A3.2 Treatment – Body of Evidence Reviews

Search strategy
A broad ranging systematic search was developed by the guideline development team. The search strategy was limited to peer-reviewed journal articles with an English abstract published from 1st January 1980 onwards.

For Medline, PsycInfo, all EBM Reviews & ProQuest:

1. exp Gambling
2. gambl$
3. betting
4. wager
5. gaming
6. 1 or 2 or 3 or 4 or 5

For EMBASE & CINAHL:

1. gambling
2. betting
3. wager
4. gaming
5. 1 or 2 or 3 or 4

Data collection and analysis
The search was conducted on 07/04/2009 and was undertaken by several members of the guideline development team. Once duplicate articles and irrelevant articles, based on the title and abstract, were excluded the search provided 3139 possible articles for inclusion. Once these articles were reviewed a total of 35 studies from 38 articles were included for appraisal for the treatment questions.
Clinical question 1a
For people with gambling problems, are cognitive-behavioural interventions more effective than no intervention?

Clinical question 1b
For people with gambling problems, are cognitive-behavioural interventions more effective than other psychological interventions?

Background
The underlying assumption generally implicit in behavioural explanations is that gambling is a learned maladaptive behaviour that results from a combination of personal reinforcement history and prevailing reinforcement contingencies [1-2]. Positive reinforcement schedules include the variable ratio schedule of “random” financial gain and the fixed interval reinforcement schedule of subjective excitement and physiological arousal. There is also a negative reinforcement schedule that provides escape from emotional pain and aversive stress states. Operant reinforcement allows gambling to be maintained sufficiently long enough for arousal and excitement to be associated with gambling-related external stimuli through classical conditioning [1-2]. These widely generalised conditioned stimuli include external stimuli such as situations, places, and times, or internal stimuli such as mood states, physiological arousal, or cognitions. These operant and classical conditioning schedules can also combine with early exposure to gambling and modeling effects to predispose individuals to initiate participation in gambling behaviour [2].

In accordance with learning principles, behavioural approaches have commonly applied classical and operant conditioning techniques in order to reduce the arousal and excitement associated with gambling. A range of behavioural procedures have been explored in the evaluation of interventions for problem gambling, including aversive techniques, covert sensitisation, positive reinforcement, exposure techniques, stimulus control techniques, systematic desensitisation, behavioural counselling, and cue exposure. Other behavioural procedures include imaginal desensitisation, alternative activity planning, problem solving training, financial planning and limit setting, social skills and communication training, and relapse prevention.

Cognitive explanations propose that gamblers hold invalid beliefs that are based on false assumptions and are maintained by a biased interpretation of the evidence [3]. The most frequent involve cognitive biases include overconfidence in ability to identify systems of winning; believing that winning is imminent; believing that attitudes, beliefs, prayer, specific places, or behaviours can influence gambling outcomes; placing bets based on instinct, omens, hunches, and feelings; viewing luck as personal or fluctuating with environmental circumstances; recollecting wins and ignoring losses; and personalising gaming machines [4]. Inadequate conceptualisation of statistical independence and randomness is the core feature underlying gambling-related cognitive distortions.

Cognitive formulations of the development and maintenance of problem gambling imply that intervention should identify cognitive distortions and biases and correct them through cognitive restructuring techniques. Cognitive misconceptions of the basic notions of
randomness (e.g., gamblers’ fallacy, chasing losses, discounting losses, overestimation of skill, and the efficacy of systems or superstitious behaviours) are generally corrected with evidence generally related to the independence of play, the inability of strategies or superstitions to control the outcome, and the negative winning expectancy.

There is increasing evidence of the efficacy of CBT in a range of settings and in combination with other interventions. Although the literature does not provide a strong basis for differentiation of the available treatment options, cognitive-behavioural therapies have been cautiously recommended as “best practice” for the psychological treatment of problem gambling [5].

Methods

Study selection criteria

<table>
<thead>
<tr>
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<tbody>
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<td>People who present for problem gambling treatment.</td>
<td>People who present to treatment for issues other than problem gambling.</td>
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<tr>
<td>Any age, sex, ethnicity, gambling type, setting, comorbidity.</td>
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<tr>
<td><strong>Intervention</strong></td>
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<tr>
<td>Any cognitive-behavioural psychological intervention.</td>
<td>Any psychological intervention not classified as cognitive-behavioural.</td>
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<td>Any pharmacological intervention.</td>
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<td><strong>Comparison</strong></td>
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<tr>
<td>No intervention: any control condition, including, wait list control, assessment only, non-gambling related treatment, treatment as usual and placebo.</td>
<td>No suitable or appropriate comparison group.</td>
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<td>Other psychological interventions: any psychological intervention not classified as cognitive-behavioural.</td>
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<tr>
<td><strong>Outcome</strong></td>
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<td>Gambling behavior, gambling severity, psychological distress, alcohol or substance use or quality of life</td>
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Summary of clinical evidence

*Volume of evidence*

(a) Eight RCTs were identified for inclusion. One RCT was found to have a low risk of bias, two were found to have a moderate risk of bias and five were found to have a high risk of bias.

(b) Two RCTs were identified for inclusion. Both RCTs were found to have a moderate risk of bias.
Consistency of studies
(a) Various comparisons were made by these studies:
- Individual CBT vs. group CBT vs. waitlist control
- Individual CBT vs. GA referral (waitlist control)
- CBT workbook vs. CBT workbook and MI vs. waitlist control
- CBT workbook and MI vs. CBT workbook and MI and 6 booster telephone support vs. CBT workbook only vs. waitlist control
- Two studies addressed individual CBT vs. waitlist control
- Group CBT vs. waitlist control
- GA referral vs. GA referral and CBT workbook vs. GA referral and individual CBT
(b) Two different comparisons were made by these studies:
- DBT vs. TAU
- CBT vs. CBT and compliance improving techniques

Consistency of results
(a) The studies that compared individually administered CBT with a control group found that CBT was superior to the control group in gambling severity, gambling behaviour and psychological distress. The studies that compared group CBT with a control found conflicting results. One study found significant differences between group CBT and a waitlist control in gambling behaviour and some psychological distress measures and one study found significant differences between the groups in gambling severity but no differences were found in gambling behaviour. Studies that compared a self help CBT workbook with a control found fairly similar results. One study found no differences between the groups in gambling behaviour, one study found significant differences between the groups in gambling behaviour but only at the follow up assessment and one study that assessed both gambling behaviour and gambling severity found no differences between the self help CBT workbook group and the waitlist control group.

(b) Significant reductions in gambling severity and gambling behaviour measures were found in both the DBT and TAU interventions, however, there were no significant differences between the two groups. No significant differences were found between CBT and CBT and compliance improving interventions in gambling severity and gambling behaviour.
## Draft recommendation

### Draft 1 - Recommendation based on evidence (done by Evidence Officer):

(a) For people with gambling problems, CBT can be more effective than no intervention in reducing gambling behaviour, gambling severity and psychological distress.

(b) There is insufficient evidence to make an evidence-based recommendation.

### Draft 2 - Recommendation based on evidence and clinical expertise (done by Key contacts):

For people with gambling problems, CBT can be used to reduce gambling behaviour, gambling severity and psychological distress.

### Draft 3 - Recommendation based on evidence and clinical expertise (done by GDG):

Individual or group CBT should be used to reduce gambling behaviour, gambling severity and psychological distress in people with gambling problems.

