ab,kw (Word variations have been searched)
psycholog*.ti,ab,kw (Word variations have been searched)
counsel*.ti,ab,kw (Word variations have been searched)
"social work".ti,ab,kw (Word variations have been searched)
"welfare officer".ti,ab,kw (Word variations have been searched)
podiatr*.ti,ab,kw (Word variations have been searched)
"speech patholog".ti,ab,kw (Word variations have been searched)
"speech therapist".ti,ab,kw (Word variations have been searched)
chiropr*.ti,ab,kw (Word variations have been searched)
naturopath*.ti,ab,kw (Word variations have been searched)
acupunctur*.ti,ab,kw (Word variations have been searched)
"massage therapist".ti,ab,kw (Word variations have been searched)
homeopath*.ti,ab,kw (Word variations have been searched)
therapist*.ti,ab,kw (Word variations have been searched)
herbalist*.ti,ab,kw (Word variations have been searched)
hypnotherapist*.ti,ab,kw (Word variations have been searched)
#69 optometr*:ti,ab,kw (Word variations have been searched)
#70 dentist*:ti,ab,kw (Word variations have been searched)
#71 paramedic*:ti,ab,kw (Word variations have been searched)
#72 radiograph*:ti,ab,kw (Word variations have been searched)
#73 sonograph*:ti,ab,kw (Word variations have been searched)
#74 #5 or #6 or #7 or #8 or #9 or #10 or #11 or #12 or #13 or #14 or #15 or #16 or #17 or #18 or
#19 or #20 or #21 or #22 or #23 or #24 or #25 or #26 or #27 or #28 or #29 or #30 or #31 or #32 or
#33 or #34 or #35 or #36 or #37 or #38 or #39 or #40 or #41 or #42 or #43 or #44 or #45 or #46 or
#47 or #48 or #49 or #50 or #51 or #52 or #53 or #54 or #55 or #56 or #57 or #58 or #59 or #60 or
#61 or #62 or #63 or #64 or #65 or #66 or #67 or #68 or #69 or #70 or #71 or #72 or #73
#75 MeSH descriptor: [Australia] explode all trees
#76 austral*:ti,ab,kw (Word variations have been searched)
#77 NSW:ti,ab,kw (Word variations have been searched)
#78 "New South Wales":ti,ab,kw (Word variations have been searched)
#79 Queensland*:ti,ab,kw (Word variations have been searched)
#80 Victoria*:ti,ab,kw (Word variations have been searched)
#81 Tasmania*:ti,ab,kw (Word variations have been searched)
#82 "Australian Capital Territory":ti,ab,kw (Word variations have been searched)
#83 "Northern Territory":ti,ab,kw (Word variations have been searched)
#84 "South Australia*":ti,ab,kw (Word variations have been searched)
#85 "Western Australia*":ti,ab,kw (Word variations have been searched)
#86 #75 or #76 or #77 or #78 or #79 or #80 or #81 or #82 or #83 or #84 or #85
#87 #4 and #74 and #86
#88 #4 and #74 and #86 Publication Year from 2007 to 2018
Appendix S2. Websites Searched for Grey Literature (conducted September 2018)

Health related Organisations

- Primary Health Networks (PHNs) x 31
- Departments of Health (Federal, WA, SA, NT, QLD, NSW, Vic, ACT, Tas)
- NSW Agency for Clinical Innovation (ACI)
- National Prescribing Service (NPS) MedicineWise
- Sax Institute
- Consumers Health Forum of Australia
- Therapeutic Goods Administration (TGA) (*nil found*)

Pain Bodies

- Painaustralia
- Australian Pain Society
- Australian Pain Management Association
- Chronic Pain Australia
- International Association for the Study of Pain (IASP)

Organisations of conditions associated with chronic pain

- Arthritis Australia
- Musculoskeletal Australia
- MS Australia
- Pelvic Pain Foundation of Australia
- Osteoporosis Australia (*nil found*)
- Fibromyalgia Australia (*nil found*)
- ME/CFS Australia (*nil found*)
- Endometriosis Australia (*nil found*)
- CRPS Network Australia (*nil found*)
- Headache Australia (*nil found*)
- Ankylosing Spondylitis Groups of Australia (*nil found*)
- Trigeminal Neuralgia Association of Australia (*nil found*)

Health Care Professional Organisations

- Australian College of Rural and Remote Medicine
- The Pharmacy Guild of Australia
• Pharmaceutical Society of Australia
• Australian Psychology Society
• Royal Australian College of Physicians (RACGP) (nil found)
• Australian and New Zealand College of Anesthetists (nil found)
• Australian Physiotherapy Association (nil found)
• The Australian Clinical Psychology Association (nil found)
• Exercise and Sports Science Australia (ESSA) (nil found)
• Australian College of Nursing (nil found)

Research Groups

• Pain Management Research Institute (USyd and RNSH)
• Neuroscience Research Australia (NeuRA)
• The Primary Health Care and Research Information Service (PHCRIS)
• eCentre clinic (Macquarie University)
• Australian Primary Health Care Research Institute (APHCRI)
Appendix S3. List of Key Experts Consulted (December 2018)

- Ms Carol Bennett, CEO, Painaustralia
- Mr David Beveridge, Nurse Practitioner, Lismore Base Hospital, Multidisciplinary Pain Management Clinic
- Dr Matthew Bryant, Director Townsville Pain Persistent Pain Service and North Queensland Persistent Pain Management Service
- Ms Lesley Brydon, Founding CEO Painaustralia (retired)
- Dr Anne Daly, Physiotherapy and Pain Management Consultant
- Ms Terina Grace, CEO and Managing Director Black Swan Health
- Ms Fiona Hodson, Clinical Nurse Consultant Pain Management, Hunter Integrated Pain Service, Surgical Services
- Associate Professor Malcolm Hogg, painaustralia
- Dr Simon Holliday, GP and Addiction Medicine Specialist
- Ms Jenni Johnson, Manager, Pain Management Network, NSW ACI
- Dr Michelle King, Senior Lecturer School of Pharmacy and Pharmacology, Griffith University
- Ms Joyce McSwan, Pharmacist, Pain Educator Gold Coast PHN
- Dr Milana Votrubec, GP specialising in pain
- Ms Leanne Wells, Consumers Health Forum and consumer representative on Pain, Australia
- Professor Andrew Wilson, Co-Director The Australian Prevention Partnership Centre and Co-Director Menzies Centre for Health Policy
Appendix S4. Literature Screening Questions

Title and abstract screen:

1. Is the paper focused on preventing, assessing or managing pain (excluding cancer pain)?
   a. Yes: Continue to question 2
   b. No: Exclude

2. Was the research primarily at the primary care/ community setting (e.g. general practice, allied health, community health centre, workplace settings)?
   a. Yes: Continue to question 3
   b. No: Exclude

3. Was the research conducted in, or focused on the Australian context?
   a. Yes: Continue to question 4
   b. No: Exclude

4. Does the paper discuss or describe a relevant initiative?
   a. Yes: Continue to full text review (questions 1-6)
   b. No: Exclude

The above in addition to the following questions on full-text review:

5. Has the initiative been implemented in the real-world setting?
   a. Yes: Group together with other implemented initiatives and continue to question 6
   b. No: Group together with other non-implemented initiatives and continue to question 6

6. Does the paper identify outcomes (any) that have been evaluated through research?
   a. Yes: Group together with other evaluated initiatives
   b. No: Group together with other non-evaluated initiatives
### Appendix S5. Identified initiatives and supporting evidence

#### Table S1. Initiatives addressing access to multidisciplinary care and improving consumer health literacy and care navigation: summary and evidence

