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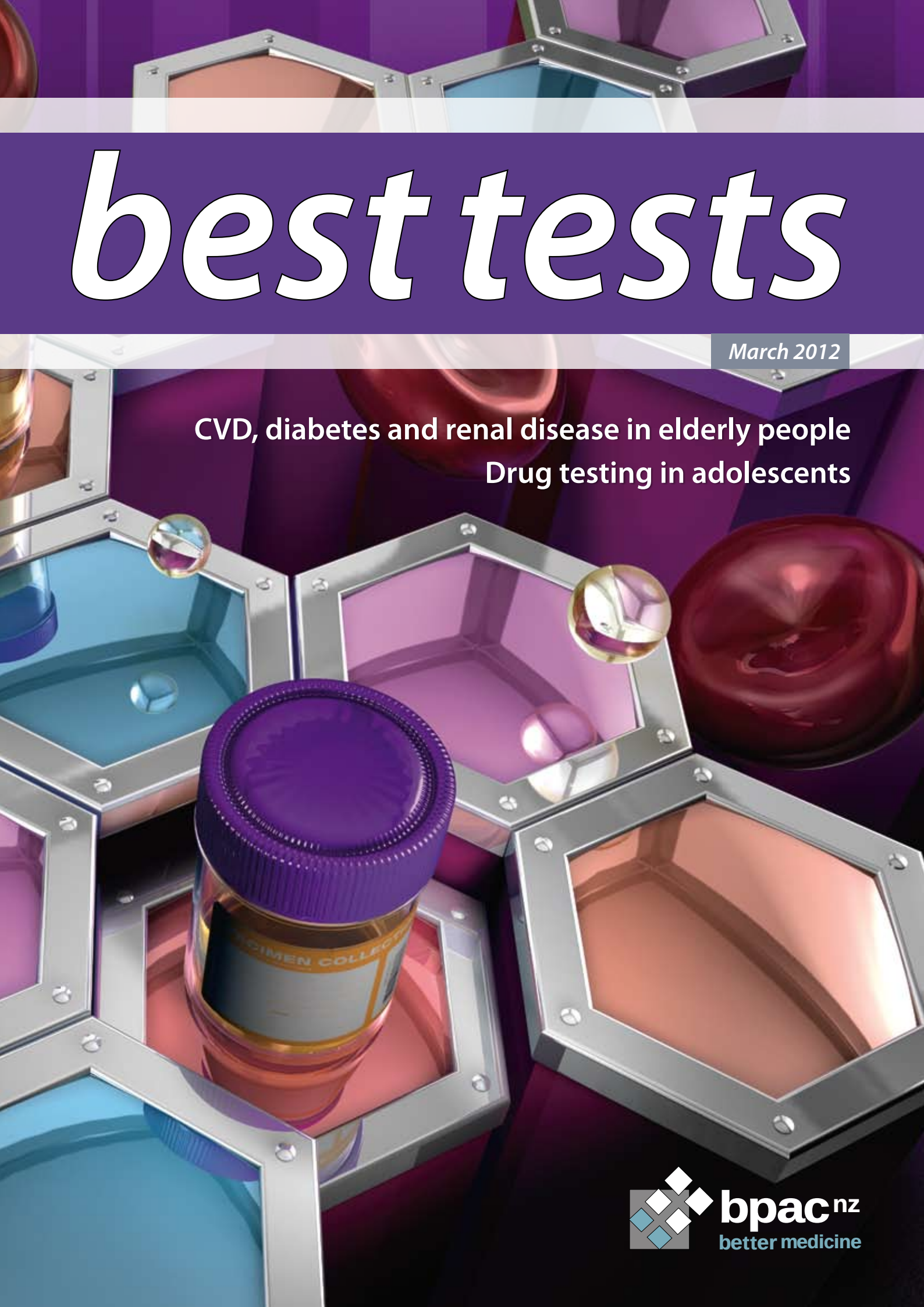

CVD, diabetes and renal disease in elderly people

Drug testing in adolescents

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better medicine

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Testing for CVD, diabetes and renal disease in elderly people

As people age and their co-morbidities and medicine use increases, decisions about medical management change. There is limited evidence of benefit of some tests in older people, such as monitoring lipid levels for primary prevention of cardiovascular disease, and many tests become more difficult to interpret due to the effects of medicines and declining general health. Decisions about testing must be made on an individual patient basis, taking into consideration their "drugs, diseases and disabilities". In the following article we present some general concepts for consideration, along with some recommendations for testing (or not).

Does age affect laboratory testing?

