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## When Pain Won't Go Away, Then What? An Evaluation of Acceptance Commitment Therapy in a Pain Management Program using Program Assessment Methodology

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### Introduction

#### **The Problem of Chronic Pain**

Chronic pain is defined as pain experienced every day for 3 months or more (Access-Economics, 2007), it affects 1 in 5 Australians (Blyth et al., 2001) and is estimated to cost \$34.3 billion AU per annum (Access-Economics, 2007). Of the total economic cost, lost productivity accounts for \$11.7 billion annually, disease burden at \$11.5 billion, and health system costs account for \$7 billion (Access-Economics, 2007). Overall, chronic pain represents a complex biopsychosocial phenomenon that has a profound impact on an individual's life.

For those who live with chronic pain, attempts to control pain can consume their lives and include extended rest, avoidance of activities that might aggravate pain, seeking out medical procedures or use of medications in the hope of relief. While these strategies may be effective in acute pain, they are generally not effective with chronic pain, and yet paradoxically, the struggle for relief from pain may be causing more problems as patients become increasingly more intolerant of pain (Dahl and Lundgren, 2006) and in the case of long term use of opioid analgesic medications, they may develop increased sensitivity to pain (Mao, 2002). Patients often invest so much time and energy in avoiding pain that they become further removed from a life that they value.

#### **Psychological approaches to managing pain – letting go of the control agenda**

Cognitive Behavioural Therapy (CBT) has been the dominant psychological paradigm in the treatment of pain with a strong research base and emphasis on the primacy of cognition in mediating pain related distress (Longmore and Worrell, 2007). The main focus of CBT is on changing the 'negative' content of thoughts and beliefs about pain that will lead to reductions in pain behaviour and distress (McCracken, 2005). Cognitive strategies such as reinterpreting experience or diverting attention away from pain, have demonstrated efficacy in reducing pain related distress in the short-term (Flor and Hermann, 2004, Linton, 2002b, Linton, 2002a, Linton and Andersson, 2000), however the long term benefits are less clear. Because of the intractable nature of chronic pain, negative ruminations about pain will continue to be activated in the presence of escalating pain, thereby undermining any benefits gained from distraction or reinterpreting experience.

One of the reasons for why old patterns of responding are activated by pain is that our mind is constantly evaluating, comparing, making judgments, remembering past dangers and failures, and warning us about potential future catastrophes. As soon as pain sensations are perceived by the brain, the mind starts automatically producing cognitions or "scripts" about the pain. Mind scripts include thoughts about the various impacts pain has on ones life, and rules aimed at protection from

further pain, e.g., “any physical exertion increases my pain, therefore I should avoid all stress or physical demands until I have got rid of the pain” (Dahl and Lundgren, 2006). Cognitive strategies such as distraction or re-interpreting the negative mind scripts, can have the effect of increasing one’s attention toward the very thought or pain sensations they are trying to avoid, thereby increasing a person’s intolerance of pain and suffering.

### **So what do you do when you cannot control the uncontrollable?**

Acceptance Commitment Therapy (ACT) is a mindfulness-based, values directed, behavioural therapy, which has as its main goal to create a rich, full and meaningful life, while accepting the pain that inevitably goes with it (Dahl and Lundgren, 2006). Acceptance is not a case of stoically soldiering on but rather acceptance of inner experience emphasizes observing thoughts and feelings as they are, without trying to change them, and behaving in ways consistent with valued goals and life directions (Dahl and Lundgren, 2006). While there is no goal of symptom reduction in ACT, symptom reduction frequently happens as a byproduct and not a goal.

Mindfulness is a key element used in ACT to establish a sense of self that is greater than one’s thoughts, feelings and other private events. The essence of mindfulness is ‘paying attention in a particular way, on purpose, in the present moment, and non-judgmentally’ (pg 4) (Kabat-Zinn, 1994). By practicing mindfulness exercises, clients learn to explore previously avoided thoughts, feelings and physical sensations of pain in a non-reactive and nonjudgmental way. Approaching avoided private experiences in this way, assists by changing the relationship from one of aversion to that of acceptance. The practice of mindfulness is also essential in helping clients to identify valued life directions that are very personal and deeply important to them and that will provide natural positive reinforcement. Clients who are “stuck” in chronic pain are mostly active in the unfulfilling struggle of reducing pain rather than living a fulfilling life of their choosing. There is not much fulfillment in nursing pain symptoms, however valued directions, which have probably been put on hold in the service of reducing pain, contain the positive reinforcement or fulfillment needed to motivate the behaviour change to resume living a valued life (Dahl and Lundgren, 2006).