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Study Type</th>
<th>Effectiveness</th>
<th>Costs</th>
<th>Acceptance</th>
<th>Feasibility</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Consumer pain programs – group based</strong></td>
<td></td>
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</tr>
<tr>
<td>Osteoarthritis of the Knee self-management program (OAK) and Stanford Arthritis Education program (Coleman et al. 2010; Coleman et al. 2011; Coleman et al. 2012; McQuade 2015)</td>
<td>The aims of the program are to improve quality of life, physical function and reduce pain. The program is conducted over six weekly 2.5hr sessions primarily by physiotherapists. Additional handouts and reference book readings are also provided. Groups run with up to 12-14 participants.</td>
<td>E</td>
<td>+</td>
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<tr>
<td>Community-based aquatic exercise program ‘Waves’ (Barker et al. 2016)</td>
<td>Exercise classes were delivered to adults with musculoskeletal conditions across 18 Australian community aquatic centres to help reduce pain and joint stiffness, improve physical function and improve quality of life. The intervention is a peer-led, 45-minute weekly aquatic exercise class that includes aerobic, strength, flexibility and balance exercises over 12 weeks.</td>
<td>E</td>
<td>+/-</td>
<td></td>
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<tr>
<td>Stanford arthritis self-management education program (ASMP)/ Arthritis Self-Management Course (ASMC) (Osborne et al. 2006; Osborne et al. 2007; Ackerman et al. 2012; Ackerman et al. 2013)</td>
<td>A six-week, group based self-management program for people with hip or knee osteoarthritis that have been referred to an orthopaedic surgeon. It consists of weekly 2.5hr sessions with up to 12 participants per group. The course is delivered in a prescriptive format by two leaders; one peer leader (who has arthritis or personal experience of arthritis) and one health professional leader (e.g. nurse or physiotherapist).</td>
<td>E</td>
<td>-</td>
<td></td>
<td>+/-</td>
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<tr>
<td>PREVENT Trial (Traeger et al. 2014; Lee et al. 2015; Traeger et al. 2017; Traeger et al. 2018)</td>
<td>Participants either received pain education (2x1hr sessions of pain education by the trained study physiotherapist to (1) reframe any unhelpful beliefs about the nature of low back pain (LBP), (2) present key concepts of pain biology, and (3) evaluate understanding and discuss recovery), or sham education sessions based on a reflective, non-directive approach in addition to recommended first line care for acute low back pain.</td>
<td>E</td>
<td>-</td>
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<td>+</td>
</tr>
<tr>
<td>TOPS: Trial of prevention strategies for low back pain</td>
<td>Group-based exercise and educational classes for preventing recurrence of LBP in people who have recently recovered from an episode of LBP. The program is a 12-week intervention</td>
<td>E</td>
<td>-</td>
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<tr>
<td>Name</td>
<td>Description</td>
<td>Study Type</td>
<td>Effectiveness</td>
<td>Costs</td>
<td>Acceptance</td>
<td>Feasibility</td>
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<td>(Stevens et al. 2016; Stevens et al. 2018)</td>
<td>consisting of a single 1hr assessment session, three 30-minute individual sessions and eight 1hr comprehensive group exercise and education sessions from a physiotherapist.</td>
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<td>+</td>
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<td>+</td>
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</tr>
<tr>
<td>Worksafe Victoria and the Transport Accident Commission (TAC) Network pain management program (NPMP) (Daly 2013; Elder 2013)</td>
<td>NPMP is for clients with musculoskeletal injuries and persistent pain from a transport accident with the aim of increasing functional ability and improving quality of life. Multidisciplinary healthcare interventions and education are provided to groups of adult clients by a multidisciplinary team that have skills and experience in delivering pain management treatment.</td>
<td>O</td>
<td>+</td>
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<tr>
<td>Brief Pain Self-Management Program (BPSM) ACI community led pain management programs (Electronic Persistent Pain Outcomes Collaboration (ePPOC) 2017a, 2017c; Pain Management Research Institute 2017)</td>
<td>This program is for patients with chronic pain who are independently mobile. The program consists of six 2hr group sessions over six weeks. Two facilitators run the session which could be physiotherapists, psychologists, nurses, occupational therapists, multi-cultural health workers, health education officers and bilingual educators who have undertaken a course in the skills required to conduct a pain self-management program.</td>
<td>O</td>
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<tr>
<td>Self-Training Educative Pain Sessions (STEPS) (Davies et al. 2011a; Davies et al. 2011b; Grace et al. 2014)</td>
<td>The program comprises six group sessions run over two days led by clinical psychologists, an occupational therapist, a physical therapist, and pain medicine physicians to impart their knowledge and to share skills with attendees. Four weeks following the session patients meet one on one with each practitioner to devise an individually tailored pain management plan, which is forwarded to the patient’s GP/referrer for implementation in the primary care setting.</td>
<td>O</td>
<td>+</td>
<td>+</td>
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<tr>
<td>Turning Pain into Gain Program (King and Sav 2014; King and Mey 2015; King et al. 2015; King et al. 2016; King and Mey 2017; Joypaul et al. 2018)</td>
<td>The program aims to help patients manage their pain with appropriate support in primary care and includes individual discussions with patients to support them and guide them to relevant allied health services, and ten evidence-based education and information sessions provided by a multidisciplinary team. The group sessions last 2hrs and are held monthly.</td>
<td>O</td>
<td>+</td>
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<tr>
<td>Multidisciplinary cognitive behavioural therapy and graded exercise therapy program for Chronic Fatigue States (Sandler et al. 2015)</td>
<td>A specialist-led, multidisciplinary outpatient clinic for chronic fatigue. The 12-week program includes four treatment modules provided by the clinicians (exercise physiologists and clinical psychologists) to form an integrated approach. Regular case discussions are conducted between the health providers and an expert medical practitioner.</td>
<td>O</td>
<td>+</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Study Type</td>
<td>Effectiveness</td>
<td>Costs</td>
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<td>Feasibility</td>
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<tr>
<td>Rheumatoid Arthritis Self-management education program (RA-P) (Vermaak et al. 2013; Vermaak et al. 2015)</td>
<td>The program consists of six weekly 2.5hr group educational sessions delivered by the same two health professionals. New skills and techniques are introduced for exercise and relaxation each week with continuous feedback and goal setting to reinforce self-management. Supplementary written material was also provided. Groups were between 8-15 participants.</td>
<td>O</td>
<td>+</td>
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<tr>
<td>Back to Life program (Casey and McCalman 2012)</td>
<td>This program encompasses twice weekly 3hr group sessions over eight weeks, with up to eight participants with chronic back pain. Components of the group include physiotherapy, occupational therapy, social work, psychology, dietetics, nursing, hydrotherapy, relaxation and pain education. An extensive 42-page booklet was developed and given to participants on their final session to aid in promoting continued self-management in the community.</td>
<td>O</td>
<td>+</td>
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<td></td>
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</tr>
<tr>
<td>Cognitive behavioural, interdisciplinary work-related activity program (Light WRAP) (Dunstan and Covic 2007)</td>
<td>Targeting pain disabled injured workers, a cognitive-behavioural, interdisciplinary intervention was delivered using a multi-contributor provider model (a clinical psychologist and physiotherapist from separate practices, working in liaison with the participant’s occupational rehabilitation provider and treating doctor). Groups of six participants attended for one half day per week for six weeks in a community room and received a participant workbook. Work-Related Activity Programs (WRAPs) are a set of suggested biopsychosocial interventions that target physical, psychological and occupational functioning to facilitate work resumption. The light WRAP is recommended for use in the subacute and early chronic phases, and the intensive pain clinic type WRAP in the chronic phase only.</td>
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<tr>
<td>Take charge of pain (TCOP) program (Hoon et al. 2017)</td>
<td>Using aspects of the Stanford model of chronic disease self-management, Arthritis SA redesigned a shorter, community-orientated self-management education program delivered by health professionals. The TCOP program is delivered over two 2.5hr sessions one week apart to groups of between 10-14 community members. Delivered by trained health educators, participants receive resource packs with information regarding session content, activity logs and local support services.</td>
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<tr>
<td>Community based group exercise program incorporating CBT (Steffens et al. 2014)</td>
<td>The ten-week group exercise program involved a strong educational component combined with physical retraining for patients with chronic non-specific low back pain (NSLBP) by physiotherapists. A book of exercises and educational materials related to back pain and posture was also provided.</td>
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<tr>
<td>Modified Self-Training Educatve Pain Sessions (mSTEPS) program (Briggs et al. 2012; Slater et al. 2012a)</td>
<td>The mSTEPS program involved the same components as the original STEPS model, with modules delivered in a more compressed format of 6.5hrs over a single day for adults with persistent low back pain.</td>
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<tr>
<td>Ankylosing Spondylitis patient education program (AS-P) (Inderjeeth et al. 2016; McQuade et al. 2016)</td>
<td>A multidimensional AS-P for patients referred via a rheumatologist. Participants attended a weekly 2.5hr patient centred group education session facilitated by the same two health professionals over six weeks.</td>
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<tr>
<td>Mindfulness based functional therapy (MBFT) group intervention (Schutze 2011; Schutze et al. 2014)</td>
<td>Aimed at improving emotional and physical functioning in chronic back pain patients using mindfulness training, psycho-education and physiotherapeutic movement retraining. The group intervention consisted of eight weekly 2hr sessions co-facilitated by psychologists and physiotherapists.</td>
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<tr>
<td>Schools Menstrual Education 'ME' Program (Pelvic Pain Foundation of Australia 2017)</td>
<td>The aim is to educate teens from years nine and ten regarding normal menstrual symptoms, how to recognise when symptoms are abnormal, which symptoms are suggestive of endometriosis, and where to obtain assistance should their menstrual symptoms be distressing. This 1hr program is delivered by fully trained educators in schools and incorporates specifically developed resources for girls with pain to take home.</td>
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<tr>
<td>Supporting Knowledgeable and Empowered Communities in the Hunter New England (SKECH) project (Wales et al. 2012)</td>
<td>An e-bulletin was developed as a vehicle linking a hospital pain service with the community and to open communication channels. Subscribers to the e-bulletin drove the direction of the project. Four listening posts were conducted followed by public lectures providing information about chronic pain management and the need for active self-management.</td>
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**Consumer pain programs – clinical or individual intervention**

