

MSAC Application 1736

Lipoprotein(a) testing as an independent predictor of cardiovascular disease

This application form is to be completed for new and amended requests for public funding (including but not limited to the Medicare Benefits Schedule (MBS)). It describes the detailed information that the Australian Government Department of Health requires to determine whether a proposed medical service is suitable.

Please use this template, along with the associated Application Form Guidelines to prepare your application. Please complete all questions that are applicable to the proposed service, providing relevant information only. Applications not completed in full will not be accepted.

Should you require any further assistance, departmental staff are available through the Health Technology Assessment Team (HTA Team) on the contact numbers and email below to discuss the application form, or any other component of the Medical Services Advisory Committee process.

Email: hta@health.gov.au

Website: www.msac.gov.au

PART 1 – APPLICANT DETAILS

1. Applicant details (primary and alternative contacts)

Corporation / partnership details (where relevant):

Corporation name: The Royal College of Pathologists of Australasia

ABN: 52 000 173 231

Business trading name: The Royal College of Pathologists of Australasia

Primary contact name: REDACTED

Alternative contact numbers

Business: **REDACTED**

Mobile: **REDACTED**

Email: **REDACTED**

Alternative contact name: REDACTED

Alternative contact numbers

Business: **REDACTED**

Mobile: **REDACTED**

Email: **REDACTED**

2. (a) Are you a lobbyist acting on behalf of an Applicant?

- Yes
 No

(b) If yes, are you listed on the Register of Lobbyists?

N/A

PART 2 – INFORMATION ABOUT THE PROPOSED MEDICAL SERVICE

3. Application title

Lipoprotein(a) testing as an independent predictor of cardiovascular disease

4. Provide a succinct description of the medical condition relevant to the proposed service (no more than 150 words – further information will be requested at Part F of the Application Form)

Coronary heart disease (CHD) due to atherosclerosis (an accumulation of lipids and inflammatory mediators in the artery wall, causing a blockage of the blood supply to the heart) is a leading cause of death in Australia and a major contributor to the overall burden of disease. In many cases, CHD is a preventable disease associated with several modifiable risk factors such as overweight and obesity, smoking, hypertension, an atherogenic lipid profile (increased lipoprotein(a), LDL-cholesterol and/or triglycerides with low HDL-cholesterol) (AIHW 2020).

Lp(a) comprises an LDL-like particle bound to a molecule of apolipoprotein(a), which is encoded by the highly polymorphic *LPA* gene. Lp(a) levels tend to remain relatively constant over a person's lifetime and are not significantly influenced by age, sex, physical activity, changes in diet nor with most drugs used to treat high cholesterol. Statins, commonly used to lower LDL-cholesterol, do not lower Lp(a). (Nicholls & Nelson 2019)). Studies have conclusively demonstrated that despite optimal lipid lowering statin therapy, high levels of Lp(a) remain a strong risk factor for cardiovascular events (O'Donoghue et al 2019; Thanassoulis 2019) and are a major component of "residual risk:" the risk of coronary artery disease that remains despite optimising all other modifiable risk factors such as smoking, hypertension and obesity.

5. Provide a succinct description of the proposed medical service (no more than 150 words – further information will be requested at Part 6 of the Application Form)

Lp(a) can be measured using a variety of methods, including enzyme linked immunosorbent assays (ELISA), latex-agglutination, immunoturbidimetry/immunonephelometry, electrophoresis, and immunofixation electrophoresis (IFE) (Wyness & Genzen 2021) or mass spectrometry.

An Lp(a) item number is intended to identify those individuals considered to be at moderate risk for CHD based on standard risk assessment tools and measurement of total cholesterol, high-density lipoprotein (HDL) cholesterol, non-HDL cholesterol, and triglyceride concentrations.

Measurement of Lp(a) should be considered in:

- adults to assess or stratify CVD risk in those with the following clinical features: a personal history of premature CVD (<60 years), family history of premature CVD, family history of high Lp(a)(>200 nmol/L), familial hypercholesterolaemia, significant renal impairment, early onset calcific aortic stenosis (<60 years);
- those with moderate 10 year CVD risk (10-15%) when classical risk algorithms are used such as the Framingham risk score, the PROCAM risk score, the ESC Heart Score or the Australian and New Zealand risk calculator;
- those with recurrent or progressive CVD despite optimally treated plasma LDL-C concentrations; or
- children and adolescents with familial hypercholesterolaemia, premature CVD, a first-degree relative with significantly elevated Lp(a) (>200 nmol/L), a family history of premature ASCVD.

Individuals at moderate risk found to have elevated Lp(a) levels would be reclassified as being at *high-risk* of CVD based and would benefit from more aggressive and intensive risk factor modification to reduce their risk of CVD. Lp(a) testing of first-degree relatives of individuals with high levels of Lp(a) should also be offered to allow risk modification before CVD develops.

6. (a) Is this a request for MBS funding?

- Yes
 No

(b) If yes, is the medical service(s) proposed to be covered under an existing MBS item number(s) or is a new MBS item(s) being sought altogether?

- Amendment to existing MBS item(s)
 New MBS item(s)

(c) If an amendment to an existing item(s) is being sought, please list the relevant MBS item number(s) that are to be amended to include the proposed medical service:

N/A

(d) If an amendment to an existing item(s) is being sought, what is the nature of the amendment(s)?

N/A

(e) If a new item(s) is being requested, what is the nature of the change to the MBS being sought?

- A new item which also seeks to allow access to the MBS for a specific health practitioner group
 A new item that is proposing a way of clinically delivering a service that is new to the MBS (in terms of new technology and / or population)
 A new item for a specific single consultation item
 A new item for a global consultation item(s)

(f) Is the proposed service seeking public funding other than the MBS?

- Yes
 No

(g) If yes, please advise:

N/A

7. What is the type of service:

- Therapeutic medical service
 Investigative medical service
 Single consultation medical service
 Global consultation medical service
 Allied health service
 Co-dependent technology
 Hybrid health technology

8. For investigative services, advise the specific purpose of performing the service (which could be one or more of the following):

- To be used as a screening tool in asymptomatic populations ONLY in targeted groups
 Assists in establishing a diagnosis in symptomatic patients
 Provides information about prognosis
 Identifies a patient as suitable for therapy by predicting a variation in the effect of the therapy
 Monitors a patient over time to assess treatment response and guide subsequent treatment decisions

9. Does your service rely on another medical product to achieve or to enhance its intended effect?

- Pharmaceutical / Biological
 Prosthesis or device
 No

10. (a) If the proposed service has a pharmaceutical component to it, is it already covered under an existing Pharmaceutical Benefits Scheme (PBS) listing?

N/A

(b) If yes, please list the relevant PBS item code(s):

N/A

(c) If no, is an application (submission) in the process of being considered by the Pharmaceutical Benefits Advisory Committee (PBAC)?

N/A

(d) If you are seeking both MBS and PBS listing, what is the trade name and generic name of the pharmaceutical?

N/A

11. (a) If the proposed service is dependent on the use of a prosthesis, is it already included on the Prostheses List?

N/A

(b) If yes, please provide the following information (where relevant):

N/A

(c) If no, is an application in the process of being considered by a Clinical Advisory Group or the Prostheses List Advisory Committee (PLAC)?

N/A

(d) Are there any other sponsor(s) and / or manufacturer(s) that have a similar prosthesis or device component in the Australian market place which this application is relevant to?

N/A

(e) If yes, please provide the name(s) of the sponsor(s) and / or manufacturer(s):

N/A

12. Please identify any single and / or multi-use consumables delivered as part of the service?

Single use consumables: Standard laboratory consumables

Multi-use consumables: N/A

PART 3 – INFORMATION ABOUT REGULATORY REQUIREMENTS

The National Association of Testing Authorities (NATA) and the Royal College of Pathologists Australasia (RCPA) oversee the regulation of pathology testing for clinical purposes.

