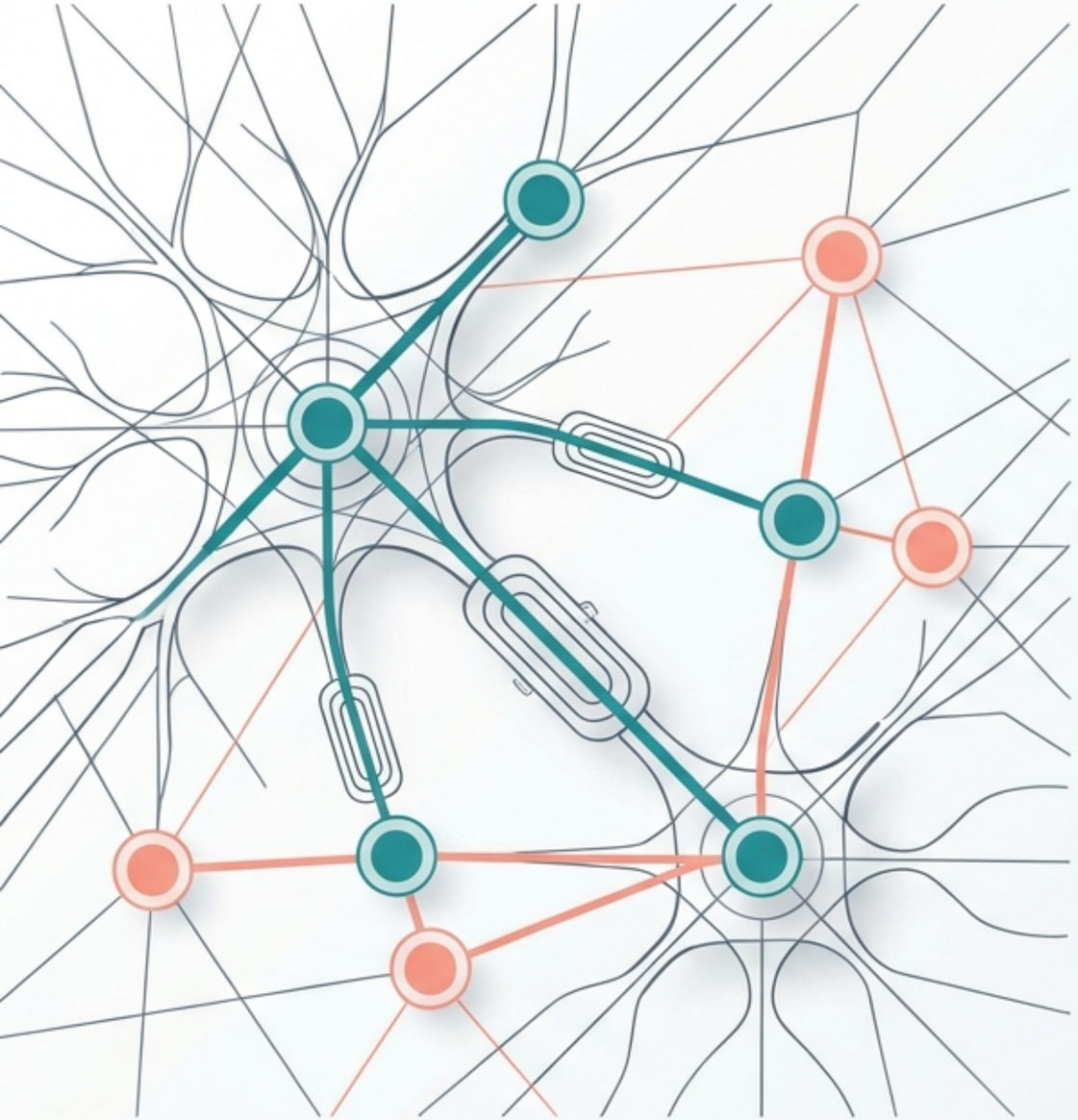
