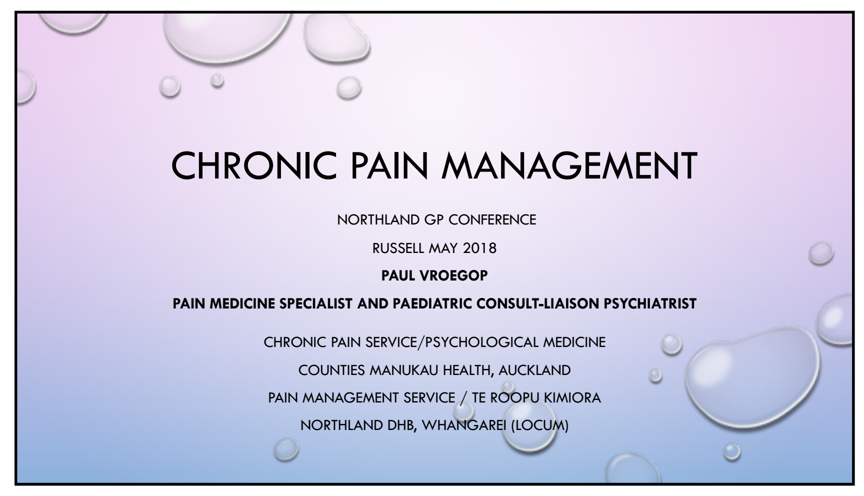
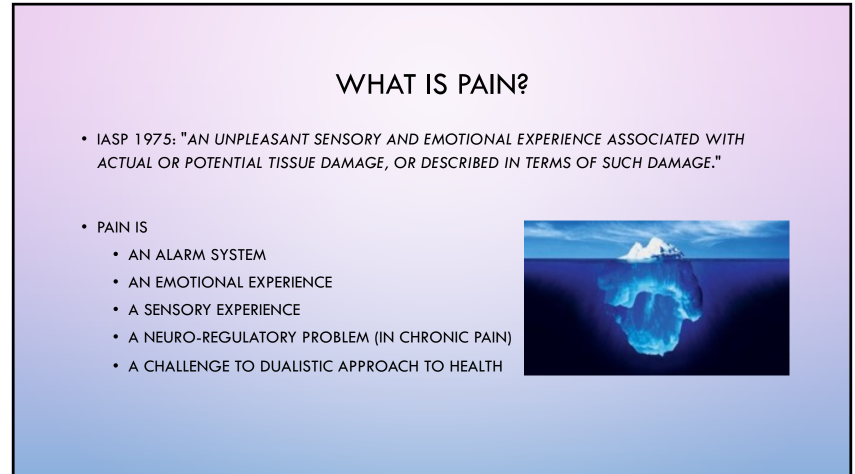




CHRONIC PAIN EPIDEMIOLOGY (1)

- CHRONIC PAIN IN POPULATION PREVALENCE AT AROUND 20%
- PREVALENCE INCREASES WITH AGE, LOWER SOCIOECONOMIC STATUS, ETHNICITY, FEMALE GENDER
- NZ 17% (DOMINICK ET AL 2011)
  - 15-24 YEARS 8% F/9% M
  - 35-44 YEARS 14.1% F/16.1% M
  - 45-54 YEARS 20.5% F/17.7% M
  - 75+ YEARS 30% F/25.6% M
  - SF-36: HEALTH RELATED QOL DECREASES WITH NUMBER OF PAIN SITES

4 out of the top 6 leading causes for the global burden of disease are conditions that cause chronic pain
People with chronic pain present with significantly higher rates of mental health problems.

EPIDEMIOLOGY: SITES

- HEAD 15%
- NECK 8%
- UPPER BACK 5%
- LOWER BACK 18%
- HIP 8%
- SHOULDER 9%
- HAND 6%
- LEG 14%
- KNEE 16%
- JOINTS (UNSPECIFIED) 10%
- BACK (UNSPECIFIED) 24%

EPIDEMIOLOGY: COMMON SYNDROMES

- HEADACHE: MIGRAINE, TENSION HEADACHES, CLUSTER HEADACHES (AUTONOMIC), CHRONIC DAILY HEADACHE, MEDICATION OVERUSE HEADACHE
- LOW BACK PAIN +/- RADICULOPATHY
- NON CARDIAC CHEST PAIN
- MYOFASCIAL PAIN SYNDROMES
- NEUROPATHIC PAIN SYNDROMES
- MUSCULOSKELETAL PAIN SYNDROMES: FIBROMYALGIA, ARTHRITIS, BURSISTIS, PLANTAR FASCIITIS, OTHERS
- CRPS (COMPLEX REGIONAL PAIN SYNDROME)
- VISCERAL PAIN (GASTROINTESTINAL, PELVIC, ABDOMINAL)
- ORAL/FACIAL PAIN

EPIDEMIOLOGY: ASSOCIATIONS

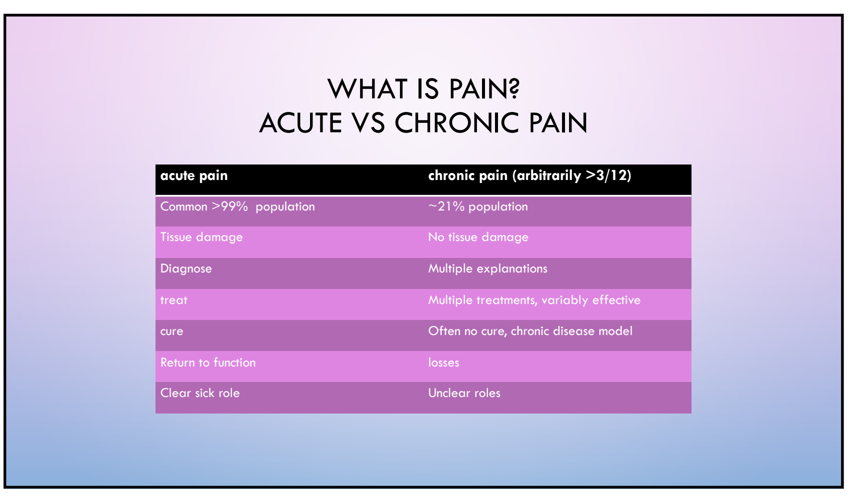
- PSYCHOLOGICAL FACTORS ADVERSELY AFFECT GENERAL MEDICAL CONDITIONS IN SEVERAL WAYS:
  - CLOSE TEMPORAL RELATIONSHIP BETWEEN PSYCHOLOGICAL FACTORS AND DEVELOPMENT OR EXACERBATIONS IN MEDICAL CONDITION
  - FACTORS INTERFERE WITH TREATMENT
  - FACTORS ARE AN ADDITIONAL HEALTH RISK
  - STRESS RELATED PHYSIOLOGICAL RESPONSES PRECIPITATE MEDICAL SYMPTOMS

EPIDEMIOLOGY: MENTAL HEALTH ASSOCIATIONS

- MAJOR DEPRESSION 34-82% (CF 18-35% POPULATION)
- ADJUSTMENT DISORDER WITH DEPRESSED MOOD 28%
- ELEVATED SUICIDE RATES (SIMILAR TO OTHER DISABLING ILLNESSES)
- ANXIETY DISORDERS: GAD 15-20%, PD 11%, PTSD 7-39% (45-82% IN CSA), PHOBIA 9%, SOCIAL PHOBIA 11%
- AOD: ON OPIOIDS FOR CNCP ADRB 11-20.4%, ADDICTION 3.3%; PROBABLY MUCH HIGHER (26%) FOR UNSELECTED PATIENTS
- SOMATOFORM DISORDERS: PAIN DISORDER (LITTLE VALIDITY), CONVERSION DISORDER (NEUROPHYSIOLOGICAL PHENOMENA CLOSELY INVOLVED IN GENERATION OF MOTOR AND SENSORY "CONVERSION" SYMPTOMS)
- PERSONALITY DISORDERS: RATES OF 37-66%, HIGHER THAN GENERAL POPULATION BUT SIMILAR RATES TO PSYCHIATRIC AND MEDICAL POPULATIONS