Laboratory reference ranges are usually derived from populations of younger people, without significant illness or disability. As people get older, test results are less likely to lie within reference range values. This is due to the effect of co-morbidities and polypharmacy, which tend to increase in older people, as well as physiological changes associated with ageing.[1]

In the Sydney Older Person's Study, researchers measured a range of haematological and biochemical values in a sample of more than 300 people aged over 75 years living in the community. It was found that the distribution of test results fell outside of the established laboratory reference range in 31 of the 35 variables measured.[1] There were significant correlations between test results and number of medicines, total disability score and number of co-morbidities. Researchers concluded that rather than age alone, it is the presence of medical conditions, and the associated disability and need for medicines, which accounts for abnormal test results.[1]

These findings suggest that;

- Chronological age alone should not guide decisions on testing or interpretation of results
- A patient's "drugs, diseases and disabilities" should be taken into account when considering testing and interpreting results
- Decisions about testing will change with time – as life expectancy decreases and elderly people become frailer, their wishes may change, along with the management of their conditions

Cardiovascular risk assessment: is there an age when this should stop?

The incidence of cardiovascular disease increases with age and it is the leading cause of mortality in New Zealand, particularly among Māori and Pacific peoples.[2] There is clear guidance on when to begin regular CVD risk assessment, based on evidence that this can lead to a significant reduction in morbidity and mortality,[3] however, when to stop risk assessment is less clear.

At a population level, risk tables based on the Framingham equation are calculated to age 74 years and PHO Performance Programme incentives for CVD risk assessment include patients aged up to 74 years. At the individual patient level, risk can continue to be assessed beyond age 75 years, calculated using the risk associated with the age 65 – 74 years bracket.[3] However, some studies have cast doubt that Framingham risk factors can predict cardiovascular morbidity in an older population the same way as they do in younger adults,[4] and the evidence that interventions improve mortality in this age group is also less clear (see below).

This suggests that the decision when to stop CVD risk assessment should be made on an individual basis, after consideration of;

- The patient's "drugs, diseases and disabilities", e.g. CVD risk assessment may become less important in a patient with a terminal illness or advanced dementia
- A conversation with the patient about their own expectations and wishes (and for some patients, those of their family, caregiver or person with power of attorney)

Lipid testing becomes less useful with advancing age

Lipid levels naturally increase, until approximately age 65 years, when they begin to decline again in most people.[5] Repeated lipid testing in people aged over 65 years, with normal baseline lipid levels, is therefore considered to be of limited value.[6] As there is no clear optimal level of cholesterol in people aged over 80 years,[7] continued lipid testing at this age is less likely to be clinically relevant. A low lipid level in elderly people may actually be an indicator of poor nutritional status or occult disease and reflect an increased risk of underlying morbidity and mortality.[8]

The following points may help guide the use of lipid tests in elderly people;

- Continued lipid testing in older people with normal baseline lipid levels is generally unnecessary
- The clinical relevance of lipid levels in a very elderly person is unclear and generally a statin would not be initiated in this patient group
- There is a role for follow-up lipid testing in older people who are being treated with a statin for secondary prevention, but after goal lipid levels are reached, testing could be requested at a reduced frequency (e.g. every three years)[9,10]

The evidence for statin use in elderly people

The evidence of the effect of lipid levels on cardiovascular mortality in older people is uncertain and varies within this age group. There is evidence of benefit from lipid-lowering treatment in "young elderly people", however, the evidence of benefit for the "very elderly" group (age ≥ 80 years) tends to be sparse and contradictory and also varies depending on whether a statin is prescribed for primary or secondary prevention.

The majority of randomised controlled trials have found no evidence that lipid-lowering treatment using statins for primary prevention in people aged over 80 years reduces total mortality.[7] Some studies have shown that in elderly people all-cause mortality is highest when total cholesterol is lowest (<5.5 mmol/L).[7, 11]

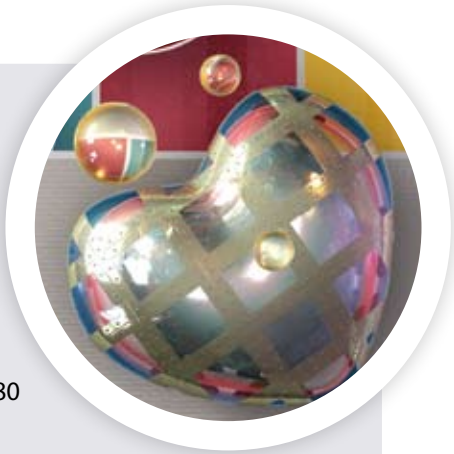
There is good evidence that lipid lowering treatment, when used for secondary prevention in people with established cardiovascular disease, reduces all-cause mortality and the incidence of cardiovascular events (including stroke). Although the majority of studies have specifically excluded older people, subgroup analyses of the trials that did include limited numbers of elderly participants, suggest similar benefits apply to people in older age groups.[12, 13]

In general the evidence from primary and secondary prevention trials suggests that;

- There is a role for the use of lipid-lowering treatment in elderly people for secondary prevention, particularly those at high cardiovascular risk
- The evidence for the use of lipid-lowering treatment in elderly people for primary prevention is more limited and should be based on individual clinical judgement. The age of the patient alone is not sufficient to determine whether or not a statin should be prescribed.