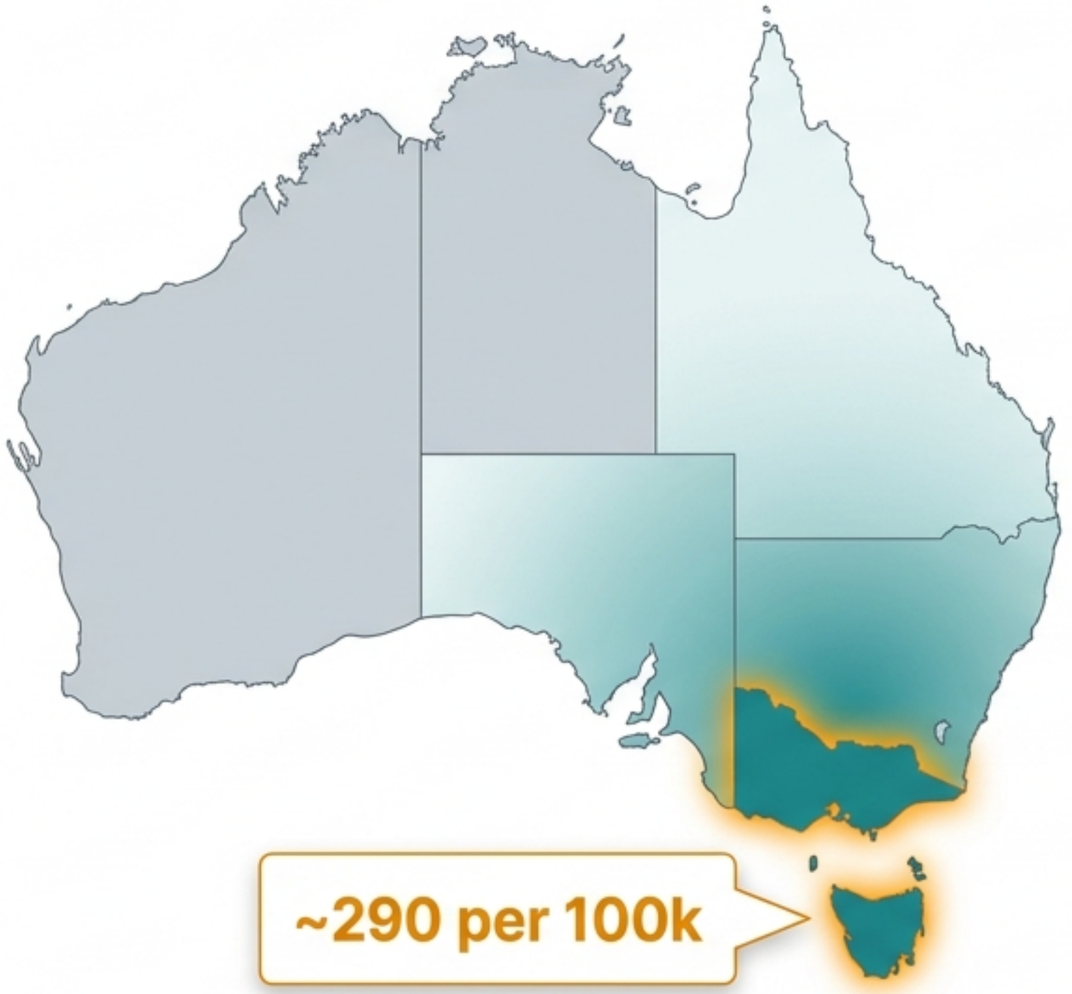