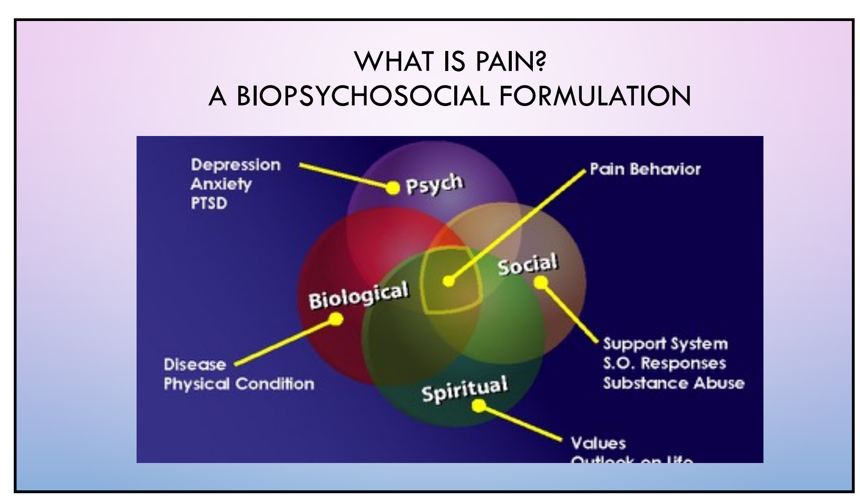
EPIDEMIOLOGY: NATURAL HISTORY

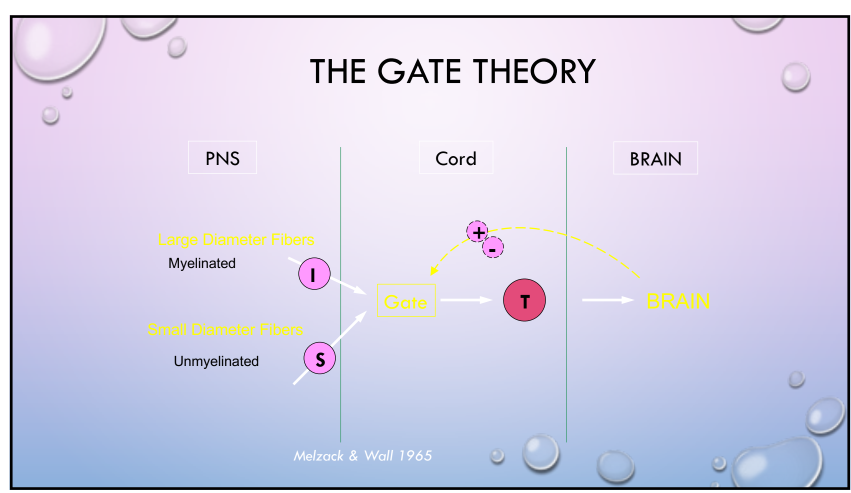
- CHILDREN WITH NORMAL APPENDIX REMOVED (N=209):
  - → 2X RATE OF PSYCHIATRIC ADMISSIONS, GENERAL HOSPITAL ADMISSIONS, CL ATTENDANCE
- CHILDHOOD RECURRENT ABDOMINAL PAIN:
  - → 40-60% ADULT IRRITABLE BOWEL SYNDROME (SMALL NUMBERS)
- PREMATURE INFANTS (NICU OUTCOMES)
  - → INCREASED RATES OF CHRONIC PAIN IN ADOLESCENCE AND ADULTHOOD: 30 - 40% BY AGE 30
  - → PAIN SENSITIVITY CORRELATES WITH NUMBER OF PROCEDURES

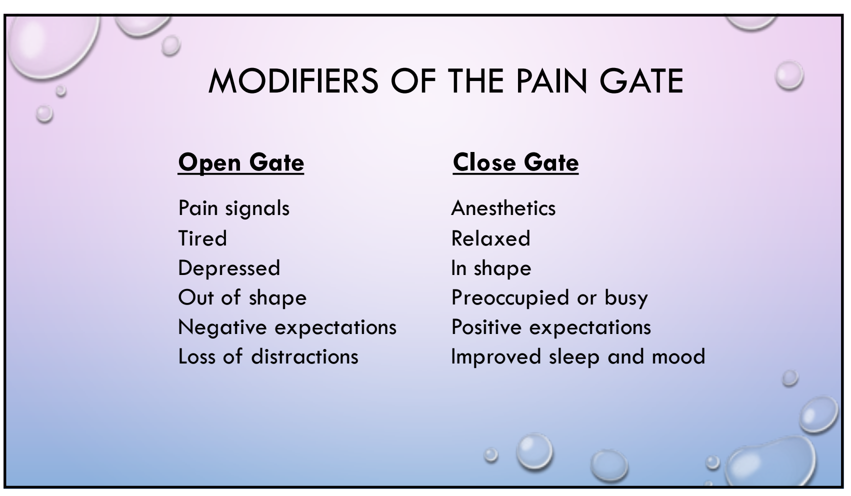


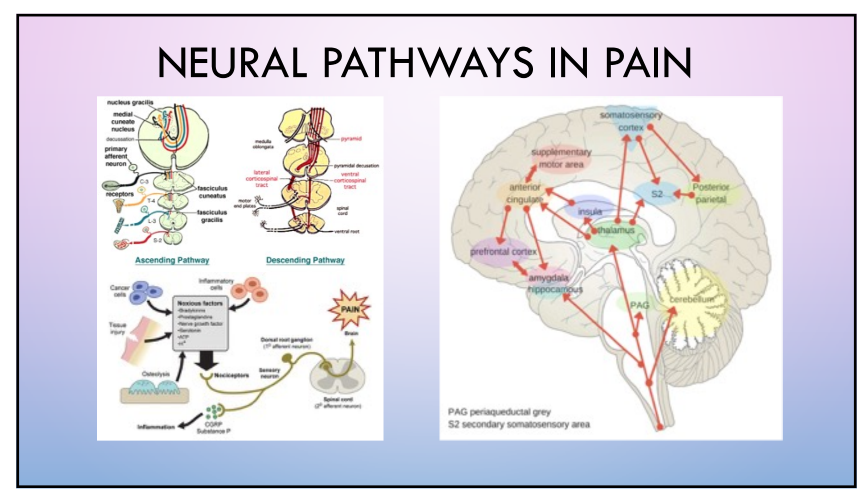
WHAT IS PAIN?
ACUTE VS CHRONIC PAIN

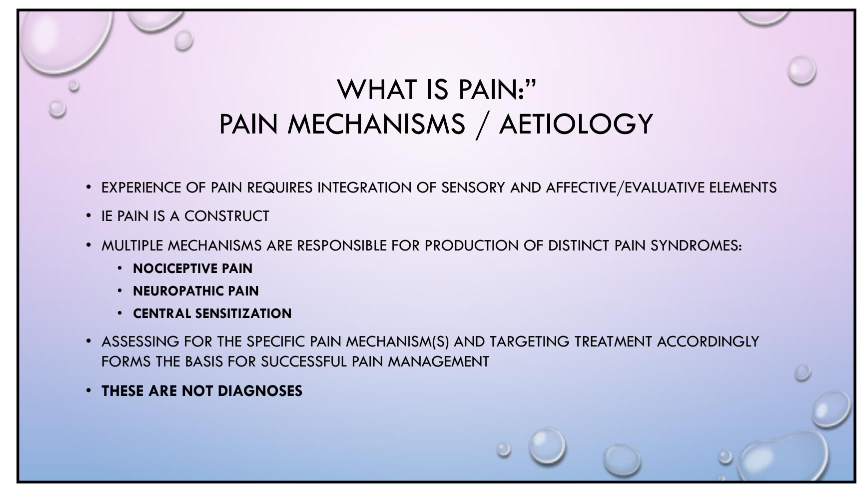
acute pain	chronic pain (arbitrarily >3/12)
Common >99% population	~21% population
Tissue damage	No tissue damage
Diagnose	Multiple explanations
treat	Multiple treatments, variably effective
cure	Often no cure, chronic disease model
Return to function	losses
Clear sick role	Unclear roles

