

Eight Screen Validation: Final Report

(Addendum incorporated)

**Abacus Counselling Training &
Supervision Ltd**

Participants in current study

Problem Gambling Foundation of NZ
Salvation Army Oasis Centre
Te Rangihaeata Oranga
TUPU
Salvation Army Bridge Programme
Odyssey Auckland
Odyssey Christchurch
CADS Dunedin
CADS Auckland
Care NZ
Vincentian Centre
Ora Toa PHO
Gambling Helpline
Wairarapa Addiction Service
Hawkes Bay AOD
Oraka Aparima Health & Social Services

Abacus Counselling Training & Supervision Ltd
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Caritas (Hong Kong) online Chinese EIGHT Screen

Journal article on Youth EIGHT Screen & Journal article on suicide where EIGHT Screen used in an A & E setting

Executive Summary

The EIGHT Screen (**E**arly **I**ntervention **G**ambling **H**ealth **T**est; Sullivan 1999; copy of screen is annexed) was developed initially as a gambling screen for use by General Practitioners or family doctors (GPs).

1. The purpose of this project was to:
 - a. Assess the validity of the EIGHT Screen as an assessment tool for adult gamblers, adolescent gamblers, and major New Zealand (NZ) ethnic groups.
 - b. Assess the reliability of the EIGHT Screen as an assessment tool.
 - c. Identify appropriate cut-off points to differentiate between those with serious problems, including pathological gamblers (Level 3), those with less serious problems that may benefit from early/brief intervention (Level 2) and non-problem gamblers (Level 1).
 - d. Assess the ability of the EIGHT Screen to accurately assess a client's harm caused by gambling in a variety of different clinical situations. These clinical situations include both specialist and generalist settings such as alcohol and other drug services, general practice services, and youth services.
 - e. Obtain qualitative feedback from experienced and competent medical and intervention service practitioners and to incorporate feedback, so that it will enhance the acceptability of the EIGHT Screen, and willingness of practitioners to integrate the EIGHT Screen as an assessment tool in the provision of services.
2. The EIGHT Screen comprises eight questions to assess problem gambling, with four or more yes answers identifying a gambling problem that may be moderate or sub-clinical (Level 2), or serious (Level 3, including probable pathological gambling). It was designed to be brief (self-completed in approximately one minute), and simple to score, in order to provide prompt assessment and feedback.
3. Because there is no precise description of what constitutes a serious or pathological gambler (Level 3 gambler) or sub-clinical gambler (Level 2), there is no 'gold standard' usually available to compare the EIGHT Screen's ability to identify those conditions against. In the absence of a gold standard, 'de facto' standards have arisen, including the DSM-IV criteria for Pathological Gambling Disorder (PGD) for Level 3 gambling, and various lower screen cut-offs (lower number of questions agreed with, that indicate gambling problems) for Level 2 gambling. One researcher has suggested that:

"...a gold standard exists when a multiplicity of workers concerned in a phenomenon accept at least tacitly that there is a best available measure to identify that phenomenon and adopt that measure in their daily work" (Becker 1960; Dean 1979; Gerson 1983; Volberg 1983).

(In Volberg 1998, p 20)

4. Until recently there has largely been a tacit agreement that the SOGS gambling Screen (Lesieur & Blume 1987), with 20 scored questions (plus others non-scored) was a de facto gold standard.
5. The method used to deliver the five above aims, was to combine a number of approaches, namely a Triangulation approach (Patton 2002). This included analysis of past research on the EIGHT Screen; feedback from practitioners, researchers and other users of the screen; and a current study with the identified target users and consumers of the screen.

The Screen Development Study (Sullivan 1999) developed the EIGHT Screen for General Practitioners (GPs), and formed part of a thesis for a Doctor of Philosophy qualification from the Department of General Practice at the University of Auckland.

6. Because PGD is a persistent and recurrent problematic behaviour (DSM-IV), the EIGHT Screen questions asked whether problem gambling issues had ever occurred, rather than within a set recent period (commonly called 'current' screens). This approach was to avoid finding that, incorrectly, the person was not a problem gambler because the behaviour was temporarily in abeyance at the time of screening (ie false positives). Participants were GP patients, problem gambling treatment provider clients, and problem gambling therapists in NZ and overseas.
7. The Screen Development Study identified that the EIGHT Screen correlated positively with the SOGS (74%) and would identify correctly a 3 cut-off (93% identified) of the SOGS Screen (sub-clinical, Level 2 problems) and at a 5 cut-off (92.7% identified) that identified probable pathological gambling (Level 3).
8. The study identified that the EIGHT Screen was a useful screen with both males and females, and identified NZ clients of problem gambling services that had been assessed as meeting a PGD assessment.
9. In a GP patient population, the EIGHT Screen identified 75% of patients who met SOGS probable pathological gambling categorisation.
10. The screen was found to have a high internal consistency in that each question correlated highly with the result of the total screen (Cronbach's alpha 0.971 where a minimum of 0.70 is the lower point and 1.0 the upper point).
11. A cut-off of 4 for the EIGHT Screen was confirmed through ROC analysis and from feedback from 63 NZ and overseas specialists.
12. Peer feedback was positive, as identified by the granting of the PhD following review from other NZ and overseas Universities, and a successful viva defense, and feedback from presentations at international conferences.

The Youth EIGHT Screen-Y Study (Sullivan 2005) compared this screen in Auckland High Schools (n=525) with a youth version of the SOGS with a correlation of 64% identified, and with a more conservative DSM-IV screen with a correlation of 53%. The findings have been published in a peer

reviewed journal, the Health Promotion Journal of Australia (Sullivan 2005).

In a PHO study (Sullivan et al 2006), patients of three PHOs in NZ (n=1,580) participated and completed the EIGHT Screen and a depression screen. It is known that problem gamblers have higher levels of depression than non-gamblers (on average), and an expected outcome for external validity of the screen was that those who screened positive on the EIGHT Screen would be more likely than other patients to also screen as positive on the depression screen. EIGHT Screen positives were found to be almost twice as likely to also score positive on the depression screen.

The Prison Study (Sullivan et al 2006), compared the EIGHT Screen scores with SOGS scores and a DSM-IV diagnosis by therapists of inmates (n=100) in a NZ medium security prison. Criminal offending is highly correlated with PGD. Twenty nine percent of prisoners scored as positive on both the EIGHT Screen and SOGS, with a correlation of 83% between the screens. Compared with a DSM assessment, the EIGHT Screen identified 91% of inmates assessed as meeting PGD, while SOGS identified 82% of these PGD inmates. The EIGHT Screen identified 78% of sub-clinical problem gamblers (Level 2 – set for this study at 3-4 DSM criteria), the same as SOGS (at 3-4).

Within the last year, NZ Corrections has adopted the EIGHT Screen as its assessment screen for problem gambling for sentenced offenders.

University research in NZ (Cape et al 2002) analysed the internal consistency of the EIGHT Screen and concluded in assessing the screen's validity, that there were no redundant questions in the screen, no two questions were overly correlated, and "in general all questions were equally valid" (page 8). They concluded:

"The use of the EIGHT Screen test as a screen for pathological gambling proved to be practical and this research enabled further validation of this questionnaire."

An Australian University study (Shandley 2000) identified that the EIGHT Screen and SOGS correlated at 90.6% for Australian treatment and general populations.

Current Use of the EIGHT Screen: In current use, the EIGHT Screen, as a validity measure of applicability, is currently being utilised by: the South Australian Government Dept of Human Services, the South Australian Break Even Programme in Conjunction with Dept of Correctional Services, the Victorian Commission for Gambling Regulation (as an online self test), the South Australian Government Dept of Human Services in conjunction with Australian Medical Association and Flinders University Medical Centre for Anxiety & Related Disorders, Caritas AG Counselling Centre in Hong Kong (also online), Australian Federal Dept of Health & Aging online professional development AOD resource handbook as the gambling screen, in NZ Corrections (above), and others.

As a validity measure of both applicability and culture, the EIGHT Screen has been used in the Ngati Porou Study (2005; n=507) and Toiora Project (2004; n=792), as well as with lower socio-economic groups in the Foodbank Project (2004; n=1,219) and in a Hospital setting (Suicide Study 2006; n=70).

The Current Study involved screening of clients at Alcohol and Other Drug treatment settings (AOD), problem gambling treatment settings, and a PHO. Participants completed the EIGHT Screen and either a SOGS (AOD and PHO) or a NODS screen, based upon DSM-IV criteria for PGD. The NODS screen focused upon the previous 12 months and was expected to be conservative compared with the EIGHT Screen and SOGS:

“On average, the DSM-IV appears to target a level of gambling pathology that is too severe to capture gambling-related problems typical in community samples (for community use there is a need for) development of criteria to map the lower ranges of severity...to increase measurement precision.” (Strong et al 2004 page 477)

13. N=1,333 clients or patients participated in the Current Study (n=341 specialist problem gambling treatment service clients, 315 PHO patients, and 676 AOD patients). Client's areas ranged from Whangarei to Dunedin and patients were from a Wellington PHO (Porirua).
14. The EIGHT Screen and SOGS correlated highly at 86%, while the EIGHT Screen and NODS correlated lower at 62%.
15. In the AOD setting, the EIGHT Screen and SOGS correlated at 89.5%, in the PHO setting, correlated at 81%, and the EIGHT Screen and NODS in the specialist setting correlated at 62.4%.
16. One hundred and forty three of 811 AOD clients and PHO patients scored positive on the EIGHT Screen (scored 4 or more), compared with 108 SOGS positives who scored as probable pathological gamblers (5 or more) and 40 who met Level 2 (scored 3-4). The 143 EIGHT Screen positives and 148 SOGS positives were similar in number, and this indicates that the EIGHT Screen does not result in high numbers of positives compared with the de facto gold standard, the SOGS.
17. Correlation between the EIGHT Screen and SOGS for females was similar at 84.5% as for males 87%, with reliability high for each (Cronbach's alpha 0.96 females, 0.956 for males).
18. With youth (aged under 25 years), the EIGHT Screen and SOGS correlated highly at 91.4%, but lower for EIGHT Screen and NODS at 70%.
19. The EIGHT Screen and SOGS correlated highly for Maori (83%) but lower for the NODS 58%, and also for Pacific people (SOGS/EIGHT r=82%; NODS/EIGHT 36%) and NZ European (89%; 63% respectively). Usefulness of the EIGHT Screen was high (ROC 0.976 Maori, Pacific 0.957 and NZ European 0.976).
20. The EIGHT Screen was found to be reliably high between different settings (AOD, PHO) and at 70%, at the limit of acceptability for specialist problem gambling services. Reliability was high for both

- males and females (over 0.95 Cronbach's alpha for both) and for Maori, Pacific and NZ Europeans (all over 0.94).
21. When participants were retested at a later time with the EIGHT Screen, they scored positive or negative compared with their first screen 96% of the time.
 22. Feedback from AOD, specialist services and PHOs, youth services, Iwi-based services and Corrections were strongly positive (see appendix for statements), with little negative feedback. Positive acceptance of brevity, simplicity and reliability was found.
 23. Various aspects of validity were met, as to construct validity, classification validity, appropriate samples, dimensionality (with some discussion), external validation, concurrent validity and item variability, practicality, applicability, gender, age (youth and others), and culture.

Cut-off

24. From analysis and feedback, a 4 cut-off was considered appropriate to identify Level 2 and 3 problem gambling.
25. A 2 (or 3) cut-off was suitable for health promotion purposes or brief interventions.
26. A higher cut-off for Corrections may enable fewer false positives, but at a cost of false negatives, and with little benefit. Training and education as to the likely effects on an individual of a 4 score would be preferable.
27. Although findings for the NODS were relatively low for a 4 cut-off in specialist services, support from therapists were high.
28. The EIGHT Screen at a 6 cutoff for specialist problem gambling treatment settings acts as a reasonable substitute for a DSM-IV based screen for PGD. It identifies, at a 6 cutoff, 96.5% of those who would be assessed by the 12-month NODS screen as pathological gamblers.
29. The SOGS and NODS are established screens, however the wide acceptance of the EIGHT Screen and its 4 cut-off, is an indicator that could be given more weight than the NODS findings, while the high correlation between the longer SOGS and the EIGHT Screen supports the 4 cut-off as a good indicator of Levels 2 and 3 gambling, and ensures that high numbers of probable pathological gamblers are identified without excessive false positives.
30. Also, as neither the SOGS nor the NODS are accepted gold standards for Levels 2 or 3 gambling, weight must be given to the other validation indicators. As stated by Volberg above, if a particular screen (and this would include cut-off) is accepted by a majority of practitioners in the field, this becomes a gold standard. This standard appears to be a 4 cutoff for clinical issues, and lower for health promotion purposes.

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Introduction

Literature Review

Problem gambling can result in serious health and social problems for gamblers and their families, yet help-seekers appear to be late-stage (Garretsen & Plant 1997; Ministry of Health 2005) and comprise only a small proportion of those actually experiencing problems (Productivity Commission 1999). Symptoms are often obscure and/or ambiguous (Garretsen et al 1997) and guilt and shame can deter help-seeking. Early detection and early interventions can be both more outcome-effective and more cost-effective, than later stage intervention.

Currently there are over 20 problem gambling screens (Abbott, Volberg, Bellringer & Reith 2004). More recently, briefer screens have been developed, for example, the Lie/Bet Scale (Johnson et al 1997), the Problem Gambling Severity Index (PGSI) of the Canadian Problem Gambling Index (Ferris & Wynne 2001), the shortened SOGS (Strong et al 2003) as well as others. In some cases, these screens have been designed as clinical instruments to identify those who may be assessed for gambling pathology (Lie/Bet or shortened SOGS), or as a briefer population assessment instrument (PGSI; Wager 2004). The present research comprises a validation exercise to identify the psychometrics of the EIGHT Screen within a New Zealand population.

Background

The EIGHT Screen (**E**arly Intervention **G**ambling **H**ealth **T**est, Sullivan 1999; copy annexed) was developed initially as a gambling screen for use by General Practitioners or family doctors (GPs). The parameters of such a screen would be brevity and simplicity; to meet the constraints of a busy general practice; as well as the usual requirements of reliability and validity (Litwin 1995). Brevity, following enquiry of GPs, was delineated as requiring one minute or less on average, to complete the self-administered screen. Simplicity was a quality required which overlapped with the brevity, in that scoring was required to be a very brief exercise, in order to enable feedback to be promptly provided. With limited available time and a very wide range of possible health issues to be identified and addressed, screens for issues like problem gambling, which has only recently been perceived as a health issue rather than a financial or behavioural problem, and without apparent direct morbidity sequelae, are unlikely to be used. As such, minimising barriers for use in this setting was as important as the psychometric properties of the screen.

In the development of the EIGHT Screen, a series of validation and reliability steps were addressed in a number of studies, using a triangulation approach (see Initial Validation section below), that focused upon the screen being essentially a tool for GPs.

Since this time (1999), there has been a wider use of the screen in settings outside that of the original intention, generally in an ad hoc, rather than integrated approach. Problem gambling has been identified as likely to coexist with many other health issues, such as depression, stress related somatic

problems, and anxiety (Potenza et al 2002). However, for an alternative view on anxiety see Shaffer & Korn (2002), suicidal ideation (Productivity Commission 1999); Penfold, Hatcher, Sullivan & Collins (a) and (b) (submitted for publication), and many chemical addictions, particularly alcohol (Garretsen et al 1997; Penfold et al –paper (b).

