

Laboratory Testing

For Cardiovascular Risk

Quiz Feedback



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Laboratory Testing For Cardiovascular Risk

- 1. By what age should cardiovascular risk assessment begin for Maori men?**
 - 35 years for all
 - 35 years only if risk factors present
 - 45 years for all
 - 45 years only if risk factors present
- 2. In a person with a 5-year cardiovascular risk less than 5%, and no development of risk factors, when is the next risk assessment usually due?**
 - 1 year
 - 2–5 years
 - 6–9 years
 - 10 years
- 3. In which of the following situations is troponin testing useful in primary care?**
 - Routine cardiovascular risk assessment
 - Several weeks after an acute MI, to ensure the level has returned to baseline
 - To rule out MI when a patient presents the day after atypical chest pain
 - When a patient presents with suspected acute MI
- 4. In most cases, which is the most effective intervention in the metabolic syndrome?**
 - Blood pressure management
 - Lipid lowering drugs
 - Metformin
 - Weight loss
- 5. Which of the following statement about gout and cardiovascular risk is true?**
 - ACE inhibitor therapy is associated with an increased risk of gout
 - Gout has no association with cardiovascular risk
 - The presentation of gout provides a useful opportunity to perform a CVD risk assessment
 - The uric acid level can help with assessment of cardiovascular risk
- 6. Which of the following statements are true about CVD risk assessment for people over 75 years old?**
 - CVD risk assessment is just as useful in elderly people as in younger people
 - People over 75 years are likely to benefit from routine lipid lowering drugs
 - People over 75 years should not be offered CVD risk assessment
 - There is a limited evidence regarding lipid modification in older subjects
- 7. Which of the following is usually the most important for monitoring response to lipid modification therapy.**
 - HDL
 - LDL
 - Chol/HDL Ratio
 - Total cholesterol
 - Triglycerides
- 8. Which of the following statements about the use of homocysteine measurements is true?**
 - Folate supplementation is beneficial when homocysteine levels are high
 - Homocysteine measurement is likely to play an important role in future cardiovascular risk assessment
 - There is a strong association between homocysteine levels and cardiovascular risk
 - There is no role for homocysteine measurement in primary care
- 9. Which of the following is true about creatine kinase measurement in primary care**
 - Creatine kinase is generally obsolete as a marker for cardiac damage
 - Creatine kinase levels remain elevated for seven days after myocardial damage
 - Creatine kinase levels should be measured before starting statin therapy
 - There is no role for creatine kinase measurement in primary care
- 10. Which of the following interventions are likely to produce the greatest reduction in cardiovascular risk?**
 - ACE inhibitor therapy
 - Beta blockade
 - Optimal lipid reduction
 - Smoking cessation

Quiz Feedback

We are sorry you did not return a quiz to us. These questions were designed to represent a range of situations where laboratory testing may be used for screening or managing cardiovascular risk.

Please let us know if there is any way we can make our case studies more useful to you because we want our resources to be helpful for your day-to-day practice. We would be pleased to receive any suggestions that you have.

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Quiz Feedback:

Responses from Colleagues, GP Panel and Specialist

1. By what age should cardiovascular risk assessment begin for Maori men?

	You	Your Peers	GP Panel
35 years for all		95%	+
35 years only if risk factors present		4%	
45 years for all		1%	
45 years only if risk factors present		0%	

GP Panel

The panel had a lively discussion around this question. Although they are aware of the recommendations for commencing cardiovascular risk assessment, it is not necessarily straightforward to achieve this within day to day practice. Most CVD risk assessments are performed opportunistically, and because GPs are kept busy dealing with acute problems there often isn't the time within the consultation to initiate CVD risk assessment.

Throughout the country there are some areas which have systems in place for cardiovascular risk assessment, with some degree of funding. The panel also noted a formal recall system for ensuring all patients had CVD risk assessment would have a number of associated costs, for example, GP and nurse time, financial costs to practice, development of recall systems.

