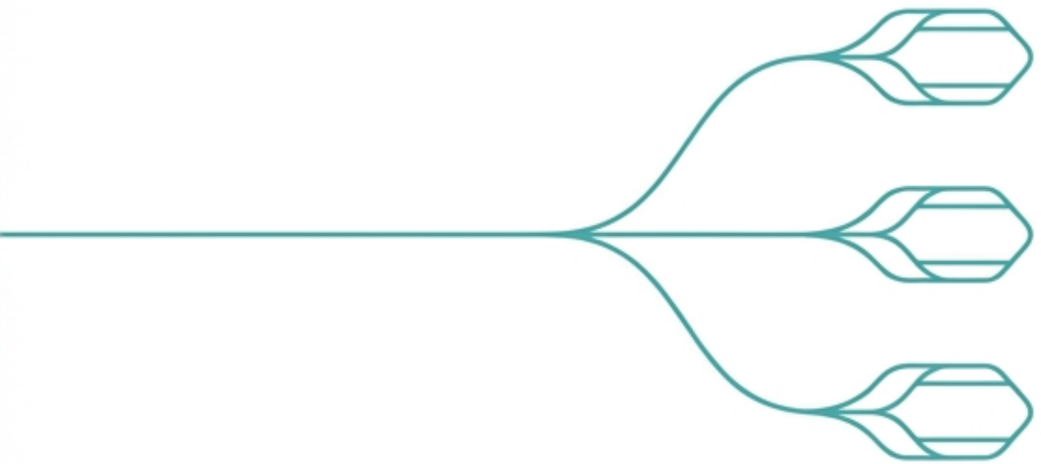


Stable Angina: **The Clinical Decision Pathway**

Evidence-based diagnosis, pharmacotherapy, and revascularization guidelines for Australian practice.

Sourced from Med2Date Clinical Guidelines (ESC 2019/2024 & NHFA/CSANZ 2023 aligned).

The Australian Burden of Chronic Flow-Limiting CAD

1.2 Million
Australians

Prevalence of coronary heart disease, accounting for 5.1% of total DALYs (2023).

>90,000
Hospital Admissions

Annual ICD-10 I25 admissions, disproportionately affecting regional/remote areas (20-40% higher).

2 Million
GP Encounters

Costing the healthcare system $2.6 billion annually, driven by morbidity and quality-of-life impacts.

Pathophysiology: The Supply-Demand Mismatch

Symptoms trigger when stenosis exceeds 50–70% of vessel lumen diameter, reducing coronary flow reserve (CFR).

Reduced Supply

- Fixed epicardial stenosis
- Coronary microvascular dysfunction (up to 40% of non-obstructive cases, measurable via CFR/IMR)
- Coronary spasm
- Anaemia, Hypoxia

