WestBay Alliance and Western HARP Consortium
A systems response to the care of people with diabetes

Summary: Diabetes Calculator

This document provides a summary of the Western HARP diabetes risk calculator designed to determine the overall risk of a person presenting for services. The diabetes calculator has been designed around available evidence where it exists. Included in this document, is a summary of each section of the calculator with an explanation of the rationale and guidelines on how the section is to be completed when using the tool. The reasons for each section are described, and where supported by a body of literature, this has been stated.

The Diabetes Calculator aims to determine the risk of people with diabetes presenting to hospital for treatment in the following 12 months and defines the entry point for HARP services. The risk screen is based on presenting clinical symptoms, history of diabetes management, self-management, and psycho-social issues. This screening categorises a person into one of four risk categories, (low medium, high and urgent).

The calculator helps service providers determine eligibility for HARP services, by quantifying a person's risk of acute presentation. Clients screened as urgent, high or medium risk are eligible for HARP diabetes services. The frequency of ongoing monitoring is also determined with this tool by informing clinicians when the person should be recalled to have their diabetes monitored. It is used following a full assessment by the treating clinician.

Purpose of the calculator:

- A tool for measuring the risk of acute presentation in the next 12 months.
- Determines the entry point for HARP.
- Forms the basis for recall and review by the agency and other clinical partners.

Reviewing the calculator

The diabetes calculator has recently been revised and updated as part of the continuous improvement methodology of the HARP Diabetes program. Working parties of clinicians have come together to discuss the presenting issues and advised on recommendations for changes. The calculator then underwent a trial period with a sample of 50 patients.

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CALCULATOR ITEM	RATIONALE and GUIDELINES FOR USE
PART A: CLINICAL ASSESSMENT	
1. Presenting clinical symptoms	Rationale The presenting clinical picture records the degree of severity of presenting clinical symptoms. It provides an indicator of existing diabetes management and the likelihood of an acute presentation. Presenting clinical symptoms are grouped into four risk categories. The criterion for each category has been determined by clinical working parties and available guidelines and evidence. The focus is on those criteria that contribute to overall risk and complexity, and the likelihood of increasing a person's risk of acute presentation within 12 months. Guidelines for use Clients are assigned one risk category and the corresponding score, determined by the treating health professional's assessment. Scores are weighted according to the severity of presenting clinical symptoms. Scores are not graded; each category is given the score indicated, giving a maximum sore of 10 points. This scoring system is based on the assumption that the more severe the presenting clinical symptoms, the higher the likelihood of acute presentation.
2. Service Access Profile	Rationale *Acute presentation* Recent literature and experience from the clinical arena suggests previous presentation to be a significant predictor of future presentation. *Regular GP follow-up* Available evidence supports the need for ongoing monitoring of diabetes complications and risk factors by regular follow-up. Routine monitoring can reduce the risk of developing diabetes related complications. *Reduced ability to self-care* Reduced ability to self-care for activities of daily living will often impacts on a person's ability to manage their diabetes. This is considered to contribute to a person's overall risk. Significant evidence from clinicians and experts support this. Guidelines for use Clients are given the corresponding score for each service access issue present. Service access issues are weighted according to the contribution they make to overall risk and the possibility of an acute presentation. Issues are also considered cumulative, increasing the risk with each one present. Scores are not graded; each presenting issue is given the score indicated, giving a maximum score of 10 points. The underlying assumption

1. Presenting Clinical Symptoms	
Urgent: (Presentation with wound or foot ulcer; commencing insulin; 3 levels of < 4mmol/l or 7 levels of >15mmol/l in the last 2 weeks; HbA1c > 10%; BGL > 20mmol/L)	10
High: (Presentation with active foot pathology and history of complications; less than 3 levels < 4mmol/l or less than 7 levels of >15mmol/l in the last 2 weeks; HbA1c 8.6-9.9%; BGL 15-19mmol/L)	6
Medium: Presentation with active foot pathology/ problem but no history of foot complications; HbA1c 7.0-8.5%; no HbA1c in the last 6-12 months; BGL 8-15mmol/L)	3
Low risk: (Foot check with no history of foot complications and no active foot pathology/ problems; HbA1c <7.0%; BGL < 8.0mmol/L)	1
Score	/10