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<tr>
<td>Work Injury Screening and Early Intervention (WISE) Study (Nicholas 2016)</td>
<td>An early identification and intervention protocol vs. usual care in the NSW workers compensation environment for injured public health workers. The protocol requires psychological screening of all those having a week off work within seven days of their injury using the ten item OMPQ, followed by early assessment (2-3 weeks after injury) by a psychologist who was approved to conduct up to six sessions (weekly) for identified obstacles for return to work (RTW).</td>
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<td>Pain coping skills training (PCST) program (Bennell et al. 2012a; Hunt et al. 2013; Bennell et al. 2014; Bryant et al. 2014; Nielsen et al. 2014)</td>
<td>A 12-week PCST intervention involving ten individual physiotherapy visits together with home practice and home-based exercise for patients aged &gt;50yrs with symptomatic and radiographic knee OA. The three groups evaluated were exercise alone, PCST alone or integrated PCST and exercise. Psychologists were responsible for the ongoing training and monitoring of the physiotherapists.</td>
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<tr>
<td>Spinal Pain Assessment (SPA) clinic (Cox et al. 2016)</td>
<td>Each multidisciplinary clinic involves education and access to conservative management concepts, summation of recommendations for further investigations and/or treatment where appropriate. The clinic places an emphasis on self-management strategies and recommendations for implementation in primary care. It is not an ongoing treatment clinic.</td>
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<tr>
<td>Back Pain Assessment Clinic (BAC) (Moi et al. 2016)</td>
<td>The BAC provides community-based allied health care for patients referred with mechanical low back pain (with non-operative spinal conditions referred for hospital specialist care).</td>
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<tr>
<td>MND NSW volunteer massage program (Wallace and Dalkic 2011)</td>
<td>MND NSW recruited and trained volunteers to equip them with the knowledge and skills to provide a simple hand and foot massage to people with motor neurone disease. Most recipients received massages weekly.</td>
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<tr>
<td>Disease State Management (DSM) Care program for people with acute low back pain in the community pharmacy (Shaheed et al. 2016)</td>
<td>The proposed program involves patient screening by pharmacists (or pharmacy assistant), enrolment into the DSM program, clinical information gathering, referral to GP for suspected red flag conditions, or provision of simple analgesic, advice to stay active and reassurance with 1-2 week follow up for NSLBP.</td>
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<td>Self-management Plus intervention for the LINKIN Health Study (Hoon-Leahy et al. 2012; Dent et al. 2016)</td>
<td>Through a co-creating of knowledge translation (Co-KT) framework, an intervention was developed, implemented and evaluated to improve access to healthcare services for musculoskeletal conditions. The intervention included a triage service (via a computer assisted telephone interview), which included referral to physiotherapists, GPs, and community health-based self-management and physical activity options. Physiotherapists provided supervised physical activity classes over ten weeks.</td>
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<td>Pain MedsCheck (Hunt 2018)</td>
<td>A new trial program through community pharmacies across Australia, which will support people suffering from ongoing chronic pain. It will involve professional pharmacist face-to-face consultation with patients to review their medication and analgesic use and develop a written action plan incorporating education, self-management and referral to doctors or other experts where additional support is required. All participating pharmacists are obliged to complete free CPD accredited online training modules.</td>
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<td>Whiplash ImPaCT (Rebbeck et al. 2016)</td>
<td>This intervention is a clinical pathway of care, with care matched to the predicted risk of poor recovery. Participants with whiplash associated disorder (WAD) at low risk of ongoing pain and disability will receive up to three sessions of guideline-based advice and exercise with their primary healthcare provider. Participants at medium/high risk of developing ongoing pain and disability will be referred to a specialist who will conduct a more in-depth physical and psychological assessment. As a result, the specialist will liaise with the original primary healthcare provider and determine one of three further pathways of care.</td>
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<td>StressModEx - Physio led Stress Inoculation Training with exercise (Ritchie et al. 2015)</td>
<td>The intervention aims to assess whether Stress Inoculation Training (SIT) integrated with standard physiotherapy exercise delivered by physiotherapists is more effective than physiotherapy exercise alone in reducing neck pain and disability in individuals in acute WAD. SIT is a cognitive behavioural approach that teaches various general problem-solving and coping strategies to manage stress-related anxiety and provides important information to injured individuals about the impact of stress on their physical and psychological wellbeing. The intervention consists of ten clinical guideline recommended supervised physiotherapy exercise sessions integrated with six weekly SIT sessions.</td>
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<tr>
<td>Routine Opioid Outcome Monitoring (ROOM) Screening and Brief Intervention (Nielsen et al. 2019)</td>
<td>Computer-facilitated screening and brief intervention to support pharmacist identification of opioid-related problems and provide capacity for brief intervention including verbal reinforcement of tailored information sheets, supply of naloxone and referral back to the opioid prescriber.</td>
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<td>The PARTNER Study Model of Care (Hunter et al. 2018)</td>
<td>General practices and patients with knee osteoarthritis (OA) (&gt;45yrs) were recruited for an implementation intervention that aims to support and provide education to intervention group GPs to deliver effective management for patients using tailored online training and electronic medical record support. The intervention group patients will be referred to a centralised multidisciplinary service: the PARTNER Care Support Team (CST). The CST will be trained in behaviour change support and evidence-based knee OA management over 12 months. They will work with patients over 12 months to develop and implement a collaborative action plan focussed on key self-management behaviours and communicate with the patients GPs. Patients in the intervention group will receive tailored OA educational materials, a leg muscle strengthening program, and access to a weight-loss program as appropriate and agreed.</td>
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**Outreach patient services**