The panel would not like general practice in New Zealand to approach screening programmes in a similar way as the UK, in which some GPs can perform what may be perceived as "tick-box" medicine. The panel likes to believe things are done within their practice because it is the "proper" thing to do, and not because they are paid to do it.

Expert Comment

The GP respondents and GP panel clearly recognise the necessity for early cardiovascular risk assessment in Maori. This is an important issue, given that the relative risk in Maori men is up to three fold that of European men at the same age and that the current risk assessment calculator, based on the Framingham equation, may underestimate absolute risk, even after adjustment. There is an urgent need to develop risk assessment tools that are relevant to New Zealand and which will allow more accurate assessment in high risk groups at younger ages.

2. In a person with a 5-year cardiovascular risk less than 5%, and no development of risk factors, when is the next risk assessment usually due?

	You	Your Peers	GP Panel
1 year		<1%	
2–5 years		9%	
6–9 years		2%	±
10 years		88%	±

GP Panel

The vast majority of responses agree with NZGG, that recommend further cardiovascular risk assessments should be performed 10 yearly for people with a 5 year risk of under 5%.

The panel pointed out it would be difficult to know if the patient continued to be at low risk, until some degree of assessment was performed. Indicators for assessment earlier than 10 years may include other factors such as lifestyle changes, increase in blood pressure, weight gain, and starting smoking.

Expert Comment

While 10 years is the recommended period before full reassessment of cardiovascular risk in an individual with low initial risk, this is based on best opinion rather than actual evidence and may not apply to all individuals. Some younger subjects will have low absolute risk calculated from tables but may have quite high relative risk. Over a decade this will translate to high absolute risk and earlier follow up would be prudent.

3. In which of the following situations is troponin testing useful in primary care?

	You	Your Peers	GP Panel
Routine cardiovascular risk assessment		0%	
Several weeks after an acute MI, to ensure the level has returned to baseline		<1%	
To rule out MI when a patient presents the day after atypical chest pain		95%	+
When a patient presents with suspected acute MI		9%	

GP Panel

The panel all agreed a patient presenting with suspected MI should be referred immediately to hospital, otherwise the GP is taking a gamble. The panel would only use troponin in patients who present a day or two after atypical chest pain, in this situation the benefits of a acute referral to hospital no longer apply.

One of the panel member was familiar with the catchphrase “Pain on day: patient goes to hospital” and equally fitting: atypical chest pain, can use troponin.

Expert Comment

Current definitions of myocardial infarct place enormous emphasis on detection of very small increases in troponin. In a clinical setting suggestive of an acute coronary syndrome results for troponin greater than the 99th centile of population levels are sufficient to make the diagnosis, without any ECG changes required. Detection of such small increases above the 99th centile tests the capabilities of current assays and frequently serial results over periods up to 10 hours are required to demonstrate change from baseline. It rarely will be possible to manage this diagnostic process well in primary care. Even if the first troponin is convincingly elevated the turnaround time of the result from the laboratory is unlikely to meet the recommended time [< one hour] and the gamble mentioned by the panel is obvious. The scenario mentioned, to rule out MI in a case of atypical, late presenting chest pain, in which the prior probability of MI is low, is the proper use of Troponin in primary care.

4. In most cases, which is the most effective intervention in the metabolic syndrome?

	You	Your Peers	GP Panel
Blood pressure management		2%	
Lipid lowering drugs		<1%	
Metformin		<1%	
Weight loss		98%	+

GP Panel

While the overall results indicate weight loss as the most effective intervention for the metabolic syndrome and this is supported by experts, the panel commented this is often difficult to achieve in practice.