2. Service Access Profile	
Acute diabetes admission/presentation (Have you been to hospital in the last 12 months including today?)	4
No regular GP follow up (regular medical checks 3 times a year)	3
Reduced ability to self-care (to the extent it impacts on diabetes management)	3
Score	/ 10

	is the more issues a person has, the higher their risk and hence likelihood of acute presentation.
3. Risk Factors	Rationale There is a significant body of evidence that links the risk factors listed to the progression of diabetes related complications. Risk factors are considered cumulative, the more a person has, the higher their overall risk. Morbid obesity has been assigned a higher score due to evidence that demonstrates the significant risk of lifestyle related disease. This risk will substantially increase the chances of developing diabetes complications. Guidelines for use Clients are given the corresponding score for each risk factor present. Risk factors are weighted according to the contribution they make to overall risk and the possibility of an acute presentation. Scores are not graded; each category is given the score indicated, giving a maximum score of 16 points. This corresponds with the assumption that risk factors are cumulative and increase a person's risk with the more that are present.
4. Diabetes Complications	Rationale There is a significant body of evidence about the long-term complications of diabetes. The presence of diabetes related complications add to disease complexity and overall risk, and increases the likelihood of acute presentation. Each problem listed is a known long-term complication of diabetes as stated in the evidence and best practice guidelines. This calculator assumes a cumulative nature of diabetes complications, the more complications a person has, the greater the level of risk due to increasing disease complexity. It is also assumed that this is more likely to increase the risk for acute presentation. Guidelines for use Clients are given the corresponding score for each diabetes complication present. Complications have been weighted according to the contribution they are suspected to make to overall risk and the possibility of an acute presentation. Scores are not graded; each category is given the score indicated, giving a maximum score of 18 points. This is based on the assumption that diabetes complications are considered cumulative and increase a person's risk with the more that are present.

3. Risk Factors	
Smoking	2
Overweight / Obesity (Guide: BMI 26-32)	2
Morbid obesity (Guide: BMI > 35)	4
High cholesterol (total cholesterol ≥ 5.5mmol/L, HDL≤ 1.0mmol/L, LDL ≥ 2.0mmol/L)	2
High blood pressure (≥ 140/90mmHg or on medication for high blood pressure)	2
Physical inactivity / sedentary	2
Polypharmacy > 5 medications	2
Score	/ 16

4. Diabetes Complications	
Cardiovascular Disease (coronary heart disease, stroke, PVD)	3
Eye Disease (diabetic retinopathy, cataracts, glaucoma)	3
Kidney Disease (diabetic nephropathy, end stage renal disease)	3
Neuropathy (peripheral neuropathy, autonomic neuropathy	3
Foot Complications (foot ulcer, lower extremity amputation)	3
Oral complications (periodontal disease, tooth loss, oral problems)	3
Score	/ 18
TOTAL SCORE FOR PART A	/ 54

PART B: FACTORS IMPINGING ON SELF-MANAGEMENT

5. Psycho-social issues

5. Psycho-social and demographic issues (Circle yes or no for each issue listed. If the issue is present, circle Y, if absent, circle N)	
Mental health (depression, anxiety or psychiatric illness)	Y / N
Disability (Intellectual, physical, visual, hearing)	Y / N
Transport to services	Y / N
Financial issues (inability to afford health services and/or medication)	Y / N
CALD or Indigenous (health beliefs)	Y / N
Illiteracy and/or limited English	Y / N
Unstable Living Environment	Y / N
Socially isolated	Y / N
Drug and Alcohol problems	Y / N
Rate the impact these combined factors have on the person's ability to self-manage their condition as nil, low or high.	
No impact (on client's ability to self-manage their diabetes)	0
Low impact (on client's ability to self-manage their diabetes)	7
High impact (on client's ability to self-manage their diabetes)	15
Score	/ 15

Rationale

Evidence supports the notion psycho-social issues add to disease complexity and therefore lead to significantly poorer outcomes over time. The issues listed were chosen based on written evidence about the psycho-social factors that are likely to lead to poorer outcomes. These factors have a significant impact on a person's ability to self-manage their condition and people who have significant psycho-social issues are less likely to engage in behaviour change.