Multiple Sclerosis & Demyelinating Disease

A Clinical Playbook for Primary Care and Allied Health

Translating the 2026 Guidelines into Precision Care

Epidemiology & Burden of Disease



33,300

Australians currently living with MS. National prevalence of 130 per 100,000.

3:1

Female-to-Male ratio. Peak onset occurs between 20-40 years of age.

$1.75B

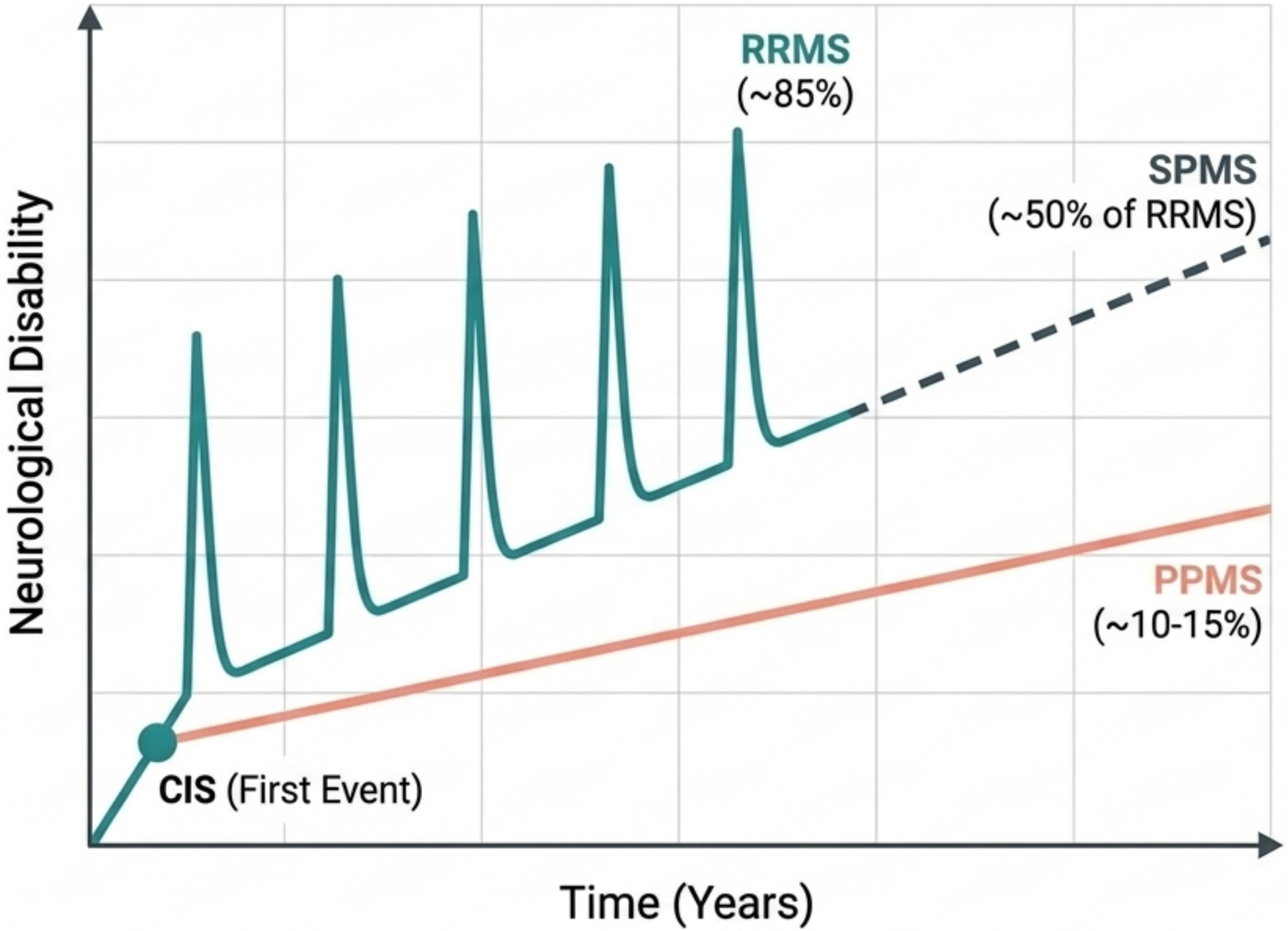
Annual economic cost. It is the leading cause of non-traumatic neurological disability in young Australians.

1-2 Years

Median time from symptom onset to diagnosis, representing a critical window for intervention.

⚠ **Genetics + Environment:** HLA-DRB1*15:01 carries a 3x risk. Low Vitamin D, EBV seropositivity, and smoking compound environmental risk.

Disease Subtype Evolution



Relapsing-Remitting (RRMS)

Discrete inflammatory relapses with full or partial recovery. Stable baseline between attacks.

Secondary Progressive (SPMS)

Gradual neurological deterioration following an initial RRMS course, driven by neurodegeneration.

Primary Progressive (PPMS)

Steady, relentless decline from onset without discrete relapse spikes. Typical onset at age 40-50.

Early intervention during CIS/RRMS delays the transition to SPMS.

CIS Presentation Typology & Triage

Optic Neuritis

Most Common

- Unilateral painful vision loss, relative afferent pupillary defect, colour desaturation.

Action:

Ophthalmology + Neurology referral.

Brainstem Syndrome

- Internuclear ophthalmoplegia, diplopia, vertigo, young patient trigeminal neuralgia.

