PAIN BC

Changing pain.
Changing minds.
The Evolution of Pain Management

New Science, Emerging Knowledge

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Session Overview and Objectives

Overview

- Current State - Mike
- Impact and Pain Centred Life - Mike
- Emerging Knowledge – Gillian
- Neuroplasticity and Brain perception - Gillian
- Function Driven Recovery - Gillian
- Emerging Self-Management Knowledge, Technology and Approaches – Neil
Enduring Beliefs

1. Pain is an inevitable part of the human condition
   “Patient” – derived from the Latin word “patiens” which means “one who suffers”

2. Pain is “natural” – therefore beneficial

3. Pain is essential for diagnosis – only a symptom

4. Ongoing pain means tissue damage

5. Patients with chronic pain are malingerers or have purely psychological problems

6. Concerns/fears about opioids
The Current State

1. Pain – acute and chronic – inadequately addressed due to cultural, attitudinal, educational, political, religious and logistical reasons

2. Inadequately treated pain has major physiological, psychological, economic and social ramifications

3. Within the capacity of most developed and some developing countries to significantly improve the treatment of pain.

Prevalence of Chronic Pain in Canada.

Pain Res Manage 2011;16(6):445-450

Are You Suffering From Pain?

- Yes - 44.4%
- No
Prevalence of Chronic Pain in Canada.

Pain Res Manage 2011;16(6):445-450

For six months or more

- Yes - 35.1%
- No
Prevalence of Chronic Pain in Canada.

Pain Res Manage 2011;16(6):445-450

Last suffered less than one month ago

- Yes - 29.7%
- No
Prevalence of Chronic Pain in Canada.

Pain Res Manage 2011;16(6):445-450

With intensity last time of 5+/10

Yes - 18.9%
No
Prevalence of Chronic Pain in Canada.

Pain Res Manage 2011;16(6):445-450

Suffering several times a week or more

- Yes - 24.9%
- No

10
Prevalence of Chronic Pain in Canada.

Pain Res Manage 2011;16(6):445-450

British Columbia after all 5 questions

- Yes - 21.8%
- No
People in Pain

Diverse Population:

Chronic Disease eg Cardiac disease, Diabetes, Osteoarthritis
Chronic Post Surgical Pain
Chronic Pain Post Injury eg Whiplash, Spinal Cord Injury
Chronic Headaches eg Tension, Migraine, Cluster.
Neuropathic Pain eg Post Herpetic Neuralgia, Trigeminal Neuralgia
Complex Regional pain Syndrome
Recurrent Abdominal pain
Fibromyalgia
Back Pain
Post trauma/burns/stroke
Cancer
Consequences

Person with pain:

Job loss, financial strain
Inactive, weight gain, secondary health problems
**Lowest Q of Life** scores of any chronic disease
Family/interpersonal distress/isolated
**Depression** and anxiety (5X)
**Suicide** (2X)
**Addiction/Substance abuse**
Consequences

Society:

**Increase healthcare consumption**
- 4x GP visits
- 2x hospital admissions and LOS
- Use ED for treatment (esp. no GP or marginalized)
- More drugs and surgeries/procedures

Lost productivity
Increased benefit payments
Lost tax revenue
Familial breakdown

Social issues: drug trade as source of pain relief, homelessness, poverty
Chronic Pain Impact

- Chronic pain is of high prevalence
- Chronic pain has huge impact.
- Affects all aspects of biopsychosocial function.
The pain spiral

Injury 
Surgery 
Illness

Tissue 
damage

Stigma

Isolation

Reduced 
activity

Fear, 
loss or 
grief

Depression & 
sleep problems

Pain-
centered 
life

Inadequate 
pain management

Unhelpful 
pain myths

Weak, tight 
muscles

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Hierarchy of Natural Systems

Western Healthcare

Subatomic Particles

Atoms

Molecules

Organelles

Cells

Tissues

Organ/Organ systems

Person

Two person

Family

Community

Culture

Society/Nation

Biosphere

Patient presentation

Surgery

Nerve blocks

Pharmacology

Radiology

Blood tests

NCS

Self-management

C.B.T.

A.C.T

Relaxation

Biofeedback

Laughter Yoga

Yoga
PAIN BC

Changing pain.
Changing minds.
There are many names for pain. Whatever you call it, there is hope.

Understanding Pain

Through advances in basic science and clinical research over the last two decades we have come to understand:

- Chronic or persistant pain is a disease in its own right.
- Pathophysiological changes are occurring within the nervous system and the brain.
Understanding Pain

The pain system is an alarm system

- It *can* warn you when you have been damaged.
- It *can* warn you when you are approaching damage.
Understanding Pain

- The system *can* also warn you if you are in a situation similar to past experience in which you experienced pain.

- It responds to the warning.
PAIN EXPERIENCE

When your brain automatically concludes ...

- That there is no threat $\rightarrow$ you get no pain.
- Increased threat $\rightarrow$ increased pain.
- Immediate need for action $\rightarrow$ increased pain.
Danger Signals in the Brain

When you feel pain, between 200 and 400 areas of your brain become active.

Your brain has over 10 BILLION neurons, each one connecting to up to 5,000 other neurons.
Many parts of the brain are involved:

- Movement areas
- Thinking/reasoning/belief areas
- Memory areas
- Learning areas
- Emotional areas
- Autonomic centres
- Immune systems
Acute pain versus chronic pain

Useful alarm system when it is acute pain as it concludes that danger to your tissues exists and that action is required in terms of rest and remedies to help healing.