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<tr>
<td>Physiotherapy plus telephone health coaching using the Health Change Australia (HCA) Model of Health Change (Bennell et al. 2012b; Bennell et al. 2016; Hinman et al. 2016; Bennell et al. 2017b)</td>
<td>The program targeted inactive adults ≥50 years of age with knee pain and knee osteoarthritis. All participants received five 30-minute consultations with a physiotherapist over six months for education, home exercise, and physical activity advice. The intervention group also received 6-12 telephone coaching sessions by clinicians (nurses, occupational therapist and health psychologist) trained in behavioural-change support for exercise and physical activity.</td>
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<tr>
<td>Costs to Australian Private Insurance - Coaching Health (CAPICHe) study</td>
<td>Targeting health insurance customers with at least one chronic condition (namely low back pain, diabetes, CAD, heart failure, and COPD) and predicted high cost claims for the following 12 months, the intervention group received disease management services including mailed</td>
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<td>(Telephone health coaching) (Byrnes et al. 2012; Scuffham et al. 2018)</td>
<td>program awareness notifications, outbound health coach outreach and follow up calls, access on an inbound telephone basis to health coaches, tailored mailed educational material, tailored outreach specific material designed to encourage individuals with specific risks to talk with a health coach, and mailed health coach selected educational and other material.</td>
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<td>Chronic Pain Telehealth program (NSW Agency for Clinical Innovation 2016)</td>
<td>A telehealth service is offered for rural and regional patients with chronic pain via referral from their GP to a multidisciplinary pain clinic. GPs have the option to be part of the consultations or can receive correspondence from the pain clinic if consultations reach patients in their home.</td>
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<tr>
<td>Lower Murray Medicare Local pain management service (Dua et al. 2015)</td>
<td>A service combining skills of local health providers and metropolitan clinicians working as a multidisciplinary team. The team consists of metropolitan pain physicians and nurse practitioner, locally based service coordinator, oncologist, psychologist, physiotherapist, pharmacist, occupational therapist, podiatrist and yoga therapist. The service implemented telehealth to fast track surgical intervention if required and access to complimentary therapies.</td>
<td>No evaluation identified</td>
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<td>Brief advice and education, physio consultation, NSW Get Healthy Information and Coaching Service (GHS) (Williams et al. 2016)</td>
<td>Patients with chronic low back pain that are overweight or obese waiting for an outpatient consultation with an orthopaedic surgeon at a public tertiary referral hospital receive brief phone advice and education about the benefits of weight loss and physical activity for their conditions by trained telephone interviewers. They also receive a clinical consultation by a physiotherapist followed by a six-month telephone based lifestyle behaviour intervention consisting of ten individually tailored sessions (GHS). All health coaches, regardless of multidisciplinary background receive training.</td>
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<tr>
<td>Telecare Trial (Health Change Australia call methodology) (Hinman et al. 2017)</td>
<td>This intervention will compare existing care (a minimum of one phone call from a nurse for advice on osteoarthritis (OA) self-management) with the addition of exercise advice (5-10 calls over six months from a physiotherapist trained in behaviour change support to prescribe, monitor and progress a strengthening exercise program and physical activity plan) for people over 45yrs with knee symptoms consistent with knee OA.</td>
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<td><strong>Online consumer information initiatives</strong></td>
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<td>The Pain Course (Dear et al. 2013; Dear et al. 2015; Gandy et al. 2016; Dear et al. 2017; Friesen et al. 2017; Dear et al. 2018a; Dear et al. 2018b)</td>
<td>A clinician guided internet-delivered cognitive behavioural therapy (iCBT) program to reduce disability, anxiety, and depression associated with chronic pain. Treatment consists of five iCBT based lessons, five lesson summaries combined with homework tasks, nine additional resources, weekly email or telephone contact from a clinical psychologist, and automated emails over eight weeks.</td>
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<tr>
<td>Internet based pain coping skill training (PCST) (PainCOACH program),</td>
<td>Targeting adults with knee pain and OA ≥50 years of age, the intervention group received three inter-related interventions. There were (1) an online URL link to Arthritis Australia information, (2) access to PainCOACH (eight x 35-45min modules that teach pain coping skills completed</td>
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<td>online educational material (Arthritis Australia) AND Skype sessions with a physio (IMPACT-knee pain) (Dobson et al. 2014; Bennell et al. 2017a; Lawford et al. 2017; Williamson 2017)</td>
<td>one/week), and (3) seven Skype physiotherapy consultations with prescription of a home exercise program to be performed three times weekly. The intervention period is three months, with participants receiving further monthly PainCOACH boosters during the six months following the intervention period.</td>
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<tr>
<td>Internet based pain coping skill training (PCST) (PainCOACH program) (HOPE Trial) (Bennell et al. 2015; Bennell et al. 2018)</td>
<td>Targeting adults aged ≥50 years of age with persistent hip pain, this intervention consisted of access to either internet-based education and eight weekly information sheets (control group), or access to internet-based education, eight weekly information sheets, internet based PCST (PainCOACH) (intervention), plus five 30min face-to-face physical therapist sessions and a home exercise program three times per week for one year. The PainCOACH program translates key therapeutic components of face-to-face PCST for delivery in 8 highly interactive, automated training sessions. The programs eight weekly 35-45min modules each provide interactive training in a cognitive or behavioural pain coping skill. PainCOACH also includes several supplementary features to support use of new skills.</td>
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<tr>
<td>ePACT (Electronic personal administration of cognitive therapy) (Migliorini et al. 2011; Migliorini et al. 2016)</td>
<td>A flexible online psychological treatment using CBT and positive psychology based techniques, for individuals with spinal cord injury (SCI) who also live with depression or both depression and anxiety. ePACT is a ten module skills and psycho-educational program that is largely based on cognitive behaviour therapy principles but with the addition of positive psychology and mindfulness mediation aspects. It can be a self-help program on its own, however it is recommended to also have clinician support by phone and/or email. Individuals complete one module per week and complete between module activities. Modules can be completed from between 10-minutes to 1hr.</td>
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<tr>
<td>My Joint Pain Website (Umapathy et al. 2015)</td>
<td>The aim of the website is to provide a credible, tailored information source with a variety of self-assessment tools to improve disease knowledge and self-management of osteoarthritis.</td>
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<td>My back on track, my future (MBOT) compared to the back book (BB) (Lin et al. 2017)</td>
<td>LBP information was developed as five short audio-visual scenarios, filmed using Aboriginal community actors. This was compared to the existing the “Back Book” resource to ascertain which information was preferred and why, and perceptions about each resource and LBP management.</td>
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<td>SteppingUp (Osborne et al. 2012; Osborne et al. 2013)</td>
<td>SteppingUp is an online program designed to support people with arthritis, back pain or other musculoskeletal condition to better manage their health. Participants worked independently through a personalised set of modules over 4-10 weeks with length and intensity determined</td>
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<tr>
<td>painHEALTH (Slater et al. 2015; White 2018)</td>
<td>An online health platform to facilitate access to evidence-informed musculoskeletal pain management for consumers and health care providers.</td>
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<tr>
<td>&quot;Helping You Manage Your Pain&quot; Resources (Spragg and Filocamo 2011)</td>
<td>A tool to promote safe and effective use of pain medicines and improve communication between patients and health professionals about the use of pain medicines. The information booklet &quot;Helping You Manage Your Pain&quot; contained information about types of pain, what is arthritis, my healthcare team, chronic pain management plan, pain diary, and information to take to the doctor or other health professional.</td>
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<tr>
<td>Online self-management program focused on physical activity (Jones et al. 2016)</td>
<td>Via an online survey, participants were asked whether they would be interested in participating in an online self-management program aimed at improving the ability of people living in the community with an acquired brain injury (ABI) to overcome barriers and increase their levels of physical activity. Participants also had the option of leaving qualitative feedback about the type of content they would like to see including in such a program.</td>
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<td>MoodGYM plus multimodal manual therapy (Petrozzi et al. 2015)</td>
<td>Participants with chronic LBP (screened in the medium risk category of The Keele STarT Back screening tool) will be randomly allocated into one of two groups. Both groups will receive an upper limit of 12 multimodal manual therapy (MMT) sessions over a period of eight weeks delivered by physiotherapists and chiropractors. MMT is centred around manual therapies but also employs best practice primary care and is supported by therapeutic exercises. The intervention group will also receive five weeks of MoodGYM covering five online modules. The goals of MoodGYM are to help people to identify and overcome general psychological distress by developing good psychological coping skills.</td>
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<td>The Fibromyalgia Australia Website (Kwiatek et al. 2013)</td>
<td>The website was developed to assist Australian general practitioners and fibromyalgia syndrome (FMS) patients to collaboratively develop optimised evidence-based care. Recommendations are based on four pillars of management implemented using a tailored stepwise approach and enabling FMS patients to access education and self-efficacy promoting self-management skills. Multidisciplinary referrals are supported with links to regional patient resources and networks, patient self-monitoring tools are highlighted, and multimedia educational formats are introduced.</td>
