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**Implementing evidence-informed policy into practice for healthcare professionals managing people with low back pain in Australian rural settings: a preliminary prospective, single-cohort study**

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#### **Authors' contributions**

HS, AB, AS, SD and JQ contributed to the study design and HS, AB and AS designed the study evaluation. HS, SD and JQ contributed to the development and delivery of the educational materials and delivery of the educational materials. AS and SB managed the data collection and AS undertook independent statistical analyses. HS, AB, AS and SB interpreted and reported on the data. All authors contributed to the intellectual content of the manuscript and the manuscript preparation. HS

drafted the first and final manuscript versions and acts as guarantor of the paper. All authors contributed to editing the manuscript, contributed to revisions and approved the final manuscript.

## Abstract

**Objective:** To provide access to professional development opportunities for healthcare professionals, especially in rural Australian regions, consistent with recommendations in the Australian National Pain Strategy and state government policy. **Design and setting:** This preliminary prospective, single-cohort study design, which aligned health policy with evidence-informed clinical practice, evaluated the implementation and effectiveness of an interprofessional, healthcare provider pain education program (hPEP) for management of non-specific low back pain (nsLBP) in rural Western Australia. **Intervention:** The 6.5 hour hPEP intervention was delivered to sixty care providers (caseload nsLBP 19.8%  $\pm$  22.5) at four rural WA regions. **Outcome measures:** Outcomes were recorded at baseline and 2 months post-intervention regarding attitudes, beliefs (modified Health Care Providers Pain and Impairment Relationship Scale (HC-PAIRS), Back Pain Beliefs Questionnaire (BBQ)), and self-reported evidence-based clinical practice (knowledge and skills regarding nsLBP, rated on a 5-point Likert scale with 1 = nil and 5 = excellent). **Results:** hPEP was feasible to implement. At two months post-hPEP responders (response rate 53%), improved evidence-based beliefs, were indicated by HC-PAIRS scores: baseline mean (SD) [43.2 (9.3)]; mean difference (95% CI)[-5.9 (-8.6 to -3.1)]; and BBQ baseline [34.3 (6.8)]; mean difference [2.1 (0.5 to 3.6)]. Positive shifts were observed for all measures of clinical knowledge and skills ( $p < 0.001$ ) and increased assistance with planning lifestyle changes ( $p < 0.001$ ); advice on self-management ( $p = 0.010$ ) and for decreased referrals for spinal imaging ( $p = 0.03$ ). **Conclusion:** This policy-into-practice educational program was feasible to implement in rural WA. While preliminary data indicate are encouraging, a further randomised controlled trial is recommended.

**Key words: implementation, interprofessional, primary care, service delivery model, remote access, health policy**

**Brief summary**

This preliminary prospective study investigated the implementation and effectiveness of a policy-into-practice educational intervention aimed at upskilling health care providers working in primary care in practically-oriented, evidence-based nsLBP management in rural WA. Care providers received an interprofessional pain management educational intervention. Outcomes included improved self-reported beliefs, increased evidence-based knowledge and skills and more guideline-consistent practice behaviours.

## Introduction

The health and economic burdens associated with persistent low back pain (LBP) are substantial for health consumers and for society[1, 2]. In Australia, while up to 80 per cent of consumers with persistent pain (of which LBP represents a significant proportion of the musculoskeletal contribution[1]) could feasibly receive effective care[2], fewer than 10 per cent gain access to evidence-informed management. Yet, reliable data indicate the burden of persistent pain for consumers and society can be substantially reduced when available evidence-based management is implemented[2, 3] when compared to no treatment, or to that which is non-evidence based.

Obtaining timely, practical and evidence-informed care is challenging as the complexity of persistent pain is poorly understood across the community, and by educators, researchers and health professionals alike[4] resulting in pain care disparities that may be amenable to policy shifts[5]. Many health care professionals continue to manage consumers with persistent pain within a biomedical reductionist framework[6] and have little or no training to help them address the multidimensional nature of pain[7]. Furthermore, a lack of knowledge by practitioners of best practice guidelines[8], a lack of adherence to these guidelines[9], the inconsistent translation of evidence into practice in the primary care setting[10], an inadequately skilled health workforce[11] and emerging workforce [12] contribute to poor consumer outcomes. Additional barriers exist for care providers who work in rural regions where access to professional development opportunities is limited[13, 14]. To address these barriers, a policy and practice framework, 'The Western Australian Spinal Pain Model of Care'[15], has been developed to ensure consumers receive the 'right' care, at the 'right' time, from the 'right' team and in the 'right' place. Developing innovative models of care based on a contemporary perspective of persistent pain and aligning these models with a skilled workforce, targets the needs of people in such remote areas[16]. To this end, the importance of an appropriately skilled primary care health workforce is becoming increasingly recognised as health

systems change to emphasize community-based care, interprofessional care, and a whole person engagement model of care, especially for chronic health conditions[17].

While it is pivotal for success that care providers adopt a consistent, evidence-based approach to the management of nsLBP, such an approach also requires health system plasticity[18]. In the current context, an example of system plasticity is the effective implementation of an integrated model of spinal pain management geared towards care providers working in primary care, as this is the entry point for most consumers seeking initial health care. Previously we have reported on the implementation and evaluation of an interprofessional LBP knowledge and skills program developed for primary care physicians managing nsLBP[19]. Following the implementation of this educational intervention, primary care physicians in metropolitan Perth, Western Australia (WA) adopted more self-reported evidence-based attitudes, beliefs and clinical behaviours regarding nsLBP[19], however this same implementation approach has not been trialled for care providers working in rural WA; an area with unique system and service challenges. Given the recognised need for best practice care for consumers with nsLBP and the inequities in delivery of this care in rural WA[13], we expanded our education program beyond physicians to include the broader primary care health workforce. The aim of this preliminary study was to trial the implementation of this educational program and to evaluate the short-term effectiveness in improving the self-reported evidence-based management of nsLBP by primary care providers in rural areas of Western Australia (WA).

## Methods

### Design

This study employed a pragmatic, prospective, single cohort design. While the use of a randomised controlled trial would have been optimal, our design enabled timely recruitment and completion of the preliminary trial within the limited 12 months funding cycle and the ability to deliver the intervention to all interested practitioners, rather than a randomised subset. Care providers were recruited through advertisements from professional bodies (the Royal Australian College of General Practitioners, the WA chapters of the Australian Physiotherapy Association, Australian Clinical Psychology Association and Pharmaceutical Society of WA), from rural health services (Rural Health West) and from the peak non-profit, non-government body for musculoskeletal disease in WA (Arthritis and Osteoporosis WA). Health care professionals from four rural regions of WA (Kununurra, Broome, Albany and Kalgoorlie) were invited to participate. Inviting care providers from related clinical areas of care for nsLBP was a deliberate strategy, aimed at strengthening the use of primary care networks and promoting shared clinical decisions to improve LBP management. Programs, each extending over a single day (6.5 hours), were delivered over a twelve month period in 2010-2011. Inclusion criteria required that care providers were registered and involved in delivering primary care in WA. The study was approved by the local Institutional Ethics Review Committees (West Australian Country Health Service and Curtin University) and adhered to the Declaration of Helsinki, Code of Ethics. The Royal Australian College of General Practitioners (RACGP) accredited the program as a Continuing Professional Development activity attracting a Category 1 rating with the awarding of a maximum of 40 points. Funding for the project was provided through a partnership arrangement between the contributing organisations (WA Government, Rural Health West and Arthritis and Osteoporosis WA).



**Participation, consent and anonymity**

Sixty care providers attended the health professional pain education program (hPEP) and fifty seven (95%) consented to being involved in the prospective evaluation. Prior to each hPEP intervention, written consent forms were completed by all participants. Consenting participants then completed a uniquely-coded battery of questionnaires. The educational team remained blinded to the data collection, entry and analysis. At 1.5 months post-intervention, care providers were mailed a post-course questionnaire battery with the same unique identification codes, with instructions to complete and to return within 2 weeks (i.e. by 2 months post-course). Non-responders were contacted by email, on not more than 2 occasions, to request completion of the post-course questionnaire battery.