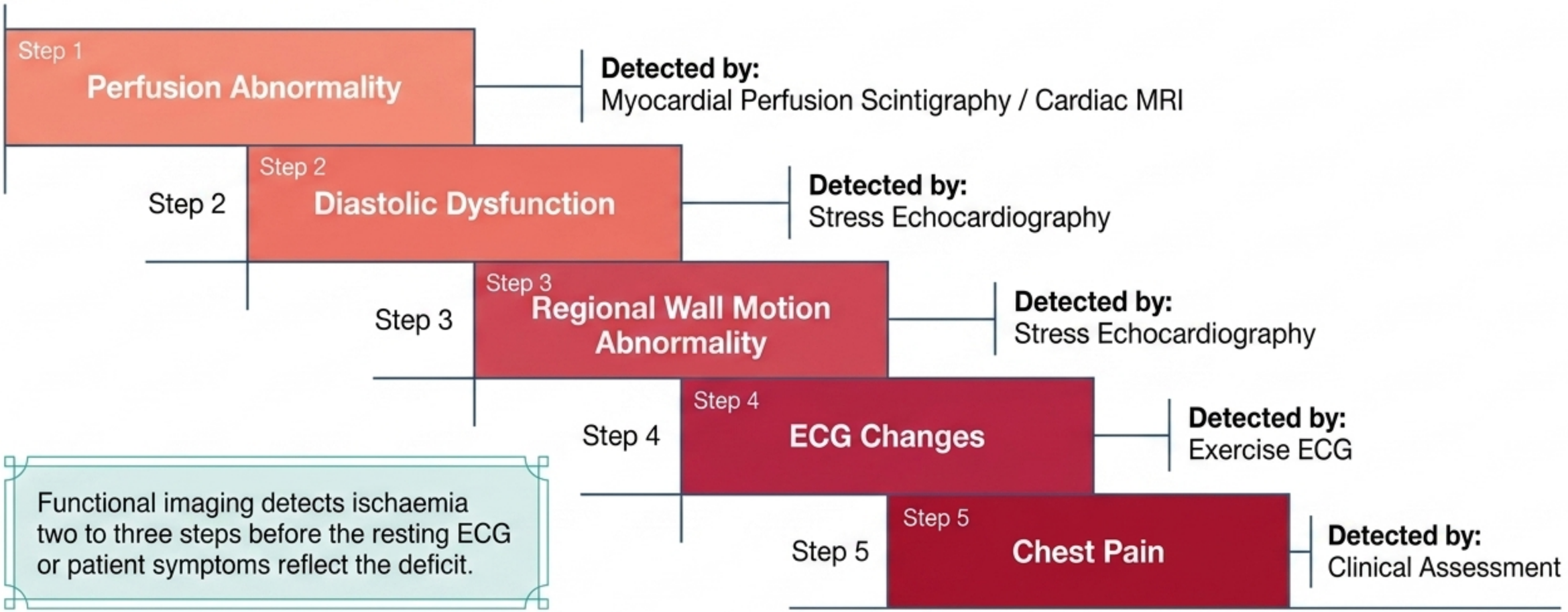
Increased Demand

- Tachycardia (shortens diastolic filling)
- Hypertension
- Left Ventricular Hypertrophy (LVH)
- Catecholamine excess

Key Insight: Tachycardia dramatically increases demand while simultaneously **cutting the supply window** (diastolic filling time) — making heart rate control the absolute **cornerstone of therapy.**

The Ischaemic Cascade

The Ischaemic Cascade Staircase



Functional imaging detects ischaemia two to three steps before the resting ECG or patient symptoms reflect the deficit.

Clinical Presentation & Triage

Symptom Characterization

Typical

- Retrosternal heaviness/tightness.
- Provoked by exertion/stress.
- Relieved within 2–10 mins by rest or GTN.

Atypical

- Radiation to arm/jaw/epigastrium.
- Associated dyspnoea, nausea.
- Provoked by cold weather or heavy meals.