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<td>&quot;People getting a grip on arthritis&quot; educational</td>
<td>An evidence-based educational program which consists of education about numerous effective non-pharmacological self-management interventions for arthritis to improve health behavioural changes such as self-efficacy. Pgrip has been adapted by primary care providers</td>
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¹ Costs refer to the financial cost of delivering the intervention, including the cost of resources and personnel. ² Effectiveness refers to the effectiveness of the intervention in achieving its intended outcomes.
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<td>program (Pgrip) (Brosseau et al. 2015)</td>
<td>and translated into lay words for patients to improve arthritis care in the community. For the study, the online program was made available to participants via a URL, Facebook and/or webpage link via email. The program was evaluated for patients with rheumatoid arthritis, using Facebook in combination with arthritis health care professional support and electronic educational pamphlets over six weeks. Involved professions include physiotherapy, occupational therapy and kinesiology, whom provide feedback and answer questions on the Facebook page for participants (professionals were based and trained in Canada).</td>
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<td>Arthritis NSW self-directed online learning program (Challenging Arthritis) (Spragg and Buggy 2011)</td>
<td>Participants can complete the program online, or in hard copy, or a combination of both. The program reflects current best practice and uses a health coaching model to instigate and support behaviour change. Modules include: 1) managing pain, 2) physical activity and exercise, 3) coping with arthritis, 4) stress management and relaxation, 5) arthritis medicines and their safe use, 6) joining forces: you and your healthcare team, 7) health eating, and 8) caring for your joints. Challenging Arthritis includes an online self-management program (can also be completed without the internet), spiral bound diary and CDs, information sheets and telephone advice line.</td>
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<tr>
<td>Web-based cognitive behavioural therapy (Sleepio) (Pinheiro et al. 2016)</td>
<td>An interactive web-based sleep intervention based on cognitive behavioural therapy (CBT) principles (intervention) or a web-based education program (control) consisting of six sessions over six weeks. The intervention program is highly interactive, and the content is delivered by an animated personal therapist (avatar), with automated web and email support. Underlying algorithms feed the delivery of information, support, and advice in a personally tailored manner. Participants have low back pain and access an online case file comprised of a progress review, a reminder of strategies to try out between sessions, an agreed sleep schedule, and a list of additional reading. Web-based CBT users will also be able to participate in a moderated social network of users.</td>
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<td>Community awareness</td>
<td>Media Campaign - Back Pain: Don't take it lying down (Buchbinder and Jolley 2001; Buchbinder et al. 2001; Buchbinder and Jolley 2004, 2005, 2007; Buchbinder 2008; Buchbinder et al. 2008)</td>
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This campaign was designed to alter beliefs about back pain, influence medical management, and reduce disability workers’ compensation related costs. The campaign was based on the messages delineated in the "Back Book", an evidence-based patient educational booklet produced in the UK. Both the booklet and the campaign provide sharply focused unambiguous advice directed toward staying active and exercising, not resting for prolonged periods, and remaining at work. The campaign also emphasised that the spine is strong, self-coping is important, investigations often are not helpful, and surgery may not be the answer. The major media of the campaign were television commercials aired in prime-time slots beginning in September 1997. The commercials included dialogue by recognised international and national medical experts as well as Australian sporting and television personalities who have managed their back pain successfully. Radio and printed advertisements, outdoor billboards, posters,
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<tr>
<td>Real relief campaign (Painaustralia 2017)</td>
<td>Between 22 December 2017 and 1 February 2018 there were daily #realrelief tweets from @Painaustralia and daily posts to a dedicated Real Relief Facebook page. Along with paid advertising they were intended to drive people to the Real Relief website, where consumers could find out more about non-medicine approaches to pain management. Painaustralia featured in TV, radio, print and online media coverage, along with three consumers who shared their own personal stories.</td>
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<td>Brainman video series (Understanding pain in less than 5 minutes, Brainman stops his opioids and Brainman chooses) (White et al. 2016)</td>
<td>Three key messaging videos outlining the foundations of chronic pain treatment, thus challenging unwarranted clinical variation. The videos were released on YouTube as a low-cost public health intervention. Each video used an evidence informed script appropriate for low literacy and a cartoonist to provide matching images. Videos have been independently translated into multiple languages and have been embedded into multiple health-related websites. The first video is in 15 languages and subtitled in English for the hearing impaired. The 2nd and 3rd have been translated into German and subtitled in French and Japanese.</td>
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*E = Experimental study design; O = Observational study design; *Outcome measures including; general health, general function, quality of life, pain (severity, self-efficacy, catastrophising), physical measures (e.g. range of motion, joint stiffness, muscular strength and endurance), occupational outcomes (work status, return to work rates, lost time from work), appropriateness of care, consumer and health professional knowledge, confidence, attitudes, beliefs and changes in behaviour (self-reported, simulated or actual concerning medication use and prescribing, health care utilisation and referral, and patient participation in exercise), and reach of community level interventions (e.g. number of website visits). Costs including reports on costs associated with implementation (costs and cost savings), reports on costs associated with implementation with comparison to a similar intervention or control group, and economic evaluation of both costs and initiative outcomes compared to a control group; Evidence is graded as + Positive outcomes, +/- Mixed outcomes, or - Negative or no positive findings.
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<td><strong>Education and training</strong></td>
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<td>The Rheumatoid Arthritis for Physiotherapists-eLearning (RAP-eL) resource (Fary et al. 2015; Gardner et al. 2016)</td>
<td>The RAP-eL web-based resource is a series of four learning modules and two clinical case studies. The modules include: (1) RA: the disease and recognition in practice, (2) RA: the early stage of the disease, (3) RA: the chronic stage of the disease, and (4) extraarticular features of RA and comorbid conditions. Content within each module was focused on delivering essential knowledge and translating that knowledge into practical clinical skills. Physiotherapists were given four weeks to complete the online modules.</td>
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<td>Simulated learning vs. peer learning (Hecimovich and Volet 2014)</td>
<td>Third year exercise physiology students were assigned to either the simulated learning environment (actors as standardised patients) or the peers' learning environment (peers acting as patients for each other) for their lab practice in musculoskeletal condition assessment and rehabilitation.</td>
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<td>IMPLEMENT Trial (McKenzie et al. 2008; Page et al. 2011; French et al. 2012; French et al. 2013; Mortimer et al. 2013; French et al. 2015)</td>
<td>GPs received an intervention specifically designed to address the perceived barriers and enablers for implementation of the clinical practice guidelines (CPG) for low back pain (LBP). The intervention consisted of facilitated face-to-face small group workshops with a pre-course reflective activity. Two workshops for 3hrs each, or one workshop of 6hrs was provided depending on the preference of the GP. Workshops were directed by a trained GP facilitator and involved a combination of didactic lectures and small group discussion. The intervention concentrated on delivering key messages, namely that diagnostic x-rays are rarely necessary in the management of acute LBP and that advising patients to remain active reduces pain and disability. A DVD was provided to GPs who could not attend workshops.</td>
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<td>One-to-one academic detailing for management of shoulder pain, locally developed clinical guidelines and a video/DVD on how to examine the shoulder (Broadhurst et al. 2007)</td>
<td>Two specialists provided academic detailing to GPs to improve the assessment and management of shoulder complaints and improve the knowledge and confidence of GPs to manage shoulder pain. Detailers provided one-to-one guidance to GPs on how to correctly assess the shoulder in a session that lasted from 45-60mins. After having corrected the technique the GP was provided with educational materials that included a DVD and guidelines, which were left with the GP to be used during future patient assessments.</td>
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<td>NPS MedicineWise Better Choices Better Health program (Beilby et al.</td>
<td>Focused on the quality use of medicines, educational visits are delivered to GPs across Australia by 90 locally based NPS facilitators. The visits, usually 20-30mins are provided free of charge and at a time and location suitable for the GP. When time and circumstances permit,</td>
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<td>2006; Higgins and Azam 2010; Zuo et al. 2011a; Zuo et al. 2011b;</td>
<td>NPS facilitators provide visits to pharmacists, nurses and other health professionals. Interventions include interactive workshops, educational visits, case studies, clinical audits and group discussions.</td>
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<td>MedicineWise 2017a, 2017b, 2017c)</td>
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<td>Adaptation of gPEP for the rural primary care workforce - An</td>
<td>The gPEP program was expanded beyond physicians to include the broader primary care workforce. The hPEP program was designed to upskill care providers regarding the practical evidence-based management of people with non-specific low back pain. The team was comprised of three pain specialists (one of whom was also a rheumatologist), two senior postgraduate-qualified musculoskeletal physiotherapists, and two clinical psychologists. The content and format of the hPEP was the same as gPEP.</td>