Testing for diabetes is beneficial at any age

The morbidity associated with type 2 diabetes is well-established, therefore testing for diabetes in a symptomatic person of any age is beneficial. There is strong evidence for beginning screening for type 2 diabetes in younger adults to reduce the long-term burden of micro- and macrovascular complications. However, whether the



Lipid testing in New Zealand

The rate of lipid testing in New Zealand is considerably higher in older people compared to younger age groups (Figure 1). The highest rate of lipid testing is in the age 70 to 74 year bracket, with 56% of all enrolled patients aged 70 to 74 receiving at least one lipid test in the year from September 2010 to September 2011. Testing volumes after this age remain high – almost half of all patients aged 80 to 84 years and one-third of those aged 85 to 90 years had a lipid test in this time period, with many patients receiving multiple tests. Repeated lipid testing in older people taking statins for primary prevention is not indicated and there is little evidence for the use of statins for primary prevention in people aged over 80 years.

The rate of lipid testing increases with age as more people are prescribed statins. However, it is important to review this rate of testing and consider whether this is still appropriate. Clinicians should justify why they are testing and whether it is beneficial to the patient.

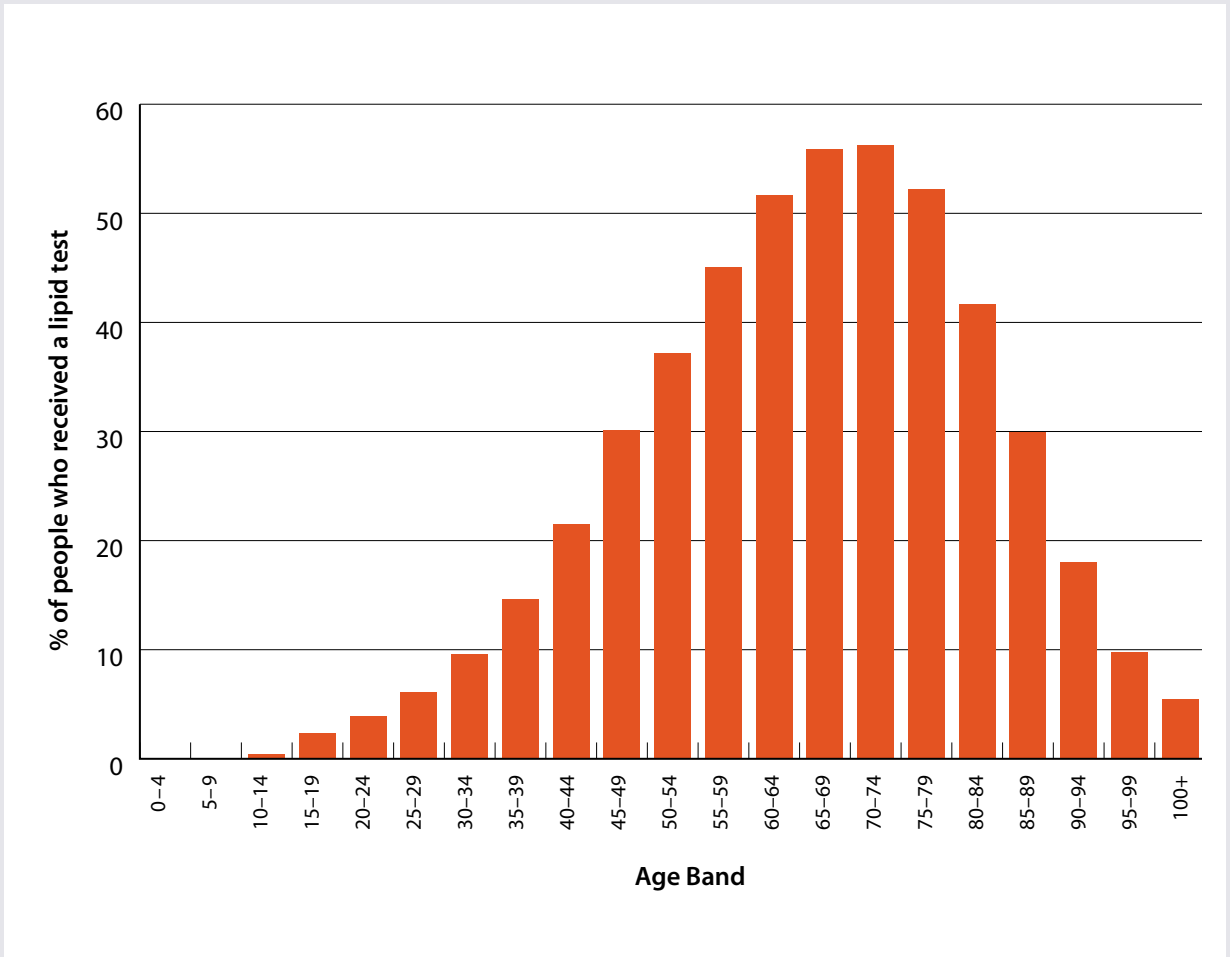


Figure 1. Percentage of people who received a lipid test from September, 2010, to September 2011, by age of enrolled population (Laboratory Data Warehouse)

detection of asymptomatic diabetes in very elderly people is beneficial in reducing morbidity and mortality is less clear.

The preferred test for diagnosing diabetes in New Zealand is HbA_{1c}. This is a useful test in elderly people as it provides a convenient (non-fasting) means of identifying clinically significant chronic glucose elevation, as well as guiding the need for intervention. Fasting may be difficult in frail elderly people and a random glucose result, unless clearly high, is often unhelpful.

The HbA_{1c} reference interval is not age adjusted, although there is some evidence from population studies that HbA_{1c} levels increase slightly with age, even in elderly people with normal glucose tolerance.[14, 15] Insulin sensitivity also slowly declines with age in many patients. While the same threshold for diagnosis of diabetes ($HbA_{1c} \geq 50$ mmol/mol) is currently applied to all patients, the benefits versus risks of intervening in elderly people, especially if they have a modest degree of glucose intolerance, are less well established.[16] It is recommended that borderline HbA_{1c} results are followed-up by a second HbA_{1c} test after several months of lifestyle modification.[16]