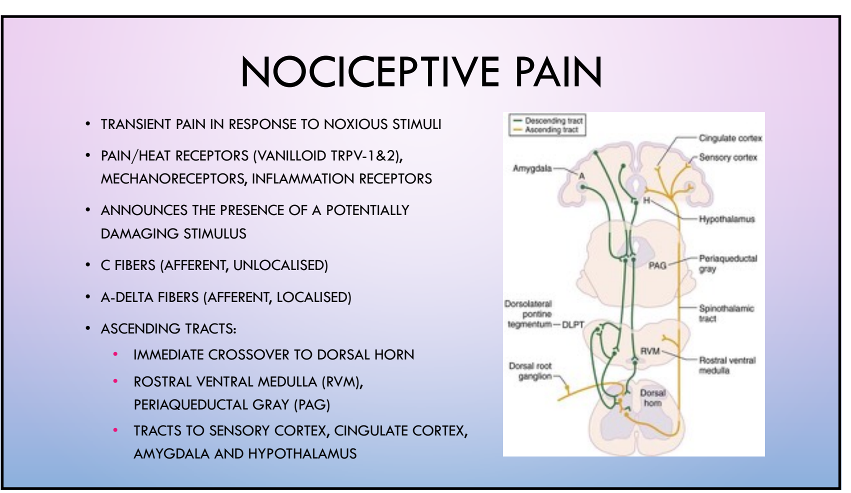





MODIFIERS OF THE PAIN GATE
Open Gate
Pain signals
Tired
Depressed
Out of shape
Negative expectations
Loss of distractions
Close Gate
Anesthetics
Relaxed
In shape
Preoccupied or busy
Positive expectations
Improved sleep and mood

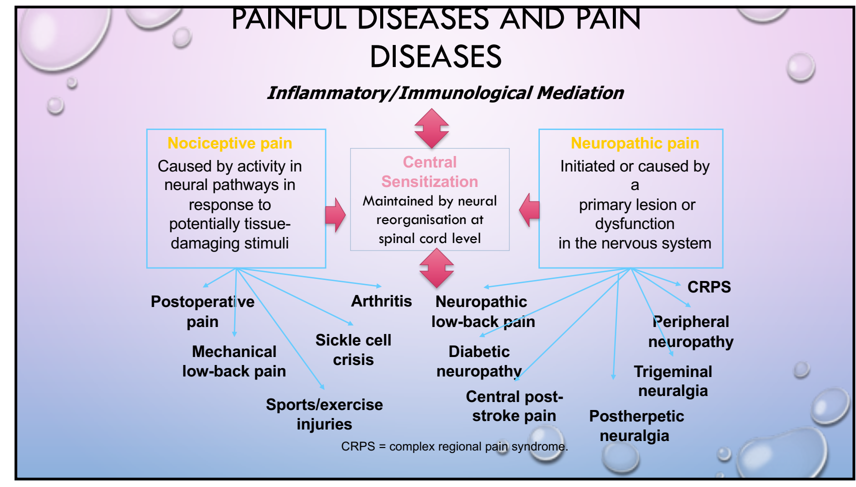

NEURAL PATHWAYS IN PAIN
Ascending Pathway
Descending Pathway
PAIN
somatosensory cortex
supplementary motor area
anterior cingulate
insula
thalamus
S2
Posterior parietal
prefrontal cortex
amygdala
hippocampus
PAG
cerebellum
PAG periaqueductal grey
S2 secondary somatosensory area

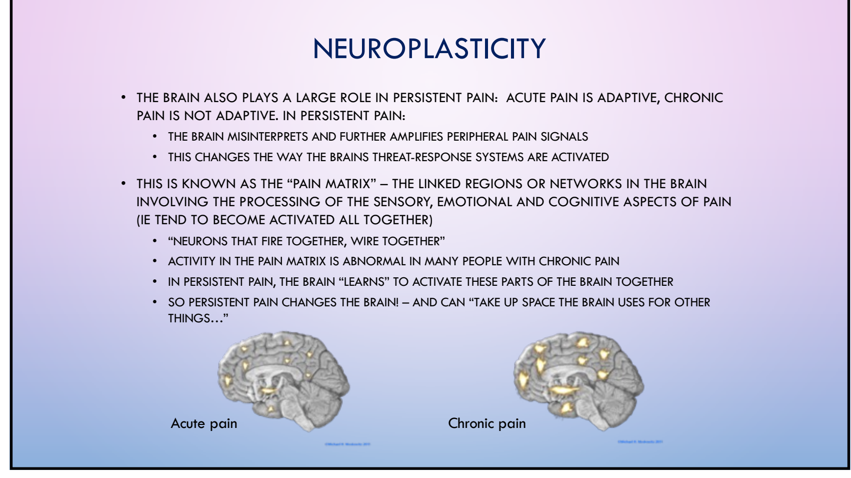

WHAT IS PAIN:”
PAIN MECHANISMS / AETIOLOGY
• EXPERIENCE OF PAIN REQUIRES INTEGRATION OF SENSORY AND AFFECTIVE/EVALUATIVE ELEMENTS
• IE PAIN IS A CONSTRUCT
• MULTIPLE MECHANISMS ARE RESPONSIBLE FOR PRODUCTION OF DISTINCT PAIN SYNDROMES:
• NOCICEPTIVE PAIN
• NEUROPATHIC PAIN
• CENTRAL SENSITIZATION
• ASSESSING FOR THE SPECIFIC PAIN MECHANISM(S) AND TARGETING TREATMENT ACCORDINGLY FORMS THE BASIS FOR SUCCESSFUL PAIN MANAGEMENT
• THESE ARE NOT DIAGNOSES


NOCICEPTIVE PAIN
• TRANSIENT PAIN IN RESPONSE TO NOXIOUS STIMULI
• PAIN/HEAT RECEPTORS (VANILLOID TRPV-1&2), MECHANORECEPTORS, INFLAMMATION RECEPTORS
• ANNOUNCES THE PRESENCE OF A POTENTIALLY DAMAGING STIMULUS
• C FIBERS (AFFERENT, UNLOCALISED)
• A-DELTA FIBERS (AFFERENT, LOCALISED)
• ASCENDING TRACTS:
• IMMEDIATE CROSSOVER TO DORSAL HORN
• ROSTRAL VENTRAL MEDULLA (RVM), PERIAQUEDUCTAL GRAY (PAG)
• TRACTS TO SENSORY CORTEX, CINGULATE CORTEX, AMYGDALA AND HYPOTHALAMUS
Descending tract
Ascending tract
Cingulate cortex
Sensory cortex
Amygdala
Hypothalamus
PAG
Periaqueductal gray
Spinothalamic tract
Dorsolateral pontine tegmentum—DLPT
RVM
Rostral ventral medulla
Dorsal root ganglion
Dorsal horn