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<td>interprofessional, health care provider pain education program (hPEP)</td>
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<td>AMS Workshop accredited by the RACGP (2 x 3hr educational workshops,</td>
<td>A pilot study evaluating three interventions including: (1) two 3hr interactive educational workshops to address knowledge, skills, beliefs about consequences, social/professional role and identity, and intentions, (2) audit and feedback of low back pain (LBP) practice addressing intentions and social professional role/identity, and (3) introduction of two clinical tools; a LBP decision making tool designed for primary care, and the STarT Back tool - a biopsychosocial prognostic risk screening tool. The aim was to reduce inappropriate LBP radiological imaging referrals, increase psychosocial orientated patient assessment and, increase the provision of LBP self-management information to patients from GPs.</td>
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<td>clinical audit and feedback of LBP practices, Two clinical tools</td>
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<td>introduced (Start Back and Back pain choices)) (Lin et al. 2016)</td>
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<td>Joint examination standardisation seminars (Joint assessment</td>
<td>Standardised joint examination technique training for rheumatoid arthritis. Training was performed by one facilitator with 15-25 healthcare professionals. Participants were mostly physicians who specialised in rheumatology, along with study nurses and a few medical technicians and physiotherapists.</td>
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<td>training in conjunction with multicentre clinical trials (Grunke et</td>
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<td>General practitioner pain education program (gPEP) (Davies et al.</td>
<td>An interprofessional low back pain (persistent non-specific low back pain) education program for GPs (gPEP). The 6.5hr gPEP was based on a contemporary biopsychosocial framework. The team included four pain medicine specialists (one of whom was a rheumatologist), one senior occupational therapist, four senior postgraduate-qualified musculoskeletal physiotherapists and two clinical psychologists. Each module comprised a 15-20min evidence-based, guideline-informed lecture followed by an action learning, interactive ‘know-do’ case study of 45-60mins.</td>
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<td>2011b; Slater et al. 2012b)</td>
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<td>2 hr workshop session and online module on test ordering for GPs (Morgan et al. 2016)</td>
<td>The intervention involved a 2hr workshop session on rational test ordering, including large and small group activities and didactic presentations, and an online module on screening. Three scenarios were tested to evaluate the effect of the intervention on test-ordering attitudes and intended practice, one of which was shoulder pain.</td>
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<td>2 x 1.5hr sessions focused on understanding and identifying barriers to recovery of injured workers with musculoskeletal conditions (Beales et al. 2016)</td>
<td>Insurance workers working in the workers compensation system (both case managers and injury management advisors) attended two 1.5hr education sessions held two weeks apart. The education was part of mandatory training for all employees. Participants were supplied with a summary document of the concepts covered during the education sessions for future reference.</td>
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<td>Pharmacy student patient self-management learning module (Smith et al. 2013)</td>
<td>An instructional module on patient self-management for undergraduate pharmacy students. Learning outcomes and associated content and assessment tasks were developed, featuring lecture and readings, in-class discussions, and online delivery of in-depth interviews with patients who were living with chronic pain. The time required for the implementation of the module was 2hrs of classroom time and approximately 3.5hrs of self-directed learning using online resources.</td>
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<td>2hr educational workshop or participation in a clinical trial (Abdel Shaheed et al. 2015)</td>
<td>Pharmacists either participated in a clinical trial (PACE) or attended a 2hr educational workshop on low back pain (LBP) specifically aimed at delivering evidence-based information delivered by two health professionals/researchers with combined expertise in the areas of pain management, quality use of medicines and musculoskeletal disorders. The intervention for community pharmacists involved a one-to-one training session of approximately 1hr duration with one of the PACE researchers. The training delivered information on evidence-based management of LBP, screening for red flag conditions and screening for eligibility into the trial.</td>
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<td>A GP registrar chronic pain educational intervention (Morgan et al. 2012; Holliday et al. 2015; Holliday et al. 2017a; Holliday et al. 2017b)</td>
<td>A brief intervention was implemented for GP registrars with the aim of reducing opioid prescribing. The training used a tripartite structure of online reading, a 90-minute face-to-face education session during a one-day workshop (including four 2-3min video vignettes of new doctor/inherited patient consultation) and access to post workshop online resources.</td>
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<td>Addiction focused training program (Mohiuddin 2015)</td>
<td>A training program for GPs to improve access to clinical care to address high demands of addiction problems. The steps taken include consultation with GPs to identify learning needs as well as barriers to engagement, design of a training program, allocation of resources, accreditation for CPD points, marketing, recruitment and commencement.</td>
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<td>Educational symposium (the ALIGN trial) - Extends the IMPLEMENT trial to allied health (McKenzie et al. 2010)</td>
<td>Application of the IMPLEMENT Trial to allied health (ALIGN), to increase allied health practitioners (physiotherapists and chiropractors) compliance with a clinical practice guideline for acute non-specific low back pain (NSLBP), compared with providing practitioners with a printed copy of the guideline. The aim is to reduce the percentage of NSLB patients who are either referred for or receive an x-ray and to improve the mean level of disability for patients three months post onset of acute LBP. The intervention primarily consisted of an educational symposium.</td>
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<td>Application of the 2012 IASP pain curriculum to physical therapy programs in Australia (Hush et al. 2015)</td>
<td>The integration of the 2012 IASP pain curriculum, using an educational model to integrate modern pain science into the Doctor of Physiotherapy program at Macquarie University in Sydney.</td>
<td>No evaluation identified</td>
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<td>The Education Modules for Appropriate Imaging Referrals project - web-based tool for inclusion in medical education curricula (Goergen and Grimm 2014; Velan et al. 2015)</td>
<td>Educational modules (EMs) were developed by multidisciplinary writing groups for (1) performance of individual clinical decision rules (CDRs), (2) application of CDRs to practice using algorithmic approaches, and (3) clinical scenarios that test application of the EM content by the student to real life situations. One EM was developed on acute low back pain. Web based education experts converted the EMs to interactive electronic modules connected to a learning management system (LMS) allowing institutions to track student (undergraduate and post graduate medication education) progress. The modules include authentic clinical scenarios, feedback, and integration.</td>
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<td>NPS MedicineWise National Prescribing Curriculum (Khanal et al. 2013)</td>
<td>The National Prescribing Curriculum (NPC) consists of online modules for pharmacy, nurse practitioner and medical student education to improve knowledge on prescribing and therapeutics. The modules evaluated were for chronic heart failure, and prophylaxis of venous thromboembolism, though there is also a module on analgesia for low back pain.</td>
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<td>OA nurse clinics (Advancing Nurse Clinics in Primary Care Project) (Grampians Medicare Local Project Team 2015)</td>
<td>A resource to assist and encourage the role of primary health care nurses in supporting the management of OA as part of chronic disease management clinics. This resource is part of the ‘Advancing Nurse Clinics in Primary Care Project’ that sought to build primary care nursing workforce capacity and capability and support primary health care nurses to develop effective, efficient and accessible service delivery models to meet locally identified needs. There is also an online module, which is a blended learning program of one-hour online theory and two hours of reflective learning. This course has been developed to provide nurses with an understanding of the nurse clinic model of care and provide a framework to assist in the planning, implementation and evaluation stages of setting up a nurse clinic in general practice.</td>
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Formal networks
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<td>Outreach services for providers</td>
<td>No literature identified</td>
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<td>Other</td>
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<td>Expanded pharmacist prescribing (Hoti et al. 2011a, 2011b, 2013)</td>
<td>Currently, pharmacists in Australia are able to prescribe a limited range of medications listed under 'pharmacy only medicines' (S2) and 'pharmacist only medicines' (S3) schedules. A supplementary prescribing model where there is agreement between doctors, pharmacists and patients which allows an expanded prescribing role for pharmacists is being proposed and considered.</td>
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*E = Experimental study design; O = Observational study design; bOutcome measures including; general health, general function, quality of life, pain (severity, self-efficacy, catastrophising), physical measures (e.g. range of motion, joint stiffness, muscular strength and endurance), occupational outcomes (work status, return to work rates, lost time from work), appropriateness of care, consumer and health professional knowledge, confidence, attitudes, beliefs and changes in behaviour (self-reported, simulated or actual concerning medication use and prescribing, health care utilisation and referral, and patient participation in exercise), and reach of community level interventions (e.g. number of website visits). Costs including reports on costs associated with implementation (costs and cost savings), reports on costs associated with implementation with comparison to a similar intervention or control group, and economic evaluation of both costs and initiative outcomes compared to a control group; Evidence is graded as + Positive outcomes, +/- Mixed outcomes, or - Negative or no positive findings.
### Table S3. Quality improvement and health system support initiatives: summary and evidence