**Education intervention**

The hPEP program was designed to upskill care providers regarding the practical evidence-based management of people with nsLBP. The program was based on that previously developed for primary care physicians and delivered by an interprofessional team in a metropolitan location (Perth, WA)[19]. The team comprised three pain medicine specialists (one of whom was also a rheumatologist), two senior postgraduate-qualified musculoskeletal physiotherapists and two clinical psychologists and had worked together in various team combinations across these facilities and in metropolitan and rural/remote settings. This allowed for the team to offer varied perspectives on the different caseloads across health sectors.

National and international clinical guidelines informed the development of educational materials[20-28]. Five integrated learning modules included: (1) Making sense of pain: a missing component of care; (2) Clinical guidelines and best-evidence practice for the assessment and management of

patients with nsLBP; (3) Movement, activity and pain; pacing activity and goal setting; (4) Response to pain: psychological and behavioural approaches to managing patients with nsLBP; and (5) Review of current pharmacologic and procedural approaches to the management of patients with nsLBP. A detailed overview of the educational program is provided as supplemental material: S1 and is also outlined elsewhere (see Slater et al [19]).

Each case study was presented as a patient vignette with questions designed to encourage real-world cross-discipline clinical perspectives and to generate shared evidence-based clinical solutions for these patient vignettes (see Supplemental file 2). This cross-discipline approach acknowledged the frequent lack of access in rural and remote areas to a tertiary multidisciplinary team and emphasized that an appropriately skilled interprofessional primary care health care team (in this study: primary care physicians, physiotherapists, pharmacists, psychologists, a psychiatrist and nurses) could feasibly provide timely evidence-based management for people with complex nsLBP, enhanced by working within a community of practice model[29]. The case studies were adapted to be relevant to rural settings, incorporating rural patients with social issues related to rural residency (see supplemental file 2).

### **Evaluation protocol**

The evaluation protocol used for this project was based on a protocol described by Evans et al[30] and which was adapted and extended for our previously developed pain education program[19]. A battery of quantitative self-report measures of care providers' attitudes, beliefs, knowledge, practical skills and clinical practice behaviours regarding the assessment and management of patients with nsLBP, was undertaken at two time points: at baseline (pre-course on the day of, and immediately prior to, the intervention) and at 2 months post-intervention (post-course). While the

current trial funding and timelines did not enable us to capture or track objective, unit-level clinical data, it is recommended that a future trial should encompass such measures, although this has been shown recently to be very challenging in practice[31]. The decision to measure outcomes at 2 months related to the requirements of the RACGP for accrediting of professional development points and was consistent with that of our previous study post course evaluation[19].

### **Outcome measures**

Demographic data included age, gender, profession, years of professional practice, self-estimated proportion of clinical caseload allocated to LBP.

### ***Self-reported attitudes and beliefs***

Beliefs about the inevitable consequences for future life with low back pain, was measured using the Back Beliefs Questionnaire (BBQ)[32, 33]. The BBQ consists of 14 items, each of which is rated on a 5 point Likert scale, ranging from 1 (completely disagree) to 5 (completely agree), yielding a possible range of 9 to 45. A higher score indicates more positive beliefs, suggesting better ability to cope. The internal consistency ( $\alpha=0.70$ ) and test-retest reliability ( $ICC=0.87$ ) of the BBQ have been established[33]. A mean difference in the BBQ scores in the order of 2 points can be considered meaningful[34], given that a change of this magnitude is associated with reduced LBP disability and workers' compensation costs[35].

The Health Care Providers Pain and Impairment Relationship Scale (HC-PAIRS) questionnaire is a reliable and valid single factor measure[36] of care providers' attitudes and beliefs about the relationship between back pain and impairment[36-38]. The validity of the original HC-PAIRS and its internal consistency ( $\alpha=0.78-0.84$ ) has been established[36, 38] with care provider cohorts similar to

participants in the current study. A modification of the HC-PAIRS[30], appropriate to the primary care context of our study was chosen as this questioned ways LBP impacts upon physical function. The total score can serve as a basis for making work and activity recommendations. The modified HC-PAIRS contains 13 items[30], and responses are recorded on a 1-7 Likert scale (ranging from 1 = 'Complete disagreement' to 7 = 'Complete agreement'). Responses are summed to form a total HC-PAIRS score, with a possible range from 13 to 91. Items 1, 6 and 12, are reverse scored prior to analysis. The higher a respondent's score, the stronger is the belief that pain necessarily implies disability[37] and that LBP should be expected to compromise daily function[30]. A variation in the score on the HC-PAIRS of more than one-half of a standard deviation ( $\geq -4.5$  points) was considered clinically meaningful[39].

### ***Self-reported evidence-based clinical knowledge and skills***

Participants were asked to use a custom-developed questionnaire[14] to self-rate their clinical knowledge and skills in regard to use of evidence-based approaches to patients with nsLBP (the full questionnaire is shown in results) and to evaluate the learning objectives of hPEP. The 12 items were previously developed by an interprofessional pain team[14] to reflect the specific LBP guideline-informed, evidence-based clinical knowledge and practical skills that were considered clinically necessary for care providers to assess and manage people with nsLBP. Responses to each question were graded on an ordinal scale of 1-5, ranging from 1 = 'Nil'; 2 = 'Minimal'; 3 = 'Acceptable'; 4 = 'Good'; to 5 = 'Excellent'. Based on the clinical guidelines used in this study and a previous protocol[14], a response of 1 or 2 was categorised as 'clinically inadequate', while the remaining responses (3, 4 and 5) were categorised as 'clinically acceptable'.

### ***Self-reported frequency of use of self-management strategies***

The use of evidence-based recommendations concerned the frequency (per 10 patients) that a care provider would advise or assist their patients with either acute or chronic nsLBP in relation to a certain activity (this questionnaire is shown in results).

### ***Self-reported practice behaviours***

Using a previously described patient vignette[30] and based on questions originally documented by Rainville et al.[40], care providers were questioned regarding their recommendations for activity, work and rest for a patient experiencing acute nsLBP (a comprehensive description of this vignette can be found in Slater et al[19]). The format chosen to capture responses to each of three case-related questions was a 5-point Likert scale, with a left to right scale progression indicating a progressively more active approach to activity and work and towards less rest. In accordance with the Evans et al.[30] protocol, guideline-consistent responses for each question were categorised as follows: question 1 (4 and 5); question 2 (3, 4, and 5); question 3 (4 and 5). All other responses were categorised as 'guideline inconsistent', as described by Evans et al.[30].

### ***Usefulness of the hPEP intervention***

Care providers were asked to rate how useful they found hPEP intervention in regard to their management of patients with nsLBP using an 11-point Global Perceived Impression of Usefulness (GPIU) scale anchored at 0 indicating 'not at all useful' and 10 indicating 'extremely useful'[41].

### **Statistical analyses**

Standard descriptive statistics were used to summarise demographic and baseline characteristics of the participants, and independent t-tests were used to evaluate differences in these characteristics

between responders and non-responders. Questionnaire total scores (HC PAIRS, BBQ) were calculated using imputed averages for missing items if only one item was missing, while totals were not calculated for those cases missing 2 or more items. Point estimates and 95% confidence intervals (95% CI) of within-subject changes in questionnaire scores and hPEP items from pre to post intervention were generated using dependent t-tests. McNemar's exact test was used to evaluate shifts toward guideline-consistent (patient vignette) and clinically-adequate (hPEP questionnaire) responses pre- to post-intervention. Levels of statistical evidence (p-values and interpretations as strong, moderate and weak evidence) against the null hypothesis of no positive change (i.e. one-sided tests) were evaluated for all statistical procedures[42].

## **Results**

### ***Demographic and clinical data***

Baseline demographic and clinical data are shown in Table 1. Thirty two subjects (53% response rate) responded to the two month postal questionnaire. Responder to non-responder baseline comparisons for demographic and clinical data and back pain beliefs (HC PAIRS, BBQ) indicated no evidence for responder bias.