CENTRAL NEURAL SENSITIZATION

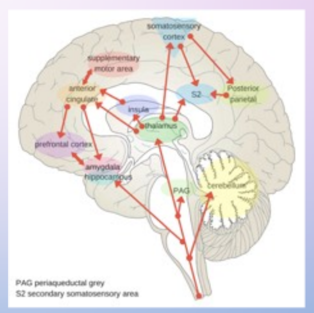
- SPINAL CORD / BRAINSTEM LEVEL
  - SENSITIZATIO0N NORMAL AND ADAPTIVE WHEN BRIEF (<72 HOURS)
  - REPEAT STIMULATION/NERVE DAMAGE ➔ WDR HYPEREXCITABILITY
  - 2ND ORDER DORSAL HORN NEURON SENDS ONGOING SIGNALS "*AS THOUGH A NEW INJURY, OR THE OLD INJURY, WERE OCCURRING*"
  - MEDIATED BY NMDA RECEPTORS; "PAIN WINDUP", TEMPORAL SUMMATION
- CHRONIC PAIN AS A FUNCTIONAL DISORDER OF THE NERVOUS SYSTEM
  - WITH ASSOCIATED AFFECTIVE AND BEHAVIOURAL COMPONENTS
  - ARGUABLY COULD BE "RECLASSIFIED" AS A NEUROLOGICAL DISORDER
  - GOOD EVIDENCE FROM ANIMAL MODELS AND HUMAN OBSERVATION OF NEUROPATHOPHYSIOLOGIC CHANGES (ALLODYNIA, HYPERALGESIA, NON DERMATOMAL SPREAD)





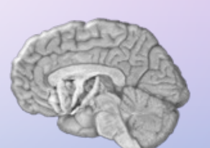
NEUROPLASTICITY: THE PAIN MATRIX

- **LIMBIC SYSTEM (EMOTIONAL RESPONSES)** "FIRES OFF" IN RESPONSE TO DANGER (OF ALL KINDS)
  - FIGHT/FLIGHT/FREEZE RESPONSE
  - THIS IS ADAPTIVE (= USEFUL) IN ACUTE PAIN, NOT ADAPTIVE (NOT HELPFUL) IN CHRONIC PAIN
- SOMATOSENSORY CORTEX
  - LOCATES WHERE THE PAIN IS IN THE BODY
- FRONTAL LOBES (ACG, SMA, PFC)
  - CONTROL BODILY MOVEMENT (MOVE BODY AWAY FROM HARM)
  - INVOLVED IN PLANNING; RELATED TO LONG TERM GOALS AND CONTEXT OF PAINFUL EXPERIENCE
  - ALSO ACTIVATES BODILY STRESS RESPONSE SYSTEMS (HPA AXIS, AUTONOMIC NERVOUS SYSTEM)



NEUROPLASTICITY: CHANGES

- THESE CHANGES IN THE BRAIN CAN BE MODIFIED OR "UNLEARNED"
- THE FOCUS MIND ON CHANGING THE BRAIN – AIM TO:
  - DISCONNECT EXCESSIVELY WIRED BRAIN NETWORKS
  - SHRINK THE BRAINS "PAIN MAP"
  - AND RETURN THE BRAIN TO A MORE "MODULATED" STATE
- EVIDENCE THAT THIS CAN CHANGE THE BRAIN'S ACTIVATION IN RESPONSE TO PAIN, AND CAN CHANGE PAIN EXPERIENCE IN THE LONG TERM



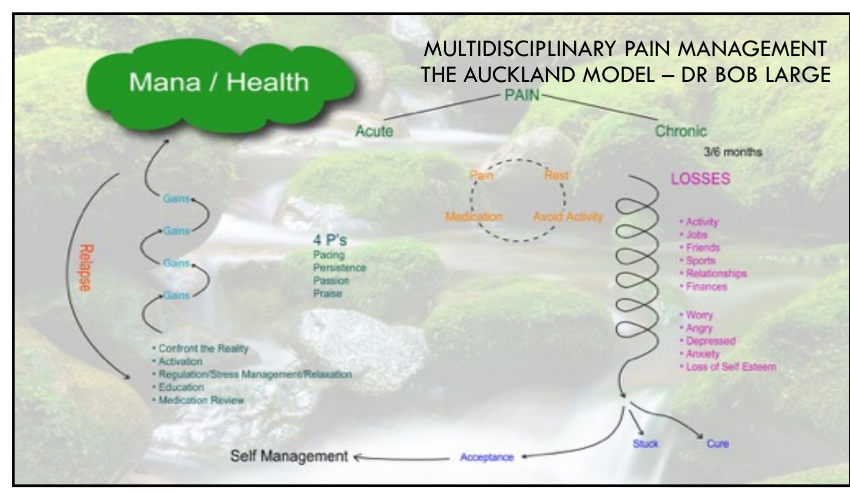
No pain

PSYCHOLOGICAL THEORIES RELEVANT TO CHRONIC PAIN

- *FAMILY SYSTEMS APPROACH* – PAIN MAINTAINS HOMEOSTASIS IN FAMILY
- *PSYCHODYNAMIC* – UNCONSCIOUS, UNACCEPTABLE NEED OR CONFLICT EXPRESSED AS "PHYSICAL" PAIN
- *LEARNING THEORY* - BENEFITS OF THE SICK ROLE EXPERIENCED OR OBSERVED BY THE CHILD
- *COGNITIVE-BEHAVIOURAL MODEL* - COGNITIVE TRIAD, LEARNED HELPLESSNESS

MANAGEMENT OF CHRONIC PAIN: CONCEPTUAL SHIFT TO A REHABILITATION / CHRONIC DISEASE MANAGEMENT APPROACH

- CHRONIC PAIN MANAGEMENT IS FOCUSED ON DEVELOPING/IMPROVING SELF MANAGEMENT SKILLS
- CORE TREATMENT IS ACTIVATION – ALL APPROACHES SHOULD BE TAILORED TO ENHANCING MOVEMENT
- GOALS OF TREATMENT CHANGE FROM:
  - THE IDENTIFICATION AND REPAIR OF THE CAUSE OF PAIN, TO…
  - PAIN CONTROL, FUNCTIONAL IMPROVEMENT, AND DECREASING SUFFERING
- MULTIDISCIPLINARY / MULTIMODAL / GRADUATED



MANAGEMENT OF CHRONIC PAIN: OVERVIEW

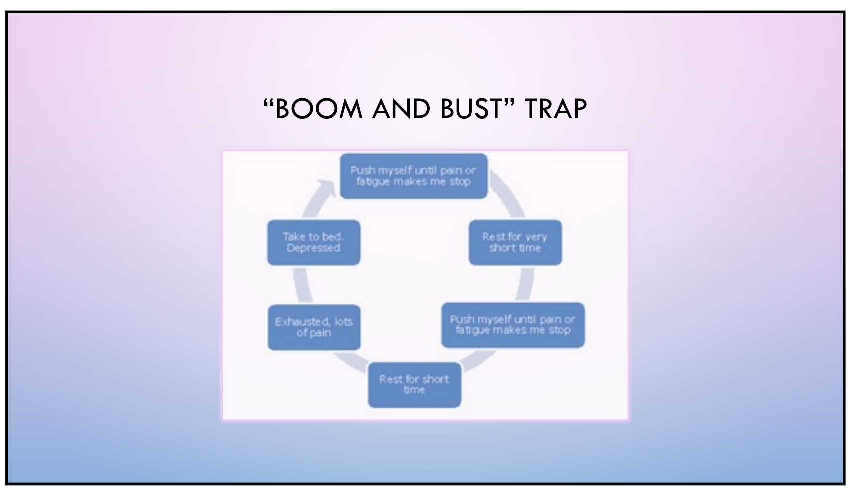
- PSYCHOEDUCATION / ENGAGEMENT
- ACTIVATION: GRADUATED PHYSICAL ACTIVITY / RE-CONDITIONING
- SOMATIC MANAGEMENT STRATEGIES
- SELF-MANAGEMENT:
  - GRADUATED RETURN TO HOME/FAMILY/WORK/SCHOOL/FUNCTIONING/ROLES
  - REDUCE "BOOM AND BUST"
- TREAT CO-MORBID: SLEEP PROBLEMS, SUBSTANCE USE PROBLEMS, PSYCHIATRIC DISORDERS
- MANAGE MEDICAL SYSTEMS (EG ED PLANS, CRISIS PLANS)
- SPECIFIC PSYCHOLOGICAL INTERVENTIONS
- PHARMACOLOGY
- SPECIFIC APPROACHES FOR SPECIFIC DISORDERS

