THE SCIENCE OF PAIN
PAIN IS AN ILLUSION

NO BRAIN NO PAIN

A TYPICAL PAIN NEUROTAG

1. **PREMOTOR / MOTOR CORTEX**
   Organise and prepare movements

2. **CINGULATE CORTEX**
   Concentration, focusing

3. **PREFRONTAL CORTEX**
   Problem solving, memory

4. **AMYGDALA**
   Fear, fear conditioning, addiction

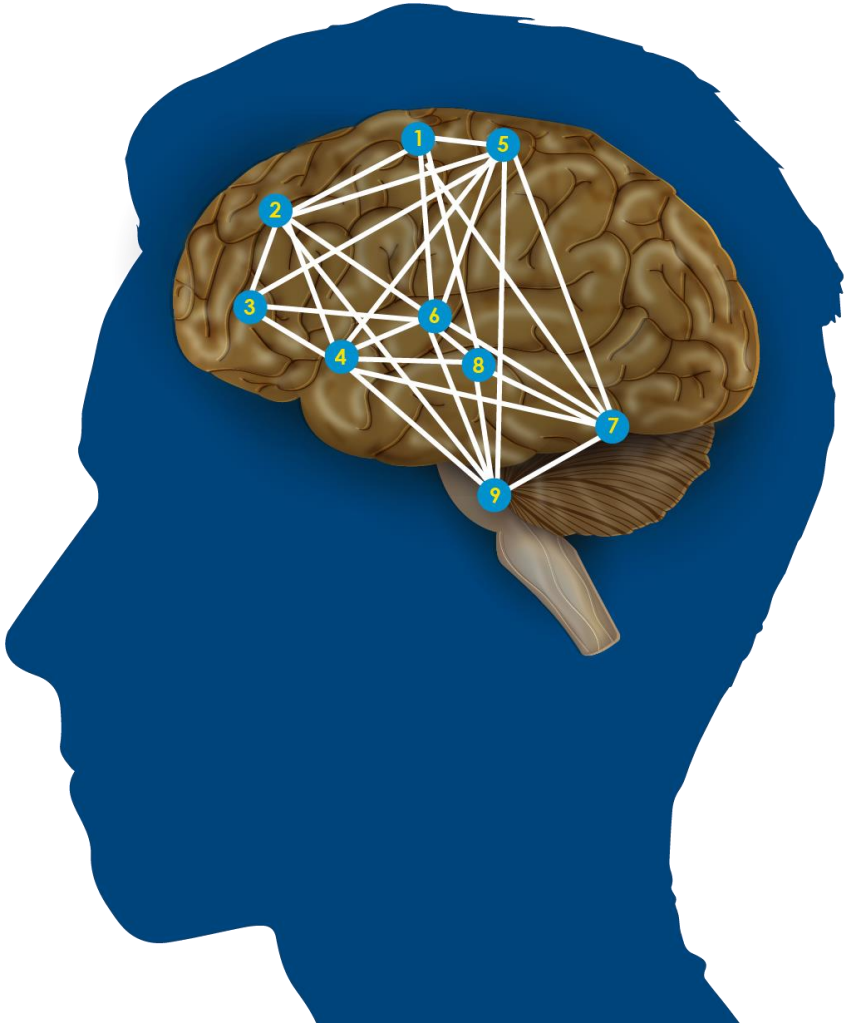
5. **SENSORY CORTEX**
   Sensory discrimination

6. **HYPOTHALAMUS / THALAMUS**
   Stress responses, autonomic regulation, motivation

7. **CEREBELLUM**
   Movement and cognition

8. **HIPPOCAMPUS**
   Memory, special recognition, fear conditioning

9. **SPINAL CORD**
   Gating from the periphery



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THE LINK BETWEEN PAIN AND DEPRESSION