### **Evaluation of Acceptance Commitment Theory in a Canberra based Multidisciplinary Pain Management Program**

An Acceptance Commitment Therapy approach was used as the therapeutic intervention in a multidisciplinary pain management program at the Canberra Hospital whereby patients were introduced to mindfulness based interventions that educated patients to work with unremitting pain sensations, along with associated thoughts and feelings, in a non-reactive and non judgmental way, while behaving in ways consistent with valued goals and life directions.

The education program runs on a group basis over two weeks, with follow-ups at one month, four months and eight months. Despite regular surveying of patients’ psychological and functional states, it was difficult to determine the success of the education program, including what parts of the program were achieved well or not.

In 2006, we decided to implement a program assessment methodology called PAT<sup>©</sup> as part of Treonic’s online Clinical Practice Improvement Framework (Shadbolt and Wang, 2007). This methodology combines the education process (in this case ACT) with epidemiological techniques and online IT infrastructure to create an end to end approach to program delivery and assessment. In this paper, we describe our first year experience after the adoption of PAT.

## **Method**

### **Subjects**

At the time of the analysis for this paper, 41 patients participated in one of six pain full-time management programs run between February 2006 and February 2008. The average age was 44 years (range 23 to 70 years), with 61% (25/41) being female.

### **Program Assessment Tool (PAT)**

PAT is a matrix approach to self-management education applied at:

- the program design and improvement stages,
- the delivery of the education,
- the assessment and distribution of individual patient outcomes, and
- the evaluation of the program deliverables (Shadbolt and Wang, 2007).

It brings together a multidisciplinary team's program content with a number of psychometric techniques to deliver a simple intuitive program-patient specific evaluation process of defined deliverables. It is designed to enhance the interpretation of other outcome measures and also to address patient perceptions about how well they believe they have achieved their own pre-program goals. Based on the results, modifications at patient and program levels can be made to improve the program and adjust the team's and patient's expectations about the benefits of the program. The evaluation process is designed to be continuous and capable of dealing with diversity and change over time.

Patients completed a PAT where they were asked to select 6 expectations from a pre-defined list of deliverables they wanted to achieve by doing the pain management program.

### **Other measures**

Other psychological measures included the 21 item Depression, Anxiety and Stress Scale (Lovibond and Lovibond, 1995), Pain Self-Efficacy Scale (Nicholas, 2007), Pain Catastrophising Scale (Sullivan et al., 1995), and the Fear Avoidance Beliefs Questionnaire (Waddell et al., 1993). These questionnaires were completed at the beginning of the pain program, and again at 1-month, 4-months and 8 months.

### **Procedure**

The multidisciplinary team, including a psychologist, physiotherapist, nurses, occupational therapist and medical doctors, worked as a group to define the education program deliverables in the context of the PAT methodology. These deliverables were defined according to program areas and refined until all team members agreed with the list. Information obtained from past patients' was also used to help define the deliverables. This list then helped form the focus of the education information sessions to the patients.

In terms of the individual education sessions, patients were provided with sessions on the mechanisms of pain and the role of medications in pain management, which provided a background to exploring whether the 'pain control agenda' was an effective long term strategy. A session on values explored the incongruence between values that were important but were not being lived out in their daily life. This provided participants with an alternative focus to pursuing valued goals that were achievable and letting go of the 'unachievable' goal of complete pain relief. Practical sessions on mindfulness meditation practices had the effect of desensitizing patients to the aversive nature of pain and to view it in a non-reactive and non-judgmental way. Each patient also participated in an exercise program under the supervision of a physiotherapist, which included strengthening and stretching exercises as well as walking on a treadmill and cycling on an exercise bike. Group sessions were conducted every day for two weeks between 9.00 am and 3.00pm. At the conclusion of the two week program, patients would attend weekly group follow-ups with the team to review progress and identify any obstacles in the way of maintaining gains. At the conclusion of the four

weekly follow up, they completed the questionnaires, and were brought back at 4 months and 8 months whereby they completed the same follow-up questionnaires.