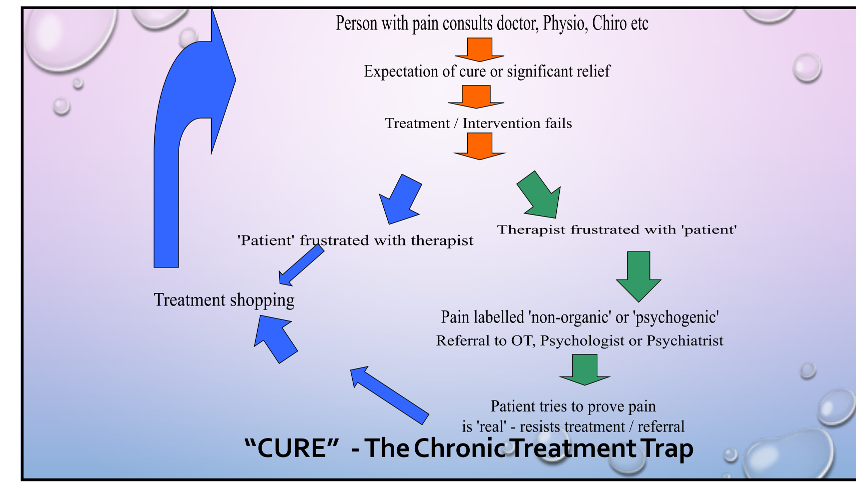
MANAGEMENT: EDUCATION/ENGAGEMENT

- EXPLANATIONS
  - "PAIN IS PAIN", NOT "IN YOUR HEAD"
  - RESOURCES: READING LISTS, BOOKS, WEBSITES (HUNTER VALLEY PAIN SERVICE YOUTUBE VIDEOS - HTTPS://WWW.YOUTUBE.COM/WATCH?V=4B8OB757DKC)
- PAIN IS NOT CAUSED BY PSYCHIATRIC ILLNESS
  - BUT DEPRESSION, ANXIETY OFTEN RESULT OF PAIN
  - ANXIETY/WORRY EXACERBATES PAIN, IMPAIRS COPING
- DE-STIGMATISE
  - EDUCATION OF WHANAU, FRIENDS, EMPLOYERS, TEACHERS
  - PROVIDING SIMPLE EXPLANATIONS TO OTHERS

MANAGEMENT: IDENTIFY "PAIN TRAPS"

- **"IDENTIFICATION TRAP"**
  - BUT INCREASED PAIN WITH ACTIVATION OFTEN NECESSARY FOR IMPROVING FUNCTION
  - INCREASED FAMILY CONCERN CAN LEAD TO INCREASED FOCUS ON PAIN, INCREASED ANXIETY AND AVOIDANCE OF ACTIVATION
- **"TAKE IT EASY" TRAP**
  - AVOIDS ACTIVITY, LOSES ROLES, SLIDE TOWARDS INVALID ROLE
- **CHRONIC RESENTMENT TRAP**
  - RELATIONSHIPS LESS REWARDING, LOSS OF ROLES, FEELS MISUNDERSTOOD, FRUSTRATED, BORING, GROUCHY





MANAGEMENT: INVESTIGATIONS

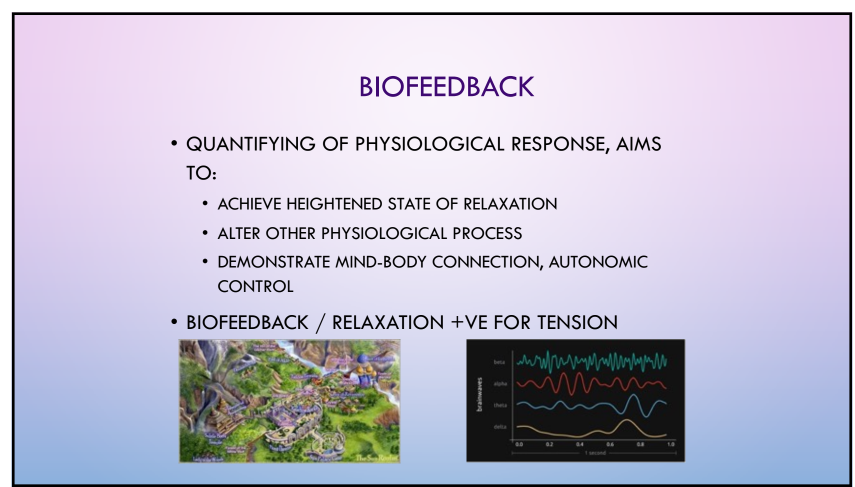
- INVESTIGATIONS FOR PAIN ARE NOT USELESS
  - ESSENTIAL TO CLARIFY WHETHER ACTIVE AND MODIFIABLE DISEASE PROCESS/INJURY IS PRESENT
  - AND USEFUL TO IDENTIFY "PAIN GENERATORS"
  - BUT ALSO IMPORTANT TO NOT CONTINUE TO SEARCH FOR "REASONS" ONCE ABOVE HAVE BEEN EXCLUDED
- OVER-INVESTIGATION CAN MAKES PAIN WORSE
  - INVASIVE/SURGICAL PROCEDURES CAN "STIR UP" PAIN / SENSITIZATION
  - FOCUS ON "CURE" CAN DELAY RETURN TO FUNCTIONING
  - AVOID "DOCTOR-SHOPPING" / PRIMARY PHYSICIAN
  - INVESTIGATE NEW SYMPTOMS ONLY