HbA_{1c} is also used for monitoring glycaemic control and predicting risk of future complications in people with diabetes.

In summary;

- The best test for the detection of diabetes in people of all ages is HbA_{1c}
- In elderly people with borderline HbA_{1c} results, repeat HbA_{1c} several months after giving advice on lifestyle modifications
- In elderly people with modest glucose intolerance, consider the risks and benefits of treatment interventions
- In elderly people with diabetes, HbA_{1c} should be checked at least annually, however, testing should not be requested more frequently in people with stable, well-controlled diabetes
- Glycaemic control targets should be individualised, with the aim of deciding on a realistic goal that reduces long-term risk. In most adults, the target HbA_{1c} is 50 – 55 mmol/mol.[17] This target may be less stringent in older adults, as "drugs, diseases and disability" are taken into account. Older people also have an increased risk of hypoglycaemia and adverse effects from diabetes medicines, therefore maintaining strict control may not be the best management option.[15]

Testing renal function in elderly people

Renal function often deteriorates in older people due to co-morbidities, especially hypertension and diabetes, and medicine use. Renal function is most commonly measured by estimated glomerular filtration rate (eGFR), calculated with the Modification of Diet in Renal Disease (MDRD) equation, which is automatically reported by New Zealand laboratories when a serum creatinine is requested. However, eGFR becomes more difficult to estimate and interpret in elderly people. The MDRD calculation is based on a standard adult BMI, therefore is less accurate in frail, elderly people with a BMI < 18.5 kg/m^2 (or those with a BMI > 30 kg/m^2). In addition, the formula was derived in people aged under 75 years and has not been validated for all ethnic groups. It is also thought that co-morbidities, particularly inflammation, have a confounding affect on eGFR.[18]

An alternative method for estimating GFR is to calculate creatinine clearance, using the Cockroft-Gault equation, which includes serum creatinine, age and also weight. Although the equation does incorporate body weight, it does not account specifically for muscle mass, and is therefore also potentially inaccurate in people who are very frail or oedematous. Calculated creatinine clearance is preferable when titrating medicine doses in elderly people, using standard drug dosing charts.