Normal brain

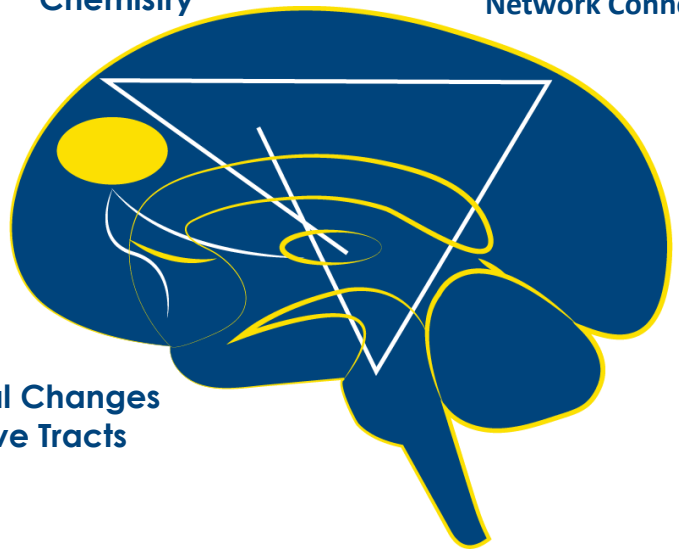
Chronic Pain Brain

Altered Brain Chemistry

Altered Brain Network Connectivity

Decrease in Gray Matter Volume in DLPC

Structural Changes in Nerve Tracts



Altered Behaviours

Sensory (e.g. spontaneous pain at rest)
Affective (e.g. anxiety, depression, suicide, addiction)
Cognitive (e.g. decreased attention)
Emotional (e.g. reward deficit state)

- Shared Biological pathways
- Shared Neurotransmitters
- Shared genetics (50%)