Guidelines for use

Unlike the other components, this scoring system is graded to demonstrate the impact the combined issues have on the person's ability to self-manage their condition. The scoring system is two-fold. Firstly, a yes or a no is marked next to each of the issues listed based on whether or not it is present. The next step is to use the rating scale to determine the impact the issues have on the ability of the person to self-manage their condition. The person is given a score based on the impact of the combined issues rather than a separate score for each issue. This score is determined by the assessment of the treating health professional.

This scoring is based on the assumption that the greater the impact of psycho-social risk factors on a person's ability to self-manage, the higher their overall risk. It also provides a guide of whether the person will benefit from additional HARP services.

6. Self-management impact

6. Readiness to change assessment	
No capacity for self-management (cognitive impairment; end stage disease)	4
Pre-contemplation (not ready for change)	3
Contemplation (considering but unlikely to change soon)	3
Preparation (Intending to take action in the immediate future)	2
Action (Actively changing health behaviours but have difficulties maintaining plan)	1
Maintenance (Maintained behaviour for ≥ 6 months)	1
Relapse (A return to the old behaviour)	3
Score	/ 4
TOTAL SCORE FOR PART B	/ 19

Rationale

A significant body of evidence supports the benefits of self-management. Effective self-management involves managing the day-to-day tasks of having a chronic illness. The degree to which people are confident and able to manage this will have a significant impact on their health outcomes as demonstrated in research.

A readiness to change assessment has been used to determine self-management impact using the Transtheoretical Model (TTM). The TTM illustrates a process for behaviour change and identifies five main stages that describe the state of readiness to make health behaviour change. This model is used to enhance a person's intrinsic motivation to change and can therefore be used to enhance self-management.

This section enables clinicians to determine a person's readiness to engage in health behaviour change. The assumption is that people who are not ready for change are more likely to develop worsening risk factors leading to diabetes related complications as they are less likely to engage in the necessary health behaviours required to manage their disease.

	Guidelines for use A score is given according to the corresponding stage of readiness identified. This is determined by the treating health professional's assessment. Clients are assigned one category scoring a possible total of 4 points. Scores have been weighted according to the likelihood of the person engaging in behaviour change. For example, people in pre-contemplation score higher as they are far less likely to engage in change and hence manage their condition. Scores are not graded; rather each stage is given the score indicated, giving a maximum score of 4 points. This is based on the assumption that the more resistant to change a person is, the higher their overall risk due to sub-optimal self-management.
PART C: NEW RISK PROFILE AND RECALL AND REVIEW	
7. Recall and review Calculate the new risk profile by adding PART A and B Total Score for A and B _____/73 Level of Risk / Score / Recall / Date Urgent / 56 - 73 / 3 months / ____/____/20___ High / 31 - 55 / 6 months / ____/____/20___ Medium / 16 – 30 / 9 months / ____/____/20___ Low / 1 - 15 / 12 months / ____/____/20___ All clients identified as urgent and high risk are registered for HARP.	Rationale Recall and review is the recalling of the person back into the system for routine screening and monitoring of their condition irrespective of the current episode of care. There is now a significant body of evidence supporting the benefits of recall and review to deliver planned care. Routine monitoring assists to prevent and delay the long-term complications of diabetes due to the increased possibility of early detection. This section provides a guide on how frequently the person should be monitored for their diabetes management based on the risk rating established through the screening. The eligibility of a person for HARP services is also determined in this section. Guidelines for use The scores for parts A and B are added together to give a total score. The overall risk of the person is determined by the total score, which corresponds to one of the four risk categories. This risk category then determines the frequency of monitoring. The date of the next risk screen is then calculated from the date this risk screen is completed. The ranges for each risk category were based on a trial of 50 patients. The trial demonstrated the need for the high risk category to commence at 31 to more accurately capture those who were clinically felt to be at higher risk and therefore requiring additional HARP services. All clients identified as either urgent or high risk are registered for HARP.