## **Results**

### **Initial program deliverables**

The multidisciplinary team agreed on 22 program deliverables under the areas of:

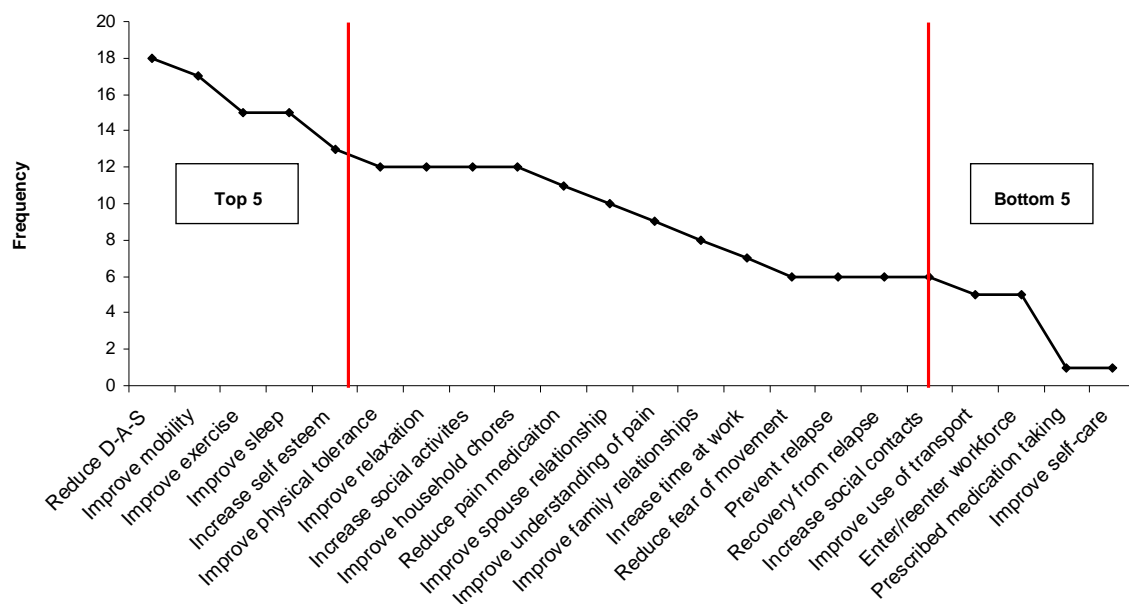
- Health/physical wellbeing
- Education/personal growth and Development
- Social network/friends
- Family relations
- Employment /career

The team believed patients could achieve the following deliverables as a result of attending the education sessions:

1. Reduced pain related Depression, Anxiety and Stress
2. Increased self-confidence and/or self-esteem
3. Reduced my fear of movement
4. Improved mobility
5. Improved physical tolerance
6. Improved ability to exercise regularly
7. Improved ability to relax
8. Reduced pain medications
9. Improved ability to sleep well
10. Improved ability to prevent a relapse
11. Improved ability to recover from a relapse
12. Improved ability to take prescribed pain medications as directed
13. Improved understanding about pain
14. Increased ability to engage meaningfully in social activities
15. Improved relationship with family members
16. Improved relationship with spouse/partner
17. Increased social contacts outside of my family unit
18. Improved ability to undertake self-care tasks
19. Improved ability to undertake household chores
20. Improved ability to use transport/travel
21. Increased time at work
22. Improved ability to enter/re-enter the workforce

### **Patient expectations**

According to patients' responses to the PAT, Figure 2 shows the frequency distribution of deliverables that patients expected to achieve from the education sessions. The most frequently reported expectation of the program was to reduce my pain related depression, anxiety or stress, follow by improving mobility, ability to exercise regularly and sleep well. The least selected expectation was improve ability to self care, followed by taking prescribed medication as directed, and then enter/reenter the workforce.



**Figure 1: Frequency of education program deliverables selected by patients (n=41)**

**Psychological and functional states at start of program**

In terms of patients’ psychological and functional states prior to the education program, the majority of patients had at least “moderate” levels of poor psychological state (as determined by published cut points). For feelings of helplessness, pain intensity and fear avoidance there were no normal responses, while over 40% of patients had extreme anxiety.