### **Baseline to post-intervention change scores**

#### ***Self-reported attitudes and beliefs***

For BBQ, the mean (SD) score was 34.3 (6.8) at baseline and 36.3 (7.1) at post-intervention with a mean difference and 95% CI of 2.1 (0.5 to 3.6);  $p=0.005$ . The higher BBQ scores at post-intervention were consistent with more positive beliefs about LBP.

For HC-PAIRS, the mean (SD) score was 43.2 (9.3) at baseline and 37.4 (11.6) at post-intervention with a mean difference and 95% CI of -5.9 (-8.6 to -3.1);  $p < 0.001$ . Lower HC-PAIRS scores indicated a movement by care providers towards disagreement with the HC-PAIRS questions: i.e.; disagreement with suggestions that LBP management should involve rest rather than activity.

### ***Self-reported knowledge and skills (hPEP questionnaire)***

The baseline to post-intervention change in responses to the hPEP questionnaire is shown in Table 2. For the majority of questions, care provider responders demonstrated approximately a 1 point shift on the 5 point Likert scale towards more 'clinically adequate' knowledge and skills ( $p < 0.001$  for all comparisons). The greatest shifts ( $> 1$  point on the Likert scale) were evident for questions 3, 8, 9 and 10. Least movement occurred for question 6. When responses to hPEP items were evaluated as binary variables representing 'clinically adequate'/'inadequate' knowledge and skills using McNemar's exact test, there was strong evidence of a shift towards 'clinically adequate' behaviour for all items ( $p$ -values;  $< 0.001$  to  $0.006$ ).

The changes in frequency of recommendations from baseline- to post-intervention regarding the management of patients with nsLBP, is shown in Table 3. There was strong statistical evidence ( $p < 0.001$ ) of increased assistance with planning lifestyle changes, moderate evidence ( $p = 0.010$ ) of increased advice on self-management and weaker evidence ( $p = 0.033$ ) for decreased referral for spinal imaging for people with persistent nsLBP, but no evidence of change in recommendations regarding management for people with acute nsLBP.

### ***Self-reported clinical practice behaviour (patient vignette)***

The baseline to post-intervention shift in responders' use of 'guideline-consistent' and 'guideline-inconsistent' recommendations in response to the vignette, are shown in Table 4. The only recommendation for which there was evidence for a positive shift, was that related to rest following acute nsLBP ( $p < 0.035$ ), such that of the 13 care providers who were guideline-inconsistent at baseline, 7 (53.8%) shifted to guideline-consistent responses at post-intervention'. This shift resulted in 27 of 34 (79.4%) responders giving guideline-consistent responses at post-intervention, compared with 21 of 34 (61.8%) at baseline.

### ***Usefulness of the hPEP intervention***

The mean (SD) score reported by care providers for the perceived usefulness of hPEP in regard to management of patients with nsLBP was 8.21 (1.21); range: 5-10.

### ***Qualitative feedback***

In order to capture the 3 most important self-perceived learning outcomes, participants were asked to provide written feedback at 2 months post intervention. These qualitative data are provided as a summary in Supplemental file 3.

### **Discussion**

This preliminary single-cohort study demonstrated that it was possible to implement a practically-oriented and evidence-based interprofessional back pain education intervention (hPEP) to care providers living in rural areas of WA, using a cross-institution partnership model of program delivery with central health agency support. Notwithstanding the limitations associated with the design of the outcomes evaluation, preliminary data on effectiveness suggest that a 6.5 hour, single-day



intervention generated favourable care provider outcomes: responders indicated more positive self-reported beliefs and attitudes towards nsLBP and indicated that they would adopt more evidence-based practice and more guideline-consistent clinical behaviours for managing people with nsLBP. Moreover, the participants were highly satisfied with the intervention, further supporting the implementation feasibility and increasing the likelihood of replication potential in a randomised controlled trial (RCT). While an RCT design is recommended for further evaluation of this intervention, the current findings, suggest potentially promising short-term benefits for care providers living in rural areas of WA and working in primary care settings.

Beliefs and attitudes of care providers regarding consumers presenting with LBP are well recognised as key factors that can influence their choice of treatment approaches[43] and can negatively impact the beliefs and attitudes of people experiencing LBP[35, 44]. In the current study, the baseline scores for back pain beliefs of care providers (BBQ and HC-PAIRS) were quite high at baseline compared with those previously reported[12, 39, 45] and did not differ significantly between responders and non-responders. Post-intervention, care providers' beliefs shifted towards even more positive beliefs about LBP as evidenced by statistically significant and clinically important differences in BBQ and HC-PAIRS scores (BBQ  $\geq$  1.9 points[35]; HC PAIRS  $\geq$  - 4.5 points[45]). The magnitude of these shifts was greater than previously demonstrated for care providers following an intervention targeting improved beliefs and that used printed materials only[45] and similar to the magnitude of positive change for HC-PAIRS demonstrated using the same educational intervention in a metropolitan primary care physician cohort[17]. These data may reflect the uptake of consistently emphasized key messages and the shared group discussions of real-world, geographically-relevant (e.g.; a farmer) patient vignettes. Using clear, simple language to convey these key messages closely aligned with an approach previously used in a population-based strategy and one which demonstrated a sustained

effect on care providers' beliefs and stated practice behaviour 4.5 years after its cessation in Australia[43].

Regarding the patient vignette, of the 13 care providers who were guideline-inconsistent at baseline, 7 (53.8%) shifted towards guideline-consistent responses post-intervention, a finding which aligned with the shift in HC-PAIRS score towards more positive beliefs. However, there was no evidence for greater shifts toward than away from guideline-consistent behaviours for work and exercise recommendations comparing baseline to post-intervention. Approximately half of the cohort gave responses at post-intervention that were still guideline-inconsistent for work and exercise recommendations, findings similar to those of Bishop et al[6] who showed in a mixed cohort of doctors and physiotherapists in the United Kingdom, that many care providers held the belief that LBP necessitates some degree of avoidance of activities and work and similar to our recent findings for an emerging medical health workforce[12]. Furthermore, we have also demonstrated that a majority of primary care physicians in a metropolitan setting shifted towards guideline consistent recommendations for work and rest following an educational intervention, although the movement for the exercise recommendation was slightly against guideline recommendations[17]. Potentially, care providers may not have factored into their thinking on recommendations, the possible influence of achieving adequate analgesia (which may have reduced pain for example from 8/10 to 4/10, allowing for a considered return to work and exercise) or may have insufficient knowledge or skills in these specific domains to enable a clear recommendation. The professional mix of our cohort may also have diluted any demonstrable shift in the exercise and work recommendations, as some care providers in the cohort (e.g.; nurses, pharmacists) may not be required to make such specific recommendations to people with LBP. The response to the exercise recommendation (13 people shifted, with 7 toward and 6 away from guideline consistent behaviour) may reflect care

providers' interpretation of paced activity and exercise, which in hPEP focused on a time-contingent approach[46] to exercise rather than a pain-contingent approach.

The hPEP interprofessional, educational framework was designed to integrate knowledge ('know') and practical clinical skills ('do') considered essential to effectively implement LBP guidelines into primary care practice[17]. For the majority of questions, care providers demonstrated approximately a 1 point movement towards improved knowledge and skills, similar to the changes previously demonstrated for this educational intervention in a metropolitan setting[17]. In the hPEP questionnaire, the question with the most 'clinically-inadequate' responses at baseline and which demonstrated the greatest positive shift at post-intervention was: 'Translating evidence based medicine into your clinical practice for people with acute and chronic low back pain'; this outcome potentially indicating a clear need for the hPEP intervention. Smaller but significant shifts also occurred for questions which related to moderating the impact of nsLBP on people, their families and work, the pharmacological options for managing nsLBP, and encouraging the involvement of the patient in the management of their nsLBP. The movement on these questions might reflect the emphasis of the case studies which were designed to moderate some of the clinical difficulty associated with matching patient expectation and guideline advice[47]. While addressing such complex factors is not achievable within a 10 minutes consultation time (e.g.; for a family physician), identification of these factors and development of an integrated team approach is one solution to facilitating best practice LBP management. Telemedicine may be a key technology to help bridge the knowledge-skills gap between care providers in rural settings and upskilled care providers and pain specialists practising in metropolitan areas as indicated by rural health consumers with LBP in our previous qualitative study[13].