“It underlines the complex causality of problems experienced by problem gamblers. Problem gambling may exacerbate other dependencies, and they in turn may exacerbate problem gambling”

“Counselling for problem gambling will need to also deal with these comorbidities, and treatment for other dependencies may need to take into account secondary gambling problems that may not be transparent”

Australian Productivity Commission (1999)

As awareness has grown about the impact of gambling on other health issues, some services and institutions have chosen to screen for gambling problems, often electing to use the EIGHT Screen as the screening tool. These include community and residential alcohol and other drug treatment services (AOD), Iwi-based services, health promotion agencies, and justice services. In addition to those in New Zealand, services outside of New Zealand have also used or trialed the EIGHT Screen (see Current EIGHT Screen Use below).

Purpose

The purpose for which a gambling screen is intended, is an important initial decision to be made when developing the tool. The Gambling Research Panel (Jackson, Thomas & Blaszczyński 2003), identified five different purposes:

1. Diagnosis of a current gambling problem.
2. Severity of the gambling problem and its consequences.
3. To predict who is at-risk for a future problem.
4. For treatment planning.
5. As a triage instrument to assign resources to.

As may be expected, there is often an overlap between these purposes. As identified by Neal and her colleagues (2005), a psychometric instrument such as the EIGHT Screen has diagnostic qualities, while even diagnostic interviews may not be an infallible standard. This is particularly true for problem gambling, where such a gold standard does not currently exist.

The Early Intervention Gambling Health Test or EIGHT Screen is a New Zealand developed tool comprising eight questions, covering emotional, cognitive, and behavioural dimensions, and has items that test similar criteria found in the SOGS, GA20, and DSM-IV, as well as a health related criterion. The Eight screen questions are divided between emotional (37.5%), cognitive (25%) and behavioural (37.5%). It is usually self-administered, but a version for phone counsellors to administer is available. Its simplicity of language, scoring, and brief length was intentional, for ease of administration by both health professionals and non-health professionals (even though initially developed for a GP environment). This enables it to be used for both screening and assessment purposes, as defined by Laplant & Shaffer⁸ above.

Most screening instruments will not be diagnostic, but will correlate positively with diagnostic criteria in varying degrees. However, in many cases, sub-clinical conditions will warrant intervention, while definition of what comprises these conditions (including problem gambling), may be open for discussion and reached by consensus with appropriate health professionals.

The Early Intervention Gambling Health Test or EIGHT Screen was developed as a tool for primary health environments, specifically in General Practice, with intended utilities of brevity, sensitivity, and simplicity of scoring (Sullivan 1999). As such, its primary focus was in the identification of a current gambling problem in a clinical setting. It was also intended to identify early gambling problems ('pre-clinical') as well as late stage problem gambling (Pathological Gambling Disorder). In its development, it has correlated well with DSM based screens and the SOGS, and appears to demonstrate face validity. It has been presented for peer assessment at international and national conferences and has appeared in journal publications. The brevity and simplicity of scoring of the Eight Screen has enabled its use to be expanded, to include identification of gambling harm in a wider range of primary care environments, treatment centres for problems that commonly co-exist with problem gambling, and in situations that may be caused by problem gambling, (e.g. budgeting services, food banks, community justice, and alcohol and other drug treatment centres).

A cut-off of four was set following a number of approaches, (consensus between health professionals in the field, correlation with other screens (e.g. ROC curves), and assessments.

Laplane & Shaffer (2002)⁸ state that evaluation of disordered gambling includes three primary forms:

- 1) screening (informal check that can be administered without a health professional),
- 2) assessment (frequently used to determine if a more extensive diagnostic evaluation is needed) and
- 3) diagnosis (trained health professionals evaluate and guide treatment strategies), and that these are intended for very specific settings.

In reality, clinical screens can have aspects of each of the above three forms. Using current categories of problem gambling (see below), various cut-offs may have satisfactory validation for different levels of problem gambling, and at its highest cut-off, sensitivity and specificity that correlates highly with Pathological Gambling Disorder in a specific setting, e.g. a specialist problem gambling treatment setting.

Screens can provide evidence of the existence of problem gambling harm without enquiring about every possible negative outcome, and the brevity of the screen should not detract from its' accuracy:

“...(Instrument) doesn't have to document all possible harmful consequences of gambling. It only has to correlate highly with that harm”
(VGS Development p 49).

Levels of problem gambling

With the focus on early identification of gambling problems rather than only focusing on gambling pathology, a common categorisation of 'levels' is increasingly being used. Level 3 is seen as the group with the most serious negative effects, with Level 2 being those who are experiencing a wide range of adverse reactions or consequences, and comprise a diverse group (sub-pathological gamblers), who are either moving towards more disordered gambling or to Level 1 (little or no gambling problems) (Shaffer et al 1997).

The Early Intervention Gambling Health Test or EIGHT Screen was developed as a tool for primary health environments, specifically in General Practice, with utilities of brevity, sensitivity, simplicity in terms, and of scoring. It is usually self-administered but a version for phone counsellor administering is available. The Eight Screen comprises eight questions covering emotional, cognitive and behavioural dimensions, and has items that test criteria found in the SOGS, GA20, and DSM-IV, as well as a health related criterion. The Eight Screen in its development, correlated well with DSM-based screens and the SOGS, and has subsequently continued to do so. It has been presented for peer assessment at numerous international and national conferences and has appeared in journal publications (see Annexure C).

The brevity and ease of use of the Eight Screen offers an opportunity to expand its use to enable early identification of gambling problems into a wider range of primary health environments: treatment centres for problems that commonly co-exist with problem gambling, and also in situations that may be caused by problem gambling, for example, budget services, food banks, community justice, and others.

The proposed project seeks to provide evidence as to whether the Eight Screen is an appropriate tool for use in a range of primary and specialist environments to identify both early and later stage gambling problems, and for the potential allocation of treatment resources to these environments, in order to intervene successfully. In this respect, the Eight Screen may also provide a measure of outcome for such interventions. Screens can provide such a finding, and the brevity of the screen should not detract from its ability to be used for this purpose:

“...(Instrument) doesn't have to document all possible harmful consequences of gambling. It only has to correlate highly with that harm” (VGS Development p49).

Laplante & Shaffer (2002) states that evaluation of disordered gambling includes three primary forms: 1) screening (an informal check that can be administered without a health professional), 2) assessment (frequently used to determine if a more extensive diagnostic evaluation is needed) and 3) diagnosis (trained health professionals evaluate and guide treatment strategies). These are intended for very specific settings, and it is expected that the current project will identify the Eight Screen's ability to contribute to each of these purposes, depending upon the environment in which it is used.

The difficulty often associated with problem gambling research is the absence of a gold standard. This often results in either a plethora of self-determined

standards being designed for the particular purpose for which they are being used (e.g. the HARM (APC 1999), the VGS (Ben Tovim et al 2001), the NODS (NORC 1999), the CPGI (Ferris 2001) and others) or use of a de facto gold standard such as the SOGS (Lesieur et al 1987) or DSM-IV (APA 1994) criteria, in a rather circular process. Therefore, the standard against which the screen is to be validated is either at best, as valid as the standard, or measured against a number of such standards that have face 'validity'. This is either as a result of widespread use (e.g. SOGS), or compared with a new standard, which, based upon the purpose of the screen, identifies outcomes of problem gambling. An example is HARM, which looks at the harm from problem gambling, rather than the gambling itself. This gold standard absence can appear to be somewhat less than exact, but can be a difficulty for behavioural problems where there are no biological markers. This is not however uncommon:

"For most of the measurements covered in this book, however, gold standards do not exist. This is especially the case where a measurement is designed to reflect an abstract, conceptual definition of health. In this situation, evidence from several validation procedures must be assembled, a process known as 'construct validation'." (McDowell et al, 1997).

Validation

The validation process involves analysis of past research on the EIGHT Screen, as well as current studies.

Triangulation approach to validation

Because the concept of problem gambling has been elusive, and can be approached through a range of paradigms (e.g. harm, medical), an agreed concept against which a test or screen will identify the existence or otherwise of that concept, a single approach was considered unwise. A methodological triangulation is a combination of research methodologies often involving qualitative and quantitative methods (e.g. focus groups and screening a population). Both within-method (2 screens completed) and between-methods (screen score and therapist feedback on a client) were perceived as a comprehensive approach to corroborate findings and to enhance the validity of the findings, and would add to the traditional focus upon reliability and validity (Patton 2002).

The absence of a true gold standard for even the most serious problem gambling syndrome, and with little accepted understanding of sub-clinical problem gambling, the approach will be one of 'construct' validation i.e., evidence from several validation procedures will be assembled both to identify the construct, and to confirm to what degree the Eight Screen identifies that construct. In some cases, these validation procedures have been completed, or are under completion from other research projects. The aim was to add the initial research (see Screen Development below) to findings through the new research, in order to ensure that these findings reflect the current position as regards the Eight Screen validity.

Validation: Past Research

Screen Development Study

Initial validation was effected as part of a doctorate (PhD) process over a number of years (Sullivan 1999). This was a formative process, working with information and screens (and their composite items) used at the time. It was noted that the majority of screen items used at the time tested a limited number of 'accepted' indicators of problem gambling. Although screens generally weight each item equally, it appears unlikely that each item would identify problem gambling to the same degree, while others may identify earlier stage problem gambling rather than later stage (PGD).

The SOGS, was then as now often described as a de facto gold standard, and remains the most widely used screen although currently this appears to be changing (Abbott et al 2004). It is based on the previous DSM-III-R and is strongly focused upon gambling behaviour (85%), as is the latter DSM-IV (70%). Volberg states:

“As cognitive therapies become more popular, and particularly since pathological gambling appears to be a peculiarly cognitive disorder, resources have been devoted to developing more cognitive instruments.”

(Volberg R, 1998 pp19-20)

Although the EIGHT Screen was developed initially for a clinical population (patients of General Practitioners (GPs)) a medical paradigm was considered as too restricted a viewpoint for problem gambling. Problem gambling affects not only the individual, but is influenced and impacted upon by cognitions and emotions. The theoretical approach taken was that problem gambling was influenced by a range of influences (bio-psycho-social), along a continuum. During the development of the EIGHT Screen cognisance was taken of the need to expand the focus of the proposed screen, from behaviour to more cognitive and emotional items.

The EIGHT Screen was developed from a pool of questions extracted from DSM-IV criteria, the SOGS, the Gamblers Anonymous 20 Question Screen, and from health effects that have been found to correlate with problem gambling. Apart from the health effect questions, the 50 questions from the three screens were in many cases testing the same item, and the final 'pool' of questions was reduced to 35. A generic question was developed for each item in the first person, with higher response rates than the similar second person question that is framed in most screens. These items were then tested in a variety of populations, with low scoring and highly correlating questions being removed. Responses to the generic questions were compared with responses to the original screen versions to measure sensitivity and specificity, while focus groups and Delphi (iterated) processes with problem gambling specialists both overseas and in New Zealand, provided further direction on aspects of question choice, cut-off, field (e.g. financial, emotional, cognitive) and cultural aspects.

Alcohol-based and filter questions were dropped despite their utility, due to their inferior psychometric properties.

Questions were compared with a range of the screens, in a variety of populations, including: specialist problem gambling treatment clinicians (n=66); patients of family doctors (pilot n=80; n=241 male patients; n=798 male and female patients); clients attending a day clinic for problem gambling (n=246); and clients and staff at the day clinic, to test the screen's reliability (n=65). The Eight Screen provides good sensitivity and specificity for problem gambling using a variety of measures, standards, and constructs, while the final screen questions can be traced back to a number of sources with at least face validity.

The final eight questions provided sufficient brevity and simplicity for its intended goal of use by a non-specialist (for gambling treatment) health professional, with limited time in a busy practice.

Choice of a 'lifetime' instrument

Many instruments elect to direct their questions to gambling and its consequences within a specific period of time. These range from 'lifetime' periods, such as the SOGS ("Have you ever...") to relatively brief periods of time such as the SOGS-3M used in treatment services in New Zealand (MOH 2005) where a period of three months is the focus period. DSM-IV refers to PGD as a 'persistent and recurrent' behaviour, suggesting there are periods when gambling is not a problem in the usual course of the disorder. If the person is screened during one of these non-problem periods and has a negative score (which could be promptly followed by a gambling problem period), the person may be deterred from help-seeking because of the clean result, understandably considering they were free of problem gambling. In addition, a simple subsequent question 'Are these issues happening now?' will clarify the immediacy of an intervention while still retaining the awareness of the need for robust relapse-prevention strategies to maintain the gambling-problem free period.

This is a perspective that appears to be supported, despite the possibility of higher false positives for current gambling problems:

"In the study of clinical disorders, pathological gambling counts as a chronic rather than an acute disorder. Once fully developed, chronic disorders leave a lifelong vulnerability. This vulnerability may be effectively treated and kept in check. However, periods when an individual is relatively free of symptoms do not mean that the person is free of the disorder. From the perspective of measuring prevalence, the strongest emphasis belongs on the determination of whether pathological gambling has developed rather than whether its symptoms are recent or current. This is clearly reflected in the DSM-IV criteria, which focus on the accumulation of discrete symptoms through the present and do not require that specific symptoms be clustered tightly together in time." (Volberg 2002, pA-7)

This argument may not carry to those who have not as yet met criteria for PGD assessment (i.e. level 2 gambling) and who may never do so. However, as little information is available on the course of this level of gambling, and as many may assume that the questions refer to things that are happening in their recent lives, this may not be an important source of error, and if it does occur, can be readily rectified.

Psychometric properties identified in the screen development

1. The usefulness of the EIGHT Screen four cutoff identified strongly with both a SOGS three cut-off (ROC=0.930) and five cut-off (ROC=0.927).
2. The EIGHT Screen was found also to be useful for identifying gambling problems with males (ROC=0.892) and females (ROC=0.973).
3. Correlation between the EIGHT Screen and SOGS was high ($r=0.74$)
4. In a problem gambling treatment clinical population, sensitivity for assessed PGD and sub-clinical problem gambling was high (sensitivity 99%) and for SOGS probable PGD (≤ 5) (sensitivity 78%; and 75% in a GP patient population).
5. In selection of the eight items, discriminant analysis was used to best identify those that discriminated between pathological and non-pathological gamblers, and between sub-clinical and pathological gamblers as a set, and non-problem gamblers.
6. The screen was found to be effective with both males and females, to correlate well with the SOGS, and had high sensitivity and specificity at a four cut-off. Screen questions included three dimensions (emotional, cognitive and behavioural), with a positive score covering a minimum of two of these dimensions.
7. Analysis of responses to the screen identified high internal reliability (Cronbach's alpha 0.971) while test-retest concordance was high.
8. Cutoff of four was confirmed through both ROC analysis (see above) and Delphi iterative process with 63 specialist problem gambling therapists from NZ and overseas, with 79%-88.5% agreeing with this cutoff.
9. The EIGHT Screen questions cover three dimensions, with reduced behavioural items (37.5% emotional, 37.5% behavioural and cognitive 25%) compared with the earlier SOGS (85% behavioural) and DSM-IV (70% behavioural) (Volberg 1998).

A more expansive breakdown of the psychometric properties is annexed to this report (annexure A).

The EIGHT Screen development study has been presented at international conferences (Sullivan & Coster 1997; Sullivan 2003) and has been submitted to the International Journal of Mental Health & Addiction for peer review and consideration for publication (Sullivan et al 2006).

Peer review of screen development

A well-prescribed process for enhancement of both professional acceptance and research compliance with expected standards, is to provide the detailed process and findings of the research to the community for peer review.

The findings of the initial validation study were presented and published for peer review at the following venues:

1. New Zealand and overseas peer review of the submitted research which formed part of the research presented for the Degree of Doctor of Philosophy, University of Auckland (Department of General Practice) 1998/1999.
2. Defense of the thesis before a panel of professors from several universities (the thesis was successfully defended, and at its conclusion the degree was confirmed) 1999.