**Table 1: Baseline responses to the outcome measures<sup>1</sup>**

Indicator	Normal (%)	Mild (%)	Moderate (%)	Severe (%)	Extremely Severe (%)
Depression	26.8	7.3	22.0	9.8	34.1
Anxiety	26.8	7.3	17.1	7.3	41.5
Stress	36.6	12.2	17.1	17.1	17.1
Helplessness	-	34.2	31.6	26.3	7.9
Magnification	13.2	36.8	21.1	18.4	10.5
Rumination	10.5	15.8	36.8	23.7	13.2
Self efficacy	17.1	26.8	31.7	19.5	4.9
Pain intensity	-	3.4	72.4	24.1	-
Fear avoidance	-	20.7	31.0	27.6	20.7

1. Cut offs determined by published values for the measures

**Outcome follow-up findings**

After one month since completing the program, there were significant improvements in all of the outcome measures, except pain intensity (see Table 2). Among the patients who had been reviewed at four months post the management program, significant reductions remained in stress,

helplessness, magnification of pain, and fear avoidance (see Table 2). The other indicators remained better than baseline but did not reach a p value less than 0.05. Again, the exception is pain intensity where responses were relatively similar across the periods.

**Table 2: Outcome measure average scores at baseline, one month and four months**

<b>Indicator</b>	<b>Baseline</b>	<b>1 month</b>	<b>P value<sup>1</sup></b>	<b>4 months</b>	<b>P value<sup>2</sup></b>
Depression	9.9(6.6) n=41	6.2(5.7) n=33	0.0006	7.1(6.9) n=21	0.1
Anxiety	7.7(5.2) n=41	5.4(5.9) n=33	0.007	6.6(5.7) n=21	0.4
Stress	10.7(6.0) n=41	6.7(5.3) n=33	<0.0001	9.2(6.6) n=21	0.05
Helplessness	16.7(5.7) n=38	12.3(5.9) n=33	<0.0001	12.1(6.5) n=21	0.007
Magnification	7.5(3.4) n=38	5.7(2.9) n=33	0.0003	5.7(3.0) n=21	0.005
Rumination	10.9(4.2) n=37	8.3(4.7) n=32	0.004	8.8(5.5) n=21	0.1
Self efficacy	29.0(11.7) n=41	37.5(8.6) n=33	<0.0001	35.7(12.9) n=21	0.1
Pain intensity	61.7(17.6) n=29	57.6(19.6) n=24	0.3	54.6(23.2) n=15	0.2
Fear avoidance	12.9(5.2) n=29	7.4(5.3) n=24	<0.0001	8.7(6.4) n=15	0.04

1. Paired t test – baseline vs 1 month based on patients who had been reviewed at 1 month
2. Paired t test – baseline vs 4 months based on patients who had been reviewed at 4 months