In regard to the frequency of recommendations, care provider-responders self-reported mostly guideline-consistent approaches to the management of nsLBP. For persistent nsLBP only, there was evidence for an increased frequency of positive recommendations in relation to two questions (assisting to plan lifestyle changes and advice on self-management), and a decreased frequency for one question (referral for spinal imaging). These changes may partly mirror the action-oriented learning approach used for case studies previously developed and trialed[17] and which were supported by current guideline recommendations[20, 21, 23, 27]. This action-learning approach was focused on providing clear, unambiguous evidence-informed pain education and skills for consumers with nsLBP, including the use of self-management strategies, and appropriate multimodal non-pharmacological, pharmacological and behavioural approaches to managing pain (including movement re-education, time-contingent paced activity and short term goal setting)[48, 49]. These changes in frequency of recommendations related only to persistent LBP, which may suggest that care providers monitor the clinical course of acute nsLBP prior to making recommendations, although self-management advice would typically form a component of integrated care for all people. Furthermore, while the self-reported frequency of recommendations for spinal imaging decreased post-intervention for persistent nsLBP, it was still slightly higher than current evidence recommends[50], for both acute and persistent nsLBP[23, 25, 27, 28]. This outcome might reflect care providers' caution about the need to screen for serious pathology, possibly indicating a more biomedical orientation to interpreting spinal pain, or the need for the patient to be reassured that there is no serious pathology, or indicate a lack of alternate examination strategies that may eliminate the need for imaging (e.g.; physical examination for evidence of serious pathology).

### **Methodological considerations**

Our findings would be strengthened if replicated using a stronger study design, such as a RCT. Larger trials would ideally examine hPEP against an active 'control' intervention to determine its clinical

effectiveness. The applicability of our findings to other populations of care providers managing people with persistent nsLBP must be also acknowledged given the limitations of the study design (for example; a modest sample size; the lack of a control group; and the lack of participant blinding; reliance on self-report for primary outcome measures). The post-intervention response rate was modest at 53% and may reflect a lower priority accorded to completion of the post-intervention data in settings where health workforce is already time-constrained, or where the triage and management of patients is not directly provided by that health professional, or mandatory continuing education points are not awarded for completion of post-education materials. Strategies that provide further incentives for care providers completing post-intervention data (such as continuing professional development points or work-based financial incentives) may be required in order to increase response rates, although this incurs additional cost and administrative burdens for research teams; care provider data were based on self-report measures; the monitoring of real-world practice behaviours (including care provider referral patterns, for prescriptions and imaging and referrals to tertiary facilities) would strengthen the study; the hPEP questionnaire was designed to capture practical clinical aspects of LBP management deemed important by the educational pain intervention team and the psychometric properties (e.g.; reliability to detect change) of the questionnaire have not yet been tested; while thorough testing of the HC-PAIRS tool for measuring care providers' attitudes and beliefs to LBP has been performed, gaps remain in the properties of this tool, particularly test-retest reliability and responsiveness[51]; responder bias (possible here due to the response rate achieved); and finally, selection bias (care providers self-referred to hPEP and their motivations for attending this educational intervention may differentiate them from other care providers not so inclined to attend).

## **Conclusion**

The findings from this preliminary study indicate that it is possible to implement an evidence-informed policy-into-practice educational intervention in rural primary care settings. In this small sample, an interprofessional, practically-oriented pain education program was associated with the adoption of more evidence-based LBP management by care providers. Further research is warranted to investigate the translational benefits in terms of objective clinical practice behaviours and any associated reductions in inequity of best practice care in rural areas as measured by improved patient outcomes.

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## TABLES

**Table 1.** The characteristics of health care professionals attending the pain education program (hPEP) intervention are shown. No significant differences (baseline) were evident between responders and non-responders to follow-up data collection. Data are presented as n (%) unless indicated otherwise.

| Characteristic   | N (%)     | Mean (SD)<br>[min – max] | Responders<br>(n=34) | Non Responders<br>(n=26) | p-value <sup>s</sup> |
|--|-----------|--------------------------|----------------------|--------------------------|----------------------|
| Profession   |           |                          |                      |                          |                      |
| <i>General Practitioners</i>   | 20 (33.3) |                          | 13 of 20 (65.0)      | 7 of 20 (35.0)           | 0.241                |
| <i>Nurses</i>  | 16 (26.7) |                          | 11 of 16 (68.75)     | 5 of 16 (31.25)          |                      |
| <i>Physiotherapists</i>  | 10 (16.7) |                          | 5 of 10 (50.0)       | 5 of 10 (50.0)           |                      |
| <i>Others (clinical<br/>psychologists, pharmacists,<br/>psychiatrist, exercise<br/>physiologist)</i> | 14 (23.3) |                          | 5 of 14 (35.7)       | 9 of 14 (64.3)           |                      |
| Age (years)  |           | 43.4 (12.6) 23-71        | 45.9 (11.8)          | 39.7 (13.1)              | 0.074                |
| Gender (Female)  | 39 (65)   |                          | 22 of 34 (64.7)      | 17 of 23 (73.9)          | 0.463                |

Policy-into-LBP practice in remote WA

30

|  |                               |             |             |       |
|--|-------------------------------|-------------|-------------|-------|
| Years of professional practice                 | 18.2 (11.5) 1-40              | 20.5 (2.0)  | 15.0 (2.8)  | 0.100 |
| Estimated % of current caseload devoted to LBP | 19.8 (22.5) 0-90 <sup>#</sup> | 15.5 (19.6) | 26.0 (25.5) | 0.128 |
| BBQ  | 34.8 (6.4)                    | 34.3 (6.8)  | 35.6 (5.7)  | 0.444 |
| HC-PAIRS                                       | 41.9 (10.0)                   | 43.2 (9.3)  | 39.6 (11.0) | 0.145 |

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<sup>§</sup> Refers to responder versus non-responder comparisons calculated using a paired t test

<sup>#</sup> one psychiatrist and one nurse did not currently have caseloads with LBP

LBP low back pain

BBQ Back pain Beliefs Questionnaire

HC- PAIRS Health Care Providers Pain and Impairment Relationship Scale

**Table 2.** Comparison data for health care professionals' self-rated evidence-based knowledge and skills regarding the management of patients with non-specific low back pain are shown. The mean difference in paired responses (post-intervention minus baseline) is a measure of change in the raw Likert scores allocated. The positive movement in scores indicates a movement towards more clinically-adequate responses.

|   | <b>Baseline score</b> | <b>Post-intervention score</b> | <b>Difference Mean (95% CI) <sup>§</sup></b> | <b>p-value<sup>§</sup></b> |
|---|-----------------------|--------------------------------|--|----------------------------|
| <b>Rating of knowledge and skills regarding:</b>  |                       |                                |  |                            |
| Q1: Current evidence based guidelines (e.g; education, pharmacological and non-pharmacological interventions, cognitive behavioural approaches) for the diagnosis and management of acute and chronic low back pain | 2.8                   | 3.6                            | 0.9 (0.6 to 1.3)                             | <0.001                     |
| Q2: The use of multidisciplinary team-based approaches for people with acute and chronic low back pain  | 2.9                   | 3.9                            | 1.0 ( 0.7 to 1.3)                            | <0.001                     |
| Q3: Translating evidence based medicine into your clinical practice for people with acute and chronic low back pain   | 2.5                   | 3.6                            | 1.1 (0.7 to 1.4)                             | <0.001                     |
| Q4: The practical differences between assessment and management of acute and chronic low back pain  | 2.7                   | 3.7                            | 1.0 (0.7 to 1.3)                             | <0.001                     |
| Q5: Similarities and differences in the management of patients presenting to the emergency department with acute low back pain and with an exacerbation of chronic low back pain                                    | 2.8                   | 3.4                            | 0.7 (0.3 to 1.0)                             | <0.001                     |
| Q6: Importance of and approaches to activity management for   | 2.9                   | 3.8                            | 0.9 (0.6 to 1.3)                             | <0.001                     |