3. Several national and international conferences and various publications (see Annexure B).

Although published responses to the EIGHT Screen have been few, its use in various overseas and NZ settings suggest acceptance (see Current EIGHT Screen Use below).

Neal and colleagues (2005), opine that the EIGHT Screen was designed as

“a convenient screening tool to be used prior to the administration of more formal or validated measures of problem gambling. For this reason, it was not intended for use in prevalence studies or as a diagnostic tool.” (p86)

However, despite alluding to its likelihood to produce high false positives and its focus upon ‘softer’ subjective items rather than gambling related harm, they still commented:

“For this reason (*focus upon softer items*), it provides a useful way of identifying people before they develop more severe problems, and serves as a means of assisting genuine problem gamblers find the appropriate professional help.” (p86)

One of the properties of the EIGHT Screen to be addressed within this study will be the extent that the screen produces false positives, and, although it was not developed as a diagnostic screen, regardless of the content reflecting diagnostic criteria (and these are contentious with problem gambling), if the positives on the screen correlate highly with PGD, then it can rightly be considered to have diagnostic qualities.

Youth EIGHT Screen-Y Study

A youth version of the EIGHT Screen (EIGHT Screen-Y) was developed by retaining the eight items, however with minor changes to some item words that were identified by youth focus groups and youth treatment specialists as more appropriate to convey the intent of the item. For example, Eight Screen item one was changed from “Sometimes I’ve felt depressed or anxious after a session of gambling” to “Sometimes I’ve felt down or stressed out after gambling” in Eight Screen-Y item one. The EIGHT Screen-Y is annexed and marked D in the published journal article (Sullivan 2005). Five-hundred and twenty-five students from six randomly selected (but blocked into low, medium or high socio-economic areas) high schools participated, by completing the EIGHT-Y Screen and two other validated youth screens, the SOGS-RA (Winters et al 1993) and the DSMIV-JR (Fisher 1992).

The EIGHT-Y and SOGS-RA correlated moderately highly ($r=0.64$) and the EIGHT-Y and DSM-JR similarly ($r=0.53$). This compared with a similar SOGS-RA correlation with DSMIV-JR ($r=0.60$) (Spearman’s rho, all significant at 0.01, two-tailed).

This study was peer reviewed, accepted, and published in the Health Promotion Journal of Australia (Sullivan 2005).

PHO Study

Mangere Health Resources Trust Gambling Project (2004; Sullivan et al 2006) comprised 1,580 patients from three PHOs who were screened with the EIGHT Screen, and with a depression screen.

McMillen and colleagues (2004) note that an external measure of validity is whether a screen correlates with other known correlates with problem gambling. Depression is high amongst those with gambling problems (Unwin et al 2000; Shaffer & Korn 2002) and a correlation would be expected between positives on the EIGHT Screen and the presence of depression. Depression was measured by a brief depression screen developed by Whooley and colleagues (1997) and compared with those who scored as negatives on the EIGHT Screen. Of those patients who answered both problem gambling questions positively (depression diagnosis probable), 40% of those who were positive on the EIGHT Screen were in this category, compared with just 16% of non-positives on the EIGHT Screen. Of those patients that answered either one of the two depression questions positively (depression diagnosis possible), or both depression questions as positive, 56% of those positive on the EIGHT Screen were in this depressed category, compared with 31% of those who were non-positives on the EIGHT Screen.

Also, when comparing EIGHT Screen positives and negatives with those who answered both depression screen questions in the positive, and could arguably be categorised as more likely to be diagnosed with a mood disorder, 31% of EIGHT Screen positives for this group, compared with 17% of EIGHT Screen negatives (Pearson Chi-Square 12.97 1df $p < .000$; Likelihood Ratio 11.45 1df $p < .001$). Therefore a positive on the EIGHT Screen correlated positively with both levels of depression at a level significantly higher than EIGHT Screen negatives.

Depression has been found to commonly occur with those diagnosed with PGD (Potenza et al 2002; Unwin 2000; Shaffer & Korn 2002).

“I’ve found those that scored positively on the gambling screen to have been quite open to discussing it further, and two agreed to seek counselling.”

“I think the Pacific patients have been more willing to talk about their gambling than others.”

The interim findings of the study were presented at an international conference (Sullivan 2003) for peer review, while the first part of the completed study was accepted for the NZ Family Physician journal and was due for publication in the June 2006 issue (Sullivan et al 2006).

Feedback from GPs and other PHO staff regarding use of the EIGHT Screen, interventions and integration into practice are annexed (Appendix).

Prison Study

Four prison officers were trained to administer the EIGHT and SOGS screens to inmates due for release within six months, with the intention that positives for problem gambling would have access to treatment options upon release. Inmates who scored three or more on either screen were assessed by either of two specialist problem gambling treatment providers against DSM-IV

criteria for Pathological Gambling Disorder (PGD). Those scoring three on the EIGHT Screen and either three or four on the SOGS Screen were assessed, so as to identify the false-negative level for each screen (for PGD), while those over these scores would provide evidence for true positive and false positive psychometrics for each screen. However, whereas SOGS identifies those who score five or more on that screen as probable pathological gamblers, a score of four or more on the EIGHT Screen identifies a problem gambler who may be either sub-clinical or clinical (PGD). The EIGHT Screen was developed with a focus upon a need for an intervention from a multiple focused approach (triangulation), and not solely based upon DSM, as there was not a true standard available for problem gambling. Nevertheless, it would be expected that a positive EIGHT Screen score would not result in high false positives, and this would be evidenced by an acceptable correlation with both the SOGS Screen (based upon DSM-III) and PGD criteria. The point at which correlation was acceptable with each of these measures would also provide evidence for an appropriate cut-off for the EIGHT Screen.

One hundred male inmates were screened using both the EIGHT and SOGS Screens, with 29 (29%) scoring either four or more on the EIGHT Screen or five or more on the SOGS Screen (i.e. positives for one or both screens). Twenty-three (23%) were positive for the EIGHT Screen and a similar 23 (23%) were positive for the SOGS Screen. Overlap between the screens was high with only 17% of the 29 who were not positives on both screens, and therefore the high correlation between the two screens ($r=0.83$) suggesting both screens were measuring the same problem gambling construct.

A further five inmates scored either three on the EIGHT Screen or four or five on the SOGS Screen. A total 34 inmates were therefore eligible for assessment by the problem gambling treatment clinicians. However, nine of these were unable to be assessed due to earlier release or transfer, with one declining assessment. Twenty-five inmates were assessed against criteria of PGD by the clinicians.

For the EIGHT Screen, 91% of those scoring four or more on that screen also met the criteria for PGD, while 78% of these EIGHT Screen positives identified those scoring three or more DSM-IV criteria for PGD (i.e. sub-clinical and clinical problem gamblers using this DSM measure).

By comparison, a slightly lesser 82% of SOGS Screen positives (≤ 5) also met the criteria for PGD, and a similar 78% of SOGS positives identified those scoring three or more DSM-IV criteria for PGD (although at a lower three or more for the SOGS, a higher sensitivity for three or more PGD criteria; 89%, but with increased false positives over the EIGHT Screen).

Effectively, the EIGHT Screen identified 17 positives who undertook assessment, of which 10 were assessed as having PGD, and 7 as sub-clinical problem gamblers. One inmate assessed as having PGD scored three on the EIGHT Screen, and was a false negative.

By comparison, 9 of the 17 SOGS positives (≤ 5) were assessed as having PGD, and 8 as sub-clinical problem gamblers. Two inmates assessed as having PGD, scored either 3 or 4 on the SOGS, and were false negatives.

Both the SOGS and EIGHT Screens identified 14 of the 18 (78%) of those who could be described as sub-clinical and clinical problem gamblers (those who meet at least 3 DSM-IV criteria for PGD).

On this measure, the EIGHT Screen performs at least as well as the longer SOGS Screen. There are less false negatives with the EIGHT Screen at a 4 cut-off than the SOGS Screen at a 5 cut-off (for PGD). As regards false positives for the lower assessment of less than 3 PGD criteria (i.e. 2 or less PGD criteria), 3 (18%) EIGHT Screen positives and 3 (18%) SOGS Screen positives were assessed as being in this lesser category.

It was concluded that few EIGHT or SOGS Screen positives were false positives for sub-clinical or clinical problem gambling (18%) using three or more DSM-IV PGD criteria as a standard, while the EIGHT Screen was marginally more effective at identifying those with PGD in this prison population.

The EIGHT Screen has now been adopted by the NZ Department of Corrections as their assessment screen (see Current Eight Screen Use below), while this paper has been peer reviewed and accepted for publication by the International Journal of Mental Health & Addiction (Sullivan et al; Vol 4(4) December 2006).

University research

Otago University

The Department of Psychological Medicine, University of Otago (Cape et al 2002) screened and interviewed 756 casino patrons. The use of the EIGHT Screen identified that 16.7% of males and 6.6% of females were positives on the screen. Higher rates were identified with Maori and Pacific participants compared with NZ Europeans (23.3% vs 10.2% OR (95%) CI =2.95 (1.17, 7.43), and those with lower educational qualifications, frequent gamblers (especially on gambling machines), and those under 30 years of age, were found to be more likely to be screen positives. These findings were noted by the researchers to accord with similar casino patron studies using the SOGS (Moore et al 1998), and age and ethnic studies (Abbott et al 1991).

The researchers found:

“(In analysing each Eight Screen question) No question was shown to be any more predictive than any other of a positive EIGHT Screen test, and no question was shown to have a particularly weak association with a positive EIGHT Screen test. Also, no two questions received entirely similar answers.” (P 8)

“In assessing the validity of the EIGHT Screen there were no questions that displayed similar rates of ‘yes’ versus ‘no’ answers, which suggests that there were no redundant questions, and that all the questions used focused on different areas of possible gambling problems. We found in general all questions were equally valid, in that no specific question was pathognomic, and no single question was protective.” (P 11)

The authors concluded that:

“The use of the EIGHT Screen test as a screen for pathological gambling proved to be practical and this research enabled further validation of this questionnaire.” (P 12)

Australian university study

Shandley (2000), for her Masters Degree (University of New England), surveyed 113 Australian adults aged between 20-29 and 60-69 years of age. They comprised either clients of gambling counselling services (31%; NSW, Queensland, Tasmania, South Australia and Victoria) or from the general population (69%). The SOGS and the EIGHT Screen were both used to identify those experiencing gambling problems, and a strong positive correlation was identified between the two screens ($r(113)=0.906, p<.001$).

Validation: Current EIGHT Screen Use

Use of a screen can indicate its utility or practicality, and its acceptance within a particular culture. The EIGHT Screen is currently used in the following settings:

NZ Department of Corrections uses it as a standard screen in their Screening Assessment Interview pre-sentence, or in Re-integrative Needs Checklist if post-sentence (see <http://www.corrections.govt.nz/public/policyandlegislation>)

South Australian Government Department of Human Services programme in conjunction with Australian Medical Association and Flinders University Medical Centre for Anxiety & Related Disorders. (see <http://som.flinders.edu.au>)

South Australian Government Break Even Gambling Program (Relationships Australia, SA) in conjunction with South Australian Department for Correctional Services. (see http://www.relationships.com.au/problem_gamb/break_even_prog.pdf)

Caritas AG Counselling Centre, provided by the Home Affairs Bureau in Hong Kong (a service providing helpline, family, residential, and counsellor certification).

See: http://www.gamblercaritas.org.hk/assessment_e6.htm (in English)
http://www.gamblercaritas.org.hk/assessment_c6.htm (in Chinese)

Victorian Commission for Gambling Regulation, as a self test for problem gambling.

<http://www.problemgambling.vic.gov.au/problemgambling/selfassessment.asp>

Relationships Australia, an Australian cross-State help service for problem gamblers. (see <http://relationships.com.au/utilities/quiz.asp>)

Hornsby Ku-ring-gai Health Service, Northern Sydney Central Coast Health, a large NSW hospital & health service with 1500 staff. (see <http://www.nsh.nsw.gov.au>)

Australian Federal Government (Dept of Health & Aging) have online on their website for GPs & Health Professionals, a professional development resource, an Alcohol and Other Drugs handbook that includes the EIGHT Screen as the problem gambling screen elected. (see <http://www.aodgp.gov.au>)

SA Lotteries have recently asked permission to offer the EIGHT Screen on their website <http://www.salotteries.sa.gov.au>

Dunedin Casino Responsible Gambling brochure
<http://www.dunedincasino.co.nz>

Sister Margaret Gambling Centre, Ontario, Canada have requested use of the EIGHT Screen in their clinical manual designed to be a secondary prevention guide to assist service providers identify older adults. (bakiche@tbh.net)

Possible use by Gambling Recovery Program of the Jewish Family Service, Buffalo, USA. They have asked for permission to use the Eight Screen in resources for primary services for the poor and elderly. (rcw_jfs@yahoo.com)

Requested use of three questions of the EIGHT Screen with high correlation with the full screen for use in research with the CATT team of the Dept of Psychiatry, Alfred Emergency Dept, Alfred Hospital, Melbourne, in research with patients admitted following a suicide attempt. (J.ChowFairhall@alfred.org.au)

Use of the first question of the EIGHT Screen following correlation analysis with the whole screen, in the CHAT Screen for PHO use (Goodyear-Smith et al 2004, 2006).

At (separate) requests of Drs Randy Stinchfield and James Westphal, data and/or psychometrics of the EIGHT Screen were provided to them for their information. At a recent conference (Las Vegas, 2005), Dr Stinchfield spoke briefly on the EIGHT Screen, as one of eight selected screens, while focusing upon mainstream screens (e.g. SOGS) and their use in appropriate settings.

The EIGHT Screen was published in the Journal of General Internal Medicine (Potenza et al 2002), Health Promotion Journal of Australia (EIGHT-Y; Sullivan 2005), the New Ethics Journal (Sullivan 2000) and the International Journal of Mental Health Addiction (Penfold et al 2006 - annexed).

In addition, a number of treatment services in New Zealand use the EIGHT Screen either in a prescribed process (e.g. The Bridge Programme of the Salvation Army; TUPU Pacific alcohol and drug treatment programme; Dr Tina Page, Bexley Clinic; PGF website self test at pgfnz.co.nz/test.htm, Nga Manga Puriri, on their new website <http://www.psal.co.nz/ngamangapuriri/eightscreen.php>).

The EIGHT Screen has been elected to be used in a number of New Zealand Iwi-based projects. These include:

Ngati Porou Community Screening Project for Problem Gambling (2004): Two-hundred Ngati Porou participants from the East Coast and 307 participants from Gisborne were screened using the EIGHT Screen and COGS Screen (Sullivan 2003).

Toiora (2004) Toiora Screening Project: 792 Toiora clients participated in screening using the EIGHT Screen, comprising 219 GP patients, 105 patients/clients of Maori Health & Social Service Providers, 83 Whanau of the Iwi, 17 Unemployed people on a course, and 368 Rangatahi (youth).

Other projects involved substantial proportions of Maori and Pacific people. An example was:

The Foodbank Project (Hutson & Sullivan 2004): 1,219 participants in Auckland and 517 participants in Christchurch attending foodbanks for

social services were screened using the EIGHT Screen. In the Auckland setting, 49% were Maori, 30% were Pacific, and 15% Pakeha.

Over 13% were identified as having gambling problems, and were offered brief interventions or referral to a problem gambling treatment service.

Suicide Study (Penfold et al 2006a & b). Seventy participants who had been admitted to an Auckland hospital Accident & Emergency Dept were screened using the EIGHT Screen and other non-gambling measures. Suicidal ideation has been found to be high amongst those assessed with PGD (APA 1994). 17% were positive for the EIGHT Screen, substantially higher than the 2-3% indicated by DSM-IV PGD.