Action:

ED Assessment → Urgent Neurology.

Partial Transverse Myelitis

Serious

- Sensory level, paraparesis, Lhermitte's sign, bowel/bladder dysfunction.

Action:

Emergency admission → MRI Spine → Neurology.

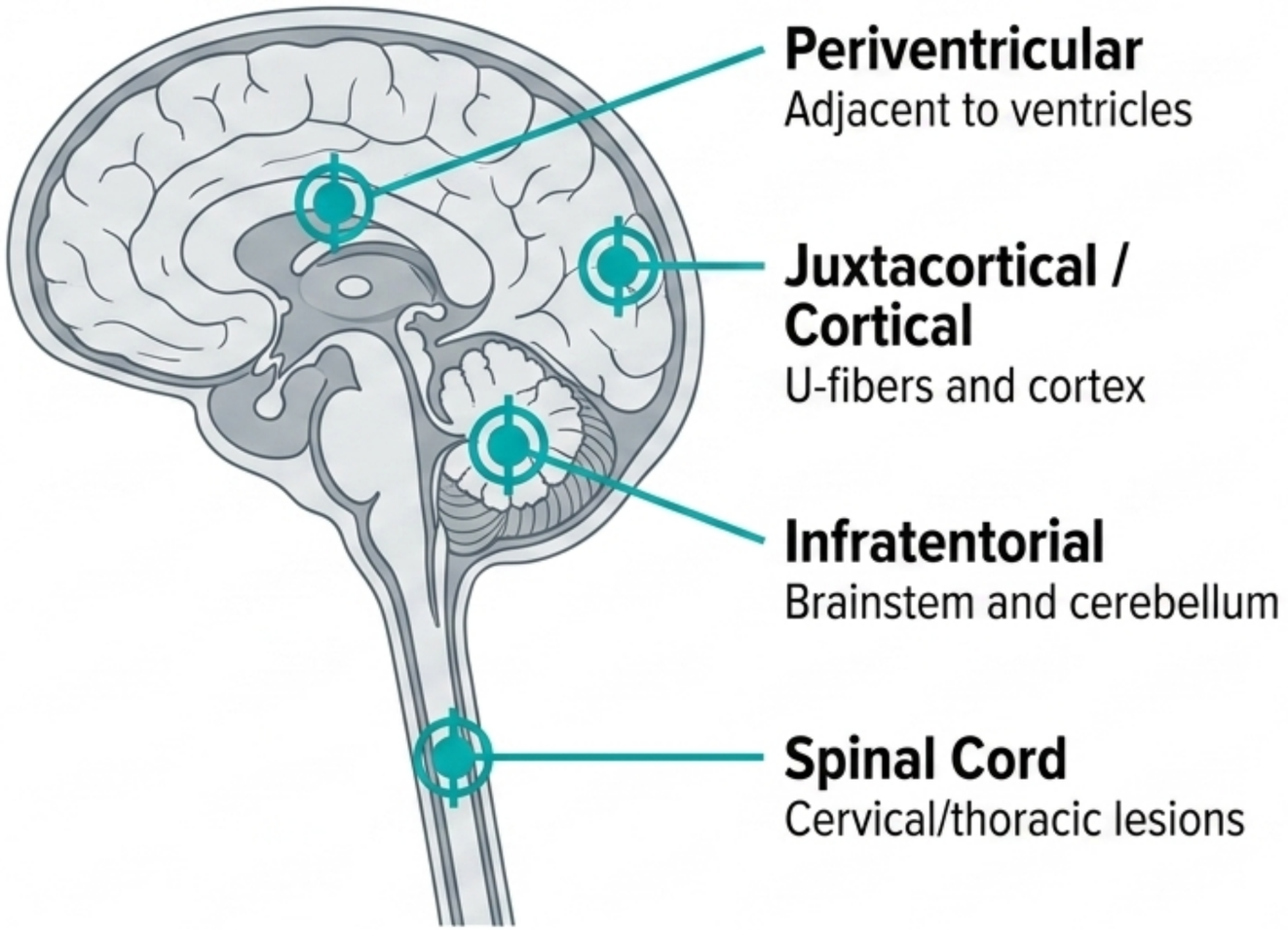
RED FLAGS FOR URGENT TRIAGE: Complete transverse myelitis (suggests NMOSD/MOGAD), severe bilateral visual loss, or progressive myelopathy require immediate escalation.