Note: A non-commercial IVD is required to be regulated but not to be listed on the ARTG: testing using an IVD would be delivered only by Approved Practising Pathologists in NATA Accredited Pathology Laboratories (as defined in MBS Pathology table) by referral only by registered Medical Practitioners (non-pathologists) in line with other tests in the MBS Pathology Table.

- 13. (a) If the proposed medical service involves the use of a medical device, in-vitro diagnostic test, pharmaceutical product, radioactive tracer or any other type of therapeutic good, please provide the following details:**

Type of therapeutic good: N/A

Manufacturer's name: N/A

Sponsor's name: N/A

- (b) Is the medical device classified by the TGA as either a Class III or Active Implantable Medical Device (AIMD) against the TGA regulatory scheme for devices?**

- Class III
 AIMD
 Class II IVD

- 14. (a) Is the therapeutic good to be used in the service exempt from the regulatory requirements of the *Therapeutic Goods Act 1989*?**

- Yes (If yes, please provide supporting documentation as an attachment to this application form)
 No

- (b) If no, has it been listed or registered or included in the Australian Register of Therapeutic Goods (ARTG) by the Therapeutic Goods Administration (TGA)?**

- Yes (if yes, please provide details below)
 No

- 15. If the therapeutic good has not been listed, registered or included in the ARTG, is the therapeutic good in the process of being considered for inclusion by the TGA?**

- Yes (please provide details below)
 No

- 16. If the therapeutic good is not in the process of being considered for listing, registration or inclusion by the TGA, is an application to the TGA being prepared?**

N/A

PART 4 – SUMMARY OF EVIDENCE

17. Provide an overview of all key journal articles or research published in the public domain related to the proposed service that is for your application (limiting these to the English language only). *Please do not attach full text articles, this is just intended to be a summary.*

	Type of study design	Title of journal article or research project	Short description of research	Website link to journal article or research
1.	Guidelines USA (2019) (Grundy et al 2019)	2018 AHA/ACC/AACVPR/AAPA/ ABC/ACPM/ADA/AGS/APhA/ ASPC/NLA/PCNA Guideline on the Management of Blood Cholesterol A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines	An Lp(a) ≥ 50 mg/dL or ≥ 125 nmol/L, Lp(a) may be considered an ASCVD risk-enhancing factor.	https://pubmed.ncbi.nlm.nih.gov/30586774/
2	Consensus statement UK (2019) (Cegla et al 2019)	HEART UK consensus statement on Lipoprotein(a): A call to action	This consensus statement by HEART UK is based on the evidence that Lp(a) is an independent CVD risk factor, provides recommendations for its measurement in clinical practice and reviews current and emerging therapeutic strategies to reduce CVD risk. HEART UK recommends that Lp(a) is measured in adults as follows: 1) those with a personal or family history of premature atherosclerotic CVD; 2) those with first-degree relatives who have Lp(a) levels > 200 nmol/l; 3) patients with familial hypercholesterolemia; 4) patients with calcific aortic valve stenosis and 5) those with borderline (but $< 15\%$) 10-year risk of a cardiovascular event. The management of patients with raised Lp(a) levels should include: 1) reducing overall atherosclerotic risk; 2) controlling dyslipidaemia with a desirable non-HDL-cholesterol level of < 100 mg/dl (2.5 mmol/l) and 3) consideration of lipoprotein apheresis	https://www.heartuk.org.uk/downloads/health-professionals/lp(a)-statement-of-care.pdf

	Type of study design	Title of journal article or research project	Short description of research	Website link to journal article or research
3	Systematic review UK (2016) (Forbes et al 2016)	The relationship between Lp(a) and CVD outcomes: a systematic review	60 studies including 10 RCTs, 37 prospective cohort studies and 13 nested case control studies were identified for inclusion. 39 studies were carried out in participants from the general population (patients not selected based on their baseline history or risk of CVD events) reported evidence of a statistically significant relationship between increased Lp(a) and an increased risk of future CVD (HR 1.16 to 2.97 and 1.01 to 3.7). Fourteen studies that assessed the relationship between Lp(a) and CVD outcomes in patients with previous CVD events reported a modest statistically significant relationship (HR from 0.75 to 3.7).	https://pubmed.ncbi.nlm.nih.gov/27184891/
4	Cohort Finland (2016) (Kunutsor et al 2016)	Lipoprotein(a) and risk of sudden cardiac death in middle-aged Finnish men: A new prospective cohort study	1,881 men (42-61 years) median follow-up of 24.7 years had plasma Lp(a) concentrations assessed at baseline and repeat measurements several years apart. During follow-up, 141 sudden cardiac deaths were recorded. Lp(a) levels were log-linearly associated with risk of SCD. In analyses adjusted for established risk factors, the HR (95% CI) for SCD per 1 standard deviation (3.56-fold) higher baseline loge Lp(a) was 1.24 (1.05-1.47; p=0.013). This remained consistent on further adjustment for alcohol consumption, resting heart rate, lipids, and C-reactive protein 1.23 (1.04-1.46; p=0.018). HRs remained unchanged after accounting for incident coronary events and did not vary importantly in several relevant clinical subgroups.	https://pubmed.ncbi.nlm.nih.gov/27393854/

	Type of study design	Title of journal article or research project	Short description of research	Website link to journal article or research
5	Post-hoc analysis of data pooled from 10 phase 3 ODYSSEY RCTs Clinical utility UK (2019) (Ray et al 2019)	Lipoprotein(a) reductions from PCSK9 inhibition and major adverse cardiovascular events: Pooled analysis of alirocumab phase 3 trials	10 phase 3 ODYSSEY trials comparing alirocumab (a PCSK9-inhibitor) with control (placebo or ezetimibe) in patients (n=4,983) with cardiovascular disease and/or risk factors, and hypercholesterolemia despite statin/other lipid-lowering therapies. No significant relationship between lowering Lp(a) levels and major adverse cardiac events (MACE) was reported. However, Cesaro et al (2021) reported that most patients in these studies had low median baseline levels of Lp(a) (<50 mg/dl) and, consequently, the reduction observed in absolute terms was small. After adjustment for baseline Lp(a), the reduction in Lp(a) obtained by alirocumab was found to be significantly associated with a lower risk of MACE.(Cesaro et al 2021)	https://pubmed.ncbi.nlm.nih.gov/31253441/ https://pubmed.ncbi.nlm.nih.gov/32858625/
6.	Case-control Multicentre (2019) (Paré et al 2019)	Lipoprotein(a) Levels and the Risk of Myocardial Infarction Among 7 Ethnic Groups	INTERHEART is a large, international, standardized, case–control study designed to determine the association between various risk factors and nonfatal acute MI in a total of 15,152 cases and 14,820 controls from 52 countries. Overall, high Lp(a) concentrations (>50 mg/dL) were associated with an increased risk of MI (OR 1.48; 95% CI, 1.32–1.67; p<0.001). The association was independent of established MI risk factors, including diabetes mellitus, smoking, high blood pressure, and apolipoprotein B and A ratio.	https://pubmed.ncbi.nlm.nih.gov/30667276/

