

# Dr Karen Wong

## Complex Regional Pain Syndrome (CRPS) When Pain Goes Rogue

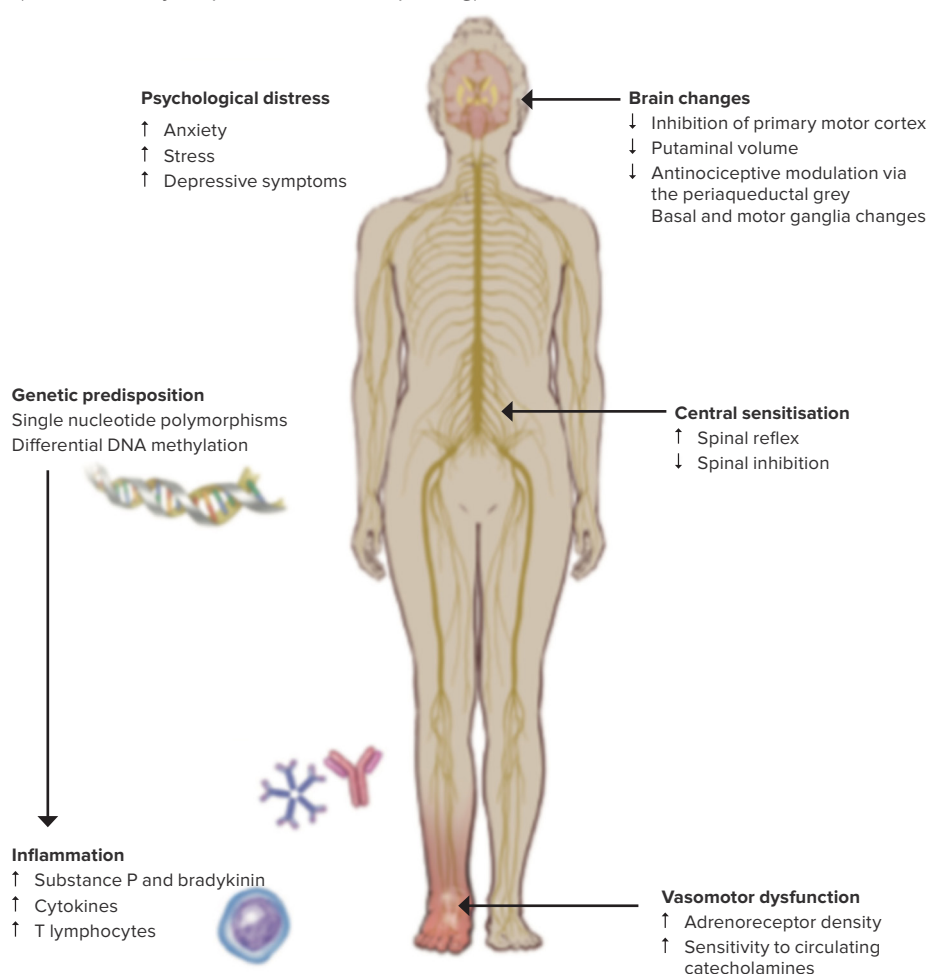
CRPS is more than just chronic pain—it's a neurological puzzle that can turn a minor injury into a major life disruption. Often misdiagnosed, CRPS causes intense, ongoing pain, swelling, and changes in skin and bone, even after the original injury has healed.

### Epidemiology Fast Facts

- Affects 5.5–26.2 people per 100,000 annually
- 4x more common in women
- Most cases occur between ages 50–80
- Upper limbs are affected more than lower limbs
- Often seen in people with existing pain conditions like arthritis or migraines

### Pathophysiology- What's Going On Inside the Body?

- Inflammatory storm & immune system
- Cytokines like TNF- $\alpha$  and IL-6; substance P & bradykinin causing peripheral sensitization
- Autoimmune hypothesis- Animal models show IgM and IgG transfer inducing CRPS-like symptoms suggesting possible autoantibody-mediated autoimmune process
- Vasomotor dysfunction
- Central sensitization and brain rewiring make pain feel worse over time
- Genetics- potentially heritable up to 1/3 of individuals
- Psychological (stress, anxiety, depression, catastrophising) can increase risk



**Figure 1: Possible pathophysiological processes in complex regional pain syndrome**  
Pathophysiological changes might arise because of symptoms and might not be causal.  
↑ indicates increased and ↓ indicates decreased.