## Clinical impact statement

Choose from:

- Slight

**Explanation:**
Current practice is unlikely to change as CBT is already routinely used. It may be more likely that it is more consistently used and therefore this would have moderate implications for the training of practitioners.
Implementation of the recommendation

Please indicate yes or no to the following questions. Where the answer is yes please provide explanatory information about this. This information will be used to develop the implementation plan for the guidelines.

Will this recommendation result in changes in usual care? YES - This recommendation will encourage people to fund various CBT strategies and will raise a cloud of concern over the funded agencies that do not use CBT.

Are there any resource implications associated with implementing this recommendation? YES - Resource implications include training the current and future workers in this field and ensuring that they have the appropriate qualifications. CBT is also more expensive than usual care. This recommendation may also lead to the disenfranchisement of support work.

Will the implementation of this recommendation require changes in the way care is currently organised? YES

Are the guideline development group aware of any barriers to the implementation of this recommendation? YES - Training of the current and future workforce.

Clinical evidence

Volume of evidence

(a) Eight RCTs were identified for inclusion:

- One RCT with a moderate risk of bias that compared individually administered CBT with group administered CBT and with a waitlist control [6].
- One RCT with a high risk of bias that compared individually administered CBT with a waitlist control group that also obtained a GA referral [7].
- One RCT with a high risk of bias that compared a group that received a self help CBT workbook, a group that received a self help CBT workbook and a motivational interview and a waitlist control group [8].
- One RCT with a low risk of bias that compared four different interventions. One group received a self help CBT workbook, another group a self help CBT workbook and a motivational interview, another group received a self help CBT workbook and motivational interview as well as six booster telephone support and a waitlist control group [9].
- One RCT with a high risk of bias that compared individually administered CBT with a waitlist control group [10].
- One RCT with a high risk of bias that compared group administered CBT with a waitlist control group [11].
• One RCT with a moderate risk of bias that compared a GA referral control group with a group that received a self help CBT workbook and a GA referral as well as with a group that received individually administered CBT and a GA referral [12].
• One RCT with a high risk of bias that compared individually administered CBT with a waitlist control [13].

(b) Two RCTs were identified for inclusion:
• One RCT with a moderate risk of bias that compared DBT with TAU [14].
• One RCT with a moderate risk of bias that compared individually administered CBT with a group that received CBT as well as compliance improving interventions [15].

Consistency of studies
(a) Cognitive-behavioural interventions vs. no intervention:
• Seven studies assessed gambling behaviour [6, 8-13].
• Six studies assessed gambling severity [7, 9-13].
• Two studies assessed psychological distress [6, 7].
• One study assessed quality of life [7].
• None of the studies assessed alcohol or drug use.
• Treatment duration varied across the studies. Three studies gave participants one self help workbook [8, 9, 12]. The studies that administered practitioner delivered CBT had sessions ranging from 6 to 20 sessions [6, 7, 10-13].
• Follow up also varied across the studies. One study reported no follow up [7], one study reported up to 6 months follow up [6], five studies reported up to 12 months follow up [8-10, 12, 13] and one study reported up to 24 months follow up [11].

(b) Cognitive-behavioural interventions vs. other psychological interventions:
• One study assessed gambling behavior [15].
• Both studies assessed gambling severity [14, 15].
• Both studies assessed psychological distress [14, 15].
• Both studies assessed alcohol or drug use [14, 15].
• None of the studies assessed quality of life.
• Treatment duration varied with one study consisting of 14 sessions [14] and one study consisting of 7 sessions [15].
• Follow up varied across studies, with one study conducting a 3 month follow up assessment [14] and one study conducting a 9 month follow up assessment [15].

Consistency of results
(a) Cognitive-behavioural interventions vs. no intervention:
• Significant differences were found between both the individual CBT treatment and the group CBT treatment when compared to the control group in gambling behaviour. Significant differences between the individual CBT treatment and the control group were found in psychological distress. Significant differences between
the group CBT treatment and the control group were found for the depression and trait anxiety measures, but not for the state anxiety and self-esteem measures, of psychological distress [6].

- Significant differences were found between individual CBT treatment and GA referral in gambling severity, psychological distress and for one of the two quality of life measures [7].
- No significant differences were found between a self help CBT workbook and waitlist control in gambling behaviour [8].
- No significant differences were found between a self help CBT workbook and waitlist control in gambling behaviour during the 6 week study period, however, significant differences were found between the groups at the 12 month follow up assessment [9].
- Significant differences were found between individual CBT and waitlist control in both gambling severity and gambling behaviour [10].
- Significant differences were found between group CBT and waitlist control in gambling severity, however, no differences were found between the groups in gambling behaviour [11].
- Significant differences were found between the two combined CBT conditions that received either a self help CBT workbook or individual CBT when compared to the GA referral condition in gambling severity and gambling behaviour. Significant differences were also found between the two CBT groups, indicating that the individually administered CBT was more effective than the CBT workbook. Although CBT as a whole improved outcomes these benefits seemed to be driven primarily by the individual therapy condition and not by the self help CBT condition [12].
- Significant differences were found between individual CBT and waitlist control in gambling behaviour and gambling severity [13].

(b) Cognitive-behavioural interventions vs. other psychological interventions:

- Significant reductions in gambling severity and gambling behaviour were found in both the DBT and TAU interventions, however, there were no significant differences between the two groups. Significant reductions in substance use were found in the DBT intervention but not for the TAU intervention. Both groups also reduced trait anger and anger expression over time with the DBT group having significantly greater reductions in trait anger [14].
- No significant differences were found between CBT and CBT and compliance improving interventions in gambling severity and gambling behaviour [15].

**Generalisability**

(a) The evidence was not directly generalisable to the target population but it could be sensibly applied.
Five studies were conducted in Canada [8-11, 13], two in America [7-12] and one in Australia [6].

Where reported, studies were consistent in terms of age but not in terms of gender.

(b) The evidence was not directly generalisable to the target population but it could be sensibly applied.

One study was conducted in Australia [15] and one in Canada [14].

The studies were generally consistent in terms of age and gender.

**Applicability**

(a) This evidence is probably applicable to the Australian health care context with some caveats.

(b) This evidence is probably applicable to the Australian health care context with some caveats.

**Discussion about evidence review findings**

**Findings**

(a) Cognitive-behavioural interventions vs. no intervention:

- Evidence from a RCT with a moderate risk of bias found significant differences between the individual CBT treatment and the control group on all gambling behaviour measures, including, gambling frequency, gambling duration, money inserted and expenditure. Significant differences were found between the group CBT treatment and the control group on all gambling behaviour measures. Significant differences between the individual CBT treatment and the control group were found on all psychological distress measures, including, depression, state and trait anxiety and self-esteem. Significant differences between the group CBT treatment and the control group were found for the depression and trait anxiety measures, but not for the state anxiety and self-esteem measures [6].

- Evidence from a RCT with a high risk of bias found significant differences between the individual CBT treatment group and the GA referral group in gambling severity and psychological distress but only for one of the quality of life measures [7].

- Evidence from a RCT with a high risk of bias indicates that the group receiving the CBT workbook did not differ from the waitlist control in gambling behaviour [8].