	Type of study design	Title of journal article or research project	Short description of research	Website link to journal article or research
7	RCT Clinical utility Multicentre (2019) (O'Donoghue et al 2019)	Lipoprotein(a), PCSK9 Inhibition, and Cardiovascular Risk	<p>The FOURIER trial was a randomized, double-blind, placebo controlled clinical trial (n= 27,564) patients aged between 40- 85 years, with atherosclerotic CV disease, determined by a prior MI, prior non-haemorrhagic stroke, or symptomatic peripheral artery disease, in addition to predictors of high CV risk.</p> <p>The median (interquartile range) baseline Lp(a) concentration was 37 (13–165) nmol/L. In the placebo arm, patients with baseline Lp(a) in the highest quartile had a higher risk of coronary heart disease death, myocardial infarction, or urgent revascularization (adjusted HR quartile 4: quartile 1, 1.22; 95% CI, 1.01–1.48) independent of low-density lipoprotein cholesterol. At 48 weeks, evolocumab significantly reduced Lp(a) by a median (interquartile range) of 26.9% (6.2%–46.7%). The percent change in Lp(a) and low-density lipoprotein cholesterol at 48 weeks in patients taking evolocumab was moderately positively correlated ($r=0.37$, $p<0.001$). Evolocumab reduced the risk of coronary heart disease death, MI, or urgent revascularisation by 23% (HR 0.77) in patients with a baseline Lp(a) >median, and by 7% (HR 0.93, p interaction=0.07) in those \leqmedian. Coupled with the higher baseline risk, the absolute risk reductions, and number needed to treat over 3 years were 2.49% and 40 versus 0.95% and 105, respectively.</p>	https://pubmed.ncbi.nlm.nih.gov/30586750/
8	Cohort UK Biobank (2021) (Patel et al 2021)	Lp(a) (Lipoprotein[a]) Concentrations and Incident Atherosclerotic Cardiovascular Disease New Insights From a Large National Biobank	<p>The UK Biobank is a prospective, observational cohort of ~500 000 UK residents, 40 to 69 years old, recruited in 2006 to 2010. Relationship of Lp(a) to incident ASCVD was studied in 460 506 middle-aged UK Biobank participants. Over a median follow-up of 11.2 years, incident ASCVD occurred in 22 401 (4.9%) participants. Median Lp(a) concentration was 19.6 nmol/L (25th–75th percentile 7.6–74.8). The relationship between Lp(a) and ASCVD appeared linear across the distribution, with a HR of 1.11 (95% CI, 1.10–1.12) per 50 nmol/L increment. A high Lp(a) concentration defined as ≥ 150 nmol/L was present in 12.2% of those without and 20.3% of those with pre-existing ASCVD and associated with HR of 1.50 and 1.16, respectively.</p>	https://pubmed.ncbi.nlm.nih.gov/33115266/

	Type of study design	Title of journal article or research project	Short description of research	Website link to journal article or research
9	Cohort UK Biobank (2021) (Finneran et al 2021)	Lipoprotein(a) and Coronary Artery Disease Risk Without a Family History of Heart Disease	343,728 individuals without prevalent CAD and with Lp(a) measured, of whom 86.8% (n=298,461) did not report a family history of heart disease, and 153,228 had a follow-up time of <9 years. Mean age 58.4 ± 7.9 years and median (interquartile range) Lp(a) was 18.6 nmol/L (7.4–72.9 nmol/L). HR for incident CAD per 50 nmol/L Lp(a) among those with a family history was 1.18 (p<0.001) and was 1.15 (p<0.001) among those without (P[interaction]=0.73). In the secondary analyses, the HR for incident atherosclerotic cardiovascular disease per 50 nmol/L Lp(a) in those with a family history was 1.15 (p<0.001) and 1.12 (p<0.001) for those without (P[interaction]=0.66).	https://pubmed.ncbi.nlm.nih.gov/33631942/
10	Cohort UK Biobank (2020) (Welsh et al 2020)	Lipoprotein(a) and cardiovascular disease: prediction, attributable risk fraction, and estimating benefits from novel interventions	In 413,734 participants Lp(a) with composite fatal/non-fatal CVD (n = 10,066 events), fatal CVD (n = 3,247), CHD (n = 18,292), peripheral vascular disease (n = 2,716), and aortic stenosis (n = 901) were compared. About 20.8% had Lp(a) values >100 nmol/L; 9.2% had values >175 nmol/L. After adjustment for risk factors, Lp(a) was associated with a HR for fatal/non-fatal CVD of 1.12. Similar associations were observed with fatal CVD, CHD, PVD, and aortic stenosis. Adding Lp(a) to a prediction model containing traditional CVD risk factors in a primary prevention group improved the C-index by +0.0017 (95% CI 0.0008-0.0026). In the whole cohort, Lp(a) above 100 nmol/L was associated with a population attributable fraction (PAF) of 5.8%, and for Lp(a) above 175 nmol/L the PAF was 3.0%. Assuming causality and an achieved Lp(a) reduction of 80%, an ongoing trial to lower Lp(a) in patients with CVD and Lp(a) above 175 nmol/L may reduce CVD risk by 20.0% and CHD by 24.4%. Similar benefits were also modelled in the whole cohort, regardless of baseline CVD.	https://pubmed.ncbi.nlm.nih.gov/33624048/

	Type of study design	Title of journal article or research project	Short description of research	Website link to journal article or research
11	Cohort Netherlands (2021) (Kaiser et al 2021)	Lipoprotein(a) is robustly associated with aortic valve calcium	2,412 participants from the population-based Rotterdam Study and 859 healthy individuals from the Amsterdam University Medical Centers (UMC) outpatient clinic. All individuals underwent determination of Lp(a) concentration and cardiac CT to assess aortic valve calcium (AVC). Prevalence of AVC was 33.1% in the Rotterdam Study and 5.4% in the Amsterdam cohort. Higher Lp(a) concentrations were independently associated with presence of AVC in both cohorts (OR per 50 mg/dL increase in Lp(a): 1.54 in the Rotterdam Study cohort and 2.02 in the Amsterdam cohort). Lp(a) is robustly associated with presence of AVC in a wide age range of individuals, providing further rationale to assess the effect of Lp(a) lowering interventions in individuals with early AVC to prevent end-stage aortic valve stenosis.	https://pubmed.ncbi.nlm.nih.gov/33963048/
12	Cohort China (2020) (Liu et al 2020)	Predicting Cardiovascular Outcomes by Baseline Lipoprotein(a) Concentrations: A Large Cohort and Long-Term Follow-up Study on Real-World Patients Receiving Percutaneous Coronary Intervention	4,078 stable coronary artery disease patients undergoing PCI from were categorised according to median of Lp(a) levels and Lp(a) values of <15 (low), 15 to 30 (medium), and ≥30 mg/dL (high). During an average of 4.9 years of follow-up, 315 (7.7%) cardiovascular events occurred. The events group had significantly higher Lp(a) levels than the non-events group. Compared with the low Lp(a) group, the high Lp(a) group had a significantly lower cumulative event-free survival rate, and significantly increased cardiovascular events risk. High Lp(a) levels could be associated with a poor prognosis after PCI in stable coronary artery disease patients, suggesting that Lp(a) measurements may be useful for patient risk stratification before selective PCI.	https://pubmed.ncbi.nlm.nih.gov/32013705/