| Policy-into-LBP practice in remote WA   |     |     |                  |        |
|---|-----|-----|------------------|--------|
| people with acute and chronic low back pain   |     |     |                  |        |
| Q7: Importance of, and approaches to, exercise for people with acute and chronic low back pain  | 3.1 | 4.0 | 0.9 (0.6 to 1.3) | <0.001 |
| Q8: Moderating the impact of acute and chronic low back pain on people, their families and work   | 2.7 | 3.8 | 1.1 (0.8 to 1.4) | <0.001 |
| Q9: Pharmacological options for people with acute and chronic low back pain   | 2.7 | 3.7 | 1.1 (0.8 to 1.4) | <0.001 |
| Q10: Facilitating the involvement of the patient in the management of acute and chronic low back pain   | 2.7 | 3.9 | 1.2 (0.9 to 1.5) | <0.001 |
| Q11: Health Professionals in your local network that <i>include</i> patient active management strategies in their approach to acute and chronic low back pain management            | 2.7 | 3.5 | 0.8 (0.4 to 1.2) | <0.001 |
| Q12: Approaches to assist adult learning (such as hPEP being based on self-efficacy theory, pain biology, etc) and facilitating integration of this learning into clinical practice | 2.3 | 3.4 | 1.1 (0.7 to 1.4) | <0.001 |

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<sup>s</sup>calculated using a paired t-test, one-sided p-value

**Table 3.** A pre- and post-intervention comparison of health care professionals' frequency of recommendations regarding the management of patients with non-specific low back pain (nsLBP), is shown. The mean difference in paired responses (post-intervention minus baseline) is a measure of change in the raw scores allocated.

| <b>Measure</b>  | <b>Baseline-mean<br/>(SD)</b> | <b>Post-intervention<br/>mean (SD)</b> | <b>Difference<br/>Mean (95% CI)</b> | <b>p-value<sup>§</sup></b> |
|---|-------------------------------|--|-------------------------------------|----------------------------|
| <i>Frequency of recommendations (per 10 patients)</i> |                               |  |                                     |                            |
| <i>Acute nsLBP</i>                                    |                               |  |                                     |                            |
| Advise specific exercise (n=29)                       | 6.3 (3.8)                     | 6.3 (4.3)                              | 0.0 (-1.5, 1.6)                     | 0.536                      |
| Assist plan lifestyle changes (n=29)                  | 6.5 (3.3)                     | 6.9 (3.3)                              | 0.4 (-1.1, 1.9)                     | 0.288                      |
| Advise on self management (n=27)                      | 6.9 (3.5)                     | 7.7 (3.3)                              | 0.9 (-0.8, 2.5)                     | 0.146                      |
| Coordinate management (n=29)                          | 6.7 (3.3)                     | 6.4 (3.5)                              | -0.2 (-1.8, 1.4)                    | 0.620                      |
| Refer spinal imaging <sup>‡</sup> (n=24)              | 1.9 (2.1)                     | 1.7 (2.1)                              | -0.2 (-1.1, 0.6)                    | 0.282                      |
| Prescribe opioids (n=23)                              | 2.1 (2.4)                     | 1.6 (2.7)                              | -0.5 (-1.7, 0.8)                    | 0.220                      |
| <i>Persistent nsLBP</i>                               |                               |  |                                     |                            |

|                                      |           |           |                  |       |
|--------------------------------------|-----------|-----------|------------------|-------|
| Advise specific exercise (n=29)      | 7.4 (3.7) | 7.1 (4.2) | -0.3 (-2.1,1.5)  | 0.637 |
| Assist plan lifestyle changes (n=29) | 7.2 (2.7) | 8.7 (2.5) | 1.5 (0.6,2.4)    | 0.001 |
| Advise on self-management (n=29)     | 8.0 (2.9) | 9.0 (2.3) | 1.1 (0.2,2.0)    | 0.010 |
| Coordinate management (n=28)         | 8.0 (2.4) | 7.6 (3.4) | -0.4 (-1.6,0.8)  | 0.726 |
| Refer for spinal imaging (n=24)      | 3.5 (3.3) | 2.3 (2.5) | -1.2 (-2.5,-0.1) | 0.033 |
| Prescribe opioids (n=24)             | 2.0 (2.4) | 1.5 (2.5) | -0.5 (-1.5,-0.5) | 0.145 |

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<sup>§</sup> The p-value is calculated using the paired t-test.

<sup>¥</sup> In Australia, referral rights for spinal imaging are not restricted to General Practitioners. Physiotherapists also have referral rights.

**Table 4.** The proportion (N(%)<sup>§</sup>) of health care professionals who were guideline-consistent (Yes) and guideline-inconsistent (No) at baseline and at post-intervention is shown. For this patient vignette, three statements explored health care professionals' recommendations regarding exercise, work and bed rest. The only recommendation for which there was evidence for a positive shift, was that related to rest following acute nsLBP.

| Recommendation             | Baseline/Post responses |          |          |           | p-value |
|----------------------------|-------------------------|----------|----------|-----------|---------|
|                            | No/No                   | No/Yes   | Yes/No   | Yes/Yes   |         |
| 1. Exercise recommendation | 11(32.3)                | 7 (20.6) | 6 (17.7) | 10 (29.4) | 0.500   |
| 2. Work recommendation     | 8 (23.6)                | 6 (17.7) | 6 (17.7) | 14 (41.2) | 0.500   |
| 3. Rest recommendation     | 6 (17.7)                | 7 (20.6) | 1 (2.9)  | 20 (58.8) | 0.035   |

<sup>§</sup>McNemars exact test

### **A detailed overview of the hPEP educational content.**

All modules cover 15-20 mins lecture (exception EBP – all practical) followed by 60 mins small group practical (n ≤ 12 per group). The format of the small group sessions may require a more didactic approach.

Detail of small group sessions include:

- Key skills to attain
- Case study presentations that are oriented to rural and remote context with aim to engage community of practice teams and strengthen local networks. The groups discussion included simple take-home messages for clinical use and the current evidence base for these approaches, the strength of recommendations and limitations of current evidence, and how to work with local networks to maximise interdisciplinary engagement in primary care
- Where does this case study fits in the triage algorithm? (i.e.; when to refer and to whom to refer; when specialist help is needed and use of telemedicine)
- Outcome measures (reliability, validity; % change required to be clinically meaningful, number needed to treat (NNT) and number needed to harm (NNH) where appropriate)
- Questions for group discussion; how to implement best practice and monitor clinical outcomes

For each module, the following are requisite resources:

- 1-2 key evidence-based articles for their module (provided in a workbook)
- 1 case study with key questions (and answers) that target key skills for care providers to implement in clinics
- A summary table of the current evidence base for approaches used and strength of recommendations
- List of outcome measures used to assess patients with nsLBPList of URLs for further information/self help (eg NHMRC website, NZCGG, COST B13, NICE)
- A .ppt file with the module lecture content/workshop content as appropriate

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[1] Slater H, Davies SJ, Parsons R, Quintner JL, Schug SA. A Policy-into-Practice Intervention to Increase the Uptake of Evidence-Based Management of Low Back Pain in Primary Care: A Prospective Cohort Study. PLoS One. 2012;7(5):e38037.

## **Supplemental File 2**

The casestudies were focused on strategies to facilitate the translation of the presented evidence (the 'know') into practice and the use (the 'do') of practical, patient-oriented active self-management strategies and co-care from relevant primary care providers working in rural settings. The case studies for the hPEP intervention progressed from simple, uncomplicated nsLBP presentations that could be effectively managed in primary care to more complex cases that required an integrated primary care approach or referral to a tertiary pain medicine unit. Increasing the uptake of evidence by care providers in these more complicated cases, and providing more targeted early intervention based upon risk assessment, is possible in primary care as shown by Hill et al [1] and may be especially important in rural areas where tertiary services are limited.