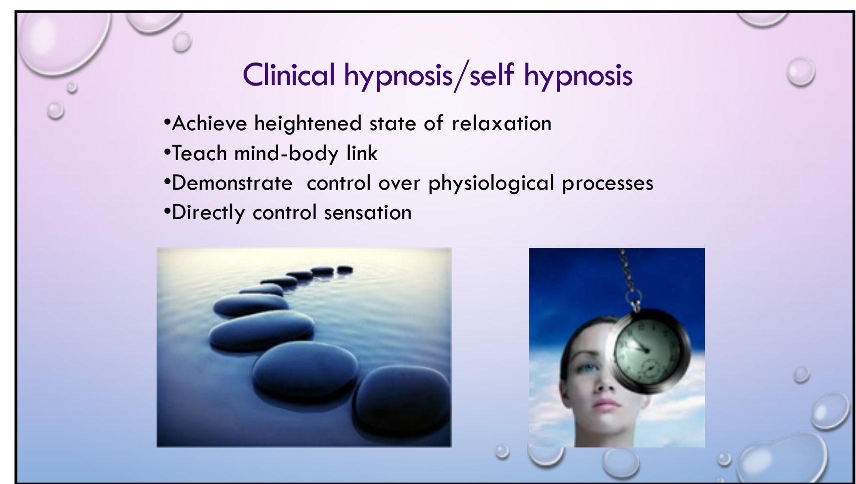
MANAGEMENT: CORE EVIDENCE-BASED BEHAVIOURAL TREATMENTS

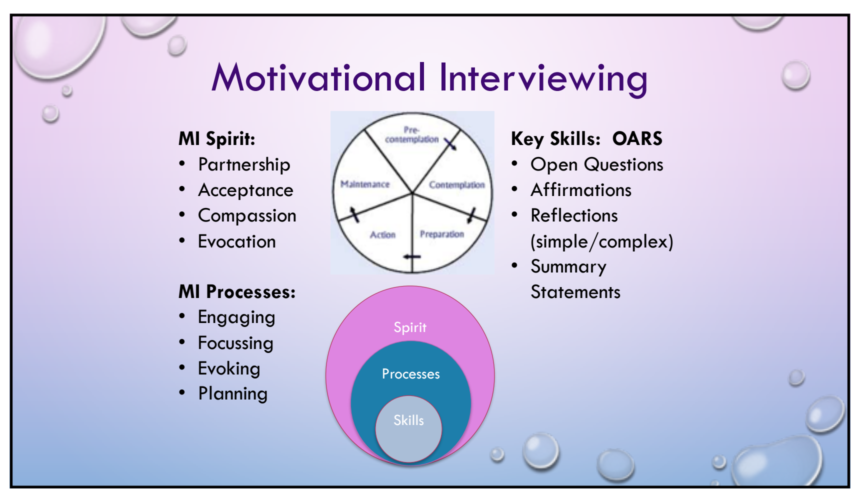
- DISTRACTION, RELAXATION, GUIDED IMAGERY TECHNIQUES (AS FOR ACUTE PAIN)
- ACTIVATION
- ACTIVITY SCHEDULING – DOING THINGS DIFFERENTLY
- RELAXATION
- SLEEP HYGIENE
- ADDRESS AND IDENTIFY "PAIN TRAPS":

MANAGEMENT: SPECIFIC PSYCHOLOGICAL THERAPIES

- BIOFEEDBACK
- SELF HYPNOSIS
- MOTIVATIONAL INTERVIEWING (MI)
- COGNITIVE BEHAVIOURAL THERAPY (CBT)
- ACCEPTANCE AND COMMITMENT THERAPY (ACT)
- FAMILY INTERVENTIONS / FAMILY THERAPY
- MULTIDISCIPLINARY GROUP TREATMENT (PAIN MANAGEMENT PROGRAMMES- PMP'S) – INTENSIVE PROGRAMMES WITH A FOCUS ON USING CBT AND PHYSICAL ACTIVATION/REHABILITATION SELF MANAGEMENT APPROACHES







CBT/COGNITIVE TECHNIQUES

- ADULTS/ ADOLESCENTS, YOUNGER CHILDREN (PARENT TEACHING SKILLS)
- SELF TALK-
  - COGNITIVE RESTRUCTURING
  - IDENTIFYING NEGATIVE AUTOMATIC THOUGHTS: MONITOR, EVALUATE AND GENERATE ALTERNATIVES
- COPING SKILLS TRAINING-
  - COPING SELF-STATEMENTS

Situation	Thoughts	Physical reactions	Feelings	Alternatives
Pain after walking	getting worse-end up in a wheelchair	Muscle tension	Fear Frustration Anxiety Worry	I walked much farther than I expect soreness
Pain on waking	Its going to be a bad day-Can't do anything	Tension Fatigue	Anger Depression	-sometimes better when I get going-I'll start with small tasks

ACT (ACCEPTANCE AND COMMITMENT THERAPY)

- ACTIVELY EMBRACING AND ACCEPTING EXPERIENCES FOR WHAT THEY ARE (NOT ACCEPTANCE OF CHRONIC PAIN OR LIMITATION)
- TECHNIQUES INCLUDE:
  - DEFUSING TECHNIQUES
  - CONTROLLING FOCUS OF ATTENTION
  - MINDFULNESS
  - IDENTIFYING VALUES

FAMILY INTERVENTIONS

- ACKNOWLEDGE AND ADDRESS STRESSORS
- ENCOURAGE PARENTS TO SET APPROPRIATE LIMITS
- ENCOURAGE EXPRESSION OF FEELINGS
- CLARIFY ROLES AND BOUNDARIES IN FAMILY
- ENCOURAGE CHILD TO TAKE RESPONSIBILITY FOR PAIN MANAGEMENT (AS DEVELOPMENTALLY APPROPRIATE)
- ADDRESS ANY UNHELPFUL ILLNESS BEHAVIOUR IN FAMILY MEMBERS
- IDENTIFYING AND DECREASING SECONDARY REINFORCERS
- FAMILY THERAPY IF REQUIRED

NON-PSYCHOLOGICAL APPROACHES

- MEDICATION (EVIDENCE BASE VARIABLE)
- NEUROSTIMULATION (EVIDENCE BASE VARIABLE)
- INTERVENTIONAL BLOCKS/ABLATION (
- ACUPUNCTURE
- DIETARY MODIFICATION
- SOMATIC TREATMENTS/DISTRACTION ("BUZZY", HEATPACKS, COOLING GELS)
- MASSAGE, MANIPULATION
- MANY OTHERS

MANAGEMENT: PHARMACOLOGY

- DMARDS (DISEASE MODIFYING AGENTS) SUCH AS BIOLOGICS, STEROIDS
- PAIN NEUROMODULATORS: LOW DOSE TCA'S, AND/OR GABAPENTIN, VENLAFAXINE
  - START LOW, GO SLOW, MAKE ONE CHANGE AT A TIME
  - ALLOW 1-6 WEEKS TO ASSESS RESPONSE
- TOPICAL TREATMENTS; CAPSAICIN, LOCAL ANAESTHETICS, CLONIDINE
- MANAGEMENT PLAN FOR EXACERBATIONS/FLARE-UPS:
  - PARACETAMOL, NSAIDS/COX-2 INHIBITORS
  - TRAMADOL – WATCH FOR SEROTONERGIC SIDE EFFECTS, CARE IN <18, >65
  - STRONGER OPIOIDS (MORPHINE, OXYCODONE) – CONTROVERSIAL, NOT RECOMMENDED FOR CNCP. CODEINE – NOT RECOMMENDED

MEDICATION NNTS (1)

OVERALL (CHRONIC PAIN):

- AMITRIPTYLINE 5.1
- DESIPRAMINE 2.1
- IMIPRAMINE 1.1
- VENLAFAXINE 3.1, NNH 20+
- DULOXETINE 5.1
- GABAPENTIN 5.8,
- PREGABALIN 3.9 CARBAMAZEPINE 1.7, NNH 2.6
- ANTICONVULSANTS PDN 2.7, PHN 2.9, MINOR NNH 2.7
- TOPICAL NSAIDS NNT 3.1 2 WEEKS)

LOCAL NEUROPATHIC PAIN

- CAPSAICIN TOPICAL DPN 4.2, OA 3.3, MIXED EVIDENCE PHN
- TCA'S 3.3, PDN 3.4, PHN 2.1
- NNH MINOR 2.7, MAJOR 17

FMS

- DULOXETINE 6 (50% REDUCTION)
- PREGABALIN 6 (50% REDUCTION)
- AMITRIPTYLINE 25

IBS

- PEPPERMINT OIL 3.1

MEDICATION NNT'S (2)

HEADACHE:

- VALPROATE 4.5
- TOPIRAMATE 3.5
- CARBAMAZAPINE 2.1
- GABAPENTIN 3.3
- TCA'S 3.2

MIGRAINES:

- SUMATRIPTAN SC 2.0, PO 2.6
- ASPIRIN/MAXALON 3.1
- (PARACETAMOL/ASPIRIN/MAXALON) 3.9

HEADACHE PREVENTION:

- TOPIRAMATE 4.1
- VALPROATE 3.5

TRIGEMINAL NEURALGIA:

- CARBAMAZEPINE 1.4-2.1
- BACLOFEN NNT 1.4
- LAMOTROGINE SMALL TRIAL
- OXCARBAZEPINE

LESS EVIDENCE!