	Type of study design	Title of journal article or research project	Short description of research	Website link to journal article or research
13	Cohort Denmark (2020) (Madsen et al 2020)	Lipoprotein(a)-Lowering by 50 mg/dL (105 nmol/L) May Be Needed to Reduce Cardiovascular Disease 20% in Secondary Prevention: A Population-Based Study	2,527 individuals aged 20 to 79 with a history of CVD from the Copenhagen General Population Study (n=58,527) with measurements of Lp(a) and 1,115 individuals with CVD from the Copenhagen City Heart Study and the Copenhagen Ischemic Heart Disease Study were studied. During a median follow-up of 5 years (range, 0-13), 493 individuals (20%) experienced a MACE in the CGPS. MACE incidence rates per 1,000 person-years were 29 (95% CI, 25-34) for individuals with Lp(a)<10 mg/dL, 35 (30-41) for 10 to 49 mg/dL, 42 (34-51) for 50 to 99 mg/dL, and 54 (42-70) for ≥100 mg/dL. Compared with individuals with Lp(a)<10 mg/dL (18 nmol/L), the adjusted MACE incidence rate ratios were 1.28 (95% CI, 1.03-1.58) for 10 to 49 mg/dL (18-104 nmol/L), 1.44 (1.12-1.85) for 50 to 99 mg/dL (105-213 nmol/L), and 2.14 (1.57-2.92) for ≥100 mg/dL (214 nmol/L). To achieve 20% and 40% MACE risk reduction in secondary prevention, we estimated that plasma Lp(a) should be lowered by 50 mg/dL and 99 mg/dL for 5 years.	https://pubmed.ncbi.nlm.nih.gov/31578080/
14	Case series Germany (2013) (Greif et al 2013)	Lipoprotein(a) is independently correlated with coronary artery calcification	1,560 European patients (1,123 men, age 59.3 ±2 0.8 years) with typical or atypical chest pain underwent coronary artery calcification (CAC) scoring by a multi-slice CT-scanner, using a standard protocol. Blood samples were evaluated using an automated particle enhanced immunoturbidimetric assay to determine Lp(a) serum levels. There was a positive correlation between CAC score, age, and common cardiovascular risk factors. Lp(a) serum levels were not associated with age but a positive correlation between Lp(a) serum levels and CAC was found. In the multivariate analysis age, diabetes, statin therapy, and Lp(a) could be identified as independent risk factors for CAC. (p< 0.001). BMI, smoking, hypertension and LDL-C were not independently associated with CAC.	https://pubmed.ncbi.nlm.nih.gov/23021791/

18. Identify yet to be published research that may have results available in the near future that could be relevant in the consideration of your application by MSAC (limiting these to the English language only). Please do not attach full text articles, this is just intended to be a summary.

	Type of study design*	Title of research (including any trial identifier if relevant)	Short description of research (max 50 words)**	Website link to research (if available)	Date***
1.	RCT	Assessing the Impact of Lipoprotein (a) Lowering With TQJ230 on Major Cardiovascular Events in Patients With CVD (Lp(a)HORIZON)	7,680 participants with elevated Lp(a) (≥ 70 mg/dL) randomised to receive TQJ230 or placebo. Primary endpoint: time to first major adverse cardiovascular event.	NCT04023552	Start Date : Dec 2019 Estimated Completion June 2024
2.	Cross sectional	Clinico-biological Collection of Subjects With Hyper Lipoprotein a in Reunion Island (COLLIPAR)	Lp (a) screening of 100 family members of patients with elevated Lp(a) levels > 200 nmol / L to explore any genetic link	NCT04310917	Start Date : Sept 2020 Estimated Completion June 2022
3.	RCT	Safety, Tolerability, Pharmacokinetics and Pharmacodynamics Study of AMG 890 in Subjects With Elevated Plasma Lipoprotein(a)	80 participants with elevated Lp(a) randomised to receive AMG 890 or placebo. Primary endpoint: incidence of adverse events	NCT03626662	Start Date : July 2018 Estimated Completion Aug 2022
4.	RCT	Olpasiran Trials of Cardiovascular Events And Lipoprotein(a) Reduction - DOSE Finding Study	290 participants with elevated Lp(a) (> 150 nmol/L) randomised to receive various doses of Olpasiran or placebo. Primary endpoint: Percent change in Lp(a)	NCT04270760	Start Date : July 2020 Estimated Completion March 2023
5.	RCT (double blind)	A Randomized Trial Assessing the Effects of Inclisiran on Clinical Outcomes Among People With Cardiovascular Disease (ORION-4)	15,000 participants aged >55 years with pre-existing atherosclerotic cardiovascular disease will be randomised to receive inclisiran sodium 300 mg or placebo. Inclisiran is a PCSK9 synthesis inhibitor which has been found to reduce LDL-cholesterol by about 50-60%, which in turn inhibits Lp(a) synthesis. Primary endpoint: time to first major adverse cardiovascular event.	NCT03705234	Start Date : Oct 2018 Primary completion date: July 2026 Estimated Completion Dec 2049

PART 5 – CLINICAL ENDORSEMENT AND CONSUMER INFORMATION

- 19. List all appropriate professional bodies / organisations representing the group(s) of health professionals who provide the service (please attach a statement of clinical relevance from each group nominated):**

The Royal College of Pathologists of Australasia (RCPA)

- 20. List any professional bodies / organisations that may be impacted by this medical service (i.e. those who provide the comparator service):**

It should be noted that the RCPA provides the comparator services, so no others would be impacted by the medical service. However, other organisations that may be relevant to the proposed medical service include:

Pathology Australia

Public Pathology Australia

Australasian Association of Clinical Biochemists

- 21. List the consumer organisations relevant to the proposed medical service (please attach a letter of support for each consumer organisation nominated):**

Australian Atherosclerosis Society

Cardiac Society of Australia and New Zealand

Endocrine Society of Australia

National Heart Foundation

Royal Australian College of General Practitioners (RACGP)

- 22. List the relevant sponsor(s) and / or manufacturer(s) who produce similar products relevant to the proposed medical service:**

N/A

- 23. Nominate two experts who could be approached about the proposed medical service and the current clinical management of the service(s):**

Name of expert 1: **REDACTED**

Telephone number(s): **REDACTED**

Email address: **REDACTED**

Justification of expertise: **REDACTED**

Name of expert 2: **REDACTED**

Telephone number(s): **REDACTED**

Email address: **REDACTED**

Justification of expertise: **REDACTED**

PART 6 – POPULATION (AND PRIOR TESTS), INTERVENTION, COMPARATOR, OUTCOME (PICO)

PART 6a – INFORMATION ABOUT THE PROPOSED POPULATION

24. Define the medical condition, including providing information on the natural history of the condition and a high level summary of associated burden of disease in terms of both morbidity and mortality:

Cardiovascular disease (CVD) encompasses coronary artery disease, cerebrovascular disease, peripheral artery disease and aortic atherosclerosis and thoracic or aortic aneurysms. Coronary artery disease accounts for up to 50% of CVD. Modifiable risk factors for developing CVD include high blood pressure, high levels of atherogenic cholesterol, overweight and obesity, physical inactivity, excessive alcohol consumption, poor diet and smoking. Most adult Australians have at least one of these risk factors, with three or more risk factors present in 25% of Australian adults (AIHW 2020).

Elevated levels of low-density lipoprotein cholesterol (LDL-C) have been demonstrated to be a major contributor to atherosclerosis leading to CVD events, with the risk of CVD significantly reduced with the use of drugs that reduce levels of LDL-C. However, many patients remain at risk of CVD and/or experience a CVD event despite significant lowering of their LDL-C levels. The 2016 systematic review by Forbes et al reported Lp(a) was an independent risk factor for coronary heart disease death, nonfatal myocardial infarction, and stroke. In addition, there was an independent positive association between Lp(a) and the risk of future CVD events both in the general population and in high risk populations, including those with diabetes, hypertension, or on dialysis (Forbes et al 2016). Approximately 1 in 5 individuals have Lp(a) levels >150 nmol/L, which is associated with 1.5-fold risk for CHD. Individuals with very high levels of Lp(a) may have an increased CHD risk of 4 - 8-fold compared with individuals with normal Lp(a). A family history of premature atherosclerotic cardiovascular disease is an indication for Lp(a) assessment for the prevention of adverse cardiovascular events, with elevated Lp(a) levels being an indication to recommend the use of statins (Cesaro et al 2021). Even though statin therapy does not lower Lp(a) concentrations, all patients, including those with normal LDL-cholesterol concentrations, benefit from LDL-cholesterol lowering if they have other major risk factors for CHD. Therefore, it is important to identify patients with elevated Lp(a).

Unlike most other types of cholesterol particles, Lp(a) levels tend to be genetically determined. Lp(a) levels tend to remain relatively constant over a person's lifetime and are not significantly influenced by age, sex, physical activity, changes in diet nor with most drugs used to treat high cholesterol, therefore Lp(a) levels should usually only be tested once per lifetime. Some patients with previously low Lp(a) levels may develop a high level of Lp(a) associated with chronic kidney disease, low oestrogen levels, nephrotic syndrome, hypothyroidism (Lab Tests Online Australasia 2021), and Lp(a) results in these patients for the assessment of CVD risk should be considered in this context.