Serum creatinine alone is not a useful marker of renal dysfunction as levels can remain in the normal range until there is a significant decrease in kidney function, especially in elderly people.[19]

Chronic kidney disease

Age-associated diseases, such as cardiovascular disease and diabetes, are significant risk factors for chronic kidney disease (CKD). The prevalence of CKD in people aged over 64 years is estimated to be between 23% to 36%.[19] CKD is increasingly prevalent in older females, compared to males, although the reason for this is not completely understood.[20] CKD is also more prevalent in people of Māori, Pacific or Asian ethnicity.[21, 22]

Risk factors for CKD include:[20]

- Diabetes
- Hypertension
- Cardiovascular disease
- Other renal disease or abnormality, including persistent proteinuria or haematuria
- Family history of CKD or other renal disease
- Long-term use of potentially nephrotoxic medicines, e.g. NSAIDs, ACE inhibitors, diuretics, aminoglycosides, lithium

People with any of the above risk factors should be considered for annual assessment and testing for CKD.[20]

The risk of CKD is assessed by investigating the **eGFR** level.

- CKD guidelines state that if eGFR is < 60 mL/min/1.73m^2 or there is a strong suspicion of CKD despite a value greater than this, further assessment for signs of kidney damage should be performed.[20]

The threshold for further investigations for CKD must be determined by clinical judgement in older people, taking into consideration their co-morbidities and medicine use.

- In people aged > 70 years, eGFR values between 45 and 59 mL/min/1.73m^2 should be interpreted with caution. If there are no other signs of kidney damage and eGFR levels are stable over time, then CKD is less likely.[23]

The **rate of decline of eGFR** may be more useful than the actual value in older people, e.g. a decline of >15% in eGFR over three months, regardless of baseline value, would prompt investigation for CKD or other causes.[23]

- An initial result of a decreased eGFR level should be repeated within two weeks to assess the rate of change:[24]
  - If stable, test should be repeated after 90 days
  - If decreasing, two further repeat tests should be requested within 90 days

If eGFR results indicate the possibility of CKD, assess for proteinuria and haematuria. Studies suggest, however, that many older people with CKD will have negative urinalysis or low-grade proteinuria only.[25]

Proteinuria can be assessed by quantifying the urinary albumin:creatinine ratio (ACR). Protein:creatinine ratio (PCR) may also be used, but the ACR is superior for detecting low levels of proteinuria,[20] which is especially important in patients with diabetes.[20] Abnormal ACR results should be repeated with an early morning urine sample, if not previously obtained.[20]

- In people with diabetes, ACR > 2.5 mg/mmol in males and > 3.5 mg/mmol in females indicates microalbuminuria
- In people without diabetes, ACR ≥ 30 mg/mmol indicates clinically significant proteinuria

Urine protein excretion has significant biological variation and persistence should be verified with at least two abnormal results from three separate specimens.[24]

Haematuria can be assessed using a urine "dipstick".[20] If assessing for haematuria in relation to CKD only, no laboratory confirmation is required.[20] However, further investigation for the cause of persistent haematuria is required in elderly people, e.g. to investigate urinary tract malignancy.

There is no specific recommendation on when to stop testing for CKD. Interventions that slow the progression of CKD, such as blood pressure management, are just as beneficial in older people as in younger people.[26]

Resources are available online and via electronic decision support tools such as *bestpractice* to aid in the assessment of eGFR and its decline.

Diabetic nephropathy

Diabetes is associated with an increased risk of renal complications and disease,[17] and this risk increases with the duration of diabetes. Diabetic nephropathy is one of the most common forms of chronic kidney failure in the developed world and occurs in more than 30% of people with diabetes.[27] Diabetic nephropathy generally takes six to 15 years to develop, therefore it is more prevalent in

older people that have a long history of diabetes, however, 5 – 10% of people will have clinical nephropathy at the time of diabetes diagnosis.[27]

Microalbuminuria is the first clinical sign of nephropathy, but not all people with microalbuminuria will progress to full nephropathy. If detected early, microalbuminuria can be reversible with good glycaemic control and management of blood pressure.

The recommended test for microalbuminuria is an albumin:creatinine ratio (ACR), using an early morning urine sample (or a random sample if this is not possible).

- ACR should be tested at least once per year in people with diabetes without previous microalbuminuria.[17]
- An elevated ratio (i.e. > 2.5 mg/mmol in males or > 3.5 mg/mmol in females) should be confirmed with two repeat tests within three to six months, with a diagnosis of microalbuminuria made if at least two of the three samples are elevated.

The specificity of ACR decreases with age, so the likelihood of predicting nephropathy in older people becomes less robust.[28] However, regular monitoring of ACR is important in people with diabetes, regardless of their age.

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Non-evidential laboratory testing for **drug use in adolescents**

When an adolescent is suspected of taking illicit drugs, parents, caregivers or schools may request that the adolescent complete a drug test. However, such testing of adolescents for non-evidential purposes is uncommon in general practice in New Zealand and it is unclear whether drug testing reduces substance misuse. Standardised interviewing techniques, e.g. HEEADSSS, are the first-line recommendation for detecting substance misuse in adolescents, as this provides contextual information about an adolescent's behaviour. If drug testing is performed, adolescents need to understand their right to confidentiality, and support and assistance should be provided in the event of a positive result. N.B. The following article focuses on non-evidential drug testing.

