

# An examination of clinically meaningful improvement following pain-management in a cohort of compensable patients with persistent back-pain

## INTRODUCTION & OBJECTIVES

The Network Pain initiative allows compensable clients to access multidisciplinary Pain Management Programs (PMP) with the goal of improving their capacity to self-manage, return to meaningful activities, and achieve vocational goals (Daly, 2013). Supporting recovery among compensable patients who have remained in this compensation environment for over 12 months is a key challenge, given the increased societal and individual challenges faced in this cohort (Beales et al., 2016). Past research has indicated that legal involvement and a compensation claim following an injury are associated with worse outcomes from both a physical and psychological perspective respectively (Murgatroyd et al., 2015). We therefore present here an examination of clinically meaningful improvement following a PMP to understand how beliefs about pain and one's confidence to manage can be altered and how this change is maintained over time. Further, we seek to use outcome data to improve service delivery and quality assurance.

## METHODS

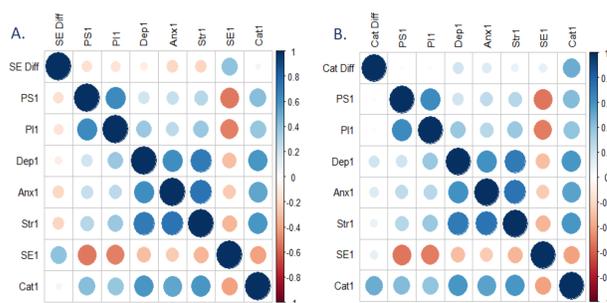
Following a MDT assessment, suitable patients were enrolled in a high intensity multidisciplinary PMP. Based on a cognitive-behavioural approach, the program involves 85 hours of concurrent treatment, primarily in group settings, twice a week over six weeks.

Outcome data was captured as part of the electronic persistent pain outcomes collaboration (ePPOC). Standardised questionnaires were administered at four time points: assessment (pre-program), discharge (post-program), follow-up 1 (6 weeks post-program) and follow-up 2 (6 months post-program). Data was captured between June 2015 and October 2016.

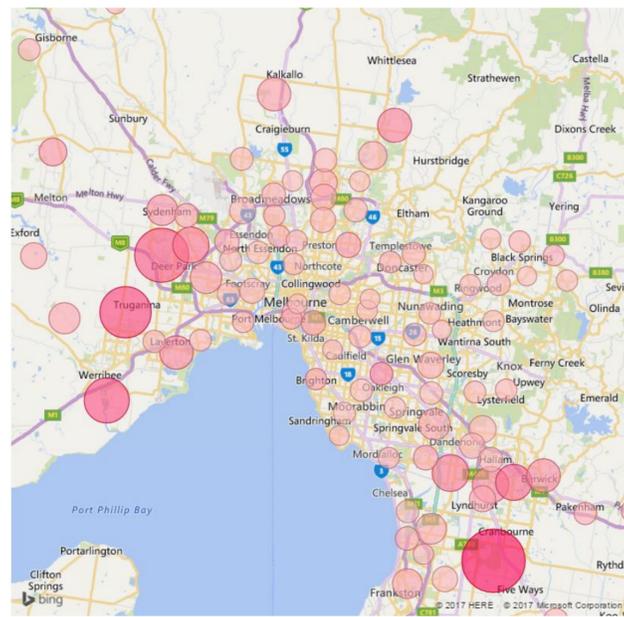
**Table 1.** Summary of patient characteristics at post-program and discharge.

Measure	Post-Program	6-8 Week
N Patients	76	41
N Males	44	24
N Females	32	17
Average Age	43.50	43.44
Age-Range	24-65	24-65
% Working	32.43%	40.00%
Av. daily morphine equiv.	76.00	23.23
% physical comorbidity	35.71%	40.00%
% pain > than 1 year	81.08%	80.00%
% born outside Australia	21.62%	25.00%
% overweight	78.33%	75.00%

## RESULTS



**Figure 1.** Matrix of correlations between all measured outcomes at baseline, in addition to observed change at program discharge to A. Self-Efficacy, and B. Catastrophizing. All variables demonstrate weak correlations to improvement in these variables. Self-efficacy demonstrates moderate to strong inverse relationships to pain severity and interference, whilst, catastrophizing demonstrates moderate to strong positive relationships with depression, anxiety and stress. SE Diff = Self-Efficacy change, Cat Diff = Catastrophizing change PS1 = Pain Severity, PI1 = Pain Interference, Dep1 = Depression, Anx1 = Anxiety, Str1 = Stress, SE1 = Self-Efficacy, Cat1 = Catastrophizing.



**Figure 2.** Map-plot where each bubble depicts a postcode of patients residency. Each bubble has a variable N. For each postcode, the size of the bubble depicts the average level of catastrophizing, whilst colour-depth reflects the number of health services used. Although based upon limited data, a trend exists for higher catastrophizing and greater health utilization in the outer west, and south eastern suburbs of Victoria.