CVD is a significant cause of morbidity and mortality. In 2018–19 CVD accounted for 5.2%, or 591,000, of all hospitalisations in Australia, the majority of which were for acute care (90% or 530,000). Of these, 27% had a principal diagnosis of coronary heart disease followed by atrial fibrillation (12%), heart failure and cardiomyopathy (12%) and stroke (11%). Hospitalisation rates for males with CHD are more than twice that of females. Of concern is the rate of hospitalisation among Indigenous Australians, which is 1.7 times higher than that of non-Indigenous Australians (3,300 and 1,900 per 100,000 population, respectively) (AIHW 2020). Hospitalisation rates and mortality from CVD increase with age (Figure 1) (AIHW 2021).

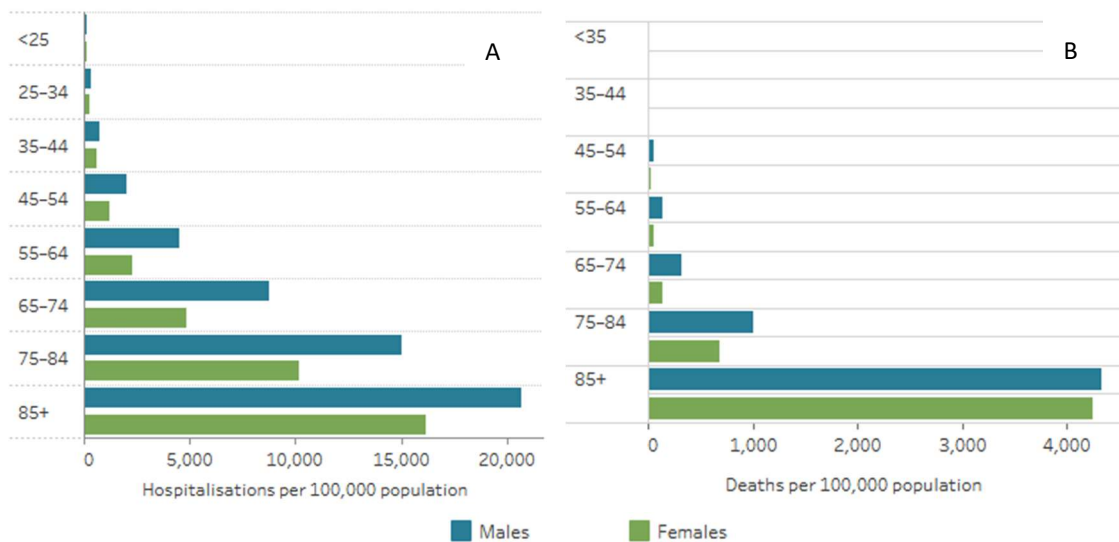


Figure 1 Number of hospitalisations (a) and deaths (b) per 100,000 due to cardiovascular disease in Australia (principal diagnosis), by sex, 2018–19 (AIHW 2021)

In Australia, CVD was the second leading cause of death in 2019, attributing to 25% or 42,300 of all deaths. Most of these deaths were caused by coronary heart disease (42%) followed by stroke (20%), and heart failure and cardiomyopathy (11%). Although more males have CVD compared to females, CVD is one of the leading causes of morbidity and death among Australian women as it is often under-diagnosed and under-treated. Of concern is that Indigenous people, those from lower socioeconomic groups and people who live in rural and remote areas are disproportionately affected by CVD and are more likely to die from coronary heart disease or stroke (Figure 2) (AIHW 2020). Identifying risk in these populations by using an easily accessible test such as Lp(a) would improve long-term health outcomes and address major issues of health inequity for Indigenous people, and those living in rural and remote locations.

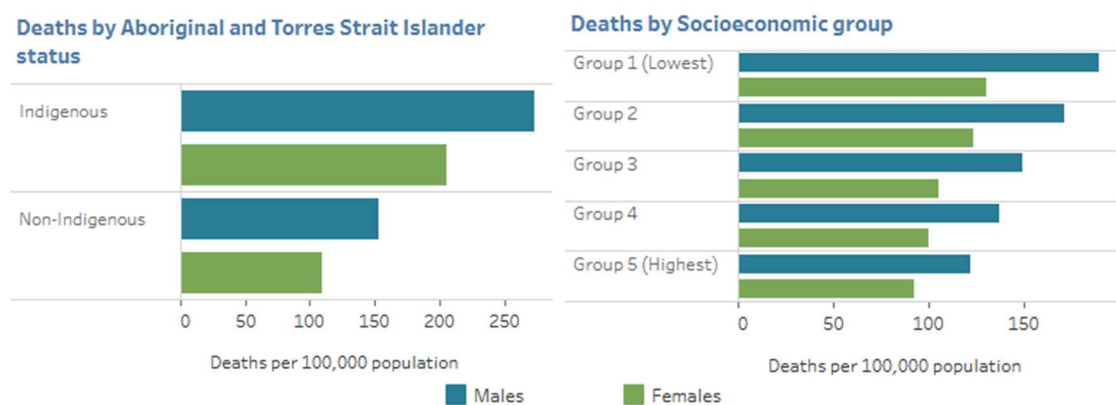


Figure 2 Number of deaths (per 100,000) in Indigenous and non-Indigenous persons, and by socioeconomic group (AIHW 2021)

25. Specify any characteristics of patients with the medical condition, or suspected of, who are proposed to be eligible for the proposed medical service, including any details of how a patient would be investigated, managed and referred within the Australian health care system in the lead up to being considered eligible for the service:

The Australian and New Zealand guidelines for the management of absolute cardiovascular disease risk¹ recommend the following for the assessment of cardiac risk:

¹ https://www.heartfoundation.org.au/getmedia/4342a70f-4487-496e-bbb0-dae33a47fcb2/Absolute-CVD-Risk-Full-Guidelines_2.pdf

1. **In the general population aged 45–74 years:** Absolute CVD risk assessment, using the Framingham Risk Equation to predict risk of a cardiovascular event over the next five years, should be performed for all adults aged 45–74 years who are not known to have CVD or to be at clinically determined high risk.
2. **In Aboriginal and Torres Strait Islander adults aged 35–74 years:** who are not known to have CVD or to be at clinically determined high risk, absolute cardiovascular risk over the next five years should be calculated using the Framingham Risk Equation. Although the Framingham Risk Equation might underestimate risk in this population, available evidence suggests that this approach will provide an estimate of minimum cardiovascular risk.
3. **In adults with diabetes aged 60 years or less:** who are not known to have CVD or to be at clinically determined high risk, absolute cardiovascular risk over the next five years should be assessed using the Framingham Risk Equation. Although the Framingham Risk Equation might underestimate risk in this population, available evidence suggests that this approach will provide an estimate of minimum cardiovascular risk.
4. **In adults who are overweight or obese:** who are not known to have CVD or to be at clinically determined high risk, absolute cardiovascular risk over the next five years should be assessed using the Framingham Risk Equation. The results should be interpreted with the awareness that its predictive value has not been specifically assessed in this population.

Those individuals determined to be at moderate risk (10-15%) should have Lp(a) measured.

