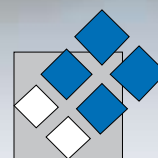


QUIZ FEEDBACK

Detecting Diabetes



bpac^{nz}
better medicine

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Acknowledgment:

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All information is intended for use by competent health care professionals and should be utilised in conjunction with pertinent clinical data.

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Introduction

This quiz provides an opportunity to revisit the recent bpac programme “Detecting Diabetes”. This programme focused on identifying the barriers to detecting diabetes in day-to-day practice and providing a series of tools to help overcome these barriers. This quiz focuses on the knowledge guide within the resource and provides an opportunity for some of the key points to be re-examined and additional detail is provided for some questions.

This copy of the quiz feedback includes the aggregated responses from GPs that completed the quiz, comments from the GP review group and specialist commentary from Dr Rick Cutfield.

All GPs who responded to this quiz receive CME points. After the closing date, the quiz can still be completed online. Currently there are approximately 20 interactive case studies available providing an ongoing opportunity for the accumulation of points. These are available from www.bpac.org.nz.



Quiz feedback: Detecting Diabetes

1. What is the best approach to testing people for diabetes?

	You	Your Peers	GP Panel
Test all of the practice's patients		1%	
Only perform as part of CVD risk assessment		6%	
Only test patients with symptoms		4%	
Target those at risk		98%	•

GP panel

While this is a fairly straight forward question, the panel did acknowledge that it can be difficult to identify those at risk. Although there are a number of risk factors that are associated with an increase risk of diabetes (such as ↑ age, ↑ BMI, etc), the panel thought that intuitively they were probably testing those people that had 2 or more of these risk factors.

The panel questioned how often reassessment of diabetes status should be repeated for people with risk factors, if the initial assessment shows normal glucose status.

Specialist comment

It is worth reviewing the risk factors and being aware of the traditional ones; obesity, age, ethnicity, family history and history of GDM. Evidence of vascular disease (angina, peripheral vascular disease) or hypertension should prompt a screen, but it is useful diabetes is now included in the C/V screening programme for over 45 year olds in primary care anyway. Be aware of PCOS and those with serious mental disorders on atypical psychotics and prednisone.

Those with IGT or IFG need annual screening. Others, depending on risks need them 3 yearly.

2. What is the currently recommended best initial test when investigating diabetes?

	You	Your Peers	GP Panel
Fasting glucose		98%	•
HbA _{1c}		1%	
Dipstick for urine glucose		1%	
Random finger prick glucose		1%	

GP panel

Although it is clear most people are aware that fasting plasma glucose is the best initial test, the figures above may not represent what actually occurs in day-to-day practice. Data from the Ministry of Health has shown that HbA_{1c} is frequently used as a screening test for diabetes. This is probably because HbA_{1c} is performed on a non-fasting sample whereas achieving fasting status can be difficult for many patients, and can be a major barrier to making a diagnosis.

Specialist comment

There is no perfect screening test. Once you have decided who to test, the fasting test is what is recommended, followed by an OGTT for those with an equivocal result.

HbA_{1c} is being used. It has been favourably compared with fasting glucose as a screen and diagnosis, in some reviews (HbA_{1c} has slightly lower sensitivity but higher specificity). An HbA_{1c} of between 5.9 – 6.1% has been seen as a possible cut off to prompt further testing.

BUT... HbA_{1c} can differ from lab to lab and from population to population. There may be history, age, ethnicity and even gender issues to work through.

A major international review is planned for later this year and we may hear something definitive next year.

3. In a person with a fasting glucose level of 5.9 mmol/L and family history of diabetes, what would be appropriate follow up?

	You	Your Peers	GP Panel
Check fasting glucose annually		12%	+/-
Repeat fasting glucose		2%	
Request oral glucose tolerance test		88%	+/-
No immediate follow up		1%	

GP panel

Although the table suggests a large proportion of doctors would request an oral glucose tolerance test for a fasting glucose in the range of 5.5 – 5.9 mmol/L, the panel wonders if this would be the case in practice. They noted the process of having a GTT is reasonably invasive for patients and in their experience performing GTTs for glucoses in this range has a low pick up rate for diabetes.

The threshold for requesting GTT would be increased by the presence of risk factors, while on the other hand may be less inclined if the patient has less risk factors. In many cases the decision on whether to perform a GTT will be based on comments accompanying the laboratory results. However, recommendations following fasting glucose results in this range, many vary around the country.

Specialist comment

The OGTT, while our gold standard, has its own problems including reproducibility, cost, convenience. The fasting plasma glucose of about 5.5 mmol/L has been shown in a number of studies to perform well as a screening test for undiagnosed diabetes. Diabetes is twice as prevalent for fasting plasma glucose in the range 5.5 – 6.0 mmol/L compared with under 5.5 mmol/L. Moreover, cardiovascular events appear to increase with increasing plasma glucose with a possible threshold at 5.5 mmol/L.

In future the fasting level of 5.9 mmol/L might warrant an HbA_{1c}, but given that 30% of type 2 diabetics have a fasting glucose less than 7 mmol/L, there would be a reasonable pick up of diabetes.

4. In a person with clear symptoms of diabetes, which is the best initial approach to confirm the diagnosis?

	You	Your Peers	GP Panel
A single fasting plasma glucose level of ≥ 7.0 mmol/L		80%	•
Two fasting plasma glucose levels of ≥ 7.0 mmol/L		9%	
Random glucose level of ≥ 11.1 mmol/L		25%	•
Two random glucose levels of ≥ 11.1 mmol/L		1%	
Oral glucose tolerance test		2%	

GP panel

Although there are some characteristic symptoms of diabetes, the panel also acknowledged sometimes the clinical picture is not so clear cut, as symptoms can appear vague and non-specific e.g. tiredness.