The Must-Not-Miss Mimics Matrix

Condition	Distinguishing Clinical Features	Key Investigations
NMOSD (AQP4-IgG)	Severe optic neuritis, complete transverse myelitis, intractable nausea/vomiting (area postrema syndrome).	**Test:** AQP4-IgG assay, MRI long cord lesion ≥3 segments.
MOGAD	Bilateral optic neuritis, ADEM-like in children.	**Test:** MOG-IgG assay.
SLE / Sjögren's	Multisystem features, rash, arthritis.	**Test:** ANA, anti-dsDNA, ENA.
Neurosarcoidosis	Cranial neuropathies, leptomeningeal enhancement.	**Test:** ACE, Chest CT, CSF.
Vitamin B12 Deficiency	Subacute combined degeneration, peripheral neuropathy.	**Test:** Serum B12, methylmalonic acid.

DIAGNOSTIC RULE: Never assume MS without excluding NMOSD and MOGAD in cases of complete myelitis or severe bilateral optic neuritis. Misdiagnosis leads to inappropriate, dangerous immunosuppression.

Dissemination in Space (DIS): The CNS Map



Periventricular
Adjacent to ventricles

Juxtacortical / Cortical
U-fibers and cortex

Infratentorial
Brainstem and cerebellum

Spinal Cord
Cervical/thoracic lesions

MRI Diagnostic Fundamentals

- MRI Brain/Spine + Gadolinium is the gold standard (MBS 63520/63553).
- >=1 T2 lesion in >=2 of the typical locations shown left meets DIS.
- High-risk CIS (>=1 lesion) has ~70-80% conversion risk to MS at 15 years.
- Spinal cord lesions at presentation independently double conversion risk.

The 2017 McDonald Criteria

1. The Classic

>=2 Clinical Attacks + **Objective evidence of >=2 lesions** = **MS Diagnosis**

(Clinical criteria sufficient)

2. Space Deficit

>=2 Attacks + 1 lesion + **DIS by MRI** (>=1 lesion in 2+ locations) = **MS Diagnosis**

3. Time Deficit

1 Attack + >=2 lesions + **DIT by MRI OR CSF Oligoclonal Bands** = **MS Diagnosis**

Key Revisions (2017 Update)

- CSF Oligoclonal Bands (OCBs) now substitute for Dissemination in Time (DIT). Present in >=90% of MS patients.
- Symptomatic lesions and cortical lesions can now be counted.

The Vaccine Checkpoint Gate

Pre-Gate (Primary Care Action)

- Check status 4-6 weeks BEFORE starting DMT.
- Administer Influenza, Pneumococcal, Hepatitis B, HPV, COVID-19 boosters.

✓ Non-Live Vaccines

Safe. Shingrix (recombinant) is highly preferred and PBS-funded for immunocompromised.

✗ Live Vaccines

Contraindicated during most DMTs (fingolimod, natalizumab, ocrelizumab, cladribine). Avoid MMR, yellow fever, Zostavax.

Note: Household contacts must also be fully vaccinated to create a protective cocoon.

First-Line Disease-Modifying Therapies

Interferon beta-1a (Avonex/Rebif)

Route: IM weekly or SC 3x/week.

Monitoring: FBC, LFTs at baseline, 1, 3, 6 mos, then 6-monthly; Thyroid annually.

⚠ **Alert:** Monitor for depression.

Glatiramer acetate (Copaxone)

Route: SC daily or 3x/week.

Monitoring: Baseline LFTs only (no routine bloods).

⚠ **Alert:** Injection site reactions common.

Dimethyl fumarate (Tecfidera)

Route: Oral BD.

Monitoring: FBC with absolute lymphocyte count (ALC) baseline, 6 mos, 12 mos, then 6-monthly.

⚠ **Alert:** Hold if ALC <0.5 x 10^9/L. Flushing common (take with food).

Context: Early high-efficacy DMT initiation in high-risk CIS significantly reduces long-term disability accumulation.