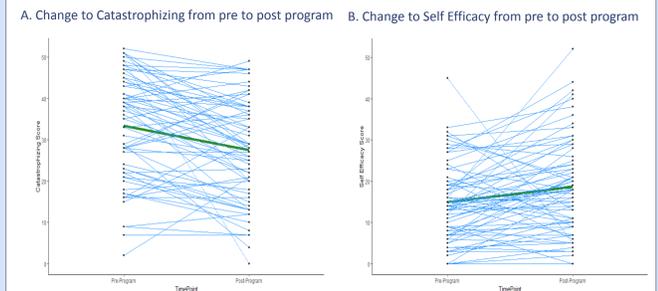
**Table 2.** Summary of overall changes observed in patients at A. Discharge and B. 6-8 week follow-up. The left column summarizes the mean percentage change to participants, whilst the right column summarizes the percentage of participants to achieve clinically meaningful improvement.

A. Discharge Outcomes		
Measure	% Improvement	% to Improve
Pain Severity	+0.4%	31.51%
Pain Interference	-9.83%	44.74%
Depression	-18.9%	36.49%
Anxiety	+0.30%	22.97%
Stress	-1.55%	26.03%
Catastrophizing	-17.55%	35.14%
Self-Efficacy	+24.43%	30.67%

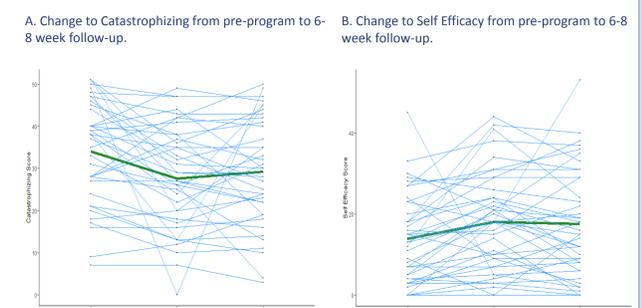
B. 6-8 Week Outcomes		
Measure	% Improvement	% to Improve
Pain Severity	+0.81%	28.95%
Pain Interference	-15.25%	40.00%
Depression	-10.59%	37.50%
Anxiety	-4.43%	17.50%
Stress	-1.27%	33.33%
Catastrophizing	-14.28%	32.43%
Self-Efficacy	+25.84%	35.55%

**Table 3** Summary of the number of participants to achieve a clinically meaningful improvement in at least one measured domain at discharge and 6-8 week follow-up, and the average number of domains observed to improve clinically.

Total clinical significance results		
Measure	Discharge	6-8 week
% to improve in at least 1 category	78.46%	71.05%
Average number of items to improve clinically	2.09	2.05



**Figure 3.** "Spaghetti" Plots depicting both individual (blue lines) and mean (green lines) change for Self-Efficacy (+24.43%) and Catastrophizing (-17.55%) at post-program.



**Figure 4.** "Spaghetti" Plots depicting both individual (blue lines) and mean (green lines) change for Self-Efficacy (+25.84%) and Catastrophizing (-14.28%) at follow-up.



**Figure 5.** Six-month follow-up data for Ascend patients summarizing change to A. catastrophizing and B. self-efficacy (N=30).

## DISCUSSION

Baseline data suggests that the cohort of patients is more at risk for poor outcomes given their involvement in the compensation system and amount of time in the environment following submission of their claim (80% claim and pain present for longer than 1 year). Nevertheless, change is possible and the analyses showed significant improvements in pain catastrophizing and self-efficacy that were maintained at six months post program. However, this trend does show some loss of the initial gains following program discharge.

Correlational analyses indicated a relationship between beliefs about pain and increased health care utilisation, particularly among patients living in outer suburbs. This reflects the interplay between individual level factors and social context; considering how interventions may be tailored for the needs of specific subgroups such as those disadvantaged by sociocultural factors is therefore a key future direction, particularly post-program.

Future directions will consider how to encourage adherence to program strategies following discharge. The role of local services and access to resources in outer suburbs is one such consideration, which could be targeted through the use of technology such as digital health coaching to maintain momentum.

## REFERENCES

- Beales, D., Fried, K., Nicholas, M., Blyth, F., Finniss, D., & Moseley, G.L. (2016). Management of musculoskeletal pain in a compensable environment: Implementation of helpful and unhelpful Models of Care in supporting recovery and return to work. *Best Practice and Research Clinical Rheumatology* (30), 445-467.
- Daly, A. (2013). Do pain management programs keep working for compensable clients? A three year follow up. *Australian Pain Society 33rd Annual Scientific Meeting*.
- Murgatroyd, D.F., Casey, P.P., Cameron, I.D., & Harris, I.A. (2015). The effect of financial compensation on health outcomes following musculoskeletal injury: Systematic review. *PLoS One*, 10 (2):e0117597.