- Evidence from a RCT with a low risk of bias found that participants who received a self help CBT workbook significantly reduced their gambling behaviour and no longer met the criteria for pathological gambling when compared with the waitlist control group at the 12 month follow up assessment. No differences were found between the groups during the 6 week study period [9].
• Evidence from a RCT with a high risk of bias found significant differences between the group that received individual CBT and the waitlist control in both gambling severity and gambling behaviour [10].
• Evidence from a RCT with a high risk of bias found significant differences between the group that received group CBT and the waitlist control group in gambling severity, however, no differences were found between the groups in gambling behaviour [11].
• Evidence from a RCT with a moderate risk of bias found significant differences between the two combined CBT conditions, that received either a self help CBT workbook or individual CBT, when compared to the GA referral condition in gambling severity and gambling behaviour. Significant differences were also found between the two CBT groups, indicating that the individually administered CBT was more effective than the CBT workbook [12].
• Evidence from a RCT with a high risk of bias found significant differences between the individual CBT group and the waitlist control in gambling behaviour and gambling severity [13].

(b) Cognitive-behavioural interventions vs. other psychological interventions:
• Evidence from a RCT with a moderate risk of bias found significant reductions in gambling severity and behaviour in both the DBT and TAU interventions, however, there were no significant differences between the two groups. Significant reductions in substance use were found in the DBT intervention but not for the TAU intervention. Both groups also reduced trait anger and anger expression over time with the DBT group having significantly greater reductions in trait anger [14].
• Evidence from a RCT with a moderate risk of bias found no significant differences between CBT and CBT and compliance improving interventions for gambling severity and gambling behaviour [15].

Population subgroups
(a) The RCT comparing individually administered CBT with a GA referral group performed a subgroup analysis on gender and found no significant gender differences in treatment response [7]. The RCT comparing a CBT workbook with a waitlist control also performed a subgroup analysis on gender and found no significant gender differences [8]. The RCT comparing individually administered CBT with a self help CBT workbook and a GA referral group found that age, gender, race and gambling severity did not alter treatment outcome [12].

(b) The RCT comparing CBT with CBT and compliance improving interventions assessed predictors of treatment outcome and found that alcohol and drug use did not predict treatment outcome [15].
Outcomes
(a) Where possible, all of the included studies used validated tools to measure their outcomes. Seven studies assessed gambling behaviour, for example, time spent gambling and money spent on gambling [6, 8-13]. Five studies assessed gambling severity, through the use of tools like the PG-YBOCS, G-SAS, SOGS and DSM criteria [7, 9-13]. Psychological distress was addressed by two studies [6, 7]. One study assessed quality of life, through the QOLI and SDS [7]. None of the studies addressed alcohol or substance use.

(b) Both studies assessed gambling behaviour, such as, the percentage of net monthly income lost gambling and the percentage of monthly income spent on gambling. Both studies assessed gambling severity through the use of the CPGI-PGSI [14] and the SCIP and SOGS [15]. One study addressed psychological distress with the BDI, STAI and alcohol or substance use through the AUDIT and the Drug Abuse Screening Test [15]. One study assessed alcohol and substance use with the Drug History Questionnaire and psychological distress with the State-Trait Anger Expression Inventory [14]. None of the studies addressed quality of life.

Implications of bias
(a) A study with a moderate or high risk of bias should be interpreted with caution. Several of the included studies were found to have a moderate or high risk of bias due to insufficient power and not reporting the method of randomisation, allocation concealment or blinding of the outcome assessors.

(b) A study with a moderate risk of bias should be interpreted with caution. The included studies were found to have a moderate risk of bias due to insufficient power and not reporting whether allocation to intervention groups was concealed and whether blinding occurred.

Usability of the evidence
The evidence acquired from these studies is probably applicable to the Australian health care context with some caveats.

References


Clinical question 2
For people with gambling problems, are psychological interventions other than cognitive-behavioural interventions more effective than no intervention?

Background
In addition to evidence for cognitive-behavioural interventions, there is empirical evidence for a number of other psychological interventions, including motivational enhancement therapies (MET), minimal or brief practitioner-delivered interventions, self-help programs, and Gamblers Anonymous.

- **Motivational enhancement therapies**: Motivational interviewing (MI) and its derived manual-guided motivational enhancement therapy (MET) are client-centred, directive methods for enhancing intrinsic motivation to change by exploring and resolving ambivalence. The principles underpinning these interventions are collaboration, in which the therapist and client pursue change together; evocation, whereby the client is believed to possess the intrinsic goals and resources for change; and autonomy, whereby the therapist respects the client’s right and capacity for self-direction and facilitates informed choice [1]. The guiding concepts of these interventions are expressing empathy, empathically developing discrepancy between present behaviour and broader goals and values, rolling with resistance, and supporting self-efficacy [1].

- **Minimal or brief practitioner-delivered interventions**: Minimal or brief practitioner-delivered interventions are those treatments involving less professional time and/or resources than are typical of traditional therapy [2]. They have been defined as those that range from 10 minutes to four sessions [3]. From a stepped-care perspective, these interventions may provide non-threatening, cost-effective, and time-efficient alternatives to traditional psychological interventions, particularly to those problem gamblers who have earlier onset and less severe gambling problems. Recent literature has successfully employed a range of problem gambling interventions involving minimal therapist contact, including self-help workbooks with booster sessions, brief advice, face-to-face interventions with a small number sessions, brief interventions delivered via telephone and online media, and interventions delivered through audiocassette and videoconferencing. Brief interventions for problem gambling have usually involved a combination of motivational interviewing and cognitive-behavioural techniques.

- **Self-help programs**: Self-help interventions are those treatments involving no professional time and/or resources. Like interventions involving minimal therapist contact, these interventions may provide non-threatening, cost-effective, and time-efficient alternatives to traditional psychological interventions, particularly to those problem gamblers who have earlier onset and less severe gambling problems. Many of these interventions may also be appropriate for problem gamblers unable or unwilling to access local services and increase the accessibility of treatment for problem gamblers located in geographically remote areas. To date, the self-help treatment outcome literature for problem gambling has comprised predominantly of the use of cognitive-behavioural self-help workbooks. Other interventions include personalised feedback and internet-delivered interventions.

- **Gamblers Anonymous**: Gamblers Anonymous (GA), the parallel organisation for Alcoholics Anonymous, is a voluntary fellowship that employs abstinent gamblers as
counsellors. Officially established in Los Angeles in 1957, GA models the principles and structure of Alcoholics Anonymous using a traditional 12-step approach. GA subscribes to a disease or medical model and therefore asserts that PG can only be arrested through the practice of complete abstinence. While GA is a common form of treatment, evaluative research is limited, probably due to the number of obstacles to systematic evaluation posed by the structure of GA [4]. Recent studies have employed comparative designs to evaluate the efficacy of referral to GA.

Methods

Study selection criteria

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<td>Outcomes other than gambling behavior, gambling severity, psychological distress, alcohol or substance use or quality of life</td>
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</table>

Summary of clinical evidence

Volume of evidence
Nine RCTs were identified for inclusion. Four RCTs were found to have a low risk of bias and five RCTs were found to have a high risk of bias.