High-Efficacy DMT Monitoring Burden

Oral Therapies	
Teriflunomide	Monthly LFTs for 6 mos. [⚠MBER ALERT: Teratogenic. Requires cholestyramine washout.]
Fingolimod / Siponimod	First-dose cardiac monitoring. Skin cancer screening. Ophthalmology at 3-4 mos (macular oedema).
Infusion / High-Efficacy	
Natalizumab	⚠ AMBER ALERT: High risk of PML.] Monitor JC Virus antibodies every 6 mos. Report new subacute cognitive/motor deficits instantly.
Ocrelizumab	Annual IgG levels. Hepatitis B screen pre-treatment. Infection vigilance (respiratory).
Alemtuzumab	Monthly FBC, renal, LFTs, TFTs for 48 MONTHS post-infusion (high risk of secondary autoimmunity like thyroid, ITP, Goodpasture's).

NEDA-3 & Shared Care Role Delineation

Target: NEDA-3 (No Evidence of Disease Activity)

1. No clinical relapses
(No Evidence with this 4 month)

+

2. No MRI activity
(new/enhancing lesions)

+

3. No EDSS disability progression
progression - months

Neurology-Led

- **MRI Brain/Spine tracking** (6-12 months initially, then annually).
- **EDSS** (Expanded Disability Status Scale) scoring every 6 months.
- **DMT escalation** decisions.

+

Shared Responsibility & Coordination

Primary Care-Led

- **Infection** screening and vaccination.
- **Comorbidity management** (CVD, diabetes accelerate MS progression).
- **Relapse documentation** (date, symptoms, residual deficits).

Symptom Management Dashboard (Part 1)

Spasticity (Affects 60-80%)

- **1st Line:** Baclofen (start 5mg TDS, titrate). Alert: Renal clearance; do not stop abruptly.
- **Alternatives:** Gabapentin, Tizanidine (LFT monitoring).
- **Specialist:** Intrathecal baclofen, Botox.

Fatigue (Affects 75-95% - #1 impact on QoL)

- **Mechanism:** Primary CNS fatigue + Uhthoff's phenomenon (heat sensitivity).
- **1st Line:** Structured exercise, cooling garments, CBT. Exclude OSA/thyroid.
- **Off-Label:** Amantadine 100mg BD.

Bladder Dysfunction (Affects ~75%)

- **Urgency:** Oxybutynin or Mirabegron.
- **Retention:** Intermittent self-catheterisation (ISC). Avoid anticholinergics.

⚠️ **AMBER ALERT:** UTI triggers ‘pseudorelapses’. Always exclude UTI before assuming a true MS relapse.

Neuropathic Pain (Affects 50-70%)

- **1st Line:** Pregabalin (titrate to 150-300mg BD), Amitriptyline (watch anticholinergic burden).
- **Trigeminal Neuralgia:** Carbamazepine (Monitor Na+, HLA-B*1502).

The Hidden Burden: Mood & Cognition

Mood Disorders

Major depression occurs in **50% of MS patients** (2-3x general population).

Screening: Mandate PHQ-9 and GAD-7 at every clinic visit.

Intervention: SSRIs are first-line (Sertraline, Escitalopram).

⚠ Alert: Avoid Fluoxetine if on Teriflunomide due to CYP interaction.