In a person with clear symptoms the panel would be inclined to either perform a finger prick glucose at the time of the consultation, or send them for an immediate non-fasting blood test. For some patients this would reveal elevated glucose levels so high that a diagnosis could be made on the spot. Patients with results that are not so clearcut, can always be referred later for a fasting sample.

Specialist comment

If a person has clear symptoms e.g. polyuria, polydipsia, either a fasting glucose or random glucose can give the diagnosis. Some symptoms are vague and appreciated only retrospectively.

Point of care testing, with a capillary test with an acceptable meter, can be useful in the practice, and while there is reasonable correlation between capillary and venous plasma glucose concentrations in the frankly diabetic range, it is considered best practice to confirm the diagnosis with a venous plasma glucose test. We have all seen some unusual test results from capillary testing at times for a number of reasons.

5. In a person with no symptoms of diabetes and a single fasting plasma glucose of 7.6 mmol/L, what further tests are required for diagnosis of diabetes?

	You	Your Peers	GP Panel
A further fasting plasma glucose of ≥ 7.0 mmol/L		89%	•
Oral glucose tolerance test		8%	+/-
HbA _{1c}		1%	
No further tests required for diagnosis		4%	

GP panel

Although a subsequent glucose of ≥ 7.0 mmol/L is diagnostic of diabetes, the panel believes there is probably a perception that a GTT would give a more definite diagnosis. When the glucose is only slightly elevated, as in the example above, GPs would want to be quite definite before giving a patient such a significant diagnosis as diabetes.

The panel recalled situations in which the fasting glucose has been slightly elevated, and then a repeat sample comes back normal, leaving them unsure of appropriate followup. They queried if a HbA_{1c} may be useful for these situations, as well as checking the patient was truly fasting. The panel discussed the effect of a concurrent illness on the fasting glucose level in a non-diabetic person.

Specialist comment

Guidelines do suggest that a followup test is needed. The diagnosis of diabetes has important consequences for the individual beyond health implications e.g. insurance. While there are studies of variability in all glucose measures showing short term changes, it is the 2 hr glucose levels that have substantially more variability (taken within 2 weeks) thus fasting glucose (within person CV 5.7%), HbA_{1c} has least variability. Diagnostic tests must be done when the patient is “well” and free of infection.

6. In a person diagnosed with impaired fasting glycaemia following a glucose tolerance test, how often should their glycaemic status be reassessed?

	You	Your Peers	GP Panel
Every six months		6%	
Annually		92%	•
As part of reassessment of CVD risk		2%	
Only if symptoms develop		<1%	

GP panel

Having annual followups is convenient for recall systems and also for patients to remember. Firm recommendations are helpful when organising nurse led clinics.

The panel were interested to know more of the significance of both impaired fasting glycaemia and impaired glucose tolerance. Are these progressive milestones on the pathway from normoglycaemia to diabetes? And is the specific diagnosis of one or the other important for management decisions?

Specialist comment

Both IFG and IGT are considered significant risk for progression to diabetes. They are common. In Australia IGT occurs in 10.6% of the adult population, IFG in 5.8%. Annual incidence rate of type 2 diabetes was 3.5% for IGT and 2.6% for IFG. WHO suggest annual screening for these groups. The corollary is that substantial numbers may return to normal glucose tolerance.

IGT predicts macrovascular events more than IFG but both should prompt full cardiovascular screening and appropriate management. Could they be replaced in future by a single HbA_{1c}? Watch this space...

7. What is the role of non-fasting blood glucose when identifying diabetes?

	You	Your Peers	GP Panel
Is currently not recommended as a initial test		46%	•
Has limited sensitivity and specificity for diagnosing diabetes		29%	•
Is less well standardised than fasting glucose, due to effects of timing and quantity of last meal		48%	•
Should usually be avoided unless there is no alternative		48%	•

GP panel

The GP panel agreed that an elevated non-fasting glucose of ≥ 11.1 mmol/L would be indicative of diabetes in a person with symptoms (or 2 samples ≥ 11.1 mmol/L in a person without symptoms), and a non-fasting blood glucose of < 5.5 mmol/L would be reassuring. Between the values of 5.5 mmol/L and 11.1 mmol/L the test is difficult to interpret and is of less value.

Specialist comment

I agree with the panel completely – nothing more to add.

8. In a person with symptoms of diabetes and a single random glucose of 15.2 mmol/L, what further tests are required for diagnosis of diabetes?

	You	Your Peers	GP Panel
A further fasting plasma glucose of ≥ 7.0 mmol/L		7%	
Glucose tolerance test		1%	
HbA _{1c}		2%	
No further tests required for diagnosis		89%	•

GP panel

The panel agreed this result is diagnostic of diabetes and no further testing would be required. There was discussion of the value of doing a HbA_{1c} at the time of diagnosis, but this is thought to be useful for providing a baseline level, rather than being a deciding feature for the early management plan.

The panel were curious to know if a person previously diagnosed with diabetes, who has changed their diet and lost weight can later be classified as non-diabetic, if their blood tests return to non-diabetic levels.

Specialist comment

This person has diabetes (probably, even if they were significantly stressed and with pneumonia or large myocardial infarct). A baseline HbA_{1c} probably doesn't change management but it is nice to show patients where they have come from 3 months later.

A person once diagnosed has diabetes, in most instances as least, for ever. Very few can maintain normoglycaemia for long periods and I tend to call these people "well controlled".



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