Consistency of studies
Various comparisons were made by these studies:
- Personalised feedback vs. waitlist control
- Counselling session vs. control
- Motivational interview vs. control interview
• Self help CBT workbook vs. self help CBT workbook + a motivational interview vs. waitlist control
• Self help CBT workbook vs. self help CBT workbook + motivational interview vs. self help CBT workbook + MI + 6 booster telephone supports vs. waitlist control
• Group node-link-enhanced mapping vs. group non-mapping vs. waitlist control
• Group node-link-enhanced mapping vs. waitlist control
• Two studies compared MET + CBT vs. MET vs. brief advice vs. assessment only

**Consistency of results**

Significant differences were found between personalised feedback and waitlist control on some gambling behaviour measures, however, no differences were found in gambling severity. No significant differences were found between a counselling session and control group in gambling behaviour. Significant differences were found in the two RCTs that compared a node-link-mapping enhanced treatment with a control group in gambling severity and psychological distress, however, significant differences were only found for some gambling behaviour measures. Significant differences were found between a motivational interview and a control interview, in gambling behaviour, however, no differences were found in gambling severity. Significant differences were found in the two RCTs that compared a motivational interview combined with a self help workbook with a waitlist control, in gambling behaviour. The two RCTs that compared motivational enhancement therapy, a combined MET and CBT, brief advice and an assessment only control found slightly conflicting results. One RCT found no differences between the MET or the MET + CBT groups when compared with the control group in either gambling behaviour or gambling severity. Significant differences were found between the brief advice group and the assessment only control group in gambling behaviour and gambling severity. The other RCT found no differences between the two MET interventions and the control group for days gambled, however, the MET only condition showed a significantly greater reduction in dollars wagered over time compared to the control condition. All three active conditions (MET, MET + CBT and brief advice) also showed significantly greater reductions, in gambling severity, when compared with the control condition.

**Draft recommendation**

**Draft 1 - Recommendation based on evidence (done by Evidence Officer):**

For people with gambling problems, psychological interventions other than cognitive behavioural interventions may be effective in reducing gambling behaviour and gambling severity.
**Draft 2 - Recommendation based on evidence and clinical expertise (done by Key contacts):**

There is insufficient evidence to make a recommendation for any specific psychological intervention based on evidence alone. Recommend further research exploring this question.

**Draft 3 - Recommendation based on evidence and clinical expertise (done by GDG):**

Motivational Interviewing and Motivational Enhancement Therapy should be used to reduce gambling behaviour and gambling severity in people with gambling problems.

**Clinical impact statement**

Choose from:
Moderate

**Explanation:**
Current practice is likely to change as MI/MET is not routinely used, therefore this would have moderate implications for the training of practitioners.

**Implementation of the recommendation**

Please indicate yes or no to the following questions. Where the answer is yes please provide explanatory information about this. This information will be used to develop the implementation plan for the guidelines.

Will this recommendation result in changes in usual care? YES - This recommendation will encourage people to fund various MI or MET strategies and will create a cloud of concern over the funded agencies that do not use MI or MET to treat people with gambling problems.

Are there any resource implications associated with implementing this recommendation? YES - Resource implications include training the current and future workers in this field and...
ensuring that they have the appropriate qualifications. This recommendation may also lead to the disenfranchisement of support work.

Will the implementation of this recommendation require changes in the way care is currently organised? YES

Are the guideline development group aware of any barriers to the implementation of this recommendation? YES – Training of the current and future workforce.

Clinical evidence

Volume of evidence

Nine RCTs were identified for inclusion:

- One RCT with a high risk of bias that compared a personalised feedback intervention with a waitlist control [5].
- One RCT with a low risk of bias that compared a motivational interview with a control interview [6].
- One RCT with a high risk of bias that compared a self help CBT workbook, a self help CBT workbook with a motivational interview and a waitlist control [7].
- One RCT with a low risk of bias that compared four different interventions. One group received a self help CBT workbook, one group a self help CBT workbook and a motivational interview, one group received a self help CBT workbook and a motivational interview as well as six booster telephone supports and one group was a waitlist control [8].
- One of the studies identified conducted two RCTs. The first RCT had a high risk of bias and compared a group format node-link-mapping enhanced treatment with a non-mapping enhanced group treatment and with a waitlist control group. The second RCT had a high risk of bias and compared a group format node-link-mapping enhanced treatment with a waitlist control [9].
- Two RCTs with a low risk of bias that compared a MET and CBT group with a MET only group, a brief advice group and an assessment only group [3, 10]
- One RCT with a high risk of bias that compared a counselling session with a control group [11].

Consistency of studies

- All of the studies assessed gambling behaviour
- Seven of the studies assessed gambling severity [3, 5, 6, 8-10].
- Two of the studies assessed psychological distress [6, 9].
- None of the studies addressed alcohol or substance use.
- None of the studies addressed quality of life.
Treatment duration was fairly consistent amongst the included studies. One study mailed out the personalised feedback [5], six studies had one session [3, 6-8, 10, 11] and two studies had a treatment duration of 8 weeks [9].

Follow up varied across the studies. One study reported no follow up [11], one study reported a 3 month follow up [5], two studies reported a 6 month follow up [9], two studies reported a 9 month follow up [3, 10] and three studies reported a 12 month follow up [6-8].

**Consistency of results**

- Significant differences were found between the personalised feedback intervention and the waitlist control on the total amount of money spent, however, no differences were found between the groups on the CPGI or the maximum amount of money spent [5].
- No significant differences were found between a counselling session and the control group in gambling behaviour [11].
- The two RCTs that investigated the efficacy of a node-link-mapping enhanced treatment found significant differences between the mapping enhanced treatment and the control group in gambling severity. Both studies also found a significant decrease, from pre to post treatment, in the mapping enhanced group in gambling expenditure, however, only one of the RCTs found a significant difference in gambling bout duration [9]. A significant decrease from pre to post treatment was also found for the node-link-mapping enhanced group, in the psychological distress measures [9].
- Significant differences were found in the RCT comparing a motivational interview with a control interview, in gambling behaviour and psychological distress, however, no differences were found in gambling severity [6].
- Significant differences were found in the two RCTs that compared a motivational interview combined with a self help workbook with a waitlist control, in gambling behaviour [7,8].
- The two RCTs that compared motivational enhancement therapy, a combined MET and CBT, brief advice and an assessment only control found slightly conflicting results. One RCT found no differences between the MET or the MET + CBT groups when compared with the control group in either gambling behaviour or gambling severity measures over the 6 week study period, however, the MET + CBT condition was found to be significantly more effective than the control group over the 9 month follow up period, for gambling severity. Significant differences were found between the brief advice and assessment only control in gambling behaviour and gambling severity [3]. The other RCT found no differences between the two MET interventions and the control group for days gambled, however, the MET condition showed a significantly greater reduction in dollars wagered over time compared to the control condition. All three active conditions (MET, MET + CBT and brief advice) also showed
significantly greater reductions, in gambling severity, when compared with the control condition [10].

**Generalisability**
The evidence is not directly generalisable but could be sensibly applied.

- Four of the RCTs were conducted in Canada [5-8], four RCTs were conducted in America [3, 9, 10] and one RCT was conducted in Switzerland [11].
- Where reported, the mean age was generally consistent amongst the studies with the mean age ranging from 20.3 years to 57.7 years.
- Gender was somewhat inconsistent amongst the studies with some reported as having up to 84.2% of their sample females and others as low as 15.4%.