Cognitive Impairment

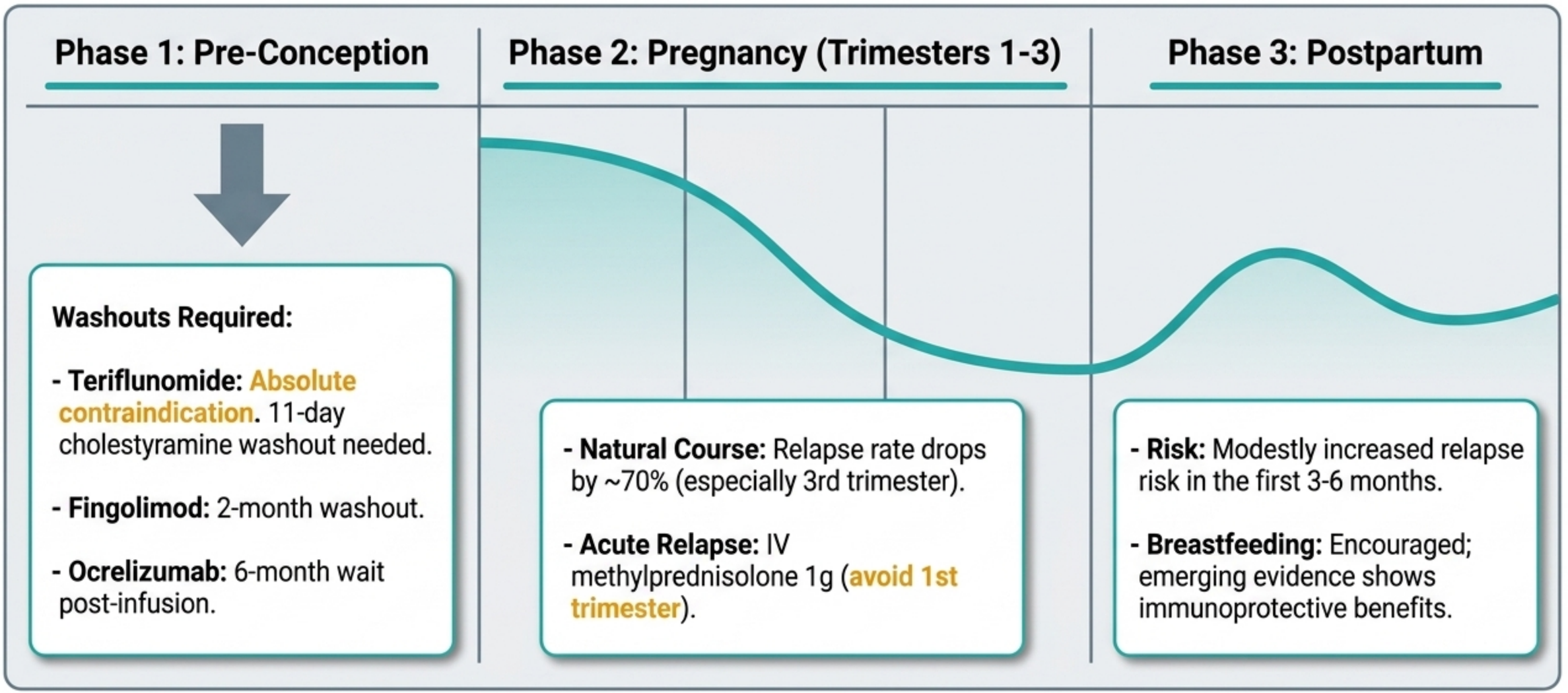
Affects 40-70%, heavily impacting processing speed, memory, and executive function.

Screening: Montreal Cognitive Assessment (MoCA).

Action: Neuropsychology referral if affecting work, driving, or daily activities.

Crucial: Actively reduce the patient's anticholinergic medication burden to preserve cognitive function.

The Pregnancy Planning Timeline



Physiological Extremes: Clinical Adjustments

The Elderly (>=60 years)

- Inflammation decreases, progression predominates. Reassess DMT benefit-risk ratio.

- Focus on polypharmacy and reducing anticholinergic burden.

Paediatric MS (<18 years)

- Accounts for 3-5%. Higher relapse rate, severe educational/cognitive impact.

- First-line: Fingolimod (PBS listed >=10 yrs).

Renal Impairment

- **Baclofen:** Accumulation risk (confusion/sedation). Dose reduce if eGFR <30.

- **Gabapentin/Pregabalin:** Mandatory strict dose reductions per eGFR.

- **MRI:** Use macrocyclic gadolinium only if eGFR <30.

Hepatic Impairment

- **Tizanidine & Teriflunomide:** Contraindicated in severe impairment.

- **Interferon-beta:** Monitor for transaminitis (stop if ALT >5x ULN).

Systemic Solutions for First Nations Health

Geographic & Specialist Isolation

Active facilitation of RFDS telehealth and ACCHS integration. Utilize Patient-Assisted Travel Schemes (PATS) for infusions.

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Cultural Safety & Diagnostic Delay

Engage Aboriginal Health Workers. Acknowledge kinship and sorry business in scheduling. Use plain language.

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Complex Comorbidity Burden

Aggressive management of diabetes/CVD. Pre-DMT catch-up vaccinations (Hep B, Shingrix) through ACCHOs.