The case studies were also designed to highlight the use of validated screening tools which can help care providers identify factors that may prolong pain and disability (for example, Orebro [2], Depression, Anxiety and Stress Scale [3], painDETECT[4]), and their application and scoring with reference to these case studies. These practice-enabling tools were used to: (i) help rural HCPs implement a time-efficient diagnostic triage system for screening patients with nsLBP; and (ii) facilitate HCPs to match their clinical findings with scores from tools as an additional guide to management. Tools were chosen to assess all relevant pain-related domains[5, 6], and to align with patient-reported outcomes from the perspective of people who experience chronic pain[7]. Interpretation of the tool scores was presented and based on these data combined with the clinical examination findings, discussion of how to implement a timely, evidence-informed and patient oriented (self) management plan was undertaken.

## **Example of case study**

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Bill Marshal is a fit and healthy 62 year old wheat farmer. He presents with a 10 day history of worsening low back pain. Initially he was able to work through the pain but in the last couple of days he is increasingly finding it difficult to do so. During this time, there has also been some bilateral hip pain and he is worried that his hips might be giving out and stop him working, just like his father's did a few years ago. He admits to prior occasions of similar low back pain but brushes them off as being part-and-parcel of his heavy workload. He normally found that a bit of rest and some stretches would help ease his pain. He doesn't like taking medication, believing that it might mask something more serious. There is nothing in his case history nor examination to indicate the presence of serious pathology or significant neurological compromise. Key presentation findings impacting on

### **Example questions for discussion**

- What would you assess in your clinical examination?
- Any red/yellow flags?
- What about his beliefs regarding medication?
- Is there a role for pacing activity?
- Outline a practical management plan for Bill given his work demands?
- Any indications for imaging?

Bill now returns 6 weeks following his initial presentation. Pain is still limiting his function and he is feeling despondent. He asks if he will ever be able to get back to work. He is

Policy-into-LBP practice in remote WA

worried that he will lose his farm and house. He notes very low levels of motivation, poor sleep, and a general growing unease with his situation.

### **Example questions**

- What pain management measures has he implemented and have these been effective?
- What is his work schedule and demands
- Did this pain begin following a significant change in routine – of note when planning long-term advice
- What additional physical and emotional screening may be required?
- What outcome measures would be appropriate here?
- What changes to pharmacologic management may be indicated?
- What community resources may be available to help Bill?
- What additional services (i.e.; other disciplines) could be accessed through telemedicine if required?

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## Detailed Structure

### Module 1: Guidelines for acute and chronic non specific low back pain (Dr Helen Slater, clinical researcher Curtin University and Specialist Musculoskeletal Physiotherapist, (FACP))

| Content   | Key Skills  |
|---|---|
| Clinical guidelines   | What guidelines? (NZ/NHMRC/COSTB13/NICE)  |
| Algorithm for triage integrating evidence into practice: timely and appropriate assessment and management of acute (< 3/12) NSLBP (inc. red/yellow flags) | Guideline consistent versus inconsistent clinical practice: a partnership approach to managing <u>acute pain to help prevent chronic pain</u> by providing patient information, assurance and encouragement to remain active. |
| Predictors of chronicity (> 3/12)   | Early recognition and use of primary care provider networks to optimise management of acute to help prevent transition to chronic   |
| Evidence base for ASx and Mx  | Time efficiency: using key messages from EB and clinical guidelines (reinforced by table summary)   |
| Strength of recommendations   | What to use and when  |
| Barriers  | Time and limitations of clinical guidelines; geography; limited health services; limited skilled health workforce   |
| Enablers  | Knowledge and networks (inc. primary care, secondary and tertiary referrals; telemedicine; triage algorithms; screening tools; outcome measures)  |

Present current guidelines for assessment and management of Non Specific Low Back Pain (NSLBP): snapshot via summarised table format of current guidelines including levels of evidence: (i) Australian Acute Musculoskeletal Pain Guidelines Group - Scope: \* Covers acute (< 3/12) low back pain with aim to reduce risk of chronic pain. <http://www.nhmrc.gov.au/publications>; (ii) NZ Acute Low Back Pain Guide. Scope: covers only acute (< 3/12) and recurrent low back pain (for prevention of chronic low back pain and disability. [http://www.nzgg.org.nz/guidelines/0072/acc1038\\_col.pdf](http://www.nzgg.org.nz/guidelines/0072/acc1038_col.pdf); Identification of those 'at risk' should lead to appropriate early management targeted towards the prevention of chronic pain; (iii) COST B13 Working Group on Guidelines for Prevention in Low Back Pain. Full guidelines and evidence tables available at: [www.backpaineurope.com](http://www.backpaineurope.com). CostB13 are primarily concerned with preventing the consequences of non-specific low back pain (future aspects) than with preventing pain itself.

**Practical** (also incorporated into proceeding sessions for all other modules). Use case studies over the day to apply current evidence base to management with identification red and yellow flags and appropriate use of radiological investigations. Demonstrate how to use these guidelines to inform care providers' clinical practice in the management of acute NSLBP; and monitoring progress to screen for factors that may indicate serious pathology ('red' flags) or psychosocial factors ('yellow' flags) that have the potential to attenuate recovery. Indicate limitations and barriers to uptake of guidelines and strategies to facilitate translation in rural and remote areas (e.g.; strengthen interdisciplinary networks through community of practice).

#### Articles:

1. Chou, R 2008 Using evidence in practice, Part 1 Pain Medicine 9 (5): 518-530. This article discusses

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which factors distinguish a high quality systematic review and clinical guideline. It also examines the difference between systematic reviews and clinical practice guidelines.

2. Chou, R 2008 Using evidence in practice, Part 1I Pain Medicine 9 (5): 531-541.

This article discusses how to evaluate applicability and clinical relevance of systematic reviews and clinical practice guidelines and provides a framework for approaching clinical decisions when evidence is weak or conflicting.

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**Module 2: Making Sense of Low Back Pain: The rationale use of medical options (Module coordinator – Dr John Quintner, Rheumatologist and Pain Physician, Fremantle Hospital Pain Medicine Unit)**

| Content                          | Key Skills                                  |
|----------------------------------|---|
| Why pain is a puzzle             | Empathy<br>Integrated biological mechanisms |
| Health Professional impact       | Minimise patient fear-avoidance             |
| Self-efficacy and belief         | Active Strategies                           |
| Motivational Enhancement Therapy | Patient Engagement: Goals                   |
| Pharmacology                     |   |
| Pharmacology                     | NNT NNH (Passive strategy); Multimodal      |
| Pharmacology                     | Responsibility for Opioid prescribing       |
| Procedures                       | NNT NNH (Passive strategy)                  |
| Enablers                         | Medicare Item Numbers                       |
| Enablers                         | Empowering Patient: Time & Provide Booklet  |

**Two references:**

1. Blyth Fiona M, March Lyn M, Nicholas Michael K, Cousins Michael J, 2005 Pain: 113(3): 285-92; Self-management of chronic pain: a population-based study. “We have shown in a population-based study that clinical findings regarding self-management strategies apply to the broader population and advocate that more attention be given to community-based strategies for improving awareness and uptake of active self-management strategies for chronic pain” at a primary preventive strategy of altering population beliefs about back pain may be a highly effective way for reducing back-related disability”.
2. Buchbinder R, Jolley D 2005 Spine. Jun 1;30(11):1323-30; Effects of a media campaign on back beliefs is sustained 3 years after its cessation. “Significant sustained improvements in population beliefs about back pain were observed 3 years after cessation of a media campaign of provision of positive messages about back pain. This result provides further evidence that a primary preventive strategy of altering population beliefs about back pain may be a highly effective way for reducing back-related disability”.

**Case history:**

A 23 year old warehouse worker comes in to the regional Emergency Department with back pain.