**Applicability**
The evidence is probably applicable to the Australian health care context with some caveats.

**Discussion about evidence review findings**

**Findings**

- Evidence from a RCT with a high risk of bias found significant differences between the personalised feedback intervention and the waitlist control on the total amount of money spent gambling, however, no differences were found between the groups on the CPGI or the maximum amount of money spent [5].
- Evidence from a RCT with a low risk of bias found significant differences between a motivational interview and a control interview, in gambling behaviour and psychological distress, however, no differences were found in gambling severity [6].
- Evidence from a RCT with a high risk of bias found significant differences between a motivational interview combined with a self help workbook and a waitlist control, in gambling behaviour [7].
- Evidence from a RCT with a high risk of bias found significant differences between a motivational interview combined with a self help workbook and a MI combined with a self help workbook and six booster telephone supports when compared with a waitlist control, in gambling behaviour. The evidence showed significant differences when comparing the two MI treatments with the waitlist control, however, there were no differences between the two MI treatment groups in gambling behaviour [8].
- Evidence from a RCT with a high risk of bias found significant differences between a node-link-mapping enhanced treatment and a control group in gambling severity. Significant differences from pretreatment to posttreatment for the node-link-mapping enhanced group were found for the gambling behaviours of expenditure and gambling bout duration [9].
• Evidence from a RCT with a high risk of bias found significant differences between a node-link-mapping enhanced treatment and a control group in gambling severity. Significant differences from pretreatment to posttreatment for the node-link-mapping enhanced group were found for the gambling behaviour of expenditure but not for gambling bout duration. A significant decrease from pre to post treatment was also found for the node-link-mapping enhanced group, in the psychological distress measures [9].

• Evidence from a RCT with a low risk of bias found no differences between the MET or the MET + CBT groups when compared with the control group in gambling behaviour and gambling severity over the 6 week study period, however, the MET + CBT condition was found to be significantly more effective than the control group over the 9 month follow up period, for gambling severity. Significant differences were also found between the brief advice and assessment only control on the gambling behaviour and gambling severity measures [3].

• Evidence from a RCT with a low risk of bias found no differences between the two MET interventions (MET and MET + CBT) and the control group for days gambled, however, the MET condition showed a significantly greater reduction in dollars wagered over time compared to the control condition. All three active conditions (MET, MET + CBT and brief advice) also showed significantly greater reductions, in gambling severity, when compared with the control condition [10].

• Evidence from a RCT with a high risk of bias found no significant differences between a counselling session and a control group in gambling behaviour [11].

**Population subgroups**

The RCT that compared a self help CBT workbook, a self help CBT workbook combined with MI and a waitlist control performed a subgroup analysis on gender and found no significant gender differences in treatment response [7]. Both of the RCTs that addressed the efficacy of MET performed subgroup analysis. One of the RCTs found no difference in treatment response when assessing gender, age, severity of alcohol or drug problems and psychological distress [3] and the other RCT found no gender difference in treatment response [10].

**Outcomes**

All of the included studies described in detail how the outcomes were assessed. All of the included RCTs assessed gambling behaviours, such as, time spent gambling, number of days or sessions spent gambling, money wagered and money lost when gambling. Seven of the RCTs addressed gambling severity through the use of such tools as the PGSI-CPGI, NODS, SOGS and DSM-IV criteria [3, 5, 6, 8-10]. Two of the RCTs addressed psychological distress, with the BAI and the BDI-II [9] and the GSI [6], respectively. None of the studies addressed alcohol or substance use or quality of life.
**Implications of bias**

A study with a high risk of bias should be interpreted with caution. Several of the included studies were found to have a high risk of bias due to insufficient power and for not reporting the method of randomisation, allocation concealment or blinding of the outcome assessors. One study also reported not blinding the outcome assessors or concealing the allocation of participants to interventions [5].

**Usability of the evidence**

The evidence from this study could probably be applied to the Australian health care context.

**References**

Clinical question 3
For people with gambling problems, is voluntary self-exclusion more effective than no intervention?

Background
Self-exclusion has been defined as a demand reduction strategy within a harm minimisation approach to gambling policy and regulation [1]. Self-exclusion programs are industry based programs designed to assist problem gamblers to cease or limit their gambling behaviour by limiting their access to gaming opportunities [2]. They require individuals to voluntarily sign an agreement to being refused entry to specified gambling venues or to be asked to leave if identified from specified gambling venues. Self-exclusion periods vary, whereby they can be time limited (e.g., 6 months) or involve lifetime bans [2].

Despite the widespread availability of self-exclusion programs, there is limited research investigating the characteristics of people who use these services and the effectiveness of these programs. Studies suggest that over half of self-excluders are male and the majority are classified as pathological gamblers [3, 4]. Self-excluders most often hear about self-exclusion programs through their friends or relatives, followed by information available from the gambling venue and the media [4]. A number of researchers have found that not everyone who requests self exclusion also wishes to undertake counselling [3, 4]. Ladouceur and colleagues [3] found that 49% of study participants who had signed self-exclusion agreements had considered seeking counselling but only 10% had actually done so.

It has been suggested that the effectiveness of self-exclusion programs can be measured in a number of ways: utilisation rate, compliance with the self exclusion requirements, and the impact on gambling behaviour [5]. Utilisation rates for self-exclusion are generally low, with estimates suggesting that between 0.4 and 7% of problem gamblers utilise self-exclusion programs [5-7]. Findings reveal that although many self-excluders report confidence that they can succeed in staying away from gambling venues during the self-exclusion period, between 10 to 50% breach the self-exclusion agreement by entering the gambling venue [3, 4, 7]. Interestingly, Ladouceur and colleagues [4] found that 45% of self-excluders intended to return to the gambling venue on completion of their self-exclusion period. Self-excluders breach an average of 3 to 6 times during their self-exclusion periods and approximately half gamble on other games during their self-exclusion period [3, 7]. Findings reveal that approximately 30% of self-excluders remain abstinent during their self-exclusion period. Findings also reveal self-exclusion programs are associated with a reduced urge to gamble, increased perception of control, a reduction in intensity of negative consequences, and reduced gambling severity [4]. There is a clear need for further research on the gambling behaviour of those who breach, just as there is a need to know more about the subsequent gambling behaviour of those who revoke their self exclusion bans.
Methods

Study selection criteria

<table>
<thead>
<tr>
<th>Participants</th>
<th>Inclusion Criteria</th>
<th>Exclusion Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>People who present for problem gambling treatment. Any age, sex, ethnicity, gambling type, setting, comorbidity.</td>
<td>People who present to treatment for issues other than problem gambling.</td>
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</tbody>
</table>

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<thead>
<tr>
<th>Intervention</th>
<th>Inclusion Criteria</th>
<th>Exclusion Criteria</th>
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</thead>
<tbody>
<tr>
<td>Voluntary self-exclusion: Voluntary self-exclusion from any gambling venue or gaming organisation.</td>
<td>Any psychological intervention that is not defined as voluntary self exclusion. Any pharmacological intervention.</td>
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<thead>
<tr>
<th>Comparison</th>
<th>Inclusion Criteria</th>
<th>Exclusion Criteria</th>
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</thead>
<tbody>
<tr>
<td>No intervention: any control condition, including, wait list control, assessment only, non-gambling related treatment, treatment as usual and placebo.</td>
<td>No suitable or appropriate comparison group.</td>
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<tr>
<th>Outcome</th>
<th>Inclusion Criteria</th>
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<tbody>
<tr>
<td>Gambling behaviour, gambling severity, psychological distress, alcohol or substance use or quality of life.</td>
<td>Outcomes other than gambling behavior, gambling severity, psychological distress, alcohol or substance use or quality of life.</td>
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</tbody>
</table>

Summary of clinical evidence

Volume of evidence

No RCTs were identified for inclusion.