The benefits of drug testing are unknown

Drug testing of adolescents is highly controversial and there is no evidence that it provides a clinical benefit in a community setting. However, if an adolescent, or their parents or caregivers, wish for a drug test to be performed, it is important that health professionals can explain the benefits versus the limitations of testing and, if necessary, be aware of the correct sample collection procedures.

The two sides of the debate

Advocates of drug testing claim that testing is a justifiable way to identify adolescents who might benefit from counselling and treatment. It is suggested that testing deters the initiation of drug misuse and encourages cessation as the consequences of detection outweigh the benefits of intoxication.[1]

Conversely, it is argued that many adolescents do not respond to deterrence strategies and that testing is a punitive practice which may also encourage adolescents to use substances that cannot be tested for.[1] In addition, adolescents who wish to avoid testing may disengage from health services that insist upon it.

The cost of drug testing

Drug testing that is requested by a General Practitioner for clinical reasons is funded (through usual laboratory contracts), e.g. to confirm/exclude drug use when treating a patient who may have overdosed. Drug testing for non-clinical purposes, e.g. pre-employment screening or to assist an adolescent in returning to school following suspension, is not funded and will cost the patient, or their employer/school, approximately $60–70 for a standard screen. If the test is for evidential purposes or the results are disputed, a positive result will require confirmatory testing, at a cost of approximately $90 for each drug that is tested for.

When might drug testing be appropriate?

Establishing and maintaining a strong relationship with an adolescent in primary care is important. There is a risk that promotion of drug testing by the clinician may undermine this relationship. In addition, there is no evidence to recommend drug testing as an effective strategy for reducing adolescent substance misuse. When drug use in an adolescent is suspected, psychosocial assessments are the first-line investigative tool as these provide contextual information about the adolescent's behaviour. However, in some cases, adolescents may ask for a test to be conducted following instruction by a school Board of Trustees or due to parental or caregiver concerns.

Drug testing is also used as a tool for measuring compliance in specialist intensive treatment programmes, for people addicted to substances such as cocaine or opiates.[2] However, a primary care practice would rarely be involved in collecting samples for drug testing for this purpose.

Consent and competency to consent

The issue of adolescent consent and competency in regards to drug testing is contentious. This is particularly difficult when there is external pressure from family or the school for the test to be conducted. Drug testing should always be discussed with the adolescent first, and their consent gained if aged 16 years or over. Consent is also required from adolescents aged under 16 years if in the judgement of the clinician they are considered to be competent (otherwise parental/caregiver consent is necessary).

In order to assess competence, the clinician must form an opinion of the intellectual maturity of the adolescent and also be aware of the adolescent's rights that accompany this assessment. This is referred to as the principle of Gillick competency, where children who are aged under 16 years, and have sufficient intelligence and comprehension, can consent to a treatment without the need for parental approval (i.e. they are Gillick competent). The adolescent should understand the nature, purpose and possible consequences of the drug test.

Issues surrounding confidentiality of test results also need to be considered and agreed upon. All adolescents should be strongly encouraged to discuss any drug test results with their parents or caregivers. However, if the adolescent is aged over 16 years or is "Gillick competent" for the purposes of drug testing, then the results of the test must remain confidential, unless the adolescent chooses to disclose the information to their parent or caregiver.

Limitations of testing

The limitations of drug testing should be explained to the adolescent and their parents or caregivers before any testing is performed. The principal limitation is the lack of contextual information that is gained by drug testing alone. In order to support adolescents who may be misusing drugs, it is important to know the frequency of drug use and to understand the social and developmental factors that may be causing the behaviour. A psychosocial welfare assessment is likely to be of greater clinical value to the adolescent and to place less strain on the patient-practitioner relationship (see "Assessing potential substance use with HEEADSSS, SACS and CRAFFT", Page 15).

Substances can generally only be detected if taken less than 72 hours before sampling, however, cannabis (tetrahydrocannabinol) can be detected from three days to three months later, depending on frequency of use (Table 1).[3,4] Therefore, a positive test result for cannabis does not necessarily indicate that it is currently being used.

A positive test will not provide any information on the amount of drug that has been taken or the levels of impairment that it has induced. Furthermore, for some drug classes, a positive test does not always confirm that the drug use has been illicit. Depending on the testing and analysis method, positive results for opiates can be produced by any medicine that contains codeine, by fluoroquinolones, or by eating foods containing poppy seeds, e.g. one poppy seed muffin or two poppy seed bagels (N.B. this may occur in a preliminary drug screen, but would be very unlikely to occur with confirmatory testing).[5] The antidepressant sertraline can also produce a positive test for benzodiazepine use.[5]

A negative test will only confirm that the drugs that have been tested for are below detection limits. Inhalants are a relatively common substance of misuse, but are unable to be detected by drug testing. Some drugs such as oxycodone, methylphenidate (Ritalin) and ecstasy are not detected by standard screens. Testing for these substances must be specifically requested.