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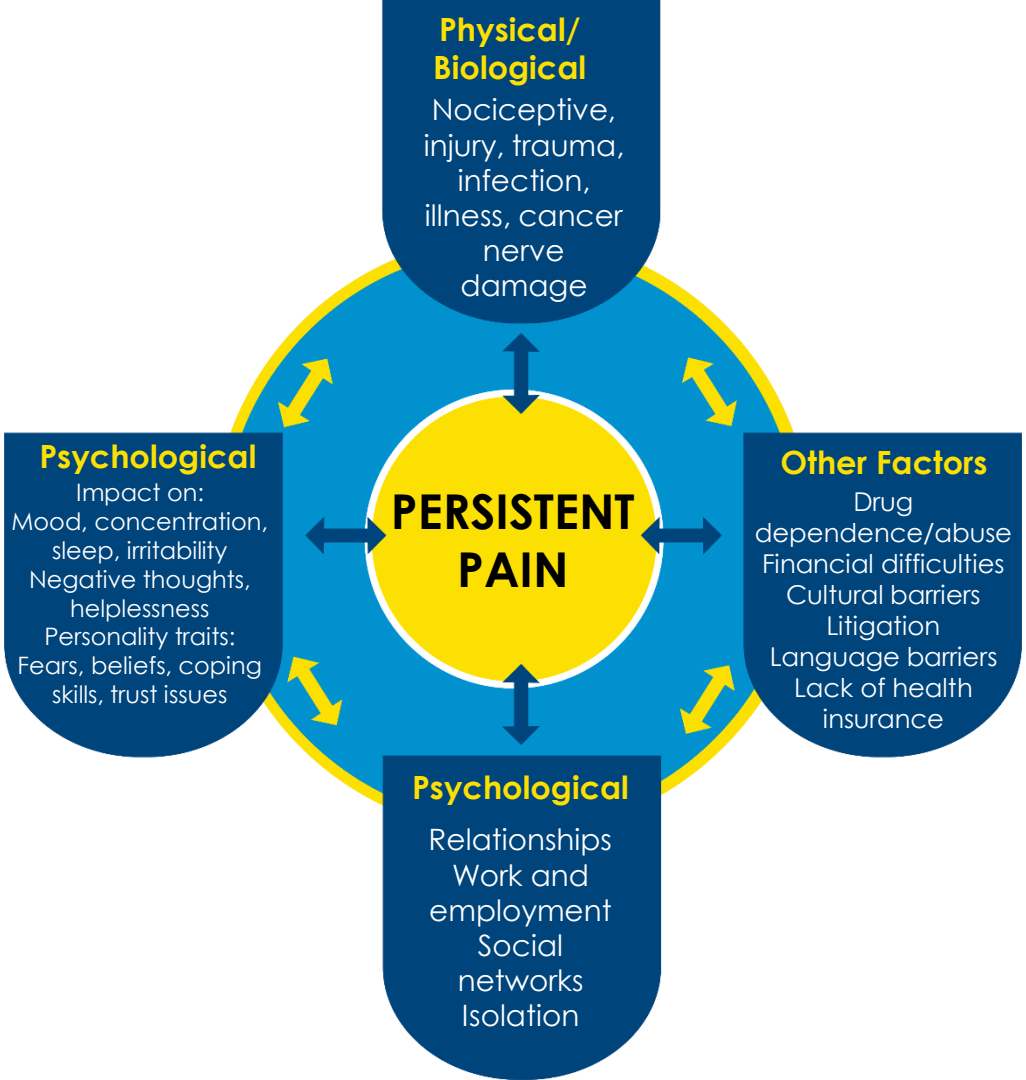
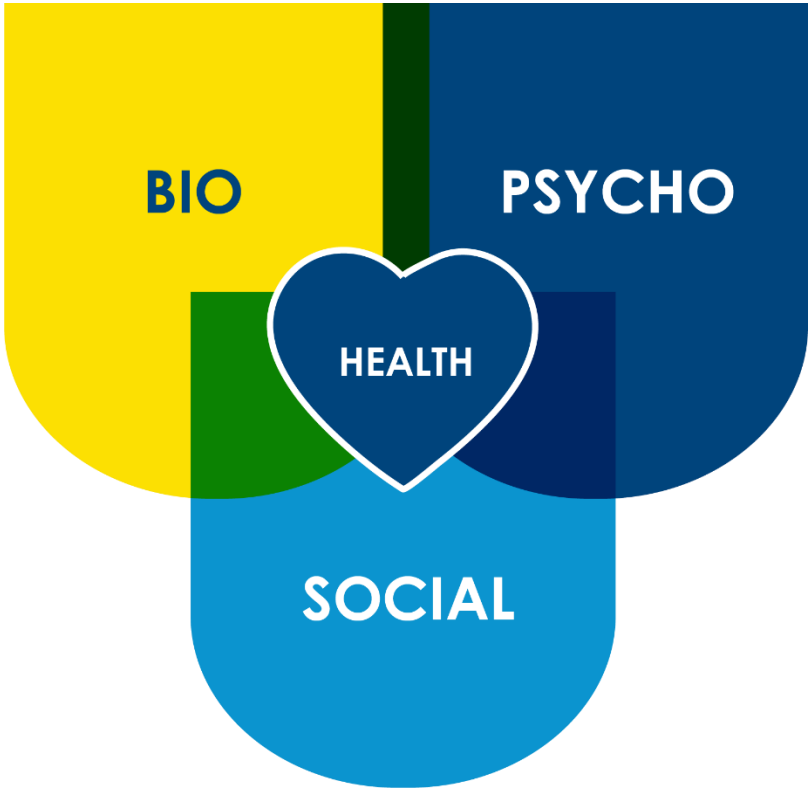
CASE STUDY: MR X , A 46-YEAR-OLD MALE WHO SUSTAINED A LOWER BACK INJURY WHILE AT WORK

- Referred for rehabilitation (PT & OT): considered fit to return to normal duty 8 days later.
- A Discharge Assessment Report: compliant with rehabilitation; no longer reported any pain or discomfort in his back and rated his back pain as 0/10; active ROM was assessed as 100% of normal range; taught a home exercise programme to promote further strengthening.
- Returned to work and started reporting repeated back pain.
- Referred to a neurosurgeon (3 months post IOD): condition was stable; no major functional or anatomical deficit; results of an MRI lumbar spine: minor orthopaedic concerns with acute back spasm; no medication required.
- Referred to ICAS EAP services regarding psychosocial and financial support: Face-to-face counselling - reported psychosocial issues and reported many subjective work stressors.
- Consulted his GP for anti-depressant medication, following development of suicidal ideation.
- Booked off on special sick leave.
- Referred to ICAS AID: utilised 75.5% of his sick leave within the initial 10 months of his cycle (eight of the 11 absence incidences were adjacent to or at the weekend).