Draft recommendation

Draft 1 - Recommendation based on evidence (done by Evidence Officer):

There is no evidence to make a recommendation.
There is no evidence to make a recommendation.

No research evidence to form an evidence-based recommendation. No consensus recommendation will be made.

References

Clinical question 4a
For people with gambling problems are, practitioner delivered psychological interventions more effective than non-practitioner delivered psychological interventions?

Clinical question 4b
For people with gambling problems, are practitioner delivered psychological interventions more effective than self-help psychological interventions?

Clinical question 4c
For people with gambling problems, are practitioner delivered psychological interventions more effective than no intervention?

Clinical question 4d
For people with gambling problems, are non-practitioner delivered psychological interventions more effective than self-help psychological interventions?

Clinical question 4e
For people with gambling problems, are non-practitioner delivered psychological interventions more effective than no intervention?

Clinical question 4f
For people with gambling problems, are self-help psychological interventions more effective than no intervention?

Background
Practitioner-delivered psychological interventions include individual and group interventions employing cognitive-behavioural interventions, motivational enhancement therapies (MET), and minimal or brief interventions.

- **Cognitive-behavioural interventions**: There is increasing evidence of the efficacy of CBT in a range of settings and in combination with other interventions. In accordance with learning principles, behavioural approaches have commonly applied classical and operant conditioning techniques in order to reduce the arousal and excitement associated with gambling. Cognitive formulations of the development and maintenance of problem gambling imply that intervention should identify cognitive distortions and biases and correct them through cognitive restructuring techniques.

- **Motivational enhancement therapies**: Motivational interviewing (MI) and its derived manual-guided motivational enhancement therapy (MET) are client-centred, directive methods for enhancing intrinsic motivation to change by exploring and resolving ambivalence. The guiding concepts of these interventions are expressing empathy, empathically developing discrepancy between present behaviour and broader goals and values, rolling with resistance, and supporting self-efficacy [1].

- **Minimal or brief practitioner-delivered interventions**: Minimal or brief practitioner-delivered interventions are those treatments involving less professional time and/or resources than are typical of traditional therapy [2]. They have been defined as those that range from 10 minutes to four sessions [3]. From a stepped-care perspective, these interventions may provide non-threatening, cost-effective, and time-efficient alternatives to traditional psychological interventions, particularly to those problem
gamblers who have earlier onset and less severe gambling problems. A recent literature has successfully employed a range of problem gambling interventions involving minimal therapist contact, including self-help workbooks with booster sessions, brief advice, face-to-face interventions with a small number sessions, brief interventions delivered via telephone and online media, and interventions delivered through audiocassette and videoconferencing. Brief interventions for problem gambling have usually involved a combination of motivational interviewing and cognitive-behavioural techniques.

In contrast, non-practitioner interventions include self-help programs, and Gamblers Anonymous.

- **Self-help programs**: Self-help interventions are those treatments involving no professional time and/or resources. Like interventions involving minimal therapist contact, these interventions may provide non-threatening, cost-effective, and time-efficient alternatives to traditional psychological interventions, particularly to those problem gamblers who have earlier onset and less severe gambling problems. Many of these interventions may also be appropriate for problem gamblers unable or unwilling to access local services and increase the accessibility of treatment for problem gamblers located in geographically remote areas. To date, the self-help treatment outcome literature for problem gambling has comprised predominantly of the use of cognitive-behavioural self-help workbooks. Other interventions include personalised feedback and internet-delivered interventions.

- **Gamblers Anonymous**: Gamblers Anonymous (GA), the parallel organisation for Alcoholics Anonymous, is a voluntary fellowship that employs abstinent gamblers as counsellors. While GA is a common form of treatment, evaluative research is limited, probably due to the number of obstacles to systematic evaluation posed by the structure of GA [4]. Recent studies have employed comparative designs to evaluate the efficacy of referral to GA.

**Methods**

**Study selection criteria**
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<td><strong>Intervention</strong></td>
<td>Practitioner-delivered psychological interventions: Any psychological intervention that is delivered by a therapist or clinician. Can be of any theoretical orientation (e.g., cognitive-behavioural, motivational enhancement, solution-focused, client-centred, psychodynamic, supportive), setting (e.g., inpatient, outpatient, community), modality (e.g., individual, couples, family, group), or method of delivery (e.g., face-to-face, telephone, online).</td>
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<td>Non-practitioner-delivered psychological interventions: Any psychological intervention delivered by a person other than a therapist or clinician. This includes trained peer workers, support workers and elders. Includes minimal or peer interventions, such as, support groups, telephone helplines or counselling, Gamblers Anonymous, internet or online therapies or peer interventions.</td>
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<td>Self-help psychological interventions: Any psychological intervention where individuals predominantly helps themselves with minimal or no assistance from others (practitioner or non-practitioner). This includes some self-help workbooks /manuals/ audiotapes /videotapes, voluntary self exclusion, internet or online therapies and self-hypnosis.</td>
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</table>
Summary of clinical evidence

**Volume of evidence**
(a) No RCTs were identified for inclusion.
(b) Three RCTs were identified for inclusion. One RCT was found to have a low risk of bias, one RCT was found to have a moderate risk of bias and one RCT was found to have a high risk of bias.
(c) Thirteen RCTs were identified for inclusion. Three RCTs were found to have a low risk of bias, two were found to have a moderate risk of bias and eight were found to have a high risk of bias.
(d) No RCTs were identified for inclusion.
(e) No RCTs were identified for inclusion.
(f) Five RCTs were identified for inclusion. Two RCTs were found to have a low risk of bias, one RCT was found to have a moderate risk of bias and two RCTs were found to have a high risk of bias.

**Consistency of studies**
(b) Various comparisons were addressed by these studies:
- CBT workbook vs. CBT workbook + MI vs. waitlist control
- CBT workbook vs. CBT workbook + MI vs. CBT workbook + MI + 6 booster telephone support vs. waitlist control
- GA referral vs. GA referral + CBT workbook vs. GA referral + individual CBT
(c) Various comparisons were addressed by these studies:
- Individual CBT vs. group CBT vs. waitlist control
- CBT vs. GA referral (waitlist control)
- CBT workbook vs. CBT workbook and MI vs. waitlist control
- CBT workbook vs. CBT workbook + MI vs. CBT workbook + MI + 6 booster telephone support vs. waitlist control
- Two studies compared CBT vs. waitlist control
- Group CBT vs. waitlist control
- Group node-link-enhanced mapping vs. group non-mapping vs. waitlist control
- Group node-link-enhanced mapping vs. waitlist control
- Individual CBT and GA referral vs. CBT workbook and GA referral vs. GA referral only
- Two studies compared MET and CBT vs. MET vs. brief advice vs. assessment only
- Counselling session vs. control
(f) Various comparisons were addressed by these studies:
- Internet delivered CBT and MI vs. waitlist control
- Personalised feedback vs. waitlist control
- CBT workbook vs. CBT workbook + MI vs. waitlist control
• CBT workbook vs. CBT workbook + MI vs. CBT workbook + MI + 6 booster telephone support vs. waitlist control
• GA referral vs. GA referral + CBT workbook vs. GA referral + individual CBT

Consistency of results
(b) Two studies compared a combined self help CBT workbook and MI intervention with a self help CBT workbook only intervention and found significant differences in gambling severity but only some differences in gambling behaviour. Some significant differences were found in gambling behaviour when comparing a self help CBT workbook with practitioner delivered CBT.