Methods for the current validation study

As the prevalence of the two levels of problem gambling (Levels 2 and 3) in the general community remains in dispute (but is probably in the range of 1.5%-5% with higher rates for some specialist populations), a process of surveying specific rather than general populations is proposed, with the intention of validation of the Eight Screen for such clinical populations. One other study (prison) involved a non-clinical population and will be reviewed for the project.

Using this process, the prevalence rate with the GP population (from current findings) would be a minimum of 5% as identified by the two screens used as a standard. The prevalence of probable gambling pathology in the AOD sample would be higher at between 10%-22% from various studies, with a suggested estimate of 20% of these clients having a prevalence of moderate to severe gambling problems, and the prevalence of moderate-severe gambling problems in the specialist problem gambling services probably around 100% for obvious reasons.

Although it is possible that the eight screen could actually be better at identifying problem gamblers than the standard questionnaires, these will be treated as the gold standard and the sensitivity of the eight screen estimated.

In the absence of a gold standard to compare the performance of the EIGHT Screen with, a multiple data gathering technique comprising a number of approaches was utilised, to enhance validity (triangulation; Patton 2002).

Essentially, this involved:

1. Comparing the psychometrics of the EIGHT Screen with other screens which were applied contemporaneously. Two screens were regarded as the maximum that could be imposed in any one setting without raising resistance from clients/patients and their health professionals.
2. Comparing EIGHT Screen scores with perceptions of health professionals who are not specialist problem gambling counsellors.
3. Comparing EIGHT Screen scores with a clinical assessment by specialist problem gambling counsellors.
4. Feedback from focus groups from a range of health settings.
5. Statistical analysis of the EIGHT Screen, e.g. reliability.

6. Correlation of the EIGHT Screen with a range of comorbid (e.g. depression) and co-existing measures (e.g. youth, some ethnic groups, low socio-economic status persons), that are known to correlate with gambling problems.

Selection of screens for comparison

A difficulty often associated with problem gambling research is the absence of a gold standard.

“Unfortunately, a limitation with any form of classification analysis that relies upon the existence of a valid reference point or ‘gold standard’ against which to compare cases identified by the measure under consideration. At this stage, there is probably no assessment in gambling that is sufficiently well-established or incontrovertible to provide this reference point” (Neal et al 2005, p60)

Currently there are more than 20 problem gambling screens (Abbott et al 2004) designed and used for identification of problem gambling in a number of settings. These include clinical, population (epidemiological) and health promotion settings. However the purpose for which a screen is developed is an important factor in its use (Jackson, Thomas & Blaszczyński 2003), particularly whether designed for diagnostic or epidemiological purposes.

The CPGI was rejected in this instance because of its length (takes between 11 minutes minimum and 30 minutes maximum), and because it was developed as a population screen, rather than a clinical tool (2004, Wager). The VGS was also rejected because of its complexity and length, and the HARM in its entirety because it is not a validated tool for a clinical population, and has limited categorisation range (score 1 = harm).

DSM based screens appear to be conservative in their identification of problem gamblers (Shaffer et al 1997; Abbott et al 2004; Neal et al 2005), implying the possibility of false negatives, an undesirable outcome that may deter future help-seeking, and result in substantial undesirable financial and health outcomes for the gambler and their family. However, DSM criteria are often perceived as a gold standard for gambling pathology, despite the difficulty in determining the construct of problem gambling. Instrumental versions of the DSM-IV criteria include the NODS (NORC 1999), Fisher DSM Screen¹⁴ or the CGS Screen¹⁵. These screens are based upon pathology or late stage problem gambling. The NODS is a more recent version based on the 10 DSM-IV criteria, comprising 17 items for either lifetime or past year. This screen categorises individuals from A to E, starting with non-gambler (Level A), low risk or no adverse effects gambler (‘B’=score 0), at-risk gambler (‘C’=score 1-2), problem or possible pathological gambler (‘D’=score 3-4), to pathological gambler (‘E’=score 5 or more). A maximum score of 10 is possible, which equates with the DSM-IV criteria for Pathological Gambling Disorder (PGD). This screen was selected in that it provided, perhaps arbitrarily, lower levels of problem gambling than PGD, with these lower levels equating to Level 1 (NODS ‘B’), Level 2 (NODS ‘C’), Level 3 (NODS ‘E’), with NODS ‘D’ possibly also best categorised in Level 3, although it could straddle both Levels 2 and 3. The NODS is provided in a lifetime and past-year mode,

and in order to minimise resistance, the past-year only mode was elected to be used. This resulted in the possibility that where gambling problems occurred over 12 months before completion of the screens, the EIGHT Screen, as a life-time screen (but generally answered as if the questions are framed as current), may be answered in the positive, while the NODS would be answered in the negative. The result could be higher (current) false positives for the EIGHT Screen, and lower correlation between the NODS and Eight Screen. To test this possibility, a sample of participants were asked to disclose whether their EIGHT Screen positives referred to gambling during the past year. However, it is important to note that DSM-IV identifies PGD as a 'persistent and recurrent maladaptive gambling behaviour', which may suggest that from a clinical perspective, especially in regard to the relationship between other addictive and mental health conditions and gambling, that identification of a serious gambling problem that may be temporarily in abeyance may be an important factor to know.

The NODS is available in a lifetime version (17 items) which is followed by a current (last 12 months) version. Because of time limitations, the current version was modified to be offered in an initial version.

The SOGS is an instrument which was developed in 1987, comprising 20 scored items focused upon behaviours, particularly accessing finance to gamble with. A score of 5 or more indicates the person is a probable pathological gambler. A score of 3 or 4 has subsequently been categorised as 'problem' gambling, and recently as level 2 gambling (Ladd & Petry 2002), however, the construct of this sub-clinical condition has not been well defined. The SOGS is the most used screen for problem gambling, and although it does not necessarily have unqualified support currently, it was developed as a clinical instrument. Current criticism of the SOGS refers to the age of the screen (prior to the substantial increase in numbers of gambling machines, which may result in non-SOGS cues), that it may be insensitive to cultural contexts, and that it may not reflect DSM-IV criteria for PGD (Abbott et al 2004). However, because of the general acceptance of the SOGS (at least until recently), and its possible divergence from DSM-IV criteria, it was accepted as the second screen in order to provide a more triangulated approach than selection of another screen that more matched the psychometric properties of the NODS. Research (Neal et al 2005; Strong et al 2004), has found the SOGS and DSM-IV criteria for PGD to be highly correlated, but DSM screens to be more conservative and will typically result in lower prevalence rates for problem gambling. Strong et al (2004) note:

"On average, the DSM-IV appears to target a level of gambling pathology that is too severe to capture gambling-related problems typical in community samples (for community use there is a need for) development of criteria to map the lower ranges of severity...to increase measurement precision." (p 47)

The 'lifetime' version (rather than the 'current' version) of the SOGS was selected because of its greater sensitivity and less false negatives identified than with the current SOGS (Neal et al 2005).

Selection of the NODS and SOGS

The 12-month NODS was chosen for the specialist problem gambling setting for:

1. The NODS to provide an alternative to an assessment for Pathological Gambling Disorder (PGD) in DSM-IV that would be standardised, to provide an instrument to measure the EIGHT Screen against, and
2. The 12 month version, to provide a limited test as to whether people may tend to answer the 'lifetime' phrased EIGHT Screen in the past rather than current, and therefore result in substantial numbers of false current positives for problem gambling. New and existing clients were included in this specialist setting to include some (numbers unknown) who may not have gambled during the previous 12 months, possibly due to their treatment.

These aims are somewhat limited, because a PGD diagnosis is not necessarily a gold standard for a serious gambling problem, while the PGD qualifying criteria is possibly 4, rather than 5 criteria:

“(in developing DSM-IV PGD criteria) Discriminant analysis was used to identify the items that best differentiated between pathological and non-pathological gamblers. While results from this sample indicated that a cutoff of 4 points was appropriate, the American Psychiatric Association established a diagnostic cutoff of 5 points” (Volberg 2002, pA-5).

In addition, the assumption would be that some clients in this setting would not have gambled for 12 months and would score nil on the 12 month NODS, to compare with the EIGHT Screen completed contemporaneously.

The ROC table on page 33 of this report identifies high sensitivity (correctly identifying a NODS 5 cutoff) for the EIGHT Screen, for a 5 cutoff on the 12-month NODS, but a lesser specificity (correctly identifying those not meeting a NODS 5 cutoff). However, a breakdown into those meeting a 4 NODS cutoff may give more clarity for the EIGHT Screen identifying PGD in this setting. It should be noted also, that as DSM criteria prescribe 'hard' symptoms of problem gambling, they are often less likely to be answered truthfully in a non-specialist setting:

“The DSM-IV appears to be a less useful tool to use in prevalence studies because it tends to produce somewhat lower estimates of prevalence than other measures (e.g. SOGS). It may also provide less useful information concerning the varying degrees of harm present in the population” (Neal et al 2005, p72).

For this reason, the NODS was considered less useful for the AOD and PHO settings in the current study and was confined to the specialist problem gambling treatment setting.

Therefore, although there is some concern that DSM-based screens, such as the NODS, may “not be all that useful in differentiating different degrees of problem gambling” (Neal et al 2005, p71), because less severe symptoms

may still identify a severe problem, and that the DSM-IV PGD criteria are “heavily biased towards North American or pathology model of problem gambling” (Neal et al 2005, p72). However, the NODS does provide a range of levels that can be an attempt to categorise lower or lesser levels of problem gambling. These sub-clinical levels of problem gambling will provide a grey area of categorisation, with the possibility that Level 2 of different screens may not necessarily measure the same construct. For this reason, the use of several screens and feedback from clinicians may assist to define what may be an acceptable cut-off on the EIGHT Screen for this level, using this triangulated approach to provide psychometric properties for this somewhat vague category.

A further possibility of error or lower correlation may arise because the SOGS and EIGHT Screen are both lifetime or ‘ever’ screens, while the NODS is a current screen. The NODS was seen as a de facto assessment for PGD, while evidence that the EIGHT Screen does not overly identify past gambling problems that no longer impact upon the person (false current problem gamblers) could be identified through there being a satisfactory correlation between the current NODS and lifetime EIGHT Screen. It was considered that clients who completed the EIGHT Screen and were identified as having gambling problems, would in turn give feedback to their counsellor as to whether these responses were in respect of a past gambling problem which no longer impacted on them. In addition, in the PHO section of the study, current levels of depression would be assessed of patients, with the assumption that if significantly higher levels of depression during the previous month (Whooley et al 1997) were experienced by EIGHT Screen positives than negatives, then it may be possible to consider that a current gambling problem may be correlating with current depression.

For the purposes of this research, the levels of the SOGS and NODS have been set as similar for Level three (SOGS ≤ 5 ; NODS ≤ 5 (Level E)). Level two or sub-clinical/early problem, or at-risk for severe gambling problems, has been set at a SOGS score of 3-4 (Ladd & Petry 2002), and will equate to NODS Level C and D (score 1-4 on the NODS). A score of 1-2 on the SOGS will be assumed to be Level 1 gambling (controlled or no problems).

Settings for screening

An aim of the study was to assess the psychometrics of the EIGHT Screen in three populations. These were:

1. The patient population in Primary Health Organisations (PHOs)
2. The client population in Alcohol & Other Drug treatment services (AOD)
3. The client population in problem gambling treatment organisations.

The intention was to continue to screen in each of the populations until the study ended, or until 1,000 participants had completed screens.

In addition, findings from existing or concurrent studies involving the use of the EIGHT Screen would be included, to demonstrate acceptability of the screen in these and other settings.

An element the current project was to identify was the usefulness of the EIGHT Screen within non-specialist settings, as well as comparing the screen’s performance with clients who were attending specialist problem gambling services and had been assessed as meeting PGD.

PHOs and AOD services have been identified in the Ministry of Health (MOH) strategic plan (2005):

“(the transition of responsibility for problem gambling harm prevention and reduction to the MOH) offers new opportunities, such as those provided by Primary Health Organisations and the wider health and addiction treatment sectors.” (MOH 2005)

In this study the SOGS was matched with the EIGHT Screen in the PHO and AOD settings, while the NODS was matched with the EIGHT Screen in the specialist problem gambling treatment setting. As the DSM-IV based screen was known to produce more conservative findings, this error was reduced by restricting its use to the specialist services where gambling problems had been disclosed.

Results

A total of 1,333 clients and patients participated in the current validation study 341 clients of specialist problem gambling services agreed to participate, 315 patients of a PHO, and 676 clients of AOD services. The sampling for both clients of specialist problem gambling services and AOD services were geographically widespread (Whangarei to Dunedin), while the PHO was based in the Wellington region.

Correlation between screens

The lifetime SOGS and EIGHT Screen correlated highly at 0.860 and the 12-month NODS correlated moderately highly at 0.624 (Pearson $p < 0.01$ 2-tailed; $n = 327$). With a more conservative analysis, the SOGS and EIGHT Screens correlated at 0.829 and 12-month NODS again at a more moderate 0.601 (Spearman's $\rho < .01$, 2 tailed).

Correlations were also calculated for the EIGHT Screen and either the SOGS or NODS in AOD, PHO and specialist problem gambling settings.

AOD setting

The EIGHT Screen and SOGS correlated at 0.895 (Pearson $p < 0.01$ 2-tailed) and 0.839 (Spearman's ρ , $p < .01$ 2-tailed) in this setting.

PHO setting

The EIGHT Screen and SOGS correlated at 0.810 (Pearson $p < 0.01$ 2-tailed) and 0.813 (Spearman's ρ , $p < .01$ 2-tailed) in this setting.

Specialist problem gambling service setting

The Eight Screen and NODS correlated at 0.601 (Pearson $p < 0.01$ 2-tailed) and 0.624 (Spearman's ρ , $p < .01$ 2-tailed) in this setting.

Comparison between positives and negatives on screens

All settings

A positive on the EIGHT Screen (score ≥ 4) was compared with SOGS as to Level 3 (probable pathological gambler; score ≥ 5), Level 2 (problem or sub-clinical; 3 or 4 on the SOGS), or Level 1 (no problem; 2 or less).

Table 1: SOGS levels of problem gambling by EIGHT Screen (N=811)

	SOGS level 1 score <3	SOGS level 2 score 3 or 4	SOGS level 3 score ≥ 5	Total
EIGHT positive (score ≥ 4)	16.1% (23)	14.0% (20)	69.9% (100)	143
EIGHT negative (score <4)	95.8% (640)	3.0% (20)	1.2% (8)	668
Total	663	40	108	811

Twenty three (16%) of EIGHT Screen positives were non-problem gamblers under the allocated SOGS measure of two or less, or were 'false positives' for this level of SOGS. Alternatively, 100 (70%) of EIGHT Screen positives were 'probable pathological gamblers' when measured by SOGS, and a further 20 (14%) were problem or sub-clinical gamblers for this level of SOGS (Pearson Chi-Square 538 (2 df $p < .000$); Likelihood Ratio 443 (2 df $p < .001$)).

Table 2: NODS levels of problem gambling by EIGHT Screen (N=318)

	NODS level 1 score 0	NODS level 2 score 1- 4	NODS level 3 score ≥ 5	Total
EIGHT positive (score ≥ 4)	2.6% (8)	22.9% (70)	74.5% (228)	306
EIGHT negative (score <4)	4	8	0	12
Total	12	78	228	318

The NODS Screen was used only in specialist problem gambling treatment settings and would be expected to test only those with higher levels of gambling problems. This is evidenced by only 12 people scoring zero on the NODS, presumably not having gambled in the past 12 months period tested by the NODS, possibly influenced by their treatment. Similarly, 12 of these participants were negative on the EIGHT Screen. Eight of these were positive on the EIGHT Screen, but negative (Level 1) on the NODS. A possible reason is that these participants answered the NODS for the previous 12 months while answering the EIGHT Screen 'ever'.