- Referred to an independent Neurosurgeon who was of the opinion:
  - *minor intervertebral disc injury: no structural impairment ; no neurological compromise; stability not impaired*
  - *acute and subsequent chronic LBP and referred pain: symptoms have tenuous anatomical basis*
  - *highly significant emotional and psychogenic aspect → failure to recover from the original injury + progressive additional problems*
  - *sees himself as a victim: his injury has not been adequately acknowledged by his employer*
  - *lives in fear of exacerbating his pain →restricts movement →makes it difficult to undergo any form of rehabilitation.*
  - *feels that the doctors were pressured into closing his IOD case: restricted his access to medication and ongoing care.*
  - *SSL→ reduced income; financial difficulty.*
- Mr X will not benefit from any form of surgical intervention but WILL benefit from holistic rehabilitative care in terms of psychological assessment and support. Physiotherapy and Occupational Therapy management would be beneficial in terms of physical rehabilitation and a managed return-to-work programme.
- Neurosurgeon concludes that with regards to X's medium and long-term prognosis, there is no threat to his projected life expectancy; however, there remains **a guarded prognosis with respect to return-to-work given the complexity of the psychological impact of the injury**


Physical/ Biological
Nociceptive, injury, trauma, infection, illness, cancer nerve damage
Psychological
Impact on:
Mood, concentration, sleep, irritability
Negative thoughts, helplessness
Personality traits:
Fears, beliefs, coping skills, trust issues
PERSISTENT PAIN
Other Factors
Drug dependence/abuse
Financial difficulties
Cultural barriers
Litigation
Language barriers
Lack of health insurance
Psychological
Relationships
Work and employment
Social networks
Isolation

EXCESSIVE LOAD, TISSUE PATHOLOGY, SYSTEM DYSFUNCTION, NOCICEPTION, INFLAMMATION, GENETICS



BELIEFS, THOUGHTS, KNOWLEDGE, PREDICTIONS, FEELINGS, ACTIONS

FAMILY, FRIENDS, COLLEAGUES, ACCESS TO CARE,

MENTAL HEALTH MANIFESTATIONS

Physical Symptoms

Sick and run down

Difficulty sleeping

Poor appetite

Muscle pains

Weight loss

Tired

Thoughts

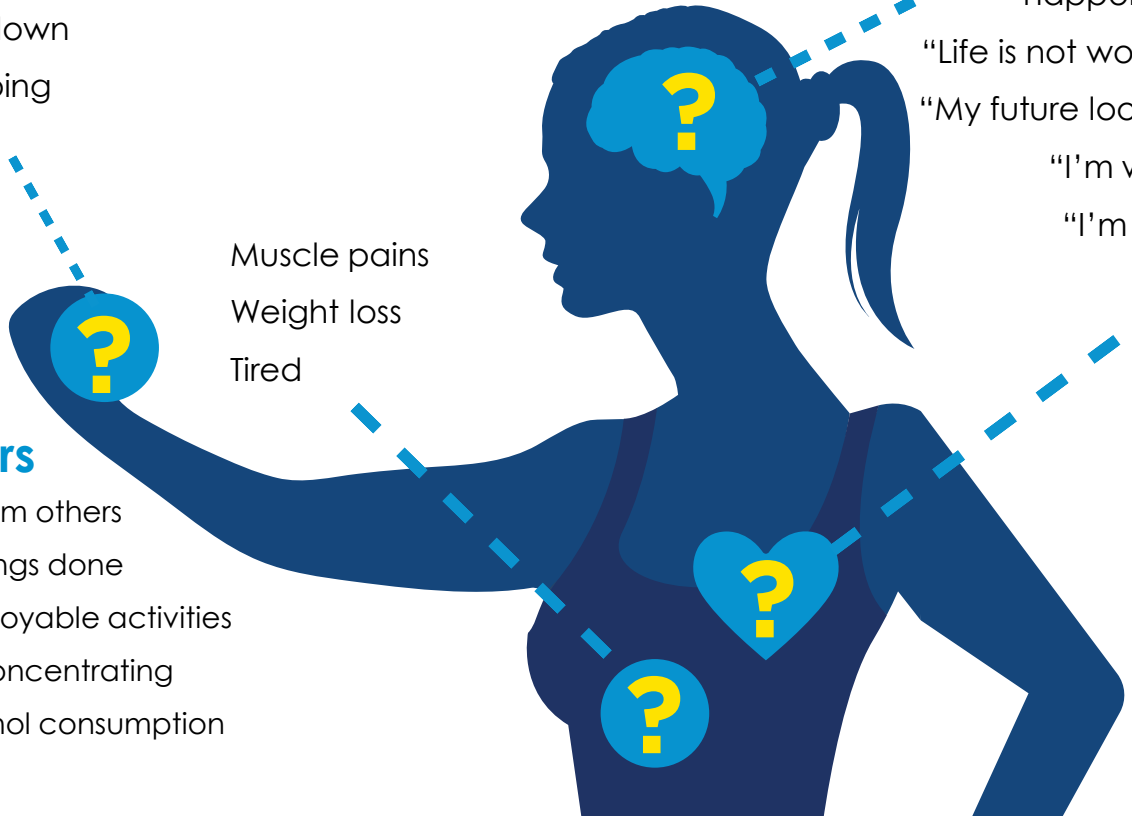
"Nothing good ever happens to me"