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<td><strong>Referral pathways</strong></td>
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<td>HealthPathways (Gray et al. 2018)</td>
<td>A password-protected web-based portal designed to provide localised evidence-informed clinical and referral information to support general practice at the point of care. HealthPathways is an online manual used by clinicians to help make assessment, management, and specialist request decisions for over 550 conditions. Each pathway is an agreement between primary and specialist services on how patients will be managed in the local context. Each health jurisdiction tailors the content of HealthPathways to reflect local arrangements and opinion and deploys their own instance of HealthPathways to their clinical community. A number of different pain-related pathways are accessible to primary care clinicians.</td>
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<td><strong>Drug monitoring</strong></td>
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<td>Real time prescription drug monitoring (Nicholas et al. 2013; Islam and McRae 2014; Wood 2015; Lyons 2016; Painaustralia 2018): Drugs and Poisons Information System Online Remote Access (DORA) program in Tasmania. SafeScript in Victoria. Electronic recording and reporting of controlled drugs (ERRCD) is available across Australia.</td>
<td>Prescription Coordination Programs (PCPs) are electronic systems designed to identify irregularities in established treatment protocols. First generation PCPs involve inspection by regulatory authorities of copies of filled prescriptions for controlled drugs retained at pharmacies. Second generation PCPs involve paper-based collation of prescriptions for controlled drugs sent from pharmacies to a centralised point to be analysed by regulatory staff, where decisions are made about the need to communicate with prescribers and/or pharmacists about problematic patients or prescribers. Third generation PCPs involve the electronic transmission of prescription information concerning controlled drugs, but not in real-time. Fourth generation PCPs have a quality use of medicines (QUM) focus, are far more comprehensive and involves providing instantaneous or real-time prescription information to prescribers, pharmacists and regulators to enable them to make informed decisions about the safety of prescribing or dispensing. The most advanced form is the coordinated medication management system which not only provides information on prescription opioids, but on a range of Schedule 4 medicines subject to misuse (particularly benzodiazepines and antipsychotic medicines) and over-the-counter medicines subject to misuse. At 2012, most Australian jurisdictions use 1st, 2nd and 3rd generation PCPs, with Tasmania having a 4th generation program, the Drugs and Poisons Information System Online Remote Access (DORA) program, focusing on prescription opioids and the benzodiazepine alprazolam. The Tasmanian system is an almost real-time system involving automatic transfer of data immediately after a Schedule 8 drug or alprazolam is dispensed at a community pharmacy. Medical practitioners and pharmacists can register to access the system.</td>
<td>No evaluation identified</td>
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Following the successful trial in Tasmania starting 2012, the Victorian Government announced plans to provide nearly $30 million to implement a real-time prescription monitoring system across the state (SafeScript). This will also include funding for counselling and addiction treatment services, and training support for pharmacists. The Victorian Tasmanian PHN Alliance has details of SafeScript on their website, and education and training is available for health professionals to use PCPs.