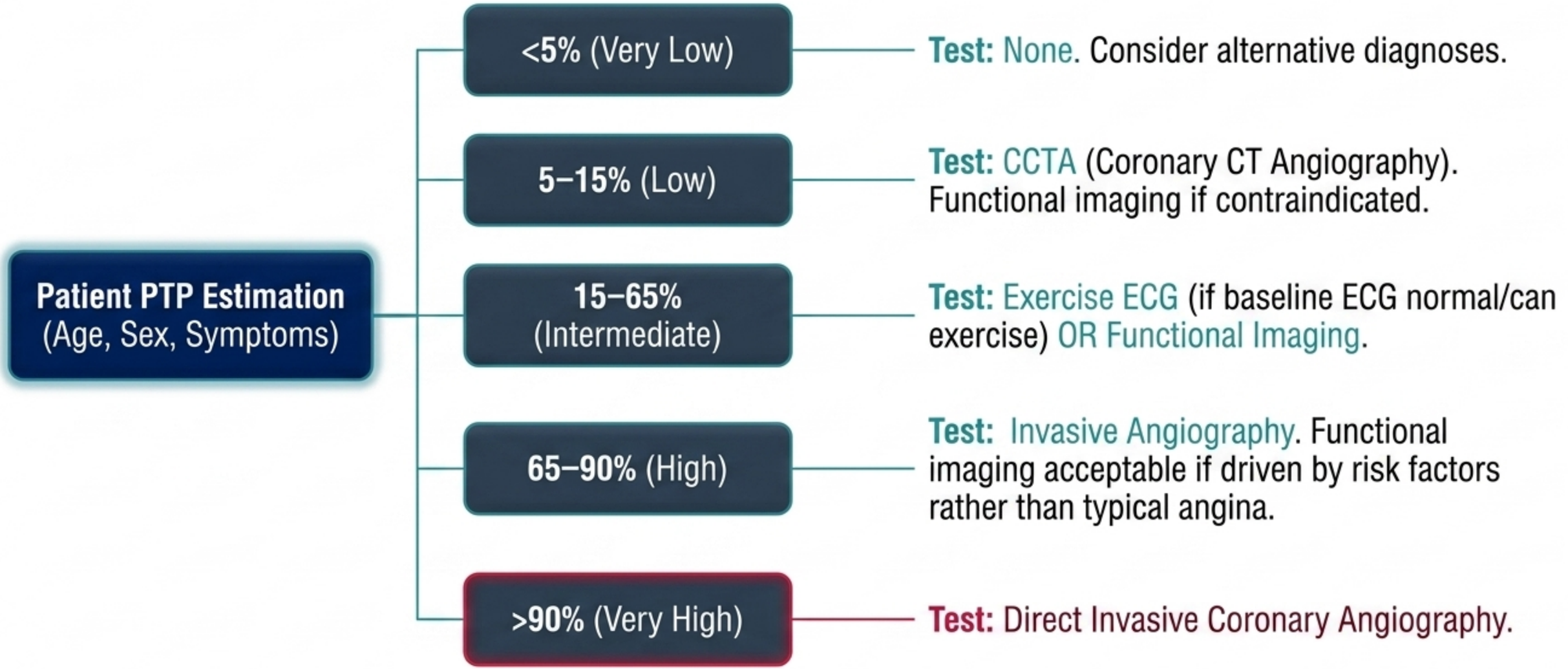
CRIMSON RED FLAG - Urgent Assessment Required

Rule out Unstable Angina / ACS immediately if:

- Rest pain occurs.
- Crescendo pattern (increasing frequency/duration).
- Haemodynamic instability or syncope.
- New-onset heart failure.

Action: Immediate cardiology referral and troponin assessment.

Diagnostic Escalation Flowchart (ESC 2019/2024)