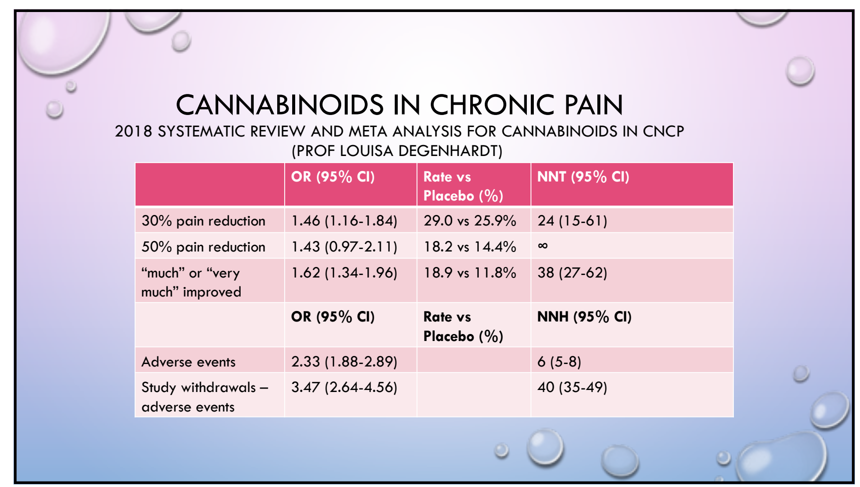
- CLONIDINE (TOPICAL PATCH, A-2 AND IMIDAZOLINE AGONIST)
- OPIOIDS (FOR CNCP)
- BENZODIAZEPINES
- CANNABINOIDS (HIV PERIPHERAL NEUROPATHY)

OPIOIDS IN CHRONIC NON-CANCER PAIN (COAT - CHRONIC OPIOID ANALGESIC THERAPY)

- SIDE EFFECTS: INHIBITION OF ENDOGENOUS SEX HORMONES, HYPOGONADISM, INFERTILITY, IMMUNOSUPPRESSION, FALLS AND FRACTURES, NEONATAL ABSTINENCE SYNDROME, QT PROLONGATION (METHADONE), SLEEP-DISORDERED BREATHING, NONFATAL OVERDOSE HOSPITALIZATIONS, DEATH FROM UNINTENTIONAL POISONING, OPIOID- INDUCED HYPERALGESIA, PHARMACOLOGICAL TOLERANCE [FRANKLIN 2014]
- 50% OF PATIENTS AT 3/12 STILL ON OPIOIDS 5+YEARS [NABILOFF 2011]
- 9 FOLD INCREASE IN DEATH RATE <20MG MED CF >100MG MED [DUNN ET AL 2010], 4.5 X RATE IN 50-100MG MED [BOHNERT 2011]
- OPIOID EFFECTS SIZES IN CNCP LONG TERM MINIMAL, SHORT TERM (NNT 4.5 AT 6 WEEKS) [FURLAN 2011]

OPIOIDS IN CHRONIC NON-CANCER PAIN 2

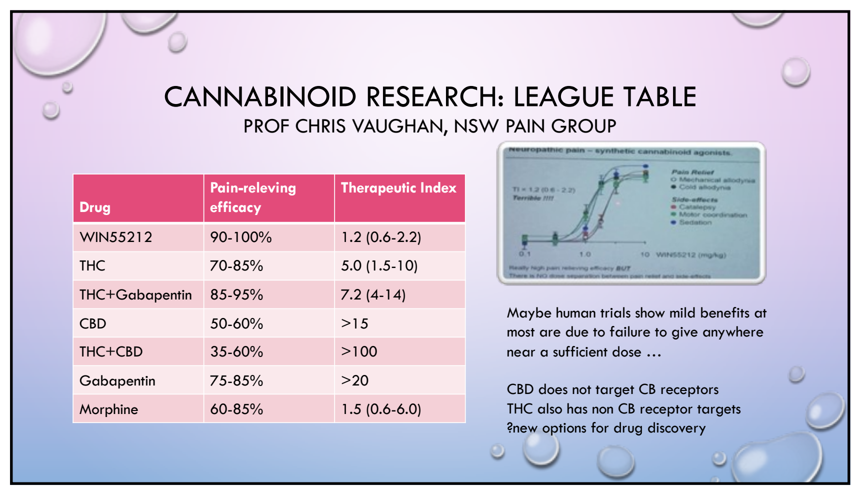
- EPIDEMIOLOGICAL STUDIES: DECREASED PAIN RELIEF, QOL, FUNCTIONAL CAPACITY [BALLANTYNE 2008], ESCALATING MED WITH NO IMPROVEMENTS IN PAIN AND FUNCTION [FRANKLIN 2009]
- NO COST-EFFECTIVENESS STUDIES
- STRATEGIES:
  - CR/SR OPIOIDS (NO EVIDENCE)
  - OPIOID ROTATION (THEORETICAL SUPPORT ONLY), ESPECIALLY TO METHADONE (BD/TDS, REDUCTION IN OPIOID INDUCED HYPERALGESIA)
  - DRUG SCREENING (NO EVIDENCE)
  - OPIOID CONTRACTS (NO EVIDENCE)
  - SCREENING FOR ADRB (ABERRANT DRUG RELATED BEHAVIORS) – NO EVIDENCE



CANNABINOIDS IN CHRONIC PAIN

2018 SYSTEMATIC REVIEW AND META ANALYSIS FOR CANNABINOIDS IN CNCP (PROF LOUISA DEGENHARDT)

	OR (95% CI)	Rate vs Placebo (%)	NNT (95% CI)
30% pain reduction	1.46 (1.16-1.84)	29.0 vs 25.9%	24 (15-61)
50% pain reduction	1.43 (0.97-2.11)	18.2 vs 14.4%	∞
“much” or “very much” improved	1.62 (1.34-1.96)	18.9 vs 11.8%	38 (27-62)
	OR (95% CI)	**Rate vs Placebo (%)**	**NNH (95% CI)**
Adverse events	2.33 (1.88-2.89)		6 (5-8)
Study withdrawals – adverse events	3.47 (2.64-4.56)		40 (35-49)



CANNABINOID RESEARCH: LEAGUE TABLE

PROF CHRIS VAUGHAN, NSW PAIN GROUP

Drug	Pain-releving efficacy	Therapeutic Index
WIN55212	90-100%	1.2 (0.6-2.2)
THC	70-85%	5.0 (1.5-10)
THC+Gabapentin	85-95%	7.2 (4-14)
CBD	50-60%	>15
THC+CBD	35-60%	>100
Gabapentin	75-85%	>20
Morphine	60-85%	1.5 (0.6-6.0)

Maybe human trials show mild benefits at most are due to failure to give anywhere near a sufficient dose …

CBD does not target CB receptors
THC also has non CB receptor targets
?new options for drug discovery