Currently, Medicare runs a Prescription Shopping Information Service that can be accessed by registered prescribers without patient consent. Its limitations are that it only identifies patients who present to more than five prescribers or obtain more than 50 prescriptions or 25 restricted items in a three-month period. Other monitoring systems are in place but require patient consent and are retrospective in nature. With patient consent, the exact number of prescriptions can be tracked from all prescribers, yet the reports issued to the requesting physician only reflect the previous three months of prescription use. In 2012 the Australian Government announced support for the implementation of an Electronic Recording and Reporting of Controlled Drugs (ERRCD) system. Since 2013, Australian states and territories have had the option to use the federal system, the Electronic Recording and Reporting of Controlled Drugs (ERRCD), but none have done so.

Other data collection and monitoring systems

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<tr>
<th>Name</th>
<th>Description</th>
<th>Study Type</th>
<th>Effectiveness</th>
<th>Costs</th>
<th>Acceptance</th>
<th>Feasibility</th>
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<tr>
<td>NPS MedicineWise MedicinalInsight dataset</td>
<td>MedicinalInsight uses a data extraction tool (GRHANITE), which collects de-identified data from patients’ electronic medical records and securely transfers the information to NPS MedicineWise weekly. Patients within practices are tracked overtime, allowing the development of an ongoing longitudinal database. Patients’ information collected by MedicinalInsight include: demographics (gender, ethnicity, indigenous status, year of birth, postcode, suburb), diagnoses, reasons for consultations, medicines prescribed and reasons for prescription, known allergies or drug reactions, pathology test orders and results, imaging test orders, instances of referrals to other healthcare professionals (excluding referral documents), instances of patient assessment and management activities, clinical measurements (temperature, blood pressure, weight, height, waist circumference), and smoking status. MedicinalInsight data usage looks at demand and utilisation of health services across general practices in the state and identifies key priority areas and options for addressing population health needs. The results will help to identify potential areas for investment and development and to design new services.</td>
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<td>Quality Care Pharmacy Program (QCPP) Mystery Shopper Initiative and guild training (Benrimoj et al.)</td>
<td>QCPP is a pharmacy-specific quality assurance program. Standards Maintenance Assessment (SMA) visits are used as part of a quality assurance process to assess the maintenance of standards for the provision of pharmacy and pharmacist only medicines in QCPP-accredited pharmacies. The visits are conducted by coordinators who have received standardised training.</td>
<td>No evaluation identified</td>
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<td>Name</td>
<td>Description</td>
<td>Study Type</td>
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<td>Costs④</td>
<td>Acceptance</td>
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<td>2008; Quality Care Pharmacy Program 2008; Gupte 2013; The Pharmacy Guild of Australia 2013</td>
<td>and a manual containing protocols and standard operating procedures for the process of SMA visits. The system uses pseudo-patient methodology, called ‘mystery shoppers’, for both assessment and quality improvement. Data on assessments of behaviour in practice environments is captured. Data gathered from these SMA visits creates a feedback mechanism for policy decision-making in QUM for non-prescription medicines. In 2008, QCPP introduced mandatory S2/S3 training for all pharmacy assistant staff to ensure core knowledge in the supply and handling of over-the-counter medicines. In 2010 this was strengthened with the introduction of mandatory refresher training to ensure pharmacy assistants were annually updating their knowledge of these restricted medicines.</td>
<td>No evaluation identified</td>
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<td>electronic Persistent Pain Outcomes Collaboration (ePPOC) (Blanchard et al. 2017; Electronic Persistent Pain Outcomes Collaboration (ePPOC) 2017b; Tardif et al. 2017)</td>
<td>ePPOC is a program which aims to help improve services and outcomes for patients experiencing chronic pain through benchmarking of care and treatment and involves the collection of a standard set of data items and assessment tools by specialist pain services and primary care programs throughout Australia and New Zealand to measure outcomes for their patients. Participation is voluntary and aims to assist pain management service providers to improve practice. The software (epiCentre) (1) provides clinicians with an approach to systematically assess individual patient experience, (2) defines a common clinical language to streamline communication between pain management providers and (3) facilitates routine collection of Australasian pain management data to drive quality improvement through reporting and benchmarking. The ePPOC dataset includes the following assessment tools: the Brief Pain Inventory (BPI); the Depression, Anxiety and Stress Scale (DASS); the Pain Self-Efficacy Questionnaire (PSEQ); and the Pain Catastrophising Scale (PCS). In total, the data set contains 86 items. This includes 17 registration and demographic items, a total of 56 questions in five separate clinical assessment tools and supplementary questions about medication use, health services utilisation, and treatment provided. The time required to complete the questionnaires is estimated to be 15 minutes; however, this will vary between patients. Comprehensive reports are provided to participating services every six months. These reports analyse an individual service’s data for the period and compare the results to aggregated data from all other participating services. Each participating service receives training and education regarding the ePPOC protocol, data items, and use of the software via site visits, webinars and telephone and email support.</td>
<td>No evaluation identified</td>
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<td>ReCEnt (Registrars Clinical Encounters in Training) project (Morgan et al. 2012; Magin et al. 2015)</td>
<td>Registrar and practice demographics are documented once in each of their three general practice terms. Registrars then record patient, consultation and educational aspects of 60 consecutive office-based consultations. From these data, detailed individual feedback reports are produced and are used to prompt registrar reflection on their practice and training program. The collected data are also used for research into registrars’ training and practice and as a resource for registrar research training. Currently, trials on the effectiveness of</td>
<td>No evaluation identified</td>
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### Name: Educational Interventions for Evidence-Based Prescribing of Opioids in Chronic Non-Malignant Pain

**Description:**

Educational interventions for evidence-based prescribing of opioids in chronic non-malignant pain, for rational test-ordering, and for evidence-based prescribing for respiratory tract infections are being conducted within the ReCEnT framework.

### Other

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<tr>
<td>The Essential Pain Management (EPM) App (Menon 2016)</td>
<td>A mobile application based on the training package developed by the Faculty of Pain Medicine of the Australian and New Zealand College of Anaesthetists that works with health workers to improve pain knowledge, implement a simple framework for managing pain and address pain management barriers. RAT stands for Recognise, Assess, Treat and provides the framework for managing a variety of real-life pain scenarios. A beta version of the App was tested by six experts via an online survey. The EPM app seeks to aid in the management of pain, especially in resource poor settings. It includes a means to assess pain and includes a logbook and other resources. The app takes the user through the RAT formula while assessing a patient, arrives at a pain diagnosis and then suggests non-drug and drug treatments based on the course and manual. The app’s logbook feature allows the user to record serial patient assessment details including treatments on their handheld device and to export and share this information with colleagues. The app can also be used without storing any details.</td>
<td>No evaluation identified</td>
<td>E = Experimental study design; O = Observational study design; Outcome measures including; general health, general function, quality of life, pain (severity, self-efficacy, catastrophising), physical measures (e.g. range of motion, joint stiffness, muscular strength and endurance), occupational outcomes (work status, return to work rates, lost time from work), appropriateness of care, consumer and health professional knowledge, confidence, attitudes, beliefs and changes in behaviour (self-reported, simulated or actual concerning medication use and prescribing, health care utilisation and referral, and patient participation in exercise), and reach of community level interventions (e.g. number of website visits). Costs including reports on costs associated with implementation (costs and cost savings), reports on costs associated with implementation with comparison to a similar intervention or control group, and economic evaluation of both costs and initiative outcomes compared to a control group; Evidence is graded as + Positive outcomes, +/- Mixed outcomes, or - Negative or no positive findings.</td>
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References


King M, Sav A (2014) Assessment of the persistent pain program provided by the Gold Coast Medicare Local: Turning Pain into Gain. Gold Coast.


Lyons A (2016) The successful trial of a real-time prescription monitoring system in Tasmania can be instructive for the rest of the country. *Good Practice* **18-20**.