AOD setting

Responses to the EIGHT Screen from clients at AOD services were compared with responses to the SOGS at a four cut-off. Although one of the aims of this study is to identify cut-offs for Level 1-3 of the EIGHT Screen, the existing cut-off (four) was compared to, separately, Levels 1-3.

Table 3: SOGS level of EIGHT Screen in AOD services

EIGHT Screen response	SOGS Level 1 (SOGS score 1-2)	SOGS Level 2 (SOGS score 3 or 4; sub-clinical problem gambling)	SOGS Level 3 (SOGS score ≥ 5 ; probable pathological gambling)
Score 4 or over (problem gambler or possible pathological gambler)	16.5%(14)	11.8%(10)	71.8%(61)
Score under 4 (non-problem gambler)	96.5%(408)	2.4%(10)	1.2%(5)

Of the 508 AOD clients who participated and completed both screens, 85 were identified as problem gamblers by the EIGHT Screen (16.7%), while 61 (12%), were identified by the SOGS as probable pathological gamblers, and a further 20 (3.9%) were identified as sub-clinical problem gamblers. Although the overall percentage of (sub-clinical and probable pathological gamblers) SOGS and EIGHT Screen clients who were identified as these levels (SOGS 15.9%; EIGHT Screen 16.7%), the overlap was not fully concordant. Fourteen SOGS negatives (scored 2 or less) were positive on the EIGHT Screen, while 10 SOGS Level 2 (scored 3-4) clients and five SOGS probable pathological gamblers were negatives (under 4), for the EIGHT Screen. However for each, 97% of AOD negatives were negatives for both screens (Pearson Chi-Square 341 2df $p < .001$).

PHO setting

Again, responses to the EIGHT Screen from clients in the PHO service were compared with responses to the SOGS at a four cut-off. Although one of the aims of this study is to identify cut-offs for Level 1-3 of the EIGHT Screen, the existing cut-off (four) was compared to, separately, Levels 1-3.

Table 4: SOGS levels of EIGHT Screen in a PHO setting

EIGHT Screen response	SOGS Level 1 (SOGS score 1-2)	SOGS Level 2 (SOGS score 3 or 4; sub-clinical problem gambling)	SOGS Level 3 (SOGS score ≥ 5 ; probable pathological gambling)
Score 4 or over (problem gambler or possible pathological gambler)	15.5%(9)	17.2%(10)	67.2%(39)
Score under 4 (non-problem gambler)	94.7%(232)	4.1%(10)	1.2%(3)

The PHO was based in a lower SES region (Porirua) with patients substantially drawing from Maori and Pacific cultures.

Of the 309 specialist problem gambling treatment clients who participated and completed both screens, 301 were identified as problem gamblers by the EIGHT Screen (97.4%), while 227 (73.5%) were identified by the NODS as probable pathological gamblers, and a further 67 (21.7%) were identified as sub-clinical problem gamblers. Although the overall percentage of (sub-clinical and probable pathological gamblers) NODS and EIGHT Screen clients who

were identified as these levels (NODS 95.2%; EIGHT Screen 97.4%), the overlap was not fully concordant. Seven NODS negatives (scored 0) were positive on the EIGHT Screen, while one NODS Level 2 (scored 1-4) client was negative (under 4) for the EIGHT Screen. However, for each, 95% of PHO negatives were negatives for both screens (Pearson Chi-Square 196 2df $p<.001$).

Of the 303 PHO patients who participated and completed both screens, 85 were identified as problem gamblers by the EIGHT Screen (19.1%), while 42 (13.9%) were identified by the SOGS as probable pathological gamblers, and a further 20 (6.6%) were identified as sub-clinical problem gamblers. Although the overall percentage of (sub-clinical and probable pathological gamblers) SOGS and EIGHT Screen clients who were identified as these levels (SOGS 20.5%; EIGHT Screen 19.1%), the overlap was not fully concordant. Nine SOGS negatives (scored 2 or less) were positive on the EIGHT Screen, while 10 SOGS Level 2 (scored 3-4) clients and five SOGS probable pathological gamblers were negatives (under 4), for the EIGHT Screen. However, as stated above, over 95% of positives were positives for both screens (Pearson Chi-Square 23 2df $p<.001$).

Specialist problem gambling service setting

Responses to the EIGHT Screen from clients at specialist problem gambling treatment services were compared with response to the NODS at a four cut-off. Although, as stated above, one of the aims of this study is to identify cut-offs for Level 1-3 of the EIGHT Screen, the existing cut-off (four) was compared to, separately, Levels 1-3.

Table 5: NODS levels of EIGHT Screen in specialist setting

EIGHT Screen response	NODS Level 1 (scored 0)	NODS Level 2 (scored 1-4; sub-clinical problem gambling)	NODS Level 3 (score\geq5; probable pathological gambling)
Score 4 or over (problem gambler or possible pathological gambler)	2.3%(7)	22.3%(74)	75.4%(227)
Score under 4 (non-problem gambler)	1	7	0

The specialist services were unlikely to have a large number of non-problem gamblers, only eight clients scored under four for the EIGHT Screen, and no clients scored as Level 1 for the NODS.

A total of 313 responses to both screens was obtained. Although it is difficult to assess the numbers of problem gamblers attending specialist services on any specific day (as compared with the number attending during any year – a larger number), the numbers are approximately those required to obtain a 95% accuracy for this population (1,600 require $n=310$; 3000 require $n=339$; Reaves 1992).

Table 6: Comparison between NODS and EIGHT Screen at different levels of problem gambling

EIGHT Screen total	Number scoring this total	Scoring less than 4 on 12-month NODS	Scoring 4 or more on 12-month NODS	Scoring 5 or more on 12-month NODS
8	157	11 (7%)	146 (94%)	141 (90%)
7	67	8 (12%)	59 (88%)	54 (81%)
6	46	9 (20%)	37 (80%)	27 (59%)
5	27	14 (52%)	13 (48%)	7 (26%)
4	9	7 (78%)	2 (22%)	1 (11%)
3	7	0	0	0
2	0	0	0	0
1	0	0	0	0
Total	313	49	257	230

Gender

Correlations of the EIGHT Screen with the SOGS were tested for both male and female clients or patients.

For females, the EIGHT Screen and SOGS correlated at 0.845 (Pearson Correlation 2-tailed $p < 0.1$).

For males, the correlation between the EIGHT Screen and SOGS was 0.87 (Pearson Correlation 2-tailed $p < 0.1$).

The reliability of the EIGHT Screen for females was Cronbach's alpha 0.960 and for males 0.956.

Youth

Youth were identified as those clients or patients under 25 years of age, a common definition (MOH website).

The EIGHT Screen and NODS correlated for youth at 0.700 (Pearson 2-tailed $p < 0.01$), however, with low numbers from specialist services ($n=29$). For the EIGHT Screen and SOGS, the correlation for youth was 0.914 (Pearson 2-tailed $p < 0.01$) and 0.778 (Spearman's rho 2-tailed $p < 0.1$; $n=148$).

Ethnicity

Maori, Pacific and NZ European clients and patients EIGHT Screen scores were compared with the SOGS and NODS. Insufficient Chinese participants were enrolled to be able to carry out analysis in this current study (however see Discussion regarding the earlier PHO study).

The EIGHT Screen and SOGS correlated for Maori ($n=222$) at 0.831 (Pearson 2-tailed $p < 0.01$) and 0.865 (Spearman's rho 2-tailed $p < 0.01$). Correlation between the EIGHT Screen and NODS for Maori ($n=94$) was 0.578 (Pearson 2-tailed $p < 0.01$) and 0.556 (Spearman's rho 2-tailed $p < 0.01$).

The EIGHT Screen and SOGS correlated for Pacific clients ($n=167$) at 0.819 (Pearson 2-tailed $p < 0.01$) and 0.884 (Spearman's rho 2-tailed $p < 0.01$). Correlation between the EIGHT Screen and NODS for Pacific was 0.359 (Pearson 2-tailed $p < 0.01$) and 0.443 (Spearman's rho 2-tailed $p < 0.01$), but with small numbers for NODS ($n=15$).

The EIGHT Screen and SOGS correlated for NZ European ($n=329$) at 0.631 (Pearson 2-tailed $p < 0.01$) and 0.778 (Spearman's rho 2-tailed $p < 0.01$).

Correlation between the EIGHT Screen and NODS for NZ European (n=186) was 0.631 (Pearson 2-tailed $p < 0.01$) and 0.597 (Spearman's rho 2-tailed $p < 0.01$).

Usefulness of the EIGHT Screen for ethnic groups

ROC curves were generated for each ethnic group and the area under the curve for each (i.e. the usefulness of the EIGHT Screen for each) was 0.976 for Maori ($p < .009$, Asymptotic significance $p < .001$), 0.957 for Pacific people ($p < .0015$, Asymptotic significance $p < .001$), and 0.976 for NZ Europeans ($p < .00017$, Asymptotic significance $p < .001$).

Reliability

Inter-item reliability

The inter-item reliability or internal consistency of the EIGHT Screen was calculated by measuring the strength of the relationship between the eight questions in the screen. Neal and her colleagues (2005) note:

“A coherent assessment tool should contain items all of which are measuring approximately the same construct, so that the scores on each individual item should be at least moderately correlated with the total score for the assessment.....In assessments of internal consistency, for example, Cronbach's alpha is usually used, with values of 0.70 or greater taken to indicate appropriate internal reliability.” (p58)

Cronbach's alpha for the EIGHT Screen was calculated at 0.958 (n=1290 cases).

Reliability of the EIGHT Screen for settings

These calculations were ascertained for different settings. Cronbach's alpha for AOD was 0.947, for PHO was 0.927, and for specialist problem gambling services was 0.692 (this last at the limit of acceptance).

Reliability of the EIGHT Screen for gender

For gender, Cronbach's alpha for the EIGHT Screen was 0.960 for females and 0.956 for males.

Reliability of the EIGHT Screen for ethnic groups

For ethnicity, Cronbach's alpha was found to be 0.956 for Maori, 0.944 for Pacific peoples, and 0.960 for NZ European.

Test-Retest

Seventy-three participants were retested at their following session or later. Sixty-seven were positive on the EIGHT Screen at both the test and retest, three were negative on the test and retest, and three were positive on the test, but negative on the retest. These last three were the inconsistent findings between the test and retest. Two scored four on the test and two on the retest, while the third scored five on the test and three on the retest.

The reliability of the test was 96% (70/73).

ROC curves

With a positive of SOGS levels 2 and 3 (SOGS score ≤ 3), the area under the curve was 0.963 (std error 0.010, $p < .001$ CI (95%) 0.944-0.983) and for a positive of SOGS Level 3 (or probable pathological gambler; SOGS score ≤ 5) the area under the curve was 0.977 (std error 0.007 $p < .001$ CI (95%) 0.963-0.991).

With a positive of NODS Levels 2 or 3 (NODS scores ≤ 1) the area under the curve was 0.746 (std error 0.089, $p < 0.004$ CI (95%) 0.571-0.921). With a positive of NODS Level 3 (NODS score ≤ 5) the area under the curve was 0.803 (std error 0.030, $p < 0.001$ CI (95%) 0.744-0.863).

Cut-off for EIGHT Screen

The ROC sensitivity and specificity scores for each cut-off of the EIGHT Screen were compared with positive scores for SOGS scores of Level 2 or 3 (≤ 3 ; sub-clinical problem gambling or probable pathological gambling) and with SOGS scores of Level 3 (≤ 5 ; probable pathological gambling).

Table 7: Sensitivity and specificity of EIGHT Screen cutoffs for SOGS

EIGHT Screen score	SOGS Level 2 or 3 (SOGS score ≥ 3 ; sub-clinical problem gambling or probable pathological gambling)		SOGS Level 3 (SOGS score ≥ 5 ; probable pathological gambling)	
	Sensitivity	Specificity	Sensitivity	Specificity
1	0.94	0.87	0.98	0.83
2	0.91	0.93	0.97	0.89
3	0.86	0.96	0.95	0.93
4	0.77	0.97	0.90	0.95
5	0.68	0.98	0.83	0.97
6	0.56	0.99	0.71	0.98
7	0.38	1.0	0.49	0.99
8	0.13	1.0	0.17	1.0

The ROC sensitivity and specificity scores for each cut-off of the EIGHT Screen were compared with positive scores for NODS scores of Level 2 or 3 (≤ 1 ; sub-clinical problem gambling or probable pathological gambling) and with NODS scores of Level 3 (≤ 5 ; probable pathological gambling). It was noted however that there were few clients scoring below NODS Level 3 as they were selected from problem gambling treatment services. In addition, DSM screens are based upon 'hard' items that commonly produce conservative scores (Neal et al 2005; Shaffer et al 1997).

Table 8: Sensitivity and specificity of EIGHT Screen cutoffs for NODS

EIGHT Screen score	NODS Level 2 or 3 (NODS score ≥ 1 ; sub-clinical problem gambling or probable pathological gambling)		NODS Level 3 (NODS score ≥ 5 ; probable pathological gambling)	
	Sensitivity	Specificity	Sensitivity	Specificity
1	1.0	0.25	1.0	0.04
2	1.0	0.30	1.0	0.05
3	0.99	0.33	1.0	0.09
4	0.96	0.38	1.0	0.19
5	0.90	0.46	0.98	0.35
6	0.79	0.63	0.90	0.56
7	0.61	0.75	0.73	0.74
8	0.25	0.88	0.31	0.91

Estimating a cutoff for PGD

At an EIGHT Screen 6 cutoff, 270 will be identified as positive for PGD. This compares with 222 identified by the 12-month NODS as meeting PGD. Therefore 48 (17.8%; 48/270) could be said to be EIGHT Screen false positives for PGD as identified by NODS, and 8 NODS positives who scored less than 6 (3.5%; 8/230; identifies 96.5% of NODS PGD) on the EIGHT Screen would be 'false negatives'. However, as stated, a 4 cut-off statistically equally will identify PGD, and the NODS is based upon each criteria with a maximum of 10 possible, and if recalculated at this lower cut-off for the NODS, it identifies 242 as meeting PGD. At this NODS cutoff, EIGHT Screen 'false positives' reduce to 28 (10.4%; 28/270) and 15 who score 4 or more on the NODS do not score at least 6 on the EIGHT Screen (ie 5.8% (15/257; identifies 94.2% of NODS PGD) are 'false negatives' at a 6 cutoff for the EIGHT Screen). These figures assume that the NODS is a more accurate assessor of PGD than the EIGHT Screen; nevertheless, the relative similarity of assessment scores between the EIGHT Screen at a 6 cutoff and the 12-month NODS, suggest that the screens at these cutoffs (4 for the NODS, 6 for the EIGHT Screen), are largely interchangeable. At a 4 cut-off for the EIGHT Screen, all NODS positives, whether at a 4 or 5 cutoff, would be identified by the EIGHT Screen, but with increased false positives (26.5% for a 5 NODS cutoff, and 15.7% for a 4 NODS cut-off).

For this setting, a Level 1 score for NODS was set at zero, with 1-4 scores for NODS at Level 2. With the EIGHT Screen designed to also identify Level 2 problem gambling, the only possible false positives may be those who score zero on the NODS and positive on the EIGHT Screen. However, as stated and supported by internationally recognised researchers in the field (Neal et al 2005; Volberg 2002), PGD is a recurrent disorder and a hiatus of 12 months, possibly inaccurately self-estimated, may not indicate absence of risk. On this basis, all of those attending specialist services should score at least 4 on the EIGHT Screen, and this in fact occurred (see table above).