"Life is not worth living"

"My future looks bleak"

"I'm worthless"

"I'm a failure"



Behaviours

Withdrawals from others

Doesn't get things done

Stops doing enjoyable activities

Has difficulty concentrating

Increases alcohol consumption

Feelings

Overwhelmed

Unhappy

Irritable

Frustrated

Lacking confidence

Indecisive

MENTAL HEALTH MANIFESTATIONS

Mental Illness

Mental Health

Person with higher chance of mental illness

+

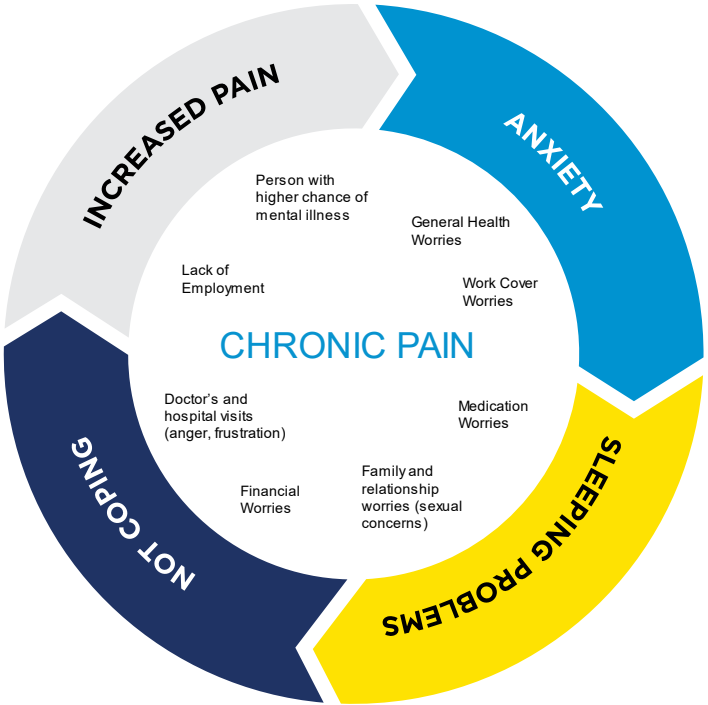
Stress

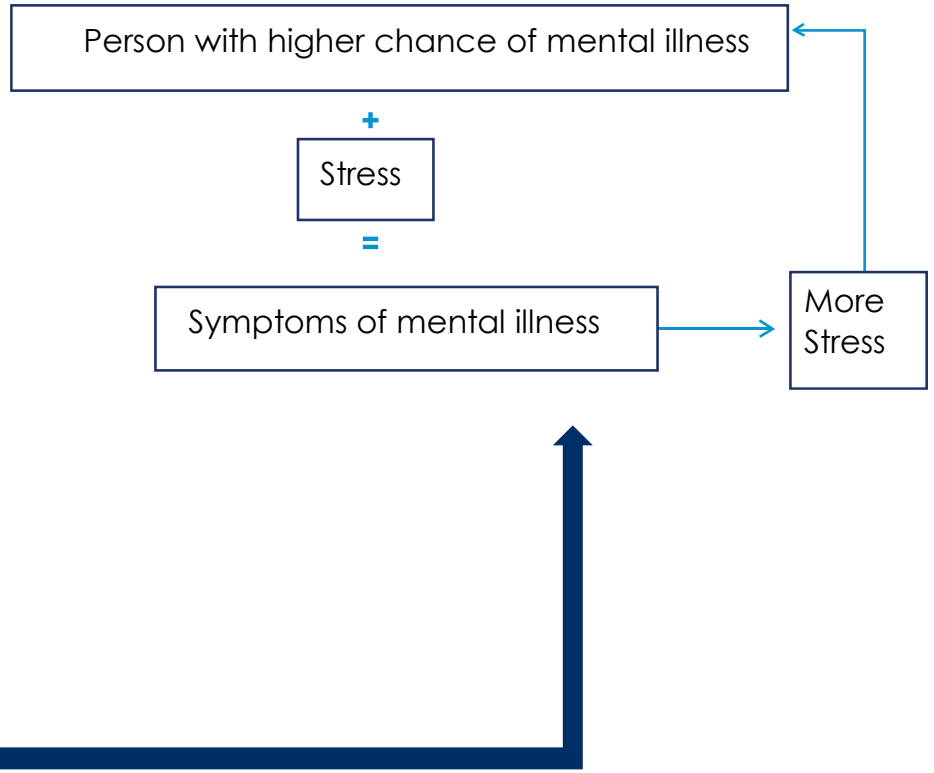
=

Symptoms of mental illness

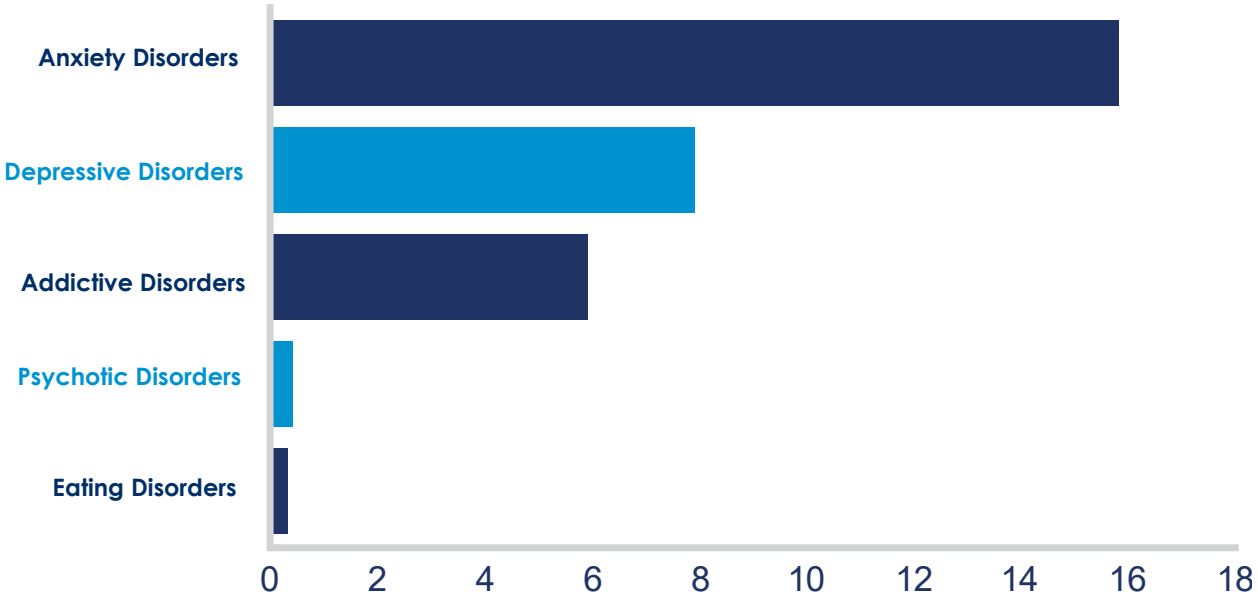
More Stress

CHRONIC PAIN





MANIFESTATION OF MENTAL HEALTH DISORDERS IN THE WORKPLACE



CHRONIC PAIN AND MENTAL HEALTH

Individuals with symptoms of depression are 3 times more likely report experiencing chronic physical conditions than the general population.