NEUROSTIMULATION

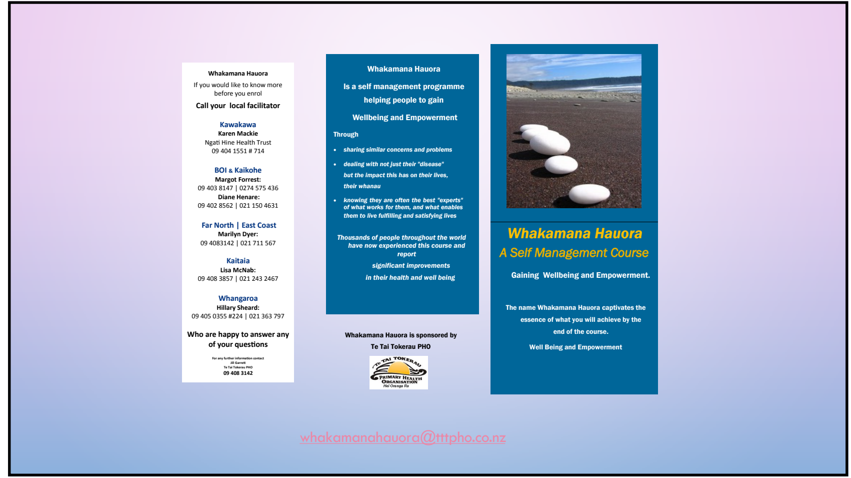
- TENS (TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION) – CHEAP, SAFE, EVIDENCE BASE REASONABLE, VARIABLE (NNT 7), INCLUDES CEFALY (MIGRAINES)
- SPINAL CORD STIMULATORS – EXPENSIVE, SOME RISKS, EVIDENCE BASE SMALL BUT POSITIVE IN SELECTED GROUPS (EXTENSIVELY USED IN AUSTRALIA AND US)
- T-CDCS (TRANSCRANIAL DIRECT CURRENT STIMULATION) – CHEAPER THAN TMS, SAFE, EVIDENCE BASE MINIMAL (CRPS)
- TMS (TRANSCRANIAL MAGNETIC STIMULATION) – VERY EXPENSIVE, SAFE, EVIDENCE BASE MINIMAL
- DEEP BRAIN STIMULATION – VERY EXPERIMENTAL, VERY EXPENSIVE, RISKY

SPECIFIC MANAGEMENT APPROACHES FOR SPECIFIC PRESENTATIONS

- **CRPS** - ACTIVATION OF AFFECTED LIMB, GRADED MOTOR IMAGERY (AIMED AT ADDRESSING CORTICAL BLURRING), BISPHOSPHANATES, CLONIDINE PATCHES, ?STEROIDS. CHILDREN/ADOLESCENCE 99% CURE…
- **IBS/RAP (RECURRENT ABDOMINAL PAIN)** – CBT, PARENT TRAINING, FODMAP DIETARY RESTRICTIONS, PEPPERMINT OIL, ANTISPASMODICS
- **FMS/CFS** – GRADUATED ACTIVATION PROGRAMME + CBT; LOW DOSE NALTREXONE V LIMITED EVIDENCE
- **MIGRAINES** – TRIPTANS
- **HEADACHES** – STOP REGULAR ANALGESICS (ANALGESIA OVERUSE HEADACHES), TOPIRAMATE, RELAXATION/BIOFEEDBACK, ?CBT, PROPRANOLOL
- **POST HERPETIC NEURALGIA:** CHICKENPOX VACCINE - ↓SEVERITY, ↓RECURRENCE

PAIN MANAGEMENT: NORTHLAND

- WHAKAMANA HAUORA – PAIN MANAGEMENT PROGRAMMES (STANFORD MODEL)
- MANAIA PHO – GENERAL SELF MANAGEMENT
- RUN SEVERAL TIMES A YEAR IN KAWAKAWA, KERIKERI AND KAIKOHE, WITH PLANS TO GET THEM GOING AGAIN IN KAITAIA
- SIX SESSIONS OVER 6/52, GROUP BASED, FOCUSSED ON EDUCATION, EXERCISE, NUTRITION, SLEEP, MEDICATION MANAGEMENT, COMMUNICATION, RELAXATION, BREATHING , PROBLEM SOLVING, WORKING WITH HEALTH PROFESSIONALS, ACTION PLANNING, DEPRESSION, POSITIVE THINKING
- GENERALLY HAVE BETWEEN 8 AND 14 IN A GROUP, CAN SELF-REFER BUT GP ENCOURAGEMENT!



CHRONIC PAIN SERVICES

- MULTIDISCIPLINARY PAIN TEAMS - GREW OUT OF THE GATE THEORY
- RECOGNITION OF PAIN AS BEING AMENABLE TO BEHAVIOURAL AND PSYCHOLOGICAL APPROACHES
- OFTEN CHARACTERIZED BY INTERDISCIPLINARY VS MULTIDISCIPLINARY FUNCTIONING
- A NUMBER OF CHRONIC PAIN SERVICES IN NZ, 3 FPM ACCREDITED TRAINING CENTRES, ANOTHER 6 TRUE MULTIDISCIPLINARY CHRONIC PAIN SERVICES
- 2012 - PAIN MEDICINE WAS RECOGNIZED AS A SPECIALIST SCOPE OF PRACTICE BY THE MCNZ; AROUND 30 FPM'S IN NZ
- FPM (ANZCA) ACCEPTS SPECIALISTS FROM A NUMBER OF AUSTRALASIAN MEDICAL COLLEGES TO TRAIN AS PAIN MEDICINE SPECIALISTS – 2 YEAR TRAINING SCHEME

NDHB PAIN MANAGEMENT SERVICE

- CHRONIC PAIN SERVICE IS PART OF THE ACUTE PAIN SERVICE:
- VERY LIMITED RESOURCE, WITH FANTASTIC AND HIGHLY SKILLED CLINICIANS
- NURSES (2, CNS/CSN) AND SMO'S (2 FPM AND V EXPERIENCED MOSS) BUT NO DEDICATED/PROTECTED TIME OR FUNDING, UNDER ANAESTHESIA, SHARE RESOURCES WITH THEATRE AND ACUTE PAIN SERVICE
  - PHYSIO, OT AND PSYCHOLOGIST IN TEAM BUT EXTERNAL
- NO INTERVENTIONAL PAIN MANAGEMENT ACCESS (ONLY RELEVANT IN ~5% OF CASES)
- FOCUS USUALLY ON MEDICATION (ESP OPIOID) REDUCTION AND SELF MANAGEMENT APPROACH

NDHB PAIN MANAGEMENT SERVICE

- REFERRALS TO CHRONIC PAIN SERVICE FROM GP'S: PLEASE PROVIDE COMPREHENSIVE INFORMATION
- PHONE/WRITTEN ADVICE CAN BE PROVIDED RELATIVELY QUICKLY
- CURRENT WAITLIST TO BE SEEN AROUND 1 YEAR; USUALLY INITIAL ASSESSMENT ONLY WITH PHYSIO/OT/PSYCHOLOGY AND SOMETIMES NURSING FOLLOWUP
- TEAM IS LOOKING TO CHANGE MODEL OF CARE THIS YEAR:
  - PROVIDE MAJOR FOCUS ON GROUPS TO PROVIDE EDUCATION AND PATIENT SUPPORT AND GUIDE CREATING SELF MANAGEMENT PLANS
  - AIM TO REACH A MUCH LARGER PATIENT GROUP AND REDUCE WAIT TIMES
  - RESERVING ONE-ON -ONE CONSULTATIONS FOR THE MORE COMPLEX PATIENTS AND THOSE WHO ARE NOT SUITABLE FOR GROUP SESSIONS

BARRIERS TO TREATMENT

- POTENTIAL BARRIERS TO A REHABILITATION APPROACH
  - CLINICIAN/PATIENT/WHANAU DIFFERENCES
    - IN FOCUS ON CAUSATION
    - IN BELIEF AROUND MEANING OF PAIN
  - CLINICIANS
    - FROM DIFFERENT SERVICES/DISCIPLINES/APPROACHES NOT DEVELOPING JOINT APPROACHES

    - FAILURE TO RECOGNIZE FAMILY/WHANAU LACK OF ENGAGEMENT
  - SYSTEMS OF CARE
    - LACK OF COORDINATED FUNDING / "SILO'S"
    - LACK OF POLITICAL INTEREST
    - UNAVAILABILITY OF CLINICAL COMPONENTS OF EVEN "VIRTUAL TREATMENT TEAMS"