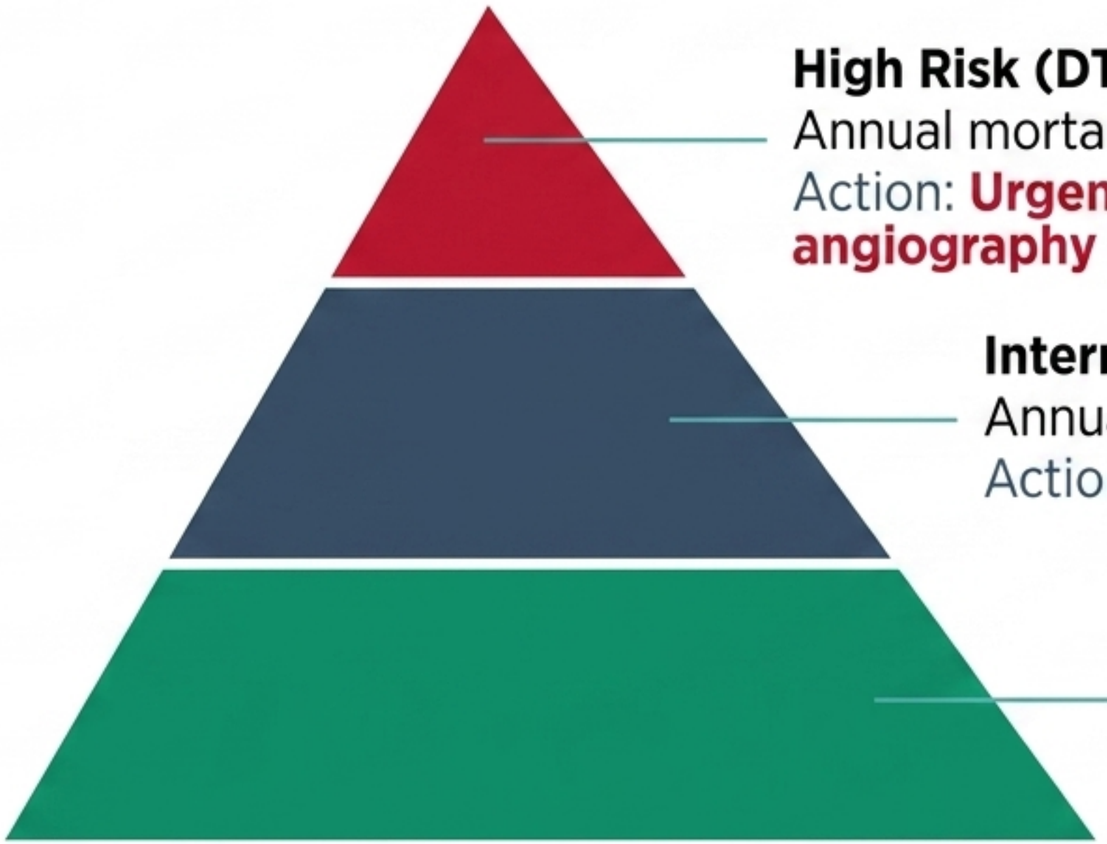
The Non-Invasive Testing Matrix

Modality	Sens/Spec	Best Use Case	MBS / Access
Exercise ECG	68% / 77%	Intermediate PTP, normal resting ECG.	MBS: 11712
CCTA (CT Angio)	~97% / ~99%	Low-to-intermediate PTP, ruling out CAD. Reduces MI per PROMISE/SCOT-HEART.	MBS: 57360
Stress Echocardiography	~80% / ~85%	Inducible wall motion abnormalities, zero radiation.	MBS: 55121
Myocardial Perfusion (MPS)	~85% / ~80%	Localization/quantification of ischaemia, LBBB, paced rhythms.	MBS: 61354
Cardiac MRI Stress	~90% / ~85%	Highest spatial resolution.	Restricted to tertiary centers.

The Clinical Blueprint

Prognostic Stratification: The Duke Treadmill Score (DTS)

$$\mathbf{DTS} = \text{Exercise time (min)} - (5 \times \text{ST-deviation mm}) - (4 \times \text{angina index}).$$



High Risk (DTS ≤ -11)
Annual mortality: 5.25%
Action: **Urgent invasive coronary angiography required.**

Intermediate Risk (DTS -10 to +4)
Annual mortality: 1.25%
Action: **Heart Team discussion.**