26. Define and summarise the current clinical management pathway *before* patients would be eligible for the proposed medical service (supplement this summary with an easy to follow flowchart [as an attachment to the Application Form] depicting the current clinical management pathway up to this point):

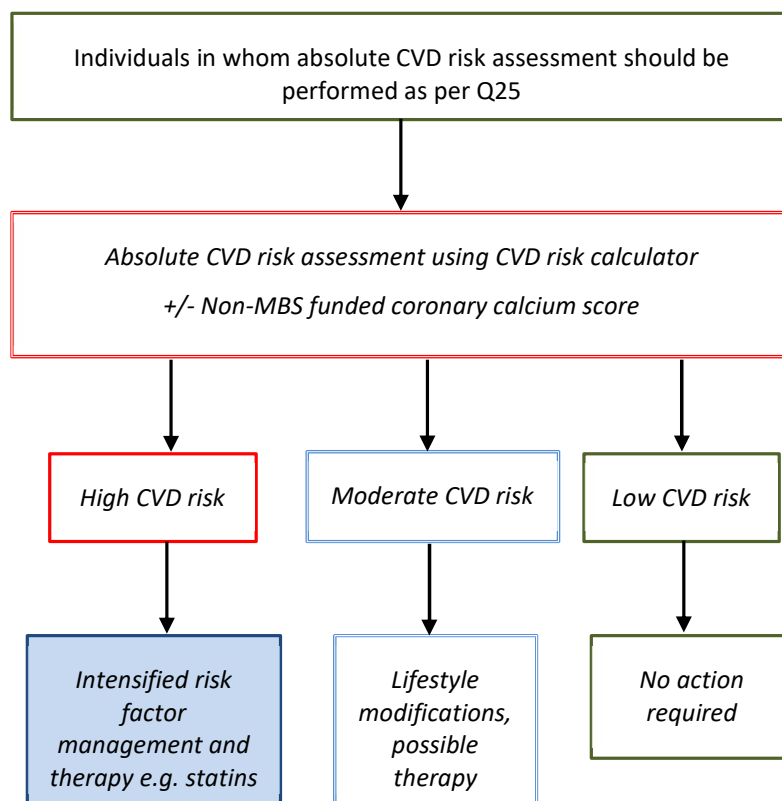


Figure 3 Current clinical algorithm for the risk assessment of cardiovascular disease without Lp(a) testing

PART 6b – INFORMATION ABOUT THE INTERVENTION

27. Describe the key components and clinical steps involved in delivering the proposed medical service:

The test requires a venepuncture to be performed on the patient for the collection of a blood/plasma sample that is referred to a pathology laboratory for analysis.

A major challenge to the accurate measurement of Lp(a) is the heterogeneity in apo(a) size between, as well as within individuals. Lp(a) has historically been expressed in mass units (mg/dL), which includes the mass of the entire particle, including the content of apo(a), apoB-100, cholesterol, cholesteryl ester, phospholipid, triglyceride and carbohydrate. This should be avoided as what is measured by preferred methods is the number of Lp(a) particles (molar concentration) and not the lipid and carbohydrate content. The most appropriate unit of measurement of Lp(a) is nmol/L (Cegla et al 2021). This highlights the importance of using a standardised method for Lp(a) measurement to assess CVD risk.

28. Does the proposed medical service include a registered trademark component with characteristics that distinguishes it from other similar health components?

N/A

29. If the proposed medical service has a prosthesis or device component to it, does it involve a new approach towards managing a particular sub-group of the population with the specific medical condition?

N/A

30. If applicable, are there any limitations on the provision of the proposed medical service delivered to the patient (i.e. accessibility, dosage, quantity, duration or frequency):

For most patients this would be a *once off* diagnostic test; however, in the near future when patients have access to Lp(a) lowering therapies, follow-up testing of these patients may need to be conducted.

31. If applicable, identify any healthcare resources or other medical services that would need to be delivered at the same time as the proposed medical service:

N/A

32. If applicable, advise which health professionals will primarily deliver the proposed service:

Testing would be provided by Approved Practising Pathologists in line with other tests on the MBS Pathology Table.

33. If applicable, advise whether the proposed medical service could be delegated or referred to another professional for delivery:

N/A

34. If applicable, specify any proposed limitations on who might deliver the proposed medical service, or who might provide a referral for it:

Patients may be referred for Lp(a) testing by their treating general practitioner, consultant physician or cardiovascular specialist.

35. If applicable, advise what type of training or qualifications would be required to perform the proposed service, as well as any accreditation requirements to support service delivery:

Testing would be delivered only by NATA Accredited Pathology Laboratories (as defined in MBS Pathology table) by referral only by registered Medical Practitioners (non-pathologists) in line with other tests in the MBS Pathology Table. Interpretation of results would be provided by an approved practising pathologist or medical scientist.

36. (a) Indicate the proposed setting(s) in which the proposed medical service will be delivered (select ALL relevant settings):

- Inpatient private hospital (admitted patient)
- Inpatient public hospital (admitted patient)
- Private outpatient clinic

- Public outpatient clinic
- Emergency Department
- Private consulting rooms - GP
- Private consulting rooms – specialist
- Private consulting rooms – other health practitioner (nurse or allied health)
- Private day surgery clinic (admitted patient)
- Private day surgery clinic (non-admitted patient)
- Public day surgery clinic (admitted patient)
- Public day surgery clinic (non-admitted patient)
- Residential aged care facility
- Patient's home
- Laboratory

(b) Where the proposed medical service is provided in more than one setting, please describe the rationale related to each:

N/A

37. Is the proposed medical service intended to be entirely rendered in Australia?

- Yes
- No – please specify below

PART 6c – INFORMATION ABOUT THE COMPARATOR(S)

38. Nominate the appropriate comparator(s) for the proposed medical service, i.e. how is the proposed population currently managed in the absence of the proposed medical service being available in the Australian health care system (including identifying health care resources that are needed to be delivered at the same time as the comparator service):

There is no true comparator for Lp(a) testing.

1. Lipid profiling (total cholesterol, LDL-cholesterol, HDL-cholesterol and triglycerides) should be conducted *before* Lp(a) testing. Lp(a) is an independent risk factor for CVD so its use should be above and beyond current CVD risk assessment. In view of its genetic basis, it is proposed that patients with premature CVD and their relatives are the most appropriate for testing. Patients and relatives with a high Lp(a) level are at high-risk of CVD and should commence lipid lowering therapy immediately.

MBS item number 66500: Quantitation in serum, plasma, urine or other body fluid (except amniotic fluid), by any method except reagent tablet or reagent strip (with or without reflectance meter) of: acid phosphatase, alanine aminotransferase, albumin, alkaline phosphatase, ammonia, amylase, aspartate aminotransferase, bicarbonate, bilirubin (total), bilirubin (any fractions), C-reactive protein, calcium (total or corrected for albumin), chloride, creatine kinase, creatinine, gamma glutamyl transferase, globulin, glucose, lactate dehydrogenase, lipase, magnesium, phosphate, potassium, sodium, total protein, **total cholesterol, triglycerides**, urate or urea - 1 test

Fee: \$9.70 Benefit: 75% = \$7.30 85% = \$8.25

MBS item number 66536: Quantitation of HDL cholesterol

Fee: \$11.05 Benefit: 75% = \$8.30 85% = \$9.40

MBS item number 66539: Electrophoresis of serum for demonstration of lipoprotein subclasses, if the cholesterol is >6.5 mmol/L and triglyceride >4.0 mmol/L or in the diagnosis of types III and IV hyperlipidaemia - (Item is subject to rule 25)

Fee: \$30.60 Benefit: 75% = \$22.95 85% = \$26.05

2. Homocysteine is commonly used as a CVD biomarker; however, its use for this purpose is controversial. Although homocysteine is listed on the MBS as one of a list of substrates, the purpose of testing is not specified. There were 107,215 services for MBS item number 66752 conducted from July 2020 to June 2021; however, it is not possible to differentiate how many of these services would have been for homocysteine alone for the purpose of assessing cardiac risk.