(c) CBT: Several studies compared practitioner delivered CBT with some form of control group. The results of these studies were fairly consistent in that practitioner delivered CBT was more effective than a control group in reducing gambling behaviour and gambling severity. The two studies that assessed psychological distress also found that practitioner delivered CBT was more effective in reducing psychological distress than a control group. Slightly conflicting results were found for practitioner delivered group CBT where one study found that it was more effective in reducing gambling behaviour and some psychological distress when compared to a waitlist control, however, the other study found that practitioner delivered group CBT was more effective in reducing gambling severity but not gambling behaviour.

MI/MET: In the two RCTs that compared a practitioner delivered MI combined with a self help CBT workbook, with a waitlist control, significant differences were found for both in gambling behaviour. The two RCTs that compared motivational enhancement therapy, a combined MET and CBT, brief advice and an assessment only control found slightly conflicting results. One RCT found no differences between the MET or the MET + CBT groups when compared with the control group in either gambling behaviour or gambling severity over the 6 week study period, however, the MET + CBT condition was found to be significantly more effective than the control group over the 9 month follow up period, for gambling severity. Significant differences were found between the brief advice and assessment only control in gambling behaviour and gambling severity. The other RCT found no differences between the two MET interventions and the control group for days gambled, however, the MET condition showed a significantly greater reduction in dollars wagered over time compared to the control condition. All three active conditions (MET, MET + CBT and brief advice) also showed significantly greater reductions, in gambling severity, when compared with the control condition.

OTHER: No significant differences were found between a counseling session and control group in gambling behaviour. The two RCTs that investigated the efficacy of a node-link-mapping enhanced treatment found significant differences between the mapping enhanced treatment and the control group when assessing gambling severity. Both RCTs also found a
significant decrease from pre to post treatment, in the mapping enhanced group in
gambling expenditure, however, only one of the RCTs found a significant difference in
gambling bout duration. A significant decrease from pre to post treatment was also found
for the node-link-mapping enhanced group, in psychological distress.

(f) Conflicting results were found in three studies that compared self help CBT workbooks
with a waitlist control. Two studies found no significant differences between the groups in
gambling behaviour, and one of these studies found no significant differences in gambling
severity. One study did find significant differences between the groups in gambling
behaviour, but only at the follow up assessment. Significant differences were found
between a personalised feedback intervention and waitlist control on some gambling
behaviour measures but no significant differences were found in gambling severity.
Significant differences were found between a self help internet delivered intervention and
waitlist control in gambling severity, psychological distress and quality of life.

Draft recommendation

<table>
<thead>
<tr>
<th>Draft 1 - Recommendation based on evidence (done by Evidence Officer):</th>
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<tbody>
<tr>
<td>(b) For people with gambling problems, practitioner delivered psychological interventions are more effective than self help psychological interventions in reducing gambling severity and gambling behaviour.</td>
</tr>
<tr>
<td>(c) For people with gambling problems, practitioner delivered psychological interventions are more effective than no intervention in reducing gambling behaviour and gambling severity and may be effective in reducing psychological distress.</td>
</tr>
<tr>
<td>(f) For people with gambling problems, self help psychological interventions may be more effective than no intervention in reducing gambling severity and gambling behaviour, however, the evidence is very conflicting.</td>
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<table>
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<tr>
<th>Draft 2 - Recommendation based on evidence and clinical expertise (done by Key contacts):</th>
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</thead>
<tbody>
<tr>
<td>Key contacts:</td>
</tr>
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</table>
For people with gambling problems, practitioner delivered psychological interventions are preferable to self-help psychological interventions but self-help psychological interventions can be used when practitioner based interventions are geographically not accessible or preferred by the client.

Draft 3 - Recommendation based on evidence and clinical expertise (done by GDG):

(b) Practitioner delivered psychological interventions should be used over self-help psychological interventions to reduce gambling severity and gambling behaviour in people with gambling problems.

(c) Practitioner delivered psychological interventions should be used to reduce gambling severity and gambling behaviour in people with gambling problems.

Clinical impact statement

Choose from:
(b) Slight
(c) Slight

Explanation:

Implementation of the recommendation

Please indicate yes or no to the following questions. Where the answer is yes please provide explanatory information about this. This information will be used to develop the implementation plan for the guidelines.

(b) Will this recommendation result in changes in usual care? NO

Are there any resource implications associated with implementing this recommendation?
YES – This recommendation will lead to an increased load on practitioners.

Will the implementation of this recommendation require changes in the way care is currently organised? NO
Are the guideline development group aware of any barriers to the implementation of this recommendation? YES – advertising/marketing different services. Resource implications.

(c) Will this recommendation result in changes in usual care? NO

Are there any resource implications associated with implementing this recommendation? YES – This recommendation will lead to an increased load on practitioners.

Will the implementation of this recommendation require changes in the way care is currently organised? NO

Are the guideline development group aware of any barriers to the implementation of this recommendation? YES – Resource implications.

Clinical evidence

Volume of evidence

(b) Three RCTs were identified for inclusion:

- One RCT with a high risk of bias that compared a self help CBT workbook, a self help CBT workbook and a motivational interview and a waitlist control group [5].
- One RCT with a low risk of bias that compared four different interventions. One group received a self help CBT workbook, one group a self help CBT workbook and a motivational interview, one group received a self help CBT workbook and a motivational interview as well as six booster telephone supports and a waitlist control group [6].
- One RCT with a moderate risk of bias that compared a GA referral control group with a group that received a self help CBT workbook and a GA referral as well as with a group that received individually administered CBT and a GA referral [7].

(c) Thirteen studies were identified for inclusion:

- One RCT with a moderate risk of bias that compared individually administered CBT with group administered CBT and with a waitlist control [8].
- One RCT with a high risk of bias that compared individually administered CBT with a waitlist control group that also obtained a GA referral [9].
- One RCT with a high risk of bias that compared a group that received a self help CBT workbook, a group that received a self CBT workbook and a motivational interview and a waitlist control group [5].
- One RCT with a low risk of bias that compared four different interventions. One group received a self help CBT workbook, another group a self help CBT workbook and a motivational interview, another group received a self help CBT workbook and...
motivational interview as well as six booster telephone support and a waitlist control group [6].

- One RCT with a high risk of bias that compared individually administered CBT with a waitlist control group [10].
- One RCT with a high risk of bias that compared group administered CBT with a waitlist control group [11].
- One RCT with a moderate risk of bias that compared a GA referral control group with a group that received a self help CBT workbook and a GA referral as well as with a group that received individually administered CBT and a GA referral (Petry 2006)
- One RCT with a high risk of bias that compared individually administered CBT with a waitlist control [12].
- One of the studies identified conducted two RCTs. The first RCT had a high risk of bias and compared a group format node-link-mapping enhanced treatment with a non-mapping enhanced group treatment and with a waitlist control. The second RCT had a high risk of bias and compared a group format node-link-mapping enhanced treatment with a waitlist control [13].
- Two RCTs with a low risk of bias that compared a MET and CBT group with a MET only group, a brief advice group and an assessment only group [3, 14].
- One RCT with a high risk of bias that compared a counselling session with a control group [15].