The panel does not tend to use weight loss drugs, mostly because of the unsatisfactory side effects. Although the long term benefits of metformin are unknown, it may be used in some cases as a second line approach

Expert Comment

The most effective management in this situation is lifestyle intervention, including physical activity, diet and weight loss. Metformin does have an evolving role as second line treatment in the metabolic syndrome and in prediabetes but it should not be regarded as a substitute for lifestyle modification. Although some early studies suggested that metformin may have some small effect in causing weight loss more recent data indicates that this is not the case. The beneficial effects of metformin are attributable to its effects in improving sensitivity to insulin.

5. Which of the following statement about gout and cardiovascular risk is true?

	You	Your Peers	GP Panel
ACE inhibitor therapy is associated with an increased risk of gout		<1%	
Gout has no association with cardiovascular risk		2%	
The presentation of gout provides a useful opportunity to perform a CVD risk assessment		94%	+
The uric acid level can help with assessment of cardiovascular risk		2%	

GP Panel

The GP panel felt it is a useful message to think about CVD risk assessment in patients presenting with gout. Uric acid has some association with risk, but it is not strong enough to be incorporated into formal risk assessment. The panel though considering CVD risk in patients with gout could be incorporated fairly easily into practice.

It was also noted that an episode of gout is a reasonably compelling reason to visit the doctor. For patients who are infrequent attenders, this provides the opportunity to assess CVD risk, for a patient that may not otherwise present.

Expert Comment

High uric acid has a very strong correlation with the presence of metabolic syndrome and has been included in some definitions. Both hyperuricaemia and gout are associated with increased cardiovascular risk but it remains doubtful if they are independent risk factors. Whatever the case, an attack of gout provides good reason and opportunity to fully assess cardiovascular risk.

6. Which of the following statements are true about CVD risk assessment for people over 75 years old?

	You	Your Peers	GP Panel
CVD risk assessment is just as useful in elderly people as in younger people		10%	
People over 75 years are likely to benefit from routine lipid lowering drugs		3%	
People over 75 years should not be offered CVD risk assessment		6%	
There is a limited evidence regarding lipid modification in older subjects		90%	+

GP Panel

The panel would generally not continue cardiovascular risk assessment in people beyond the age of 75 years, but managing people over the age of 75 who are already on statins is somewhat less clearcut. GPs continue to make pragmatic decisions for these people as data obtained from the NZHIS data warehouse shows approximately 30% of people aged 75-79 years and approximately 10% of all people aged 90+, are receiving statins.

If a person is on statins, it is necessary to monitor lipids. The panel do not feel comfortable sending their elderly patients for fasting tests. This may be a consideration in deciding whether to prescribe statins for elderly patients.

The panel thought it was reassuring there is no good evidence that supports aggressive management in people over 75 years.

Expert Comment

Limited trial data has shown cardiovascular benefit from lipid lowering in elderly subjects but the magnitude of the effect has been disappointing in some of the trials and there is no apparent benefit in mortality. GP's are probably best placed to make the decision about how aggressively cardiovascular risk factors should be managed in individual elderly patients.

7. Which of the following is usually the most important for monitoring response to lipid modification therapy.

	You	Your Peers	GP Panel
HDL		0%	
LDL		93%	+
Chol/HDL Ratio		5%	
Total cholesterol		1%	
Triglycerides		0%	

GP Panel

The panel response is aligned with the general response that LDL is an important measure for monitoring response to lipid modification medication. The panel are aware there are conflicting opinions around New Zealand regarding target levels for LDL, but they believe most decisions in general practice are not made by numbers alone. While the aim is to lower the LDL, the wishes of the patient are also incorporated into determining the extent to which this is pursued.

Expert Comment

The cholesterol:HDL cholesterol ratio is used for risk assessment while LDL cholesterol is the recommended target of treatment. There is no doubt that trial data shows incremental benefit of achieving very low levels of LDL with high doses of potent statins, compared with the benefits achieved by more modest reductions. However, the extra benefit in absolute risk is small, with correspondingly large NNT. While some experts believe that maximal reduction of LDL should be the standard of care for all there is very substantial benefit in achieving more modest changes in all modifiable factors. There is evidence that we are far from achieving such changes in a high proportion of the at risk population. Planned updates to the current guidelines are likely to recommend lower LDL levels than currently, at least for very high risk patients. Potent statins or combination therapies are likely to be required to reach these levels in many individuals and such treatment certainly should be decided in the context of informed consent.