MBS item number 66752: Quantitation of acetoacetate, beta-hydroxybutyrate, citrate, oxalate, total free fatty acids, cysteine, homocysteine, cystine, lactate, pyruvate or other amino acids and hydroxyproline (except if performed as part of item 66773 or 66776) - 1 test

Fee: \$24.70 Benefit: 75% = \$18.55 85% = \$21.00

3. Similarly, high-sensitivity C-reactive protein (CRP) testing is often used to indicate CVD risk; however, as elevated CRP levels are associated with inflammation, CRP testing is not specific to CVD. As with homocysteine testing, high levels of CRP services were performed in the 2020-21 financial year (823,076), and it is not possible to differentiate how many of these services would have been for CRP alone for the purpose of assessing cardiac risk.

MBS item number 66500:Quantitation in serum, plasma, urine or other body fluid (except amniotic fluid), by any method except reagent tablet or reagent strip (with or without reflectance meter) of: acid phosphatase, alanine aminotransferase, albumin, alkaline phosphatase, ammonia, amylase, aspartate aminotransferase, bicarbonate, bilirubin (total), bilirubin (any fractions), C-reactive protein, calcium (total or corrected for albumin), chloride, creatine kinase, creatinine, gamma glutamyl transferase, globulin, glucose, lactate dehydrogenase, lipase, magnesium, phosphate, potassium, sodium, total protein, total cholesterol, triglycerides, urate or urea - 1 test

Fee: \$9.70 Benefit: 75% = \$7.30 85% = \$8.25

4. Measuring the amount of calcium deposited in the coronary artery using computed tomography (coronary calcium score, CCS) can be used to assess CVD risk; however, CCS is not listed on the MBS and cannot therefore be considered a comparator for Lp(a) testing.

Therefore, there is no true comparator for Lp(a) testing.

39. Does the medical service (that has been nominated as the comparator) have an existing MBS item number(s)?

Yes (please list all relevant MBS item numbers below)

No

No true comparator

40. Define and summarise the current clinical management pathway/s that patients may follow *after* they receive the medical service that has been nominated as the comparator (supplement this summary with an easy to follow flowchart [as an attachment to the Application Form] depicting the current clinical management pathway that patients may follow from the point of receiving the comparator onwards, including health care resources):

Q42 describes the clinical algorithm with Lp(a) testing.

After absolute cardiac risk assessment, individuals with premature CVD or a family history would undergo intensive risk factor modification and lipid lowering therapy. Those with low or intermediate risk would be monitored by their GPs as part of their ongoing healthcare.

41. (a) Will the proposed medical service be used in addition to, or instead of, the nominated comparator(s)?

In addition to (i.e. it is an add-on service)

Instead of (i.e. it is a replacement or alternative)

(b) If instead of (i.e. alternative service), please outline the extent to which the current service/comparator is expected to be substituted:

There is no true comparator for Lp(a) testing. Lp(a) testing should be conducted in individuals with intermediate levels of LDL, who would normally not be candidates for lipid lowering therapy.

42. Define and summarise how current clinical management pathways (from the point of service delivery onwards) are expected to change as a consequence of introducing the proposed medical service, including variation in health care resources (Refer to Question 39 as baseline):

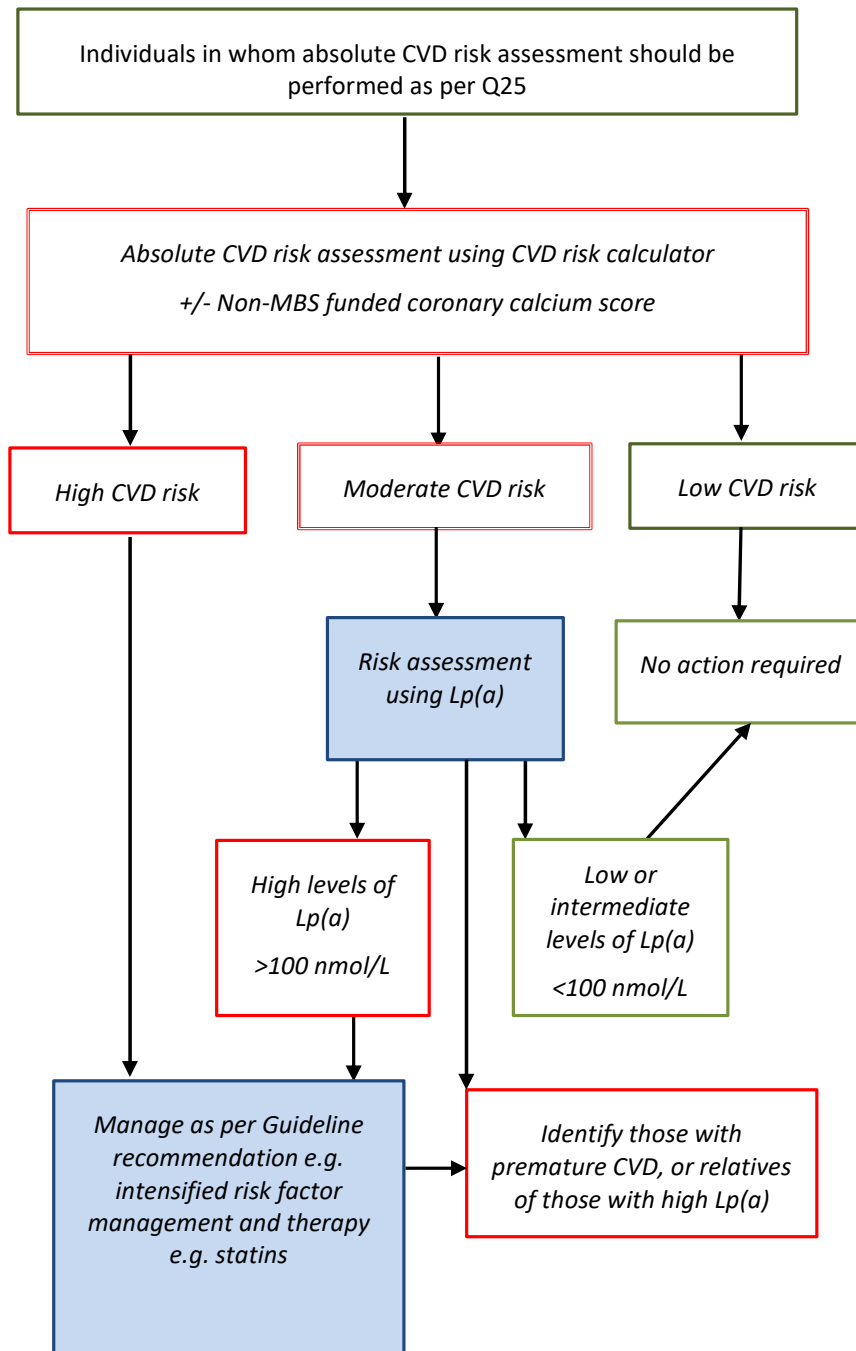


Figure 4 Proposed clinical algorithm for the risk assessment of cardiovascular disease with Lp(a) testing

PART 6d – INFORMATION ABOUT THE CLINICAL OUTCOME

43. Summarise the clinical claims for the proposed medical service against the appropriate comparator(s), in terms of consequences for health outcomes (comparative benefits and harms):

To provide best practice cardiovascular care to patients at an elevated risk of CVD requires knowledge of Lp(a) levels. Individuals with elevated Lp(a) levels have a higher burden of atherogenic lipoproteins and are therefore considered to be at high risk of a cardiovascular event such as myocardial infarction or stroke. Patients with intermediate LDL *and* high Lp(a) levels would gain significant CVD risk reduction from more aggressive lifestyle modifications and lipid lowering with statins or low-dose aspirin (O'Donoghue et al 2019). Early identification of those individuals with elevated Lp(a) levels will avoid heart attack and strokes in the future, with a concomitant reduction in the number of deaths and hospital-related admissions due to CVD events. Although the identification of index cases is important to risk factor management and initiate therapy, the true benefit of Lp(a) testing lies in the cascade testing of first-degree relatives of the index case.