(f) Five studies were identified for inclusion:

- One RCT with a low risk of bias that compared an internet delivered CBT and MI intervention with a waitlist control [16].
- One RCT with a high risk of bias that compared personalised feedback with waitlist control [17].
- One RCT with a high risk of bias that compared a self help CBT workbook, a self help CBT workbook and a motivational interview and a waitlist control group [5].
- One RCT with a low risk of bias that compared four different interventions. One group received a self help CBT workbook, one group a self help CBT workbook and a motivational interview, one group received a self help CBT workbook and a motivational interview as well as six booster telephone supports and a waitlist control group [6].
- One RCT with a moderate risk of bias that compared a GA referral control group with a group that received a self help CBT workbook and a GA referral as well as with a group that received individually administered CBT and a GA referral [7].

**Consistency of studies**

(b) Practitioner delivered vs. self-help:

- All of the studies assessed gambling behaviour [5-7].
• Two studies assessed gambling severity [6, 7].
• None of the studies assessed psychological distress
• None of the studies assessed alcohol or substance use
• None of the studies assessed quality of life
• Treatment duration varied with practitioner delivered psychological interventions ranging from one session [5, 6] to 8 sessions [7].
• Follow up was consistent with all the studies reporting 12 month follow up.

(c) Practitioner delivered vs. no intervention:
• 12 studies assessed gambling behaviour [3, 5-8, 10-15].
• 10 studies assessed gambling severity [3, 6, 7, 9-14].
• 3 studies assessed psychological distress [8, 9, 13].
• 1 study assessed quality of life [9].
• None of the studies assessed alcohol or substance use
• Treatment duration varied across the studies. Five studies had a one session intervention [3, 5, 6, 14, 15]. Three studies had 8 weeks of treatment [7, 13]. Other studies ranged from 6 to 12 sessions of treatment [8, 9, 11]. Two studies treatment duration varied depending on the goals outlined by the participants but had a maximum treatment duration of 20 sessions [10] and a maximum of 30 hours of treatment [12].
• Follow up varied across the studies. Two studies did not conduct any follow up [9, 15]. Three studies conducted 6 month follow up [8, 13]. Two studies conducted 9 month follow up [3, 14]. Four studies conducted 12 month follow up [6, 7, 10, 12] and two studies conducted 24 month follow up [5, 11].

(f) Self-help vs. no intervention:
• Four studies assessed gambling behaviour [5-7, 17].
• Four studies assessed gambling severity [6, 7, 16, 17].
• One study assessed psychological distress [16].
• One study assessed quality of life [16].
• None of the studies assessed alcohol or substance use.
• Follow up was fairly consistent across studies with three studies reporting 12 month follow up [5-7], one study reporting 3 month follow up [17] and one study reporting 36 month follow up [16].

Consistency of results
(a) Practitioner delivered vs. self-help:
• No significant differences were found between the self help CBT workbook only and the self help CBT workbook and MI groups on days gambled and dollars lost. Significant differences were found, however, on the dollars lost per gambling day outcome [5].
• Significant differences were found when comparing the self help CBT workbook and MI intervention and the self help CBT workbook and MI intervention and booster telephone support with the self help CBT workbook only intervention, in gambling behaviour and gambling severity [6].

• Significant differences were found between a self help CBT workbook and practitioner delivered CBT in gambling severity and in the gambling behaviour measure of dollars gambled but not days gambled [7].

(c) Practitioner delivered vs. no intervention:

• Significant differences were found between both the practitioner delivered individual and group CBT treatment when compared to the control group in gambling behaviour. Significant differences between the individual CBT treatment and the control group were found in psychological distress. Significant differences were found between the group CBT and control on the depression and trait anxiety measures, but not for the state anxiety and self-esteem measures [8].

• Significant differences were found between the practitioner delivered CBT and GA referral in gambling severity, psychological distress and for one of the two quality of life measures [9].

• Significant differences were found between the practitioner delivered CBT and waitlist control in both gambling severity and gambling behaviour [10].

• Significant differences were found between practitioner delivered group CBT and waitlist control in gambling severity, however, no differences were found between the groups in gambling behaviour [11].

• Significant differences were found between a practitioner delivered CBT and GA referral group when compared to a GA referral condition, in gambling severity and gambling behaviour [7].

• Significant differences were found between practitioner delivered CBT and waitlist control in gambling behaviour and gambling severity [12].

• No significant differences were found between a counseling session and control group in gambling behaviour [15].

• The two RCTs that investigated the efficacy of a node-link-mapping enhanced treatment found significant differences between the mapping enhanced treatment and the control group when assessing gambling severity. Both RCTs also found a significant decrease from pre to post treatment, in the mapping enhanced group in gambling expenditure, however, only one of the RCTs found a significant difference in gambling bout duration. A significant decrease from pre to post treatment was also found for the node-link-mapping enhanced group, in psychological distress [9].

• In the two RCTs that compared a practitioner delivered MI combined with a self help CBT workbook, with a waitlist control, significant differences were found for both in gambling behaviour [5, 6].
The two RCTs that compared motivational enhancement therapy, a combined MET and CBT, brief advice and an assessment only control found slightly conflicting results. One RCT found no differences between the MET or the MET + CBT groups when compared with the control group in either gambling behaviour or gambling severity over the 6 week study period, however, the MET + CBT condition was found to be significantly more effective than the control group over the 9 month follow up period, for gambling severity. Significant differences were found between the brief advice and assessment only control in gambling behaviour and gambling severity [3]. The other RCT found no differences between the two MET interventions and the control group for days gambled, however, the MET condition showed a significantly greater reduction in dollars wagered over time compared to the control condition. All three active conditions (MET, MET + CBT and brief advice) also showed significantly greater reductions, in gambling severity, when compared with the control condition [14].

(f) Self-help vs. no intervention:

- No significant differences were found between the self help CBT workbook and the waitlist control in gambling behaviour [5].
- No significant differences were found between a self help CBT workbook and waitlist control in gambling behaviour during the 6 week study period, however, significant differences were found at the 12 month follow up assessment [6].
- No significant differences were found between a self help CBT workbook and waitlist control in gambling behaviour and gambling severity [7].
- Significant differences were found between personalised feedback and waitlist control on the gambling behaviour outcome of total amount of money spent on gambling. No differences were found on the gambling behaviour outcome of the maximum amount of money spent and in gambling severity [17].
- Significant differences were found between a self help internet delivered intervention and waitlist control in gambling severity, psychological distress and quality of life [16].

Generalisability

(b) The evidence is not directly generalisable to the target population but could be sensibly applied.
- Two of the studies were conducted in Canada [5,6] and one in America [7].
- Where reported, age and gender were consistent.

(c) The evidence is not directly generalisable to the target population but could be sensibly applied.
Six studies were conducted in America [3, 7, 9, 13, 14] and five studies were conducted in Canada [5, 6, 10-12]. One study was conducted in Australia [8] and one in Switzerland [15]. Where reported, age and gender were generally consistent across studies, however, there was one study that looked at an all female sample [8] and another study that looked at an all male sample [12].

The evidence is not directly generalisable to the target population