Low Risk (DTS ≥ +5)
Annual mortality: 0.25%
Action: **Manage with OMT.**

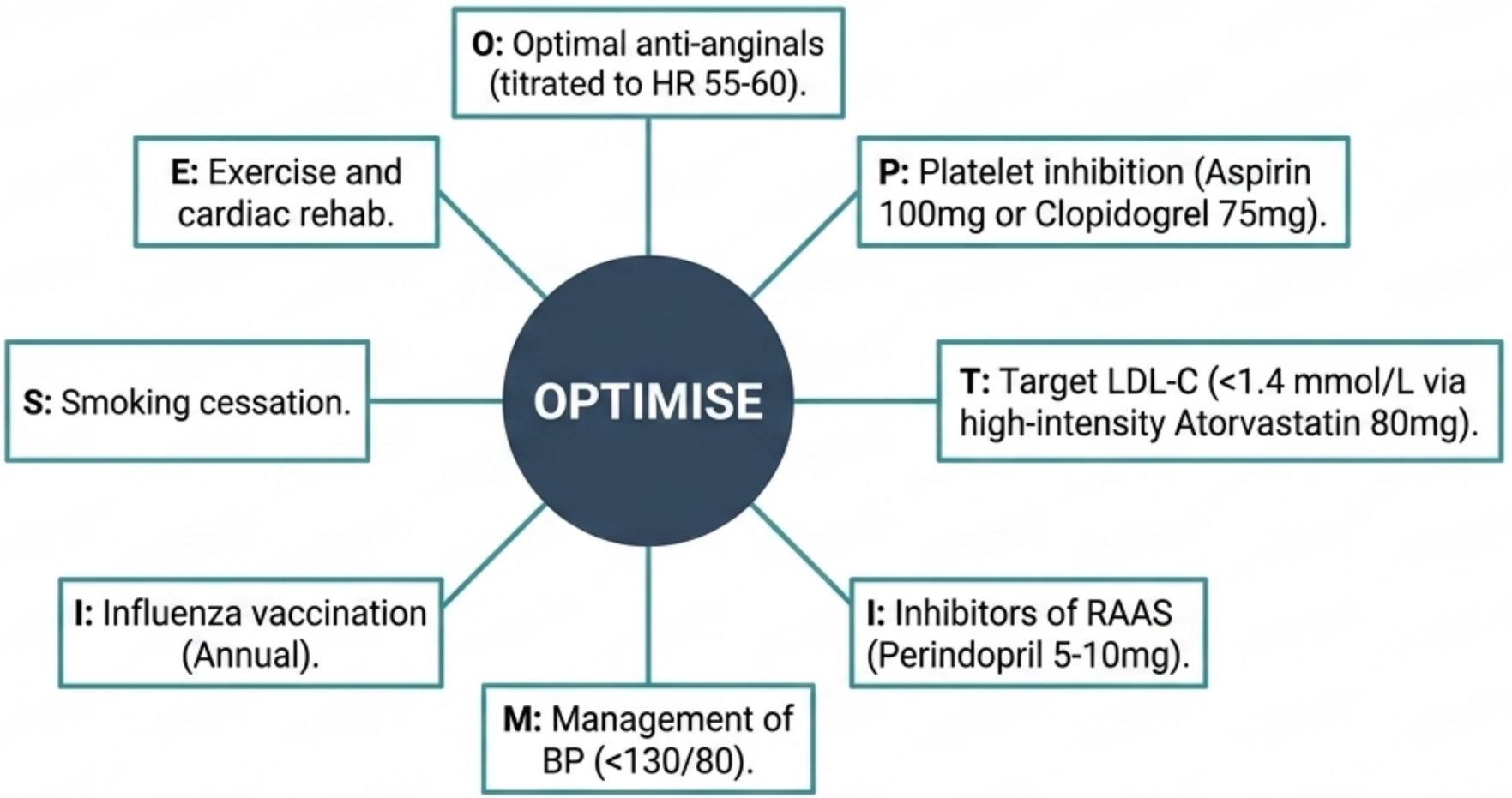
The Anti-Anginal Pharmacopoeia

Beta-Blockers (Metoprolol 50-200mg, Atenolol 50-100mg)	**Target:** Resting HR 55-60. **Avoid in:** Asthma, severe bradycardia.
Non-DHP CCBs (Verapamil 180-480mg, Diltiazem 180-360mg)	**Mechanism:** Rate-limiting. Hepatic dose adjustment needed.
DHP CCBs (Amlodipine 5-10mg)	**Mechanism:** Mechanism: Vasodilator, minimal HR effect. Safe add-on to BB.
Nitrates (SL GTN 300-600mcg PRN; Isosorbide Mononitrate 30-60mg)	**Mechanism:** Rule: 10-14hr nitrate-free interval required. Avoid PDE-5 inhibitors.
Ranolazine (375-750mg BD)	**Mechanism:** Mechanism: Late sodium current inhibitor. **Use:** Use: 3rd line. CYP3A4 interaction warning.

CRIMSON RED FLAG: Do NOT combine Verapamil/Diltiazem with Beta-blockers in HFrEF — risk of severe bradycardia, AV block, and decompensation.

Disease-Modifying Therapy: The OPTIMISE Framework

Mandatory secondary prevention for all CAD patients, regardless of symptoms or revascularization status.