**Setting context: What facilities do you have? How many patients use ED rather than a primary Health Professional? Do you have links with health professionals in your area (who)?**

**1. Why do we take a history?**

Directed questions: Management Strategies

- Past experience and patient’s beliefs
- Active Strategies (know / doing)
- Passive Strategies (know / doing)
- Supports: Home, Work & Professional
- Motivational Enhancement Therapy (MET)

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## Policy-into-LBP practice in remote WA

- Words: Non judgmental, Non confrontational
- Pain is a Primary Motivator and this incident may be an open opportunity for change; but also a time of anxiety and any plan will need to be clearly written.

### Directed questions “Red flags”

- Trauma: Fractures
- Infection: fevers, chills & rigors
- History or Signs-Symptoms of Cancer
- Neurological deficit: muscle weakness, sensation changes, bladder and bowel changes
- Suicidal Ideation, Self-Harm.

## 2. Why do we do an examination or order investigations

### Examination:

- Reassure the person
- Reassure ourselves

### Red flag conditions for Investigations:

- Can't 'see' pain on XR's, MRI, bone scans.
- Inflammatory markers have limitations for pain

## 3. How do we construct a management plan? Structure not well correlated with persistent pain

1. Activity Management (Pacing)
2. Motor control re-education
3. Pain Approach
4. Pharmaceutical
5. +/- Procedures if indicated after above

Team work: especially if person using Passive Strategies only.

## 4. Who do we involve in the management plan?

1. Health Professional to Patient:
  - Use the 3<sup>rd</sup> Space: words and body language
  - Use written information (booklet, contact list)
2. Health Professional – Health Professional(s):
  - Letter (cc list) +/- phone, telehealth (VC & Skype)

## 5. What mode(s) of communication do you use?

- Letter (cc list)
- Phone
- Telehealth (VC & Skype)

## 6. When to use complementary service for a time support (shared care)

- Health Professionals for shared team care in the community
- Referring mechanism to Pain Medicine Units: similarities and differences
- Time support: group programs (PEP, STEPS, Pacing plus)
  - Prescription non-PBS

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- CBT (LEAP, PUMP, SCAMP)
- Consideration of specific interventions combined with the above

### Websites:

1. [www.Mylibrary.net.au](http://www.Mylibrary.net.au)
2. [www.fhhs.wa.gov.au/pmu](http://www.fhhs.wa.gov.au/pmu)

TOTAL: 20 minutes lecture; 60 mins small groups case studies; evidence based practice recommendations and strengths of recommendations; outcome measures

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**Module 3: Movement, Activity and Low Back Pain: Helping patients map a course through every-day life (Module coordinator: Dr Helen Slater, clinical researcher and Specialist Musculoskeletal Physiotherapist (FACP); Melanie Galbraith, Musculoskeletal Physiotherapist; materials adapted from gPEP contribution including Luke Parkitny, Felicity Kermode, Nicky Fortescue, Helen Slater)**

Movement Activity Pain: Helping patients map a course through every-day life.

Aims: (1) Provide patients with a basic functional understanding of how pain and physical mechanisms underlie appropriate responses to low back pain (pathology versus symptomatology); (2) Appropriate assessment of and activity pacing strategies for maintaining and recapturing activities of daily living; (3) Appropriate assessment of and exercise/activity strategies for maintaining and improving symptoms; (4) Teaching patients to actively participate in recovery; (5) Appropriate coordinated management with physiotherapy and/or exercise providers for optimal recovery

**Aims:**

By the end of this session participants will:

1. Understand how to fit clinical assessment and management of acute and persistent NSLBP within a biopsychosocial framework including use of:
  - a. Red flags, yellow flags, blue/black flags
2. Understand and confidently explain the evidence-based poor correlation between pathology, investigations, and symptoms in low back pain
  - a. Research literature on correlation
  - b. When is imaging indicated (evidence and practice)?
3. Understand and be able to interpret functional outcome measures commonly used in low back pain ('know and do' skills)
  - a. Common reliable and valid outcome measures, meaning, and interpretation, % change required to be clinically significant
4. Understand and help manage patients' activity levels
  - a. Negative and positive impacts of activity and exercise
  - b. Activity quota pacing
  - c. The importance of coordinated approaches that align with consumer goals, beliefs, fear and maladaptive behaviours, movement control issues
5. Be able to plan and review the coordinated care of patients for optimal outcomes
  - a. Physiotherapy including evidence for interventions and strength of recommendations
  - b. When to refer and to whom to refer? – facilitating a "team" approach to build skilled workforce capacity in rural and remote areas and linking with specialists through telemedicine
6. Vocational rehabilitation (coordinated management with physiotherapy, exercise providers, and vocational rehabilitation providers)

**Case Study:**

Bill Marshal is a fit and healthy 62 year old wheat farmer. He presents with a 10 day history of worsening low back pain. Initially he was able to work through the pain but in the last couple of days

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he is increasingly finding it difficult to do so. During this time, there has also been some bilateral hip pain and he is worried that his hips might be giving out. He reports prior occasions of low back pain but he simply put this down to heavy work. He performed some stretches, and found that his pain resolved. There is nothing in his case history or examination to indicate the presence of serious pathology or significant neurological compromise.

TOTAL: 20 minutes lecture; 60 mins small groups case studies; evidence based practice recommendations; strength of recommendations; outcome measures

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## **Module 4: Response to Low Back Pain (Module coordinator - Carl Graham, Clinical Psychologist, Fremantle Hospital Pain Medicine Unit)**

### **Aims**

1. Identify the psychological and behavioural issues which impact on a patient's ability to cope with pain and which might lead to less functional responses and increase the potential for the development of chronic conditions.
2. To develop an understanding of the role of a clinical psychologist in a multidisciplinary response to pain treatment.

### **Objectives**

1. Understand the interaction between pain versus response to pain; and the function of illness behaviours
2. Understand the psychological & behavioural components of self-management for pain
3. Understand the role of the clinical psychologist in pain management
4. How to access services (e.g.; use of Telemedicine when no local service; virtual clinics)

### **Skills**

1. Identify contextual variables in pain onset and in patient presentation that are associated with higher risk of the development of chronic pain and comorbidities (including traumatic onset, elevated 'load', yellow flags)
2. Identify & address distress issues implicated in reduced pain coping (beliefs - catastrophising, efficacy; avoidance - meds, illness behaviours)
3. Identify & effectively address depressive responses in patient with acute pain (function of depression, evidence based treatment)
4. Understand and be able to communicate to patients the role of a CP in pain (Referral issues, role of meds, CBT vs. counselling)
5. Outcomes measures (what tools are available, reliability, validity etc) and EB for management (strength or recommendations).

### **Case Study**

JM is a high achieving 40yr old professional female who had an MVA as a teenager which left her with a history of low level nsLBP which has flared intermittently but otherwise not had a notable impact on her overall function. JM recently had a cycling accident when another cyclist failed to notice her as he entered the road and collided into her. The accident resulted in a fractured wrist and significant neck pain which is slowly improving. The patient is now being sued by the other cyclist and reports being highly distressed. Two weeks after the accident JM attends her doctor's surgery with a 2 day history of muscle spasms in her low back which, she reports, are making it impossible for her to work. She experiences a spasm in the waiting room just prior to her appointment. She is highly distressed and unable to stand upright when walking to the doctor's room.

### Questions for discussion:

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## Policy-into-LBP practice in remote WA

1. What would your treatment priorities be?
2. What might be notable issues in her presentation that you would look for?
3. Would this case indicate the need for a referral to other health professionals?
4. Who would you refer to and what is there are no local clinical psychologists?
5. What would the referrals ask for?