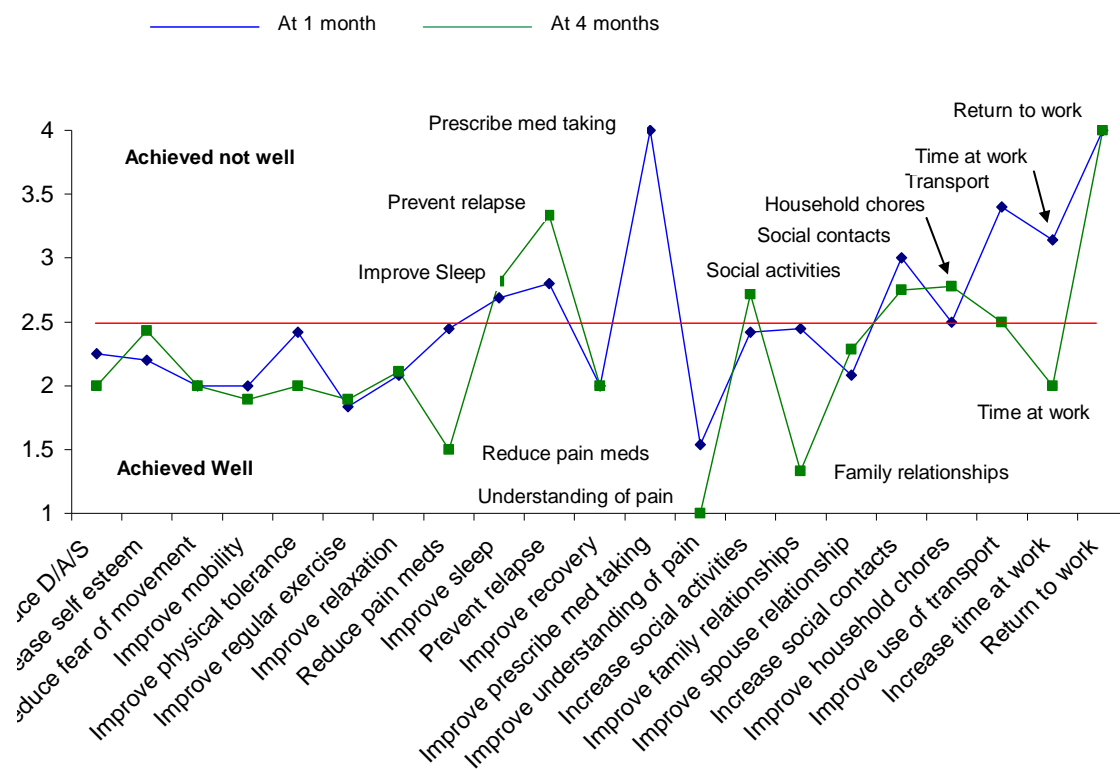
### **PAT follow-up findings**

At the one month follow up, patients felt that the program delivered well on more than half of the program deliverables (13/22), in particular improving their understanding about pain, improving their engagement in regular exercise and mobility, reducing fear of movement, improving their recovery from a relapse, and improving their ability to relax and reduce levels of depression, anxiety and stress (see Figure 2).

The deliverables that were not achieved well at one month were mainly in the areas of employment/career, family, friends and social networks, taking prescribed medication as directed, preventing a relapse and improving their ability to sleep well (see Figure 2).

By four months post program, 13/22 of the deliverables were achieved well, with most of them being the same as those achieved at 1 month (p = 0.4). Patients continued to understand their pain even better than at one month. Similarly, patients improved their use of pain medications, improved their tolerance of pain, family relationships, use of transport, and time at work (see Figure 2).

Persistently, however, patients felt the program did not improve their ability to prevent a relapse or improve their ability to sleep well, undertake household chores, engage in meaningful social contacts or enter/reenter the workforce (see Figure 2).



**Figure 2: Average patient achievement scores by program deliverables at one month and four months post program completion**

### Program review based on PAT results

As part of the continuous program review, the multidisciplinary team was able to use the PAT feedback to improve and refine the program. The changes involved three types:

- *Removal of a deliverable*
- *Modify the education session to improve the likelihood of the deliverable being achieved*
- *Change patients' expectation about what can be achieved by the deliverable*

After the first cohort of patients, it was decided to remove the enter/re-enter the workforce deliverable since it was felt that the program could not influence the uptake of employment.

After the second cohort of patients, it was decided that more research was needed on sleep to improve the program, and that new cohorts of patients should be better informed about how little the program can help with sleeping well.

After the third cohort, it was decided to place more emphasis how the program can help patients' better live with continual pain rather than manage their pain to prevent relapses. This shift in perception fits better with the Acceptance Commitment Therapy approach.

### Discussion

Overall, the indications are that the chronic pain management program at the Canberra Hospital is having a positive outcome on patients' ability to live with their condition: shifting focus from a struggle with pain to one pursuing a valued life with pain as a secondary concern. The results support decreasing levels of helplessness, magnification of pain, stress and fear avoidance.

A frequent comment from patients at the follow-ups was that their pain hadn't changed, but that they were 'less fearful' of their pain and were more active in valued activities, such as pursuing careers, exercise and leisure interests that had either been avoided or put on hold while patients pursued relief from pain.

Although important as a broad guide, the outcome measures do not identify where the program is working or not working, and how to improve it. Simply measuring patients' changes in psychological and functional state is not action oriented, but rather linked to program delivery through temporal and theoretical models that require subjective interpretation to determine the reasons behind any associations - thus generating more questions than answers. Relying on patients' comments, like those above, is always fraught with issues of bias. Integrating the PAT from end to end in the program has provided clear quantitative evidence to help identify the components of program that need action and what type of action. Thus, PAT has provided a framework to answer the team's questions, identify patients' achievements and areas of concern, and help communicate between health professionals involved in the patient's care.

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