Revascularization Escalation: When to Refer

Symptom-Driven (CCS Class III-IV)

Trigger: Persistent angina limiting life despite OMT for > ≥3 months.

Evidence Badge
COURAGE trial (PCI improves symptoms, no mortality difference over OMT alone).

Prognostic Benefit (High-Risk Anatomy)

Trigger: Left main >50%, Proximal LAD >70%, Multivessel disease with reduced EF.

Evidence Badge
SYNTAX trial (mortality reduction).

Objective Ischaemia Burden

Trigger: >10% of LV affected on functional imaging.

Evidence Badge
ISCHEMIA trial (OMT initial strategy is safe for moderate ischaemia; invasive management improves QOL).

The Heart Team Requirement: A documented case review by an interventional cardiologist, surgeon, and physician is mandated.

The Revascularization Decision Engine: PCI vs. CABG

Favour PCI		Favour CABG
SYNTAX score 0–22.	**Anatomical Complexity**	SYNTAX score >22.
Ostial/shaft lesion.	**Left Main Disease**	Distal bifurcation, LV dysfunction.
Simple 1 or 2-vessel disease.	**Diabetes Status**	Multivessel CAD (FREEDOM trial proves CABG superior for survival).
Preserved (EF >50%).	**LV Function**	Reduced (EF <50%), especially with viable myocardium.
High surgical risk (STS >5%), desires shorter recovery. MBS Wait: Elective PCI 30-60 days.	**Frailty / Access**	Low surgical risk, durable result desired.

Lifestyle Modification: Evidence-Based Prescriptions

Exercise Prescription

Dose: ≥150 min/wk moderate aerobic + 2 sessions resistance.

Benefit: Cardiac rehab (MBS 699) reduces CV mortality by **20-30%.**

Note: Use pre-exercise prophylactic GTN.

Nutritional Prescription

Protocol: Mediterranean-style diet (PREDIMED trial).

Limits: Saturated fat <7%, Sodium <2000mg, Alcohol ≤10 drinks/week.

Yields: Yields **25-30%** reduction in **MACE**.

Weight & Metabolic Optimization

Target: **BMI 20–25 kg/m^2.**

Insight: **GLP-1 agonists (Semaglutide/Liraglutide)** show major **CV risk reduction** in trials (SUSTAIN-6, SELECT).

Smoking Cessation Pharmacological Bridging

Reduces CV mortality by 36% within 2–5 years.

Varenicline - PBS covered

Days 1-3	Days 4-7	Days 4-7	Weeks 2-12
0.5mg daily	0.5mg BD	0.5mg BD	1mg BD

Day 1 Day 3 Day 4 Day 7 Week 2 Week 8 Week 10 Week 12

Efficacy: Highest single-agent success (OR 2.2). **Renal adj:** Max 0.5mg BD if eGFR <30.

Combination NRT

Weeks 1-8	Weeks 8-10	Weeks 10-12
21mg patch + PRN oral gum/spray	14mg patch	7mg patch

Cardiac Safety: Fully safe in stable CAD; avoids bolus nicotine peaks.

Contextual Prescribing: Life Stages

Pregnancy

Safe: Metoprolol, Low-dose Aspirin, **GTN**.
CONTRAINDICATED: Statins (Category X - cease 1mo pre-conception) and **ACEi/ARBs** (fetopathy). **Avoid Atenolol** (growth restriction).

Paediatrics

Exceedingly rare. Screen for **Kawasaki disease** aneurysms or **ALCAPA**. Low-dose aspirin lifelong for persistent aneurysms. Consult tertiary protocols.

Elderly (≥75 years)

High **atypical presentation** rate. Start BBs at half-dose.
Polypharmacy risk: **bleeding** with aspirin requires **GI protection** (PPIs).
Frailty scoring essential before revascularization.