8. Which of the following statements about the use of homocysteine measurements is true?

	You	Your Peers	GP Panel
Folate supplementation is beneficial when homocysteine levels are high		2%	
Homocysteine measurement is likely to play an important role in future cardiovascular risk assessment		1%	
There is a strong association between homocysteine levels and cardiovascular risk		1%	
There is no role for homocysteine measurement in primary care		95%	+

GP Panel

The members of the panel had not requested homocysteine in the past, and now were quite relieved they “...no longer have to feel guilty for not requesting one...”

The panel commented on the wide range of alternative tests that are sometimes implied as having relevance to CVD risk. Until more evidence is available on alternative tests, the panel prefers to use the tests that are shown to make the most difference.

Expert Comment

The homocysteine story is complex and the panel is correct in the view that this test is not indicated in routine assessment of cardiovascular risk.

Premature atherothrombosis is a prominent feature in patients with very high homocysteine caused by rare inborn errors of metabolism and early retrospective epidemiology also showed a relationship between mild elevations of homocysteine and vascular disease in the general population. More recent prospective studies have shown that this risk association is much weaker than seen in the original studies and randomised studies which successfully lowered homocysteine with vitamin supplementation have failed to show clinical benefit. Debate continues but meanwhile there is no reason for the general population to know their homocysteine value. This does not preclude encouraging a diet high in natural sources of folate and B vitamins or checking homocysteine in the occasional patient in whom cardiovascular disease is manifest out of proportion to traditional risk factors.

9. Which of the following is true about creatine kinase measurement in primary care

	You	Your Peers	GP Panel
Creatine kinase is generally obsolete as a marker for cardiac damage		84%	+
Creatine kinase levels remain elevated for seven days after myocardial damage		2%	
Creatine kinase levels should be measured before starting statin therapy		4%	
There is no role for creatine kinase measurement in primary care		9%	

GP Panel

The panel have infrequent need to request CK although they would use it for people on statins with unexplained muscle pains.

Expert Comment

Recent guidelines on the definition and diagnosis of myocardial infarction have reinforced the concept that creatine kinase is obsolete in this context.

Expert groups do not consider that a baseline CK is absolutely necessary before commencing statin therapy and nor is routine monitoring indicated. CK should be checked if patients do develop myalgia but it is evident that minor statin related muscle problems, including myalgia, weakness and cramps can occur without elevation of CK. If CK is elevated the issue of whether or not to withdraw/modify dose of statin or should be considered on a case by case basis, depending on severity of symptoms, level of CK, dose of statin, renal function and cardiovascular risk profile

10. Which of the following interventions are likely to produce the greatest reduction in cardiovascular risk?

	You	Your Peers	GP Panel
ACE inhibitor therapy		0%	
Beta blockade		0%	
Optimal lipid reduction		2%	
Smoking cessation		97%	+

GP Panel

The panel acknowledged that stopping smoking could provide a risk reduction of up to 50%, but this is obviously dependent upon a patient's desire to quit. Some people may need to be supported through several attempts at quitting, while other patients choose to continue to smoke because it is an enjoyable aspect of their life. More than one patient had asked when it would be okay for him to start smoking again!

Expert Comment

There is little more to say here except to restate that the evidence for cardiovascular benefit of smoking cessation is completely compelling. Risk is decreased virtually immediately and the excess risk of smoking reduces to that of a never smoker at 3-5 years after cessation. The benefits are similar for recurrent events in those who already have manifest CVD, especially for CHD but also for stroke.

The difficulties of smoking cessation are obvious but it is disturbing that many smokers will know of the risks of lung cancer but have no perception of the cardiovascular risk.



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