Propensity for over-estimation

The additional goal was, however, to identify those who scored zero for the NODS and positive for the EIGHT Screen to estimate whether the EIGHT Screen identified substantial numbers of false positives (as suggested by Neal et al 2005, however, without citing evidence). Just eight (2.6%) clients from specialist services scored zero (three who scored 8 on the EIGHT Screen,

three who scored 6, one who scored 5, and another who scored 4 on the EIGHT Screen). These low proportions suggest that the EIGHT Screen identifies few false positives, if any, for this setting.

Conclusion

The EIGHT Screen at a 6 cutoff for specialist problem gambling treatment settings acts as a reasonable substitute for a DSM-IV based screen for PGD. It identifies, at a 6 cutoff, 96.5% of those who would be assessed by the 12-month NODS screen as pathological gamblers.

Feedback

Feedback from ethnic perspective

Information from individuals and services representing Maori, Pacific, Chinese and NZ European cultures was obtained against a number of relevant questions. Verbatim feedback is reported in the annexed Appendix.

Feedback from youth

Similarly, information was obtained from Toi Ora following their screening of an initial 368 rangitahi (youth) followed by a further 80 rangitahi, where qualitative feedback supported the high percentages of screening positives identified in the initial study (see Appendix)

Feedback from settings

Feedback from AOD, PHO, Iwi-based services, Youth services and Community Probation are annexed (Appendix).

Comparison of EIGHT Screen findings from studies

Neal and colleagues (2005) identify a number of aspects of validity to be satisfied in order to effectively measure the psychometrics of a screening tool. Many of these measures require a valid 'gold' standard exist, a difficulty found with many behaviours that result in problems that may not have sequelae that can be accurately measured independently of the person. For this reason a triangulated multiple approach was adopted. Where the EIGHT Screen was compared with another screen, although the matched screen may not necessarily measure the full construct of problem gambling accurately, these comparisons provide some evidence of the EIGHT Screen's psychometric properties. Indeed, where the EIGHT Screen does not highly correlate with another screen, this may also be interpreted as either screen more accurately measuring problem gambling.

However, this study did not rely only upon the comparison between the EIGHT Screen and other screens – this approach would have simply provided that information, for example those screens based upon DSM-IV being highly correlated with DSM-IV, and providing nothing more than a circular argument. If DSM-IV was a gold standard, then this comparison would have good merit.

As noted by Neal and her colleagues (2005):

“An important point to note about this classification (PGD in DSM-IV) is that the criteria were not directly based upon empirical evidence, but were derived from other sources, including discussions between experts in the area (eg Lesieur and Rosenthal, 1991). Very Little evidence, if any, was advanced to justify the validity of the 5-criteria cut-off score, or the extent to which these criteria were able to differentiate between pathological and other gamblers.” (p67)

Indeed, during the development of the EIGHT Screen, information was sought from a number of specialists in the then smaller field of experts. These included the designer of the SOGS, who supported the phrasing of the questions testing SOGS-like items in the first person, in that they seemed to 'elicit more positive responses (than the similar SOGS item)' (Lesieur 1997, personal communication).

Meeting various validity levels

Reliability

The reliability of the EIGHT Screen appears to be confirmed from a number of studies:

Study	Result
Screen Development Study (Sullivan 1999)	Test Retest 95% concurrence (n=55) Cronbach's alpha= 0.971
Otago University Study (Cape et al 2002)	Discussion of analysis
Current Validation Study	Feedback from individuals and focus groups (Appendix) confirmed reliability Cronbach's alpha overall= 0.958 (n=1,290) Test Retest (n=73) reliability of positive score 96%

The reliability of the test producing the same positive result was high (at least 95%), while the internal consistency far exceeded the usual 70% minimum (i.e. over 0.95). The individual questions therefore, could be taken to measure the same construct, with good correlation found for each question with the overall score.

Internal validity

Construct validity

Study	Result
Screen Development Study (Sullivan 1999)	Feedback from NZ and overseas therapists/experts n=63
Presentation to international conferences	Annexure C
Current Validation Study	Feedback from NZ therapists

Classification accuracy

Screen Development Study (Sullivan 1999)	Cut-offs agreed between NZ and overseas therapists, experts Correlation with other screens in identifying probable pathological gamblers ROC Eight/SOGS 0.927
Prison Study (Sullivan et al 2006)	False positives/false negatives identified against assessment by 2 qualified therapists. 91% PGD identified cf SOGS 82%
Current Validation Study	EIGHT Screen correlated with SOGS 86% and with the 12 month NODS 62%
Australian University Study (Shandley 2000)	SOGS and EIGHT Screen correlated 90.6%

Appropriate validation samples

A range of samples have been tested with the EIGHT Screen (GP patients and problem gambling treatment clients (Sullivan 1999); Casino gamblers

(Cape 2002); Australian public and treatment clients (Shandley 2000); Inmates at a medium security prison (Sullivan et al); AOD, PHO and problem gambling treatment clients (current study)).

Dimensionality

In the Screen Development Study, factor analysis was attempted in the selection of the original questions using an Oblique Principal Component Cluster to identify clustering of the questions into various dimensions. This was unsuccessful (Sullivan 1999). Dimensions vary with perspective. For example, in the evaluation of the Victorian Gambling Screen (GRP; 2003) items in six screens, including SOGS, were attributed to four dimensions. Previous approaches have considered other dimensions (Sullivan 1999), with items often being allocated to more than one dimension. The EIGHT Screen, using dimension accepted by a number of researchers, allocated its eight items to 'emotional' (37.5%), 'cognitive' (25%) and 'behavioural' (37.5%) dimensions. These higher emotional items appeared to match with the trend towards more cognitive and emotional trends (Volberg 1998). Under the GRP dimensions, the EIGHT could be allocated to 'attitudes to gambling' (50%), 'gambling behaviour' (12.5%) and 'consequences of gambling' (37.5%), but could legitimately be reallocated to 50% gambling behaviour, and others. Factor analysis can assist to identify the proportion of error between items and whether this error substantially gives rise to a single factor (the desired effect). However, DSM-IV itself seems to be based upon two different classes of item (Neal et al 2005). The items in the EIGHT Screen appear to provide a coherent dimensionality, although further factor analysis may assist in identifying this psychometric property.

External validation

The EIGHT Screen appears to correlate with other 'qualities or measures known to be related to problem gambling' (Neal et al 2005 p61).

Study	Result
PHO Study (Sullivan et al 2006; Sullivan et al –in preparation)	EIGHT Screen positives correlated significantly with depression compared with non-positives (n=1,580)
Prison Study (Sullivan et al 2006)	High level of EIGHT positives found with sentenced offenders; similar rates to Abbott et al 2000
Toiora Screening Project (2004) and Ngati Porou Community Screening Project (2004)	High correlation of EIGHT Screen positive with Maori, as found in other studies e.g. Abbott et al 2000
The Foodbank Project (Hutson et al 2004)	High correlation of EIGHT Screen positives with lower socio-economic people eg Cape et al 2004
Suicide Study (Penfold et al –submitted)	High correlation with suicidal ideation eg DSM-IV PGD
Current Validation Study	Feedback from therapists Higher correlation of EIGHT Screen positives with alcohol misuse by AOD clients

Concurrent validity

Although correlation with existing screens is an important factor, as stated by Neal and her colleagues (2005): "...an obvious limitation with this method is that it assumes that the older methods are necessarily valid." (p61) However, the EIGHT Screen does generally correlate with other screens and methods eg, assessment by clinicians using DSM-IV PGD criteria.

Study	Result
Screen Development Study (Sullivan 1999)	Correlation with SOGS in a number of NZ settings 74%
Youth EIGHT Screen-Y Study (Sullivan 2005)	EIGHT-Y and SOGS-RA correlation 64%; and with DSM-JR 53%
Prison Study (Sullivan et al 2006)	Correlation with SOGS in a prison setting 83% Correlation with DSM assessment by therapist 91% sensitivity
Australian university study (Shandley 2000)	EIGHT Screen and SOGS correlated at 90%
Current Validation Study	EIGHT Screen and SOGS correlated at 86% and with 12 month NODS 62%

The EIGHT Screen and various other measures were positively correlated and, in most circumstances, at a relatively high level.

Item variability

Questions in the EIGHT Screen appeared not to vary in their likelihood of being chosen by problem and non-problem gamblers (eg, ability to discriminate). No question was rarely chosen by problem gamblers, nor often chosen by non-problem gamblers. This was demonstrated in the paper by Cape et al (2002).

Practicality

The length of the EIGHT Screen is short with eight questions, while the ease of administration is positive. It is easy to score with only two responses available (compared with 4 on some SOGS, and 4 on the CPGI), and ease of interpretation. Feedback from therapists and others (Appendix) confirm these properties in its use in a number of different NZ settings.

As noted above (Current EIGHT Screen Use) the screen has been adopted for use in a number of settings overseas as a brief internet self-screen (Australia and Hong Kong), as a tool in training manuals (Australia, Canada and possibly USA), and is the standard screening tool for NZ Corrections. Many addiction services in NZ use the screen either methodically e.g. The Bridge, or on an ad hoc basis, when a gambling problem is suspected.

Applicability

The EIGHT Screen has been tested in the current study in AOD, PHO, Iwi-based, and specialist problem gambling services. Positive feedback has been received in each of these settings (see Appendix). The prison study and community probation feedback supports its use and acceptance in these settings.

Gender

Positive findings for both males and females have been identified in the Screen Development Study (ROC males 0.892 and females 0.973) and in the current study.

The above findings appear to support the validity of the EIGHT Screen for the various NZ settings and populations, and provide evidence for a cutoff acceptable to various settings and which has statistical support. The various studies drawn together for this report confirm that the EIGHT Screen has tested the various types of validation and reliability for the NZ environment.

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Annexure A:

Early Intervention Gambling Health Test (EIGHT) Screen

Most people in New Zealand enjoy gambling, whether it's Lotto, track racing, the pokies or at the casino.

Sometimes however it can affect our health.

To help us to check your well-being, please answer the questions below as truthfully as you are able from your own experience.

1. Sometimes I've felt depressed or anxious after a session of gambling.
☐yes, that's true ☐no, I haven't
2. Sometimes I've felt guilty about the way I gamble
☐yes, that's so ☐no, that isn't so
3. When I think about it, gambling has sometimes caused me problems.
☐yes, that's so ☐no, that isn't so
4. Sometimes I've found it better not to tell others, especially my family, about the amount of time or money I spend gambling.
☐yes, that's true ☐no, I haven't
5. I often find that when I stop gambling I've run out of money
☐yes, that's so ☐no, that isn't so
6. Often I get the urge to return to gambling to win back losses from a past session
☐yes, that's so ☐no, that isn't so
7. Yes, I have received criticism about my gambling in the past
☐yes, that's true ☐no, I haven't
8. Yes, I have tried to win money to pay debts
☐yes, that's true ☐no, I haven't



'Eight' Gambling Screen -Early Intervention Gambling Health Test

Developed by Dr Sean Sullivan

Abacus Counselling & Training Services Ltd

www.acts.co.nz

Annexure B: Psychometrics

Eight Screen Instrument and four cut-off in Instrument	Statistical Result
Eight Screen questions and SOGS score of three or more	ROC (usefulness of screen) = 0.930 (<i>cf</i> for nine questions ROC=0.927)
Eight Screen questions and SOGS score of five or more (probable pathological gambler)	ROC = 0.927 (<i>cf</i> for nine questions 0.921)
Eight Screen questions and males	ROC = 0.892
Eight Screen questions and females	ROC = 0.973
Correlation between responses to Eight Screen questions and SOGS in Study Two	$r=0.736$ (<i>cf</i> Beck Depression Inventory and depression and personality scores $r=0.66-0.75$; Spielberger STAI anxiety inventory and other anxiety inventories $r=0.52-0.80$ (Bowling 1995); Correlation between SOGS-RA, DSM-IV-J and GA20 ranged 0.61-0.68 (Gupta et al 1997)
Percentage of problem gambling counsellors from NZ and overseas who agreed that up to four affirmed questions selected from (a) an unranked list of gambling questions would warrant intervention and (b) the list ranked by them and selected from the most indicative question for problem gambling	(a) unranked = 79% of $n=63$ counsellors (Table 10.1) (b) ranked = 88.5% of $n=43$ counsellors (Table 10.4)
Percentage of problem gambling counsellors from NZ and overseas ($n=32$) who agreed that clients who affirmed questions covering two dimensions would warrant intervention (four questions affirmed in Eight Screen would cover a minimum of two dimensions)	72% of counsellors treating problem gambling who were surveyed
Sensitivity, specificity and positive predictive value (PPV) of four cutoff on Eight Screen for diagnosed <i>pathological gambling</i> in a day treatment clinic for problem gambling	sensitivity = 99%; specificity = 100%; PPV = 80%* *specific to this population only-narrow spectrum of problem gamblers
Sensitivity and positive predictive value (PPV) of four cutoff on Eight Screen for diagnosed <i>pre-pathological or pathological gambling</i> in a day treatment clinic for problem gambling	sensitivity = 99%; PPV=100% specificity = 100% * *specific to this population only-narrow spectrum of problem gamblers
Sensitivity, specificity and PPV of three ($n=75$) and four cut-off on Eight Screen ($n=53$) for SOGS five or more ($n=32$) (probable pathological gambler) with GP patients in 'anonymous' section Study Two ($n=493$)	Three cutoff: sensitivity=91%; specificity=91%; PPV=41% Four cutoff: sensitivity=78%; specificity=95%; PPV=52%
Sensitivity, specificity and PPV of three cutoff ($n=116$) and four cut-off ($n=75$) on Eight Screen for SOGS five or more ($n=53$) (probable pathological gambler) with GP patients in Pilot, Study One and Two excluding subgroup handing their pool answers to GP ($n=798$)	Three cutoff: sensitivity=83%; specificity=92%; PPV=38% (NB with $n=493$ in Study Two sensitivity = 91%; specificity = 91%; PPV=41% Four cutoff: sensitivity =75%; specificity =95%; PPV=53% (NB with $n=493$ in Study Two sensitivity=78%; specificity=95%; PPV=52%)
Consensus (62%) of problem gambling counsellors ($n=37$; Table 10.8) that two or less dimensions affected by gambling would warrant intervention; 76% would intervene if three or less dimensions affected.	A four cut-off on the Eight Screen would affect at least two dimensions with a high likelihood of more than two.
Consensus of problem gambling counsellors ($n=63$; Table 10.2) that individual questions comprising the eight screen were able to be ordered in ability to	Kendall's coefficient of concordance (of ranking of questions)=0.1; but highly significant $X_{13}^2=83.6$;

predict problem gambling and order chosen from a total of fourteen questions - five of first eight in Eight Screen (2nd (pool g), 5th (pool j) and 8th (pool i) ranked questions eliminated because of low sensitivity with patient population and specialist treatment population.	Ranking of Eight Screen questions: urge to return (q6 on 8 Screen) rank 1st; to pay debts (q8) 3rd; depressed (q1) 4th; not tell family (q4) 6th; caused problems (q3) 7th; run out money (q5) 10th; feel guilty (q2) 11th; received criticism (q7) 12th.
Eight Screen questions cover emotional (37.5%), cognitive (25%) and behavioural (37.5%) domains -cf SOGS 85% of 20 items behavioural; 70% of 10 DSM-IV items behavioural (current tendency to develop cognitive/subjective instruments for a cognitive disorder - Volberg 1998)	<u>Emotional</u> : q1 (anxious/depressed); q2 (felt guilty); q6 (felt urge) <u>Cognitive</u> : q3 (think caused problems); q4 (better not to tell) <u>Behavioural</u> : q5 (run out money); q 8 (tried win to pay debts)*; q7 (received criticism)* <div style="text-align: right;">*also has cognitive aspects</div>
Internal reliability	Cronbach's alpha 0.971

Annexure C

Presentations

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Appendix 1:

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How well did the EIGHT Screen work?