Not the same for ongoing chronic pain. Car Alarm
One month later

thank you for waking me up this morning!" perhaps you could park your sensitive car alarm elsewhere? i'm not sure how many times i have to call 311 and give them your plate # before they'll tow but i'm gonna find out. xox

P.s. you rock!
No One Ever Told You #2

Chronic Pain is NOT an accurate indication of what is happening in your body
Pain levels over healing time:

- Pain more associated with the nervous system.
- Pain more associated with tissues.

Injury moment to healing time in days/weeks/months.
Understanding Pain

THE NERVOUS SYSTEM CHANGES

- It is an adaptable system
- Always changing - never static.
- Changing in response to inputs
- Neuroplasticity
Understanding Neuroplasticity

Darwin

- It is not the strongest of the species that survives, nor the most intelligent, but rather the one most adaptable to change.
Understanding Neuroplasticity

- Expert has practiced for >10,000 hours.
- After 10,000 hours it comes naturally without effort.
- Years down the line very little change or stimulation of other nervous pathways and possible a factor in development of dementia.
- Surge in interest in Brain Training (See Posit Science)
- Learning a new language or instrument later on in life is really difficult but helps prevent dementia.
Silver Spring Monkeys
Edward Taub, Animal Testing, Alex Pacheco, Animal Liberation Front
Maladaptive and Good Neuroplasticity

“The Brain That Changes Itself”
Norman Doidge
Many examples of maladaptive and good neuroplastic changes.
Increased Pain Traffic

- Recruitment of receptors to transmit pain
- Nerves fire off aberrant discharges
- Increased traffic in pain nerves.
- Traffic not inhibited at spinal cord
- Spinal cord pain pathway remains open/on.
- Brain changes
- Like the expert, a learnt pain path develops
Increased Pain Traffic

• Recruitment of non-pain receptors to transmit pain
• Increased traffic in pain nerves.
• Traffic not inhibited at spinal cord
• Spinal cord pain pathway remains open/on

• Brain changes:
  Decreased grey matter (nerve cell bodies)
  Decreased Descending Inhibition of Pain
  Altered Perception.
Processing System

- The brain deciphers all information.
- Can it get it wrong?
The brain’s automatic abilities

- The phaonmneal pweor of the hmuan mnid. Can you blveiee taht you can aulacly uesdnatnrd waht you are rdanieg? It deosn’t mtttaer in waht oredr the ltteers in a wrod are, the olny iprmoatnt tihng is taht the frsit and lsat ltter be in the rghit pclae. Tihs is bcuseae the huamn mnid does not raed ervey lteter by istlef, but the wrod as a whhoe.

- Waht we pecvrie is not aywlas atrccuae.
How many legs does this elephant have?
Take a look at the picture? What do you see?

Research has shown that young children cannot identify the intimate couple because they do not have prior memory associated with such a scenario.

Children see nine dolphins.
Processing Nerve Signals

*If you can change how your brain decides to see this picture can you change how your brain decides to perceive pain signals?*
fMRI

• Numerous regions of the brain are involved in the interpretation of the 'pain experience'
THE GOOD NEWS

Neuroplastic changes are not permanent
No One Ever Told You #1

Your nervous system has the power to change your nervous system.

YOU can change pain!
Good Neuroplasticity

- Nerves learn whatever we can practice.
- When you take the system off alert, the neurons will start to return to normal activity.
- Sensors are replaced every 3-4 days.
- Virtual brain maps change all through life.
- The pain killing neurotransmitters you produce are far more powerful than the danger chemicals sending signals to your spinal cord and brain.

Self-management techniques work.
Recovery Principles

• Acceptance
Recovery Principles

- Acceptance and willingness for change.
- Self Management Approaches
Pain Science to Pain Management:
A Path to Recovery

Live Well
Better Movement
Less Pain

CHALLENGE BODY
AWARENESS + SELF REGULATION
compassion
focus
persistence
enjoyment

RESET NERVOUS SYSTEM
GOAL SETTING

Breathing

PAIN KNOWLEDGE
PAIN BIOLOGY

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Pain Self-Management

Active Strategies with short term benefits

• Breathing techniques
• Restoring body awareness/body image
• Relaxation techniques
• Mindfulness
• Meditation
Pain Self-Management

Active Strategies with longer term benefits

• Yoga
• Tai Chi
• Qi gong
• Focused exercise programs
Recovery Principles

- Acceptance and willingness for change.
- Self Management Approaches
- Paced Physiotherapy with cardio
- Mind Body Techniques
- Sleep Hygiene, Good Nutrition, Fun.
- Medications (30% in 30%) in chronic pain
- All need to function together
- It takes effort to create change just like learning a new language when you are older.
Numerous regions of the brain are involved in the interpretation of the 'pain experience'.

fMRI studies of endogenous pain processing include placebo, empathy, attention, distraction or cognitive modulation of pain.

fMRI used to evaluate the effects of pharmacological and non-pharmacological techniques on brain function in acute and chronic pain.
Breaking free from pain

- Acceptance, education & pain management
- Increased activity
- Improved motivation
- Improved self-esteem
- Improved social functioning
- Improved conditioning

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Darwin Award

A Darwin award is bestowed posthumously to the person (usually a young male) who removes his genes from the gene pool by some seriously stupid act.
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