Patients with chronic physical conditions are TWICE AS LIKELY to also experience mood or anxiety disorder than the general population.

DEPRESSION
Depression is the most common psychological condition associated with chronic pain.

DISABILITY
Chronic pain and depression combined is often associated with greater disability than either depression or chronic pain alone.

87%

In any given year, 1 in 4 South Africans experiences a mental health problem or illness

Mental health costs the SA economy more than R35 billion

23 people commit suicide a day in SA, 460 attempt suicide a day, most are suffering from mental illness.

Medical aids have seen an increase of 87% of mental health claims over the last 5 years.

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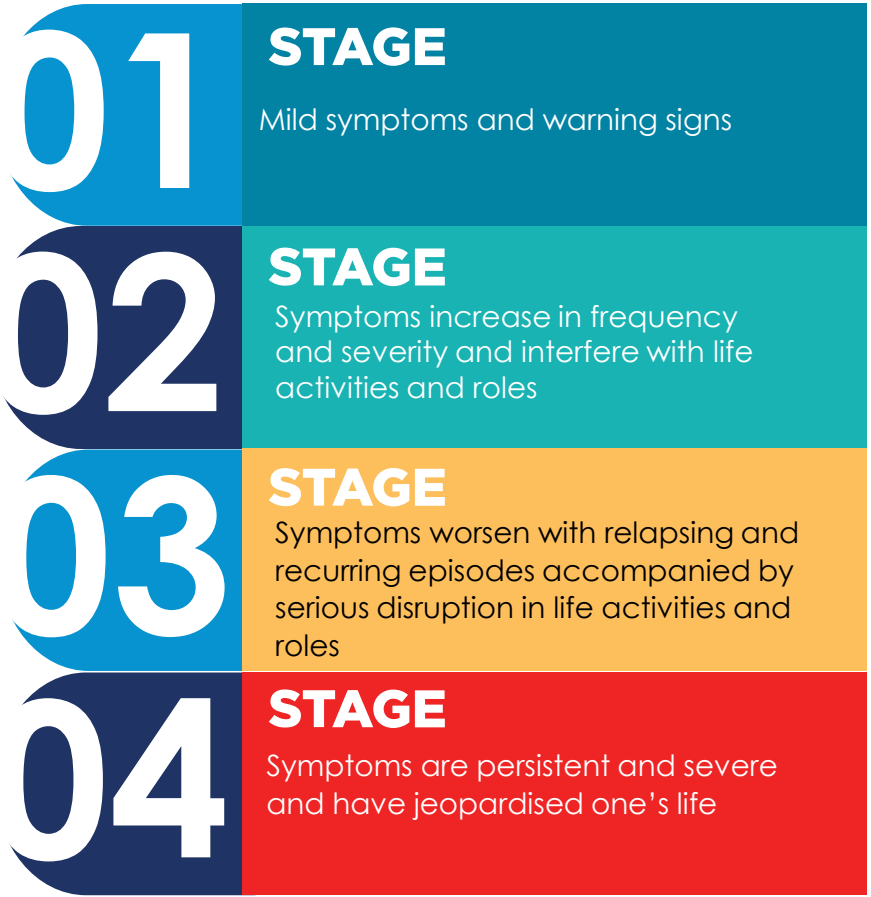
THE CHANGING FACE OF EWP



- Prevention
- Management
- Coping skills – constant changing world of work
- 4IR – technology
- Increased stress
- Providing intervention at different stages
- Counselling (telephonic, f2f, instant chat, video)
- Cross-referrals (Financial, Legal, AID)
- Risk assessment
- Possible admission
- Aftercare
- Holistic management of client: Biopsychosocial approach

THE GAP IN ORGANISATIONS

- Lack of integrated approach
- Sharing of personal data: Limitation
- Poses the challenge for organisations to effectively manage employees holistically
- Herein lies the shift that organisations need to consider in EWP, the positioning of EWP, a true integrated people solution