AOD

'It was brief by clinician standards, however less brief perhaps by clients' standards'

'The EIGHT Screen worked well. It identified any current gambling problems. However people with past gambling problems would appear (from the screen) to be current'

CADS North Auckland

'Brief and easy to administer. Some asked 'what would it mean for me if....' It helped to have someone around to discuss and clarify the questions/responses'

The Bridge Christchurch

'Not hard to do'

CADS Dunedin

'Worked okay for some – some didn't want to take part'

Odyssey Christchurch

'The EIGHT Screen is an easily workable tool'

Care NZ Porirua

'The EIGHT Screen and COGS Screen (for family) are given together – they are our most used screens. The alcohol and drug screens are 'full on' and for primary AOD problems a brief screen like the EIGHT is best used, then if gambling is an issue then we do the 'dollars' lost (set)' and later the SOGS''

TUPU Auckland

'We found the EIGHT Screen much easier to use – some of the wording in the SOGS was ambiguous'

Pacific Peoples Addiction Services

Specialist Problem Gambling Treatment Services

'The EIGHT Screen worked very well, it was easy for clients to understand – let's use it!'

And

'(It worked) Well, brief, easy to administer'

Problem Gambling Foundation (PGF) North

'Worked well – I've always liked the EIGHT Screen'
PGF Christchurch

'The questions assume the person already gambles, it can 'alienate' so best to 'pre-screen' before the EIGHT Screen'
Oasis Christchurch

'When I have used the EIGHT screen it has worked well. Clients have found it helpful to have a place to start, to talk through some of the issues raised by the EIGHT screen. We have used it as a training resource which has been very helpful and the workers who have used it to screen clients for gambling have appreciated having the screen. However, I would like to see a simpler or more appropriate screening tool developed for organisations'
Te Rangihaeata Oranga

'No Chinese or Korean client has given negative responses to the EIGHT Screen over a number of years. We have used the screen with 2 questions modified'
John Wong, Asian Services PGF

'(Pacific service) We use it and encourage AOD to use it – it is easy to explain.'
TUPU Auckland

'(the EIGHT Screen is) Brief enough'
Oasis Hamilton

'Both simple and brief enough'
Odyssey Auckland

Iwi-based Services

'Out of about 800 people (asked to participate by completing the screen) not many came back unanswered – most were self-answered – so it worked well'
Toi Ora, referring to the large multi-setting study in Taranaki (2004)

'Straightforward and easier than SOGS, and is brief; we are still using it for health promotion and will be doing another survey with it in 2007'
Ngati Porou Hauora, referring to their 2004 community study

'A very brief and simple screen that gives an immediate indication of a problem the gambler is having. This is enough of an indication that there is a major issue with gambling. In fact, the first question is a major indicator of problems with gambling'

-However, from the same organisation

'We would tell them this won't take too long, but one comment was 'this is a boring piece of paper''
and

‘Its not the most friendly screen, if I wasn’t depressed when I started I was certainly was after the first question’

Rangataua Maurora

Screen user for Corrections

‘Worked very well and is integrated into all screenings for pre-sentence reports.’

Community Probation

Was the EIGHT Screen acceptable to you and your clients?

AOD

‘Acceptable, provoking relevant discussion, if relevant to the client or their family members’ and

‘When the purpose was explained, clients were fine about it’

CADS North

‘Yes – it was self-evident and (they) didn’t mind being asked in that (AOD) setting’

CADS Dunedin

‘As a counsellor I find it acceptable to use. I did not get any negative feedback from clients who completed it’

Care NZ Porirua

‘For those that did it, they related to the questions and tended to have high scores’

Odyssey Christchurch

Iwi-based services

‘Out of 800 asked, only about 2 chose not to answer, so it has a high acceptance rate’

Toi Ora Taranaki

‘(Yes) We tried to emphasise social as well as health’

Ngati Porou Hauora

‘Maori and Pacific Island whanau that I have worked with have shown little enthusiasm to fill out this screen. The questions asked are like looking in the mirror and magnifies their image and they feel guiltier and become shy to respond. I have had to work one on one with whanau to help them through the screen. This has been a great way to start a session where these responses are true for the whanau’

and

‘Our clients struggled at times to answer and took longer than they should have to answer it’

Rangataua Maurora

Specialist Problem Gambling Treatment Services

'Acceptable and short'

PGF Christchurch

'Acceptable once they warmed up to it with their pre-screen'

Oasis Christchurch

'Yes (acceptable to ourselves and our clients)'

Oasis Hamilton

'Using the word 'gambling' can be offensive for Pacific people – the opening question is not offensive as it talks about health'

TUPU Auckland

'Yes (acceptable to myself and my clients)'

PGF Auckland

'Yes (acceptable to myself and my clients)'

Odyssey Auckland

Screen user for Corrections

'Most offenders are reasonably receptive to it'

Community Probation

Was it reliable in your view (did it accurately identify those with current gambling problems)?

AOD

'Yes (reliable)'

CADS North Auckland

'Very reliable'

Problem Gambling Foundation

'Once they scored 3-4 or more, accuracy increased'

The Bridge Christchurch

'Yes, an 'eye-opener' for some – one case-worker indicated their client had been honest with them in the screen and looked sheepish when it was positive but hadn't previously discussed it. Another counsellor suspected problem gambling but was more advanced than they thought when the client was screened'

CADS Dunedin

Iwi-based services

'It appeared to be reliable in that it is logical that Maori services had higher numbers of positives than GPs – findings made sense in light of statistics and research'

Toi Ora Taranaki

'From participants' viewpoint, they were shocked to become aware they had problems with gambling. It was good awareness raising for the community'

Ngati Porou Hauora

'I find this screen as with all screens worthwhile for the whanau to take away or to do by themselves or their own self-evaluation. To be truthful, whanau are already aware of their issues with gambling, it is my role to communicate appropriately all avenues of their life to see how they have been impacted by gambling and if they are motivated to stop gambling. We are currently drafting a screen to identify their motivation to stop or minimise gambling'

And from the same service:

'Yes (it is reliable)

Rangataua Maurora

Specialist Problem Gambling Treatment Services

'Reliable, it cuts to the chase and it relates to NZ. The screen is good for machine gamblers here – SOGS seems designed for older forms of gambling like track, and it seems very American – clients don't relate to 'stocks and shares' (in the SOGS)

PGF Christchurch

'Very accurate and correlates highly with the DSM-IV'

Oasis Christchurch

'Yes (it was reliable and accurately identified current problem gambling)'

PGF Auckland

'Yes (the EIGHT Screen is reliable in accurately identifying a current file)

Oasis Hamilton

'Yes (the EIGHT Screen is reliable in accurately identifying a current file)

Odyssey Auckland

Youth

Initially thought when youth were screened it was about 20% were positive, and that seemed a skewed result. I wondered if they understood the questionnaire e.g. 'depressed/anxious' – also young people have a different relationship with money than adults and have even less money – they either have it or they don't (question 5 'gambled until run out of money'). But about 3 months ago we did a survey of 80 young people to see what forms of gambling they used – it was mostly social gambling with cards, horses and some Lotto, but it backed up the previous survey (when the EIGHT Screen was used). The gambling was not obvious, like pokies.'

Toi Ora Taranaki

Screen user for Corrections

'Reasonably reliable but gambling was often isolated outside of the offending period'

Community Probation

Do you think a 4 cut-off is appropriate for your clients (to identify a gambling problem)?**AOD**

'Yes'

and

'Every person needs to be appraised independently to evaluate the level of the gambling problem in respect of a 4 cut-off'

CADS North

'Yes (a 4 cut-off is appropriate to my clients''

Problem Gambling Foundation

'Probably, but I would like to hear comments from other professionals. Four is worthy of starting a brief assessment and intervention'

The Bridge Christchurch

'I haven't used it enough to comment – but it seems okay'

CADS Dunedin

'Yes, although most answered 7 or 8 yes'

Odyssey Christchurch

'It is enough to alert the counsellor to question more fully'

Care NZ Porirua

Iwi-based services

'It appears to be a good cut-off'

Toi Ora Taranaki

'Three would be better – if you go to a 4 cut-off for problem gambling there are more concerns – it indicates more serious problems'

Ngati Porou Hauora

'Asking for support and sharing that they have a gambling problem is enough.'

Question 1 is a cut-off – this is enough of an indicator'

And from the same organisation

'Yes (4 is an appropriate cut-off)'

Rangataua Maurora

Specialist Problem Gambling Treatment Services

'Could be lower, such as 2.5 or 3'

PGF Christchurch

‘Four or above would be pathological gambling’
Oasis Christchurch

‘No, a 3 cut-off’
PGF Auckland

‘For some clients a 4 cut off is appropriate. However, most of my clients initially put in a 3’
Te Rangihaeata Oranga

‘Yes (a 4 cut-off is appropriate to my clients’
Odyssey Auckland

Youth

‘I would use a two as a cut-off for youth. Could be used as an early intervention tool’
Gambling Helpline (InYaFace)

Screen user for Corrections

‘I think somewhere in excess of a 4 would be more appropriate before we would consider a referral to counselling’
Community Probation

How bad a gambling problem would you think a person scoring 4 would have in your opinion?

AOD

‘Significant enough to discuss strategies for change, further exploration of pattern of gambling’
CADS North

‘Relates to overall presentation-can be an intermittent problem for some, but when more frequent, 4 fits ‘moderate’ ‘
CADS Dunedin

‘A score of 4 would be the start of problems’
Odyssey Christchurch

‘We give feedback if a score of 4 or more’
TUPU Auckland

Iwi-based services

‘Depends upon which 4? Some questions may have greater weight than others. Is there a differentiation – would women identify more with depression and anxiety etc?’
Toi Ora Taranaki

‘Four would be more serious problems’
Ngati Porou Hauora
‘Four is worthy of starting brief assessment and intervention’

And

'Serious concerns that certainly need to be supported and awhi'
Rangataua Maurora

'I think it is portraying a significant discomfort to the client'
Care NZ Porirua

Specialist Problem Gambling Treatment Services

'I would think that they had a serious problem that needed intervention'

And

'A lot more are 6-8 but 4 indicates medium problems'
PGF Christchurch

'Four would be equal to 5 DSM-IV (PGD criteria)'
Oasis Christchurch

'(Their gambling would be) Heavy-compulsive'
Oasis Hamilton

'Moderate-severe'
PGF Auckland

'A person scoring 4 would in my opinion have a serious gambling problem.
However, one also needs to monitor this as some will put a 4 because
they think they should.'
Te Rangihaeata Oranga

'Reasonably severe (seriousness at 4 cut-off)'
Odyssey Auckland

Youth

'Hard to comment on the cut-off of 4 – maybe also which 4?'
Toi Ora Taranaki

'It could be at the stage where the gambling is starting to control the client'
Gambling Helpline (InYaFace)

Screen user for Corrections

'The occasional binge together with alcohol and perhaps illicit substances'
Community Probation

What would you think if a person scored three (warrant any intervention – if so what)?

AOD

'Basic information resource, including contact number for the Gambling Helpline if the person wants to discuss it further'

'Again, each person should be appraised independently to evaluate the level of the problem. The intervention would be psycho-education, and information given'

CADS North

'If 4 is the score, it is worthy of starting brief assessment and intervention. If 3, more enquiry is needed. If lower, more false positives (of problem gambling) – a lot answer 1 or 2 which is not problematic, and not significant, but would note'

The Bridge Christchurch

'It would be silly not to discuss it further and offer feedback'

Dunedin CADS

'Didn't have any low scores so can't comment on a score of 3'

Odyssey Christchurch

'I think further discussion at least would be warranted'

Care NZ Porirua

Iwi-based services

'If anyone said 'yes' to any question it indicates some problem and needs further clarification'

Toi Ora Taranaki

'If the score was 3, it's hitting the edge of problems and there is a need to intervene to stop further problems'

Ngati Porou Hauora

'(If a person scored 3 I would have) serious concerns that certainly need to be supported and awahi. It does not matter (that it is a lower score) and any indication that there may be a problem is serious and requires support and awahi'

Rangataua Maurora

Specialist Problem Gambling Treatment Services

'Yes I would offer intervention and assessment, and use Motivational Interviewing'

'Three would indicate a possible problem; also people underestimate – it would be a forewarning for the future'

PGF Christchurch

'A score of one is significant for (identifying) a problem caused by gambling and (appropriate) to take it further. A score of 1-3 I would start with education, then proceed with what's needed'

Oasis Christchurch

'Possible early stages of problem gambling – offer information'

Oasis Hamilton

'A person scoring 3 would warrant an intensive intervention - again much of this would be dependant on the assessment at the beginning'

Te Rangihaeata Oranga

‘Check out if low scoring due to minimum social supports/connections e.g. scored ‘no’ to question 4 (not tell family) and question 7 (receiving criticism) as has no family/friends (and would otherwise have scored higher)

PGF Auckland

‘Yes, I would intervene (even) with a score of 1 ... (use) brief intervention...motivational interviewing’

Odyssey Auckland

Youth

‘Would warrant an intervention by way of offering them support from someone trained in the field (face to face counselling) and by working on strategies to assist them to stop gambling. If there is an imminent risk then an adult will be involved. Risk pertains to self harm, suicidal ideation’

Gambling Helpline (InYaFace)

Screen user for Corrections

‘A score of 3 would not be a trigger for further intervention’

Community Probation

Do you think the wording of the screen is understandable to your clients?

AOD

‘Generally yes’

and

‘The wording is understandable’

CADS North

‘The 1st person (that the screen is framed in) is most understandable in format – it implies you are thinking it or not. If not thinking in line with the statement, it might be confusing. But it may confuse those who have literacy problems or don’t think in the abstract’

The Bridge Christchurch

‘Good, straight forward instrument’

CADS Dunedin

‘Yes, wording is okay, but for Maori, there is a shame issue (especially males) and they tend to not answer at all – need to take them aside and discuss verbally and deal with shame issues’

Odyssey Christchurch

‘Yes (the wording is understandable to my clients)’

Care NZ Porirua

Iwi-based services

'People understand the questions'

Toi Ora Taranaki

'The majority understand but helpful (for them to be able) to clarify it with counsellors'

Ngati Porou Hauora

'In my observance of whanau filling out the screen, their body language indicates how comfortable or uncomfortable they feel about doing the screen'

and

'No No – whanau who have participated in filling out the forms have demonstrated enough with body language and tensing facial expression to indicate they are suffering in completing the form and these are educated people (AOD counsellor) along with our whanau'

Rangataua Maurora

Specialist Problem Gambling Treatment Services

'I think the wording of the screen is very helpful – clients appear to know what it means'

Te Rangihaeata Oranga

'Yes, so much more than SOGS'

PGF North

'Yes'

PGF Auckland

'More understandable for New Zealanders than SOGS – maybe a different word than 'guilty' – those with personality disorders don't feel guilt as much'

PGF Christchurch

'Very clearly understandable. The word 'gamble' – it assumes the person is a gambler and we should be cautious about that'

Oasis Christchurch

'Sometimes it can be confusing for the client as to the period of time they are reflecting on when answering the questions'

Oasis Hamilton

'Using words like 'feeling down' when translating depression helps. For example in Tongan, we put together 'heart' and 'sad' when we say we're feeling depressed.