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## What Causes CRPS?

- Injuries eg fractures, surgery, sprains, crush injury, dislocations, immobilization
- Neurological events eg stroke, tumors, syringomyelia
- Musculoskeletal injuries eg shoulder rotator cuff injury
- Viscera eg myocardial infarction
- Idiopathic/ spontaneous

## Diagnosing CRPS

- Clinical criteria (Budapest criteria)

## Differential Diagnosis

Neuropathic pain syndromes	<ul style="list-style-type: none"><li>– Peripheral (poly) neuropathy</li><li>– Nerve entrapment</li><li>– Radiculopathy</li><li>– Post herpetic neuralgia</li><li>– De-afferentation pain post cerebrovascular accident</li><li>– Motor neuron disease</li></ul>
Vascular	<ul style="list-style-type: none"><li>– Thrombosis ; peripheral arterial disease</li><li>– Atherosclerosis</li><li>– Raynaud's phenomenon</li><li>– Erythromelalgia</li></ul>
Inflammatory & infectious conditions	<ul style="list-style-type: none"><li>– Cellulitis</li><li>– Erysipelas</li><li>– Bursitis</li><li>– Seronegative arthritis/ autoimmune eg SLE</li><li>– Rheumatologic diseases</li></ul>
Musculoskeletal	<ul style="list-style-type: none"><li>– Overuse/ disuse</li><li>– Tennis elbow</li><li>– Repetitive strain injury</li><li>– Fibromyalgia</li></ul>
Psychiatric	<ul style="list-style-type: none"><li>– Somatoform disorders</li><li>– Munchausen syndrome</li></ul>

## Types of CRPS

- **Type I:** No nerve damage. Formerly known as Reflex Sympathetic Dystrophy (RSD)
- **Type II:** Confirmed nerve injury. Formerly known as causalgia
- **Partial Remission:** Previously met Budapest Criteria but no longer does. Still experiences some signs and symptoms, often reports ongoing, debilitating pain
- **NOS (Not Otherwise Specified):** Displays some CRPS features. Never met full Budapest criteria. No alternative diagnosis explains the symptoms

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## Treatment: CRPS waits for no one

Delaying treatment for CRPS increases the risk of irreversible changes, making early management essential to preserve function and quality of life. Early referral, patient education and multidisciplinary care is key.

### Pharmacological

- Simple analgesia: Paracetamol, NSAIDs
- Antiepileptics: Gabapentin, Pregabalin
- Antidepressants : TCAs eg Amitriptyline, SNRIs eg Duloxetine, Desvenlafaxine
- Immune modulation: Steroids, Bisphosphonates
- Ketamine

### Therapies

- Physiotherapy: Graded motor imagery
- Psychological support: CBT, ACT

### Interventions

- Nerve blocks eg sympathetic ganglion block
- Neurostimulation eg spinal cord stimulator, dorsal root ganglion stimulator

## Prevention

- No definitive strategies
- Post fracture care eg using non-restrictive casts and starting early rehabilitation may help reduce risk
- Vitamin C shows promise- proposed mechanism by reducing oxidative stress after trauma

## Prognosis

- Early improvement of symptoms common usually within the first 6 months
- Persistent symptoms in about 14-27% at 12 months
- Complete remission is rare
- Risk of chronic pain- those not improving by 18 months may develop CRPS spread or non-CRPS chronic pain
- Work impact- up to 40% cannot return to work; about 1/3 need workplace adjustments

## References

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Dr Wong has interests in managing acute, subacute, and perioperative pain, back pain, cancer and non-cancer pain. Her holistic approach promotes improved function, relief of pain and quality of life. Dr Wong works alongside Dr Gibson in theatre at St George Private and consults privately in the Megumi Health rooms, while also maintaining public appointments in Royal Prince Alfred Hospital.