There is currently no targeted therapy for lowering Lp(a) approved for use in Australia. PCSK9² inhibitors such as evolocumab have been demonstrated to reduce levels of Lp(a) levels by 20-30 per cent; however, inhibitors such as evolocumab are only approved in Australia by the PBS for the treatment of patients with familial hypercholesterolaemia, not for lowering Lp(a) (Cegla et al 2019).

44. Please advise if the overall clinical claim is for:

- Superiority
 Non-inferiority

45. Below, list the key health outcomes (major and minor – prioritising major key health outcomes first) that will need to be specifically measured in assessing the clinical claim of the proposed medical service versus the comparator:

Safety

- Harms associated with testing/not testing

Clinical effectiveness

- Impact on clinical management
- Morbidity associated with CVD
- Mortality due to CVD
- Health-related quality of life
- Other patient-relevant outcomes

Clinical validity

- Clinical sensitivity and specificity
- Positive and negative predictive values
- Prognostic value

Healthcare resource use

- Number of events, and cost associated with CVD (e.g. hospitalisation; specialist visits; requirements for subsequent therapy; cost of Lp(a) testing)
- Cost-effectiveness of Lp(a) testing
- Total Australian Government healthcare costs

² PCSK9 = proprotein convertase subtilisin/kexin 9 inhibitors

PART 7 – INFORMATION ABOUT ESTIMATED UTILISATION

46. Estimate the prevalence and/or incidence of the proposed population:

The HEART UK consensus statement recommends that Lp(a) is measured in:

- adults with a personal or family history of premature atherosclerotic CVD disease (especially for men who develop it before 55 years of age, and women before 65);
- first-degree relatives of adults who have Lp(a) levels > 200 nmol/l;
- patients with familial hypercholesterolemia;
- patients with calcific aortic valve stenosis; and
- those with borderline (but < 15%) 10-year risk of a cardiovascular event based on online risk calculators (Cegla et al 2019).

Premature coronary heart disease (CHD) is defined as CHD in those individuals <60 years of age. In 2015, the AIHW reported DALY³ rates of 2.3 and 15.5 per 1,000 people aged 25-44 and 45-64 years, respectively, indicating premature CHD. When stratified by age; however, DALY rates for premature CHD are significantly higher in males compared to females (Table 1, shaded grey rows, noting that specific data for <60 years is not available) (AIHW 2019).

Table 1 Rate of DALY due to CHD in Australia, by age group and sex, 2015 (AIHW 2019)

Age (years)	Burden of disease (DALY per 1,000)		
	Males	Females	All
25-44	3.8	0.9	2.3
45-64	25.1	6.3	15.5
65-74	53.5	20.0	36.5
75-84	96.3	51.1	71.8
85-94	175.5	127.3	145.3
95+	251.4	216.3	225.3

47. Estimate the number of times the proposed medical service(s) would be delivered to a patient per year:

As Lp(a) levels tend to remain relatively constant over a person's lifetime and are not significantly influenced by age, sex, physical activity, changes in diet nor with most drugs used to treat high cholesterol, therefore Lp(a) levels should usually only be tested once per lifetime (Lab Tests Online Australasia 2021). However, the item number should be future-proofed for when Lp(a) lowering therapies come online in the near future, to allow for the annual testing of these patients to monitor their progress.

³ DALY = disability-adjusted life years

48. How many years would the proposed medical service(s) be required for the patient?

Currently, once per lifetime; however, for the small number of patients placed on Lp(a) lowering therapy in the near future, testing should be conducted annually.

49. Estimate the projected number of patients who will utilise the proposed medical service(s) for the first full year:

An estimate of the current prevalent population with premature CHD in Australia is summarised in Table 2 using 2021 population data from the ABS (ABS 2021).

Table 2 DALY rates of CHD applied to the Australian population (as of June 2021)

Age (years)	Estimated population	DALY rates of CHD	Total number of people
25-29	1,848,806		
30-34	1,916,347		
35-39	1,863,775		
40-44	1,650,113		
Total 25-44 years	7,279,041	2.3 per 1,000 people	16,742
45-49	1,644,621		
50-54	1,604,838		
55-59	1,538,809		
60 years	308,713		
Total 45-60 years	5,096,981	15.5 per 1,000 people	79,003
Total 25-60 years			95,745

CHD = coronary heart disease, DALY = disability-adjusted life years

50. Estimate the anticipated uptake of the proposed medical service over the next three years factoring in any constraints in the health system in meeting the needs of the proposed population (such as supply and demand factors) as well as provide commentary on risk of 'leakage' to populations not targeted by the service:

Table 2 describes an estimate of the *prevalent* population using DALY data, that is the population that needs to be tested once the item number comes online. As testing is currently only recommended once per lifetime, then the incident population will be the number of individuals diagnosed with premature CHD who will move from the 24-year age bracket into the 25-year age bracket (Table 3). It should be noted that the number of individuals in the 24-year bracket decreased by 23,199 people from June 2020 to June 2021. For the sake of simplicity, this decrease has not been taken into account when estimating the potential incident population. It would also be expected that a proportion of 44-years old who had not previously undergone Lp(a) testing would be diagnosed with premature CHD. As with the number of individuals in the 24 years age bracket, there was a slight decrease (2,201) in the number of individuals in the 44 year age bracket from June 2020 to June 2021 (ABS 2021). Both figures are likely to represent an over estimation of the expected incident number of patients diagnosed with premature CHD who should undergo Lp(a) testing. It would therefore be expected that the number of new patients who would require Lp(a) testing each year would remain steady, if not decrease over time.

Table 3 Expected number of patients with premature CHD in Australia, based on June 2021 population data (ABS 2021)

	2022	Expected 2023	Expected 2024	Expected 2025
24 years		343,026		
2.3 per 1,000 people		789		
Total 25-44 years	7,279,041			
2.3 per 1,000 people	16,742			
44 years		316,981		
15.5 per 1,000 people		4,913		
Total 45-60 years	5,096,981			
15.5 per 1,000 people	79,003			
Total 25-60 years	95,745			
Total expected	95,745	5,702	5,702	5,702

PART 8 – COST INFORMATION

51. Indicate the likely cost of providing the proposed medical service. Where possible, please provide overall cost and breakdown:

The current cost to the patient of Lp(a) testing in Australia is approximately \$25 – 35 per test.

52. Specify how long the proposed medical service typically takes to perform:

Results would usually be available within one business day of sample collection for patients in metropolitan areas, or two to three business days for patients in regional areas. There are no indications for more urgent measurement of Lp(a).

53. If public funding is sought through the MBS, please draft a proposed MBS item descriptor to define the population and medical service usage characteristics that would define eligibility for MBS funding.

Category 6 Pathology Services – Group P2 - Chemical
AAAA
Quantitation (nmol/L) in serum by immunoassay of lipoprotein(a) in individuals without a history of cardiovascular disease, determined to have a moderate (10 - 15%) 5-year risk of CVD by the Australian cardiovascular risk charts.
Applicable once per lifetime
Fee: \$30.00 Benefit: 75% = \$22.50 85% = \$25.50

Category 6 Pathology Services – Group P2 - Chemical
BBBB
Quantitation (nmol/L) in serum by immunoassay of lipoprotein(a) in first-degree relatives of individuals found to have elevated Lp(a) levels identified by AAAA.
Applicable once per lifetime
Fee: \$30.00 Benefit: 75% = \$22.50 85% = \$25.50

Category 6 Pathology Services – Group P2 - Chemical
CCCC
Quantitation (nmol/L) in serum by immunoassay of lipoprotein(a) in individuals found to have elevated Lp(a) levels identified by AAAA and taking Lp(a) lowering therapy, requested by a specialist or consultant physician.
Applicable once per year
Fee: \$30.00 Benefit: 75% = \$22.50 85% = \$25.50

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