And

'Mostly we do (the screen) with them. Sometimes it is easier to sit with them as they may need help with the English because it is their 2nd language. It would help if the EIGHT Screen were available in Pacific languages too'

Tupu Auckland

'Yes (the wording is understandable to my clients)'

Odyssey Auckland

Youth

'Yes (wording is understandable to youth)'

Gambling Helpline (InYaFace)

Screen user for Corrections

'Yes...absolutely. Straight forward and clear'

Community Probation

Is the EIGHT Screen culturally appropriate for your clients?

AOD

'Card games for money, housie (official/unofficial), these forms of gambling Maori and Pacific Island people may be involved in were not included'

And

'Wording is very 'in your face' cultural appropriateness could be considered further'

CADS North

'Neutral enough to be culturally appropriate – simple enough to be inoffensive'

The Bridge Christchurch

'Seems appropriate for NZ and clients'

CADS Dunedin

'I believe so – I didn't feel uncomfortable asking my clients whatever ethnicity they were from'

Care NZ Porirua

Iwi-based services

'Of our screening, the majority were Maori and had no problem completing the screen – it was taken by them as a trigger, not a judgement, and that they would benefit from feedback'

Toi Ora Taranaki

'Okay with a national screen, but Maori and Pacific people need face to face also – they don't just respond to a piece of paper – Maori also need to talk about their experiences as they fill it out. Kaumatua or a Pacific person should be present for cultural (safety)'

Ngati Porou Hauora

'People have asked who developed this screen and why it was 'put together'. I suppose this indicates that maybe a brief history of this screen could be included. For Maori it is imperative that we know the whakapapa of all information or knowledge, and the rationale behind this. The screen

is depressing, sad and offers no hope, even though it may be the truth of their behaviour towards gambling. On a positive note, this screen can be used later on in the therapy to indicate their progress with their gambling behaviour, plus it is a good 'checklist' of what they have overcome or what they can identify for themselves to do better at. Lastly, sorry, but this is not culturally appropriate for Maori or Pacific Island. How about some realistic questions that indicate wellness for whanau, or questions as to why they gamble: 'My whanau or I have breakfast (y/n) Lunch (y/n) Dinner (y/n)?'; 'Would I like to know cheap places to buy kai? (y/n) 'Would I like to know simple menu's/recipes to cook? (y/n); 'My whanau or I get along with my whanau (y/n); 'Does any of your whanau gamble? (y/n) Indicate who'

And

'No – a comment by one whanau was 'did a palangi write this?' '

Rangataua Maurora

Specialist Problem Gambling Treatment Services

'(following on from statement that it is very helpful) However, I believe that it is more to do with the person working with the screening tool who indicates whether it is acceptable or not – I would like to see a more appropriate one for Maori and Pacific Island peoples'

Te Rangihaeata Oranga

'Yes (it is culturally appropriate)'

PGF North

'Yes'

PGF Auckland

'Okay for all cultures'

PGF Christchurch

'Not culturally inappropriate'

Oasis Christchurch

'Yes (is culturally appropriate)

Oasis Hamilton

'Yes (it is culturally appropriate)'

Odyssey Auckland

Youth

'We found that young people were keen to participate and accepting of the screen. It was appropriate but with two reservations. Did they understand the terms 'depression/anxiety' and did their different relationship to money affect the screen results. There was no barrier to them using the EIGHT Screen'

Toi Ora Taranaki

‘Yes. For youth it could also have questions involving borrowing money from friends and losing friends due to gambling, lying and not paying money back’

Gambling Helpline (InYaFace)

Screen user for Corrections

‘Apart from Klingleons, yes’

Community Probation

Can you recall any feedback from your clients when you screened with the EIGHT Screen?

AOD

‘A couple of clients indicated they would have completed it differently a few years prior, and that they are answering it differently now due to significant changes to their level of gambling’

And

‘Shying off from the screen, then continued with encouragement – saying (after) ‘I enjoy gambling socially, (and) hadn’t thought it was a problem’

CADS North

‘Remarkably non-problematic (doing the screen) and ‘seems really straight-forward’ ‘

CADS Dunedin

‘I gave them the EIGHT Screen when clients were confused by SOGS (didn’t relate as well) – it was more straight-forward’

PGF Christchurch

‘Some related back to times when they were gambling more and said they didn’t realise how serious it had been’

And

‘Some asked for more information about gambling services for friends or family members’

Care NZ Porirua

Iwi-based services

‘They said it was ‘unobtrusive’ and ‘easy to complete’ – it triggered off conversations and led on to other conversations about their whanau and with others – it was a ‘tool of engagement’ ‘

Toi Ora Taranaki

‘Some said ‘far out’ when mentioning the score. It shocks their awareness, some wanted to take more for the whanau. They said it was ‘good for the whanau, for their awareness’ and ‘a good conversation topic’. There were no negative comments’

Ngati Porou Hauora

‘Some said ‘This really sounds like me’, others ‘That’s enough, I don’t need to go any further’ and ‘I already do what these questions are asking, that’s

why I have come to counselling' and 'I didn't realise how bad I was' and
'This is quite embarrassing, I really need help'

And

'Yes, the facial expressions and huffing and puffing – it seemed to be really
depressing and heavy'

Rangataua Maurora

Specialist Problem Gambling Treatment Services

'Clients I have worked with have said that it's a relief to be able to talk about
the issues raised by the questionnaire'

Te Rangihaeata Oranga

'They were happy that it did not take long to do and was easy to understand'

PGF North

Screen user for Corrections

'A little bit of insight into addictive pursuits that generally feature in their
lifestyles'

Community Probation

CADS Focus Groups feedback

Screening for problem gambling was carried out at CADS South for a period
of approximately three months to mid-February 2005, in parallel with a trial at
CADS Central. This was a programme development project.

Clients accessing the service are assessed by a triage AOD practitioner,
when they complete a number of screens/assessment tools and can receive
information and some counselling, before being allocated to a caseworker.
Two dedicated triage practitioners participated together with occasional triage
assistance from other practitioners as needed.

Group 1

Relevance of screening for gambling

Definitely relevant. It is connected with alcohol and drug misuse, is an
addiction and can be costly. Whether it is screened for will of course be
viewed in the context of what the agency is asking of her. What she does will
be continued by the caseworker, and it may be appropriate for caseworkers to
build up rapport before asking about gambling.

Additional time required to screen?

It took approximately 5-7 minutes, sometimes more, to incorporate the
gambling screening. Normally a triage assessment takes 1 hour to 70 minutes
but this can vary. If a person wants explanations or a safety matter it can take
longer, while probation clients may take less at about 40 minutes.

Do clients mind?

Some may think more paper to complete. A couple said they came there for a
different reason (than gambling), but generally they are quite confused as to
what is required and usually accept. A lot would say 'I don't gamble'.

What was the screening process?

She would ask if the client did any gambling, and if they said she would
explore further, and if they confirmed this she would not screen. If they varied

in any way from the first statement ('I don't gamble') then they would be asked to complete the screen. She didn't have a set approach as she didn't like a prescriptive, routine approach. She couldn't speak for the other triage practitioner's approach.

Training required?

Yes, she considered it essential if they were to screen in the future, and even if they didn't screen it was essential to have training to deal with problem gambling. At present she considered she didn't know her role and didn't feel comfortable without training. Would want to know what to do, as this was commonsense.

Why did she think the prevalence of problem gambling was lower in CADS South?

May be due to many clients being probation clients who may not disclose gambling problems. In February this year CADS South identified that 40%-50% of their clients were probation clients and may have been required to attend.

From her recollection there were few clients identified after Christmas with gambling problems compared with before then. Not certain how this occurred.

Group 2

Because of limited time available from the practitioners, a less structured approach was used with feedback being abbreviated.

Relevance to practitioner

"I would have thought that with our clients having a lack of finances, they should gamble less"

"There is some cross-over between alcohol misuse and gambling problems"

"I found that if our clients were drinking, they would gamble more"

"Problem gambling is especially stressful for the significant other, but they wouldn't seek help here"

Relevance to clients - did they mind?

"I found it (the screening) a pain – some clients didn't see the relevance when they were attending for the first time – also, there were many other screens for them to do"

"Some would question whether it was any of our business (to screen for their gambling)"

Screening process?

"We didn't give much feedback to clients (on the screen) – generally just the score. If it was positive many would say 'I know' (about gambling being a problem)"

"It was harder to frame (the relevance) for the client – often we didn't try"

"It would be better to screen for gambling later, after the crisis was dealt with"

"I can imagine it would be easier to screen current clients, especially after a rapport has been established"

"Some clients didn't care that their screen was positive (for problem gambling)"

Why do you think CADS South was lower than here?

"I was also screening for problem gambling in South Auckland, and am now in Central, and I thought the prevalence found in CADS South was under-represented (didn't expand on this)"

“The finding (of one in six clients also being positive for problem gambling) was not surprising, I thought it would have been higher than we found”

If gambling screening were adopted we'd like:

“Less paperwork”

“Screen after the first presentation”

“That clients were prepared for gambling questions – change our name to ‘CADS & Gambling’ for example”

“We'd like to be resourced for gambling – more time per client and ensure we were trained to deal with them”

“I wouldn't like to be dealing with ‘pure’ gamblers, though”

GP Focus Group feedback (Mangere PHO Study)

GP participation in PRA

Nine GPs chose to participate in the Practice Review Activity process, all from the Auckland area. Participating GPs completed the questionnaires annexed (“Questionnaire 1 & 2”). Questionnaire 1 was a baseline assessment and Questionnaire 2 provided evidence of outcome. Questionnaire 1 was completed by each GP after the first month of screening.

Responses to questions (Questionnaire 1)

Were problem gambling interventions a new experience?

Four GPs responded that it was a new experience to assist problem gamblers or their affected family, while four responded that it wasn't new to them.

Were patients receptive?

All GPs responded that the patients were receptive, with three responding with the strongest response available, and the average indicating a very positive response.

Interventions were time consuming

Seven GPs agreed with this contention and two were uncertain. Those who agreed recorded a moderately strongly held perception.

Usual response to refer to specialist problem gambling service

Responses varied to this question. Five GPs did refer, two did not, and a further two were uncertain.

I felt I was able to help (problem gambling issue) clients

Seven GPs felt they were able to help their patients affected by problem gambling. These held a moderately strong belief. However the two dissenting GPs held strong beliefs around their inability to help their patients for these issues.

I would feel better if I knew patient wanted this help

Generally this knowledge was wanted by six GPs and this was moderately strongly desired. Two did not desire this feedback and one was uncertain.

Help for problem gambling issues is a legitimate GP role

Six GPs held this view and strongly believed that problem gambling was a legitimate role for GPs. Three did not see this as their role, with two of the three holding this view strongly.

More problem gambling intervention skills desired

Seven GPs agreed (moderately) with the desire for more skills to allow them to intervene with more confidence. Only one GP believed they possessed sufficient skills, while one was uncertain.

Will integrate strategies in practice to address problem gambling enquiries

Six GPs held moderately strong intentions to integrate strategies in their practice to address problem gambling. Two were uncertain, while one (who had previously doubted their ability to help these patients) did not intend to integrate strategies to address gambling issues, although this view was not strongly held.

Responses to questions (Questionnaire 2)

Following the second stage of the trial, participating practice review activity GPs completed a second assessment. Eight of the nine GPs completed the second assessment.

Raising the issue of problem gambling became easier

Six GPs agreed that, with practice, raising the issue of problem gambling became easier. This view was moderately held by four GPs and strongly held by two. Another two were uncertain, however no GP disagreed with this statement.

Providing an intervention for those affected by their gambling became easier

Six GPs agreed that interventions became easier over time with patients who were problem gambling and this view was strongly held by four GPs. One GP was uncertain and one held the view (weakly) that interventions did not become easier.

Providing an intervention for those affected by another's gambling became easier

Views were mixed. Four GPs held the view strongly that interventions for family members affected by another's gambling became easier with practice. Two GPs were uncertain and two held (weak) views that providing these interventions for family members of the gambler did not become easier.

Patients accept GPs as legitimately providing help for gambling issues

Four of the GPs believed their patients accepted their role as a help provider for gambling issues. This view was moderately strongly held by these GPs. Two were uncertain, while two held moderate to weak views to the contrary.

I have developed more skills in dealing with patient's gambling problems

Seven GPs agreed with this statement, a view strongly held by most. One was uncertain while no GP believed they had not increased their skills to intervene in problem gambling.

I have integrated strategies in my practice to address problem gambling enquiries

Seven GPs had integrated strategies in their practice to address problem gambling issues. This response was moderately strongly held. Only one GP had not and their response was weakly rated.

I found problem gambling interventions generally time consuming

All eight GPs agreed with this statement, and found their interventions were time consuming. Three held this view strongly, while five held a weak perception of time consumption by these interventions.

Usual response to refer to specialist problem gambling service

Six out of the eight GPs did generally refer their problem gambling patients to specialist services (up from the five out of nine in questionnaire 1), while two didn't usually respond with a referral.

I felt I was able to help (problem gambling issue) clients

Six GPs believed they were able to help their clients with gambling problems and these views were moderately strongly held. This response was similar to the responses to this question in questionnaire 1. One GP was uncertain and one GP did not believe they could help, compared with two GPs in questionnaire one believing they had not helped their patients.

Identified gambling problems are a cue to me to ask about commonly coexisting problems

Six GPs agreed, strongly generally, that gambling issues were commonly coexisting with other health problems that the GP would ask about. Two disagreed, moderately strongly, with this view.

General responses from focus groups/verbal feedback

GPs, Practice Nurses and in some cases reception staff gave feedback at a number meetings held both between and after the two PRA screening stages.

Time available to address gambling issues was often a problem

This was a common concern with many GPs stating that the presenting problem was often displaced by the gambling issue and a second appointment was required. There was a view that the workload for a 15 minute consultation was substantially increased, and it was not simply referring the patient to a specialist problem gambling service.

Surprise at the number of patients with their own gambling problems or affected by a family member's gambling

Many GPs were surprised at the numbers of clients identified as affected by gambling, especially COGS screen (family affected) patients. Some had not expected there to be any problem gambling issues beyond those that had already been identified previously in the practice, usually by patient self identification. Others, such as GPs in South Auckland were not surprised as they had expected there to be quite a number affected by gambling problems in their area. One GP noted that in 10 years they had not had a patient that said they had a gambling problem.

Patient responses to their GP following positive screens

Some patients did not wish to talk about their positive gambling scores, but many were agreeable to take away information to read. Others were quite open to talking about their gambling with one GP especially noting that Pacific patients were more willing to talk than others. Some found that family (COGS) patients were 'more cagey' about discussing gambling.

Many patients did not require anything other than information, and in many cases required only the pamphlet and did not want to discuss gambling issues directly. Pamphlets were generally popular.

Co-existing problems

Many GPs believed that problem gamblers would have many other problems such as alcohol and drug misuse, although one GP stated that alcohol problems were hard to identify and usually patients did not want to talk about them, and that this may extend to gambling problems.

GPs had mixed views about the high level of probable depression identified (and that it was particularly high with problem gamblers). Some were surprised at the rate of failure of the depression screen and often had to make

another time for patients to address the presenting problem and/or the depression. Others however were not surprised at the rate of depression.

Integration into practice

Many GPs indicated their awareness had been raised e.g. surprised at the number of women with problems arising from their own gambling, and the prevalence of gambling problems overall. One indicated they ran a holistic practice and would be concerned about these patients. Some spoke of the need to have a reminder to screen for gambling problems.

Strategies adopted included notes and/or scores placed upon files to raise the issue again when the patient returned, offering the patients a support phone call to check progress (a they currently do with alcohol and smoking issues), and an intention to update their practices to deal with gambling issues.

One South Auckland GP noted the mobility of many of their patients, often living with relatives in different areas, and patients' tendency to access a number of GPs as being likely to reduce continuity of care and thus a GPs ability to support problem gamblers.