TOTAL: 20 minutes lecture; 60 mins small groups case studies; evidence based practice recommendations and strengths of recommendations; outcome measures

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**Module 5: Pharmacologic approaches to low back pain (Module coordinator – Professor Stephan Schug, Professor and Chair Pharmacology and Anaesthesiology Unit, University of Western Australia and Director of Pain Medicine, Department of Anaesthesia and Pain Medicine, Royal Perth Hospital); Dr Stephanie Davies Head Pain Medicine Unit, Fremantle Hospital and Health Service; Head of Statewide Pain Medicine Services Western Australia;**

| Content      | Key Skills   |
|--------------|--|
| Pharmacology | What to use and when (inc. strength of recommendations)  |
| Pharmacology | NNT NNH (Passive strategy); Multimodal   |
| Pharmacology | Responsibility/issues for Opioid prescribing   |
| Procedures   | NNT NNH (Passive strategy)   |
| Enablers     | CGs; networks (inc. primary care, secondary and tertiary referrals; telemedicine); NNT/NNH; polypharma; building clinical networks; virtual networks |
| Barriers     | Lack of knowledge and access to EB; no active strategies recommended to use therapeutic window; geographic barriers and lack of skilled workforce    |

Need to cover:

1. Pharmacological approaches for acute – chronic management NSLBP (ranges of options).
2. Definition of nociceptive and neuropathic pain required (maybe presented earlier)?
3. What about co-morbidities when prescribing? Always part of multimodal approach. Consider issues with side effects/tolerance/dependence/addiction/substance abuse/non-responders.
4. Procedures – options; NNT/NNH; EB (strength of recommendations).

Provide:

- 1-2 key articles for the module
- 1 case study with key questions (and answers) that target key skills for care providers to take away, possibly work-related NSLBP
- A summary table of the current evidence base for approaches used and strength of recommendations (NNT/NNH)
- List of outcome measures used to assess patients with NSLBP List of URLs for further information/self help (eg NHMRC website, NZCGG, etc)
- A .ppt file with the module lecture content/workshop content as appropriate

**Articles:**

1. Chou R, Huffman LH. Medications for acute and chronic low back pain: a review of the evidence for an American Pain Society/American College of Physicians clinical practice guideline. *Ann Int Med* 2007; 147: 505-514.

TOTAL: 20 minutes lecture; 60 mins small groups case studies; evidence based practice recommendations and strengths of recommendations; outcome measures

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**Table 1.** Summary of qualitative data from participants regarding the 3 most important learning outcomes captured by the hPEP intervention at 2 months post intervention. Data are summarised for each participant by row.

| <b>Learning outcome 1</b>   | <b>Learning outcome 2</b>                                 | <b>Learning outcome 3</b>   |
|---|---|---|
| Assessment of LBP (acute vs chronic)  | Initial management of LBP                                 | Management of chronic LBP   |
| Management options for lower back pain  | info re: mechanisms                                       | Differentials, warning signs, flags   |
| Be better able to manage back pain  | Be aware of the best evidence in treating back pain       | Be aware of recommended drugs to use in back pain                                   |
| Better appreciation of causes of back pain  | Drug treatment options                                    | non drug treatment options  |
| Management of back pain   | Assessment spinal injury                                  | treatment of spinal pain  |
| reinforce LBP guideline management  | reinforce LBP presentations/assessments                   | learn new approaches in assessment/management                                       |
| Confidence in eliminating dangerous causes of back pain                           |   |   |
| Management  | Drug options  | Physical Therapy  |
| Review evidence based guidelines  |   |   |
| Best pain treatment for back pain   | Cause of back pain  | Different types of back pain  |
| Gain more understanding and "tolerance" of back pain issues                       | Try and gain some strategies for prevention               | Understand pharmacology treatments  |
| Up to date information on spinal pain   | Hints to help me with my back pain                        | Use of medications for chronic pain   |
| Latest evidence base  | Multidisciplinary approach                                | Up to date knowledge  |
| Good understanding of pain management   |   |   |
| Recognising difference between acute and chronic pain                             | Resources available for nurses to give advice to patients | Ways to prevent or at least minimise incidences of back pain in self and colleagues |
| Up to date knowledge in the area  | Identify role of psychiatrist in pain management          | Liaise with colleagues  |
| How to help resistant patients explore non-pharmaceutical pain management options |   |   |
| Understanding pain types  | Confidence in treating pain/managing pain                 | Understanding analgesia   |

## Policy-into-LBP practice in remote WA

Increase my pain management knowledge  
Specific approach to diagnosing causes of pain

Network with pain specialists

Understanding of latest evidence regarding pharmacological approach  
Logical and simple yet comprehensive approach to pain management  
Non opioid pharmacology in pain management  
Find out about pain management  
Understanding the genesis of low back pain

Improve my knowledge about chronic pain  
Skill in pain management  
Understanding the new model for spinal pain

New approaches to treating chronic pain  
Update on skills of implementing biopsychosocial treatment focus

Understand the causes of pain

Evidenced based approach to NSLBP  
Functional approach to pain

Upskill knowledge/skills in area of spinal pain  
Best way to approach movement in chronic pain patients

Hear more about evidenced based strategies  
Specific drugs that can be used

Up to date evidence  
Understanding of best MDT approach to pain - what happens and how I can apply approach to practice  
Advance technique options of pain management beyond standard management  
Correct use of opioids in non-malignant pain  
Psychological management  
Solutions that can be offered

Feel confident at educating patient  
Assessment of patient with pain  
Learning ways to use this information in practice

The role of other allied health practitioners

Improve ability of identifying high risk clients

Treatment - medical/psychological  
Strategies for treatment of clients for self management  
Current best practice techniques  
Be clear on evidenced based strategies for management  
Know best practice protocols for chronic pain management

Pain management pharmacology  
Allied health approach to pain management  
Case discussions to cover aspects I am unaware I need to know!

Learning about practical non-pharmacological methods to help patients manage their pain

New/future advances in pain management  
Palliative care pain management  
co-morbidity  
Enhancing the therapeutic relationship

Be able to produce a management pain that will be complied to  
Up to date evidence in management options

Mechanism of chronic pain vs acute pain (pain pathways)

Network with other local providers  
Self interest - chronic back pain/how I can live and work with it (lifestyle)

Cost effective management of LBP and spinal pain  
increase assessment treatment skills pain  
be aware of other professionals ideas/work methods

## Policy-into-LBP practice in remote WA

|  |   |  |
|--|---|--|
| Better understanding of pain management<br>Contact with other health professionals in this area<br>Consolidation of best evidenced based early management for spinal pain<br>Identifying skills necessary for convincing people suffering from LBP to follow my advice<br>Clear program to work with clients<br>Greater understanding of pain  | Better planning of treatment/management a direction towards doing research in this area for my practice<br><br>As above for also chronic pain<br><br>Where to find the evidence for me and patient<br>Ways to present to professionals and public treatments available<br>Review recent research on LBP treatment protocols | More strategies for encouraging patient participation in treatment<br>new ways of assisting patients who have chronic pain<br><br>How to encourage a multidisciplinary appropriate approach in this community<br><br>Link between chronic pain and mental state<br>Communication with GPS on team approach to LBP  |
| Education in up to date clinical pathway for LBP<br>Strategies for helping people to manage pain and remain active   | Understanding pain management<br>Psychological issues with pain and therapy for each<br>learn ways to assist clients with pain in my practice   | Understanding pain mechanisms<br>Prevention, management and alleviation of spinal pain through exercise/lifestyle/diet   |
| Understanding of pain and its management<br><br>Learn more generally about pain mechanisms   |   | Understanding and utilising referral pathways effectively  |
| Better understanding of pain management<br>Additional coping mechanisms to offer patient at after initial consult<br>Better understanding of medical management LBP<br>Pharmacological strategies treating spinal pain<br>How to assess back<br>Treatment alternatives for management back pain assessment skills<br>Most effective ways of managing LBP<br>How to help people to cope with pain | Identify resources for patients<br>Motivation skills to know when to encourage return to work<br>Latest EBP on spine pain<br>Non-physiological causes of spinal pain<br>Current treatment<br><br>Management plan<br>How to manage patients with long term back pain<br>To better understand what causes pain                | Update skills re: medical options for managing patients<br>Knowing when to refer on to medical team<br>Non pharmacological treatment of spinal pain<br>Long term control of LBP<br><br>Other relevant resources<br>Myths vs facts - refresh anatomy and physiology<br>Improved knowledge re: How people respond to |

Policy-into-LBP practice in remote WA

Understanding back pain better

What is spinal pain

Learn what resources available

How it is treated

pain  
Best treatment for different types of back pain  
How to educate patient to live with chronic back pain