Table 1: Length of time drugs can be detected in urine samples (adapted from Standridge, 2010)[6]

Drug class	Detection window
Amphetamines	Two to three days
Benzodiazepines	Three days for short-acting (e.g. lorazepam), up to 30 days for long-acting (e.g. diazepam)
Cocaine	Two to three days, but up to eight days with heavy use
Opiates	One to three days
Tetrahydrocannabinol	Three days with single use, five to seven with use at four times per week, ten to 15 days with daily use and up to three months following heavy, chronic use

Performing a non-evidential drug test

Drug testing can be carried out for evidential or non-evidential purposes. Evidential testing is required for certification, legal or other evidential reasons such as pre-employment, post-incident, visa applications and drug rehabilitation programmes. As these tests may have evidential or legal implications, specimens need to be collected and tested in accordance with standardised procedures at accredited laboratories. Positive preliminary tests are followed up by confirmatory testing.

Drug testing adolescents in the general practice setting, for the purposes of counselling and compliance is non-evidential testing. Non-evidential testing is still performed under a robust process, but does not require a sample to be collected under the observation of certified personnel, or for the sample to be subject to "chain of custody" protocols when it is transported and stored. Confirmatory testing is also not necessary, unless the test result is disputed.

If the adolescent wishes to proceed with the drug test, after considering the limitations of drug testing and discussing more preferable methods of psychosocial assessment, the following protocols should be observed.

Specimen collection

Urinalysis is the preferred method for drug testing in general practice. Analysis of saliva and hair samples may be available via ESR or private laboratories. It is also

Drug testing at home is not recommended

Although drug testing kits can be readily purchased online, the American Academy of Pediatrics has expressed strong reservations about drug testing of adolescents in the home setting.[3] Information on how to "pass" (falsify) drug tests is freely available on the internet, along with products such as synthetic urine (including heating devices). In a home setting it is difficult to replicate the conditions required to ensure that urine samples are not contaminated or substituted. Home-testing is also likely to place strain on family relationships.

possible for blood, breath and sweat to be analysed. Urine generally contains higher drug concentrations than blood, breath or hair.[8] Drugs and/or their metabolites are also usually present for longer periods in urine than in blood.[9]

Before taking a sample for analysis, a detailed history of all medicines the patient is taking, or has recently taken, should be noted; including all over-the-counter (OTC) and herbal preparations. This list should be recorded on the standard laboratory request form. It is important to record any specific substances that the adolescent is suspected of taking. This is because the standard preliminary screen may not detect some drugs and specific testing may be required.

Urine collection protocol

Although "chain of custody" protocol is not required for non-evidential testing, it is important that urine is collected following set protocols. A robust collection protocol removes any suspicion that the sample may have been deliberately contaminated, diluted or substituted during the collection procedure.

The adolescent should remove outer clothing (e.g. jacket) that might conceal anything that could contaminate or dilute the sample, and then wash and dry their hands. The chances of a sample being deliberately contaminated are reduced if the collection procedure takes place in a cubicle where the toilet contains a bluing agent and there are no other sources of water present. Direct observation of urination is not compulsory for non-evidential drug testing, however, this is likely to provide a strong deterrent to contamination of the sample. A 2007 report on random drug testing in an adolescent substance misuse programme suggested that contamination of samples by adolescents may exceed 20% in uncontrolled situations such as a general practice clinic.[11] Anecdotal reports suggest that the actual number of deliberately contaminated samples is likely to be much higher.

A sample volume of at least 30 mL is recommended (although smaller volumes may still be adequate).[10] Once a sample has been provided the patient's name, NHI number and the date and time of collection should be written on the container which the adolescent should also initial. The accompanying testing form should be clearly labelled to ensure all data matches.

How to tell if a sample has been contaminated

An unusually hot or cold sample, a very small volume, or unusual colouration are all indicators that the sample may have been interfered with. Creatinine concentration is reported with urinalysis results as a way of confirming sample authenticity. Normally, urine has a creatinine concentration > 1.75 mmol/L. A specimen with a low creatinine concentration (especially below 0.5 mmol/L) is most likely to be diluted or otherwise adulterated.