Contextual Prescribing: Organ Dysfunction & Immunity

Renal Impairment (CKD)

- **Atenolol** must be **dose-reduced** (renally cleared)
- **Ranolazine avoided** if eGFR <15
- **Contrast limits** and **IV pre-hydration** required pre-angiography to prevent AKI

Hepatic Impairment

- **Verapamil** requires 50-70% **dose reduction** (high first-pass metabolism)
- **Avoid long-acting nitrates** in severe impairment due to massive bioavailability/hypotension risk

Immunocompromised / HIV

- **Protease inhibitors** (Ritonavir) heavily inhibit CYP3A4
- **AVOID** Verapamil, Diltiazem, Ranolazine. Max Atorvastatin 20mg
- **Calcineurin inhibitors** increase **statin toxicity**

First Nations Cardiovascular Health

The Gap

- **1.7–2.0x higher** disease burden.
- **10-15 years** earlier onset.
- **40% smoking** prevalence.
- **Geographic isolation** delays imaging/PCI access.

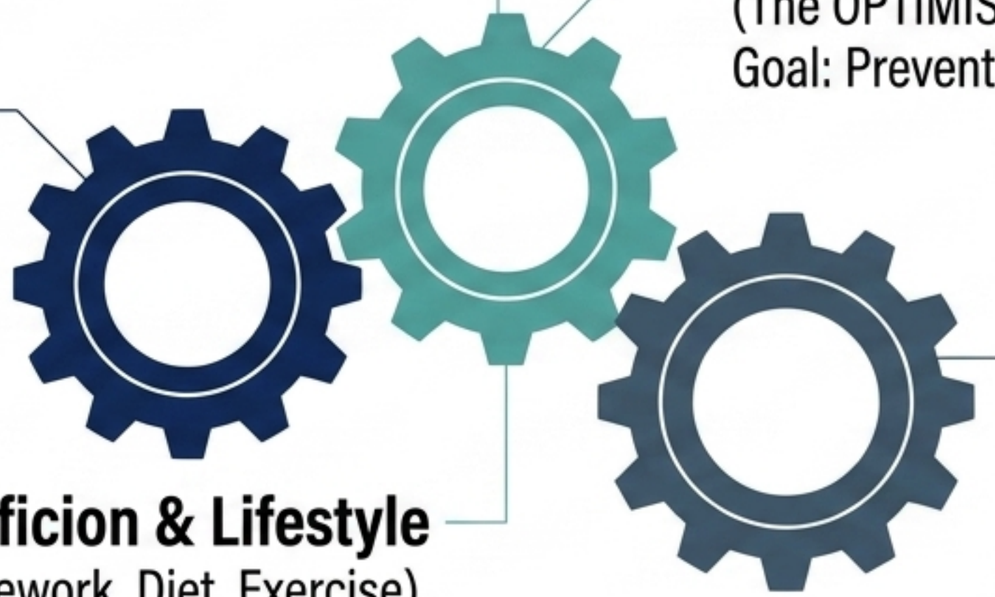
Actionable Pathways

- **Screening:** Opportunistic MBS 715 checks + AusCVDRisk tool.
- **Access:** Utilize PBS Close the Gap (CtG) co-payments for zero-cost Varenicline/NRT.
- **Communication:** Employ ‘Yarning’ and involve Indigenous Health Workers. Ensure flexibility for cultural obligations.
- **Rehab:** Refer to ACCHSs culturally tailored models (e.g., Yarning Circles) or tele-rehab.

Synthesis: The Holistic Angina Care Model

Disease Modification & Lifestyle
(The OPTIMISE framework, Diet, Exercise).
Goal: Prevent MI & CV Mortality.

Symptom Control
(Anti-anginals, GTN, Revascularization).
Goal: Improve Quality of Life.



Patient Context
(Renal/Hepatic status, Life Stage, Cultural Safety).
Goal: Ensure Adherence & Safety.

Disease Modificion & Lifestyle
(The OPTIMISE framework, Diet, Exercise).
Goal: Prevent MI & CV Mortality.

Core Insight: Treating the anatomical stenosis without aggressively optimizing the lifestyle, context, and secondary prevention yields incomplete care. Long-term survival relies on the integration of all three gears.