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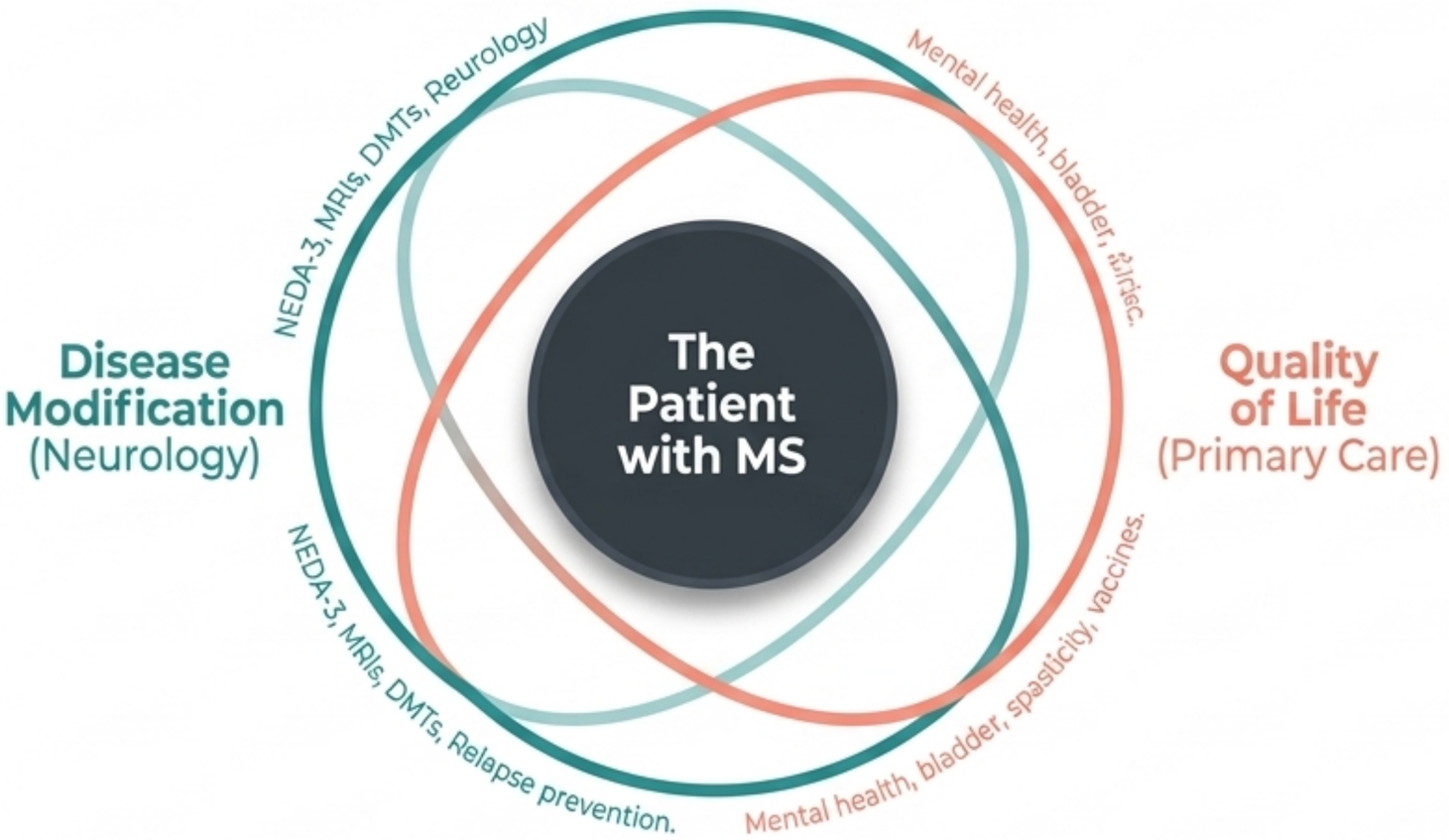
Holistic Care: Culturally responsive mental health services (e.g., Yarning circles) are essential to mitigate the compounding effects of intergenerational trauma and depression on MS outcomes.

Synthesis: The Dual-Track Paradigm & Referral

The Dual-Track Orbit



Key Insight: Untreated symptoms destroy adherence to DMTs; unmanaged inflammation renders symptom treatments useless.

Urgent (<2 Weeks)

Complete transverse myelitis, severe bilateral vision loss, brainstem syndrome with respiratory compromise.

Soon (<4-6 Weeks)

First presentation of standard optic neuritis, sensory CIS, incidental MRI white matter lesions.

Routine (<3 Months)

Known MS with worsening baseline, medication reviews, routine DMT monitoring.