Primary screening and secondary confirmation

Most laboratories perform an immunoassay on urine samples. A standard preliminary drug screen covers compounds in the following classes:

- Amphetamines
- Benzodiazepines
- Cannabinoids
- Cocaine
- Opiates

If an adolescent has taken drugs illicitly then a positive preliminary screen is often sufficient for them to acknowledge the behaviour. Secondary confirmation is usually offered by the laboratory, but in non-evidential testing it would only be required if the test result is disputed. N.B. confirmatory testing is mandatory in evidential drug testing.

Confirmatory testing involves the use of gas chromatography and mass spectrometry. Laboratories who are not equipped to offer this service can refer samples to the limited number of laboratories in New Zealand who do this testing.

Interpretation of results

A positive drug test does not always mean that the drug use has been illicit. One study which analysed 710 drug tests performed on people aged 13 – 21 years, found that 21% of positive drug tests resulted from the use of legally prescribed or purchased OTC medications, including 91% of samples positive for amphetamines.[11] False-negative results are also possible – the same study also found that 6% of samples were reported as negative because they were too dilute to interpret.[11]

Assessing potential substance use with HEEADSSS, SACS and CRAFFT

New Zealand guidelines recommend that every adolescent's psychosocial welfare be routinely assessed. HEEADSSS (Home, Education, Eating, Activities, Drugs, Sexuality, Suicide, Safety) is a standardised tool, intended to be used as a guide to a psychosocial assessment.[7] Questions are formulated and asked by the clinician, based on the topics within the HEEADSSS acronym. A psychosocial assessment should be conducted on all adolescents suspected of substance misuse regardless of whether or not drug testing occurs.

For further information about performing a HEEADSSS assessment, see "Substance misuse in adolescents" BPJ 42 (Feb, 2012).

If an adolescent discloses drug use during an assessment, this should be investigated further with tools such as the Substances and Choices Scale (SACS) or CRAFFT. SACS is a detailed question set, developed and validated in the New Zealand population. CRAFFT is a simple, but less informative, method for assessing the degree of risk that drug taking may expose an adolescent to.

N.B. Both HEEADSSS and SACS can be accessed within the *bestpractice* decision support module "Depression in Young People".

For more information about SACS and a copy of the questionnaire see:
www.sacsinfo.com/Questionnaires.html

CRAFFT:

1. Have you ever been in a **C**ar driven by someone (including yourself) who had been using drugs?
2. Do you ever use drugs to **R**elax, feel better or "fit in"?
3. Do you ever use drugs when you are **A**lone?
4. Do you ever **F**orget things you did while using drugs?
5. Have **F**amily or friends ever told you to "cut down" your use of drugs?
6. Have you ever got into **T**rouble while you were using drugs?

Answering "yes" to two or more questions indicates that drug use is likely to be a problem. Particular "red flags" are drug use when the adolescent is alone and friends expressing concern about usage.

Managing a positive result

Following a positive result, it is crucial to understand how much risk the adolescent is exposed to, what is driving any drug taking behaviour and the social context that the drug taking is occurring in. A discussion guided by HEEADSSS and SACS is the best tool for General Practitioners to uncover this information.

There is a danger that a positive drug test may cause an adolescent to become stigmatised, resulting in a reduction in self esteem and exacerbation of any underlying mental health conditions or negative social influences and disengagement from health services.[1] Referral for further support, and where appropriate, psychosocial interventions should be offered. Self management, brief interventions, motivational interviewing and cognitive behavioural therapy can all be used to assist adolescents who are at risk due to substance misuse.

It has been estimated that 60 – 75% of adolescents with a substance misuse disorder have some form of mental illness.[12] Therefore it is important that any underlying medical disorders are identified and effectively managed. Adolescents who display symptoms of suicidality, self-neglect, psychosis, severe depression or suspected bipolar disorder should be referred urgently to secondary care mental services.

Informing parents/caregivers

Adolescents who return a positive drug test should be strongly encouraged to discuss this result with their parents or caregivers. Ideally, this discussion will involve the General Practitioner. Test results may only be disclosed to parents or caregivers with the consent of the adolescent (unless judged not to be competent). However, in cases where the adolescent is believed to be placing themselves or others at risk through substance misuse, the clinician may disclose information to a parent or caregiver without the adolescent's permission. In such cases a Child, Youth and Family Services (CYF) referral should be considered. If a school or employer contacts a practice concerning an adolescent's test results, this information should remain confidential, unless there is prior consent for the information to be released.

For further information see: "Substance misuse in adolescents: alcohol, cannabis and other drugs", BPJ 42 (Feb, 2012).

LabPLUS is an Auckland based laboratory that provides both evidential and school-based non-evidential drug testing. For further information see: www.labplus.co.nz/drug_testing

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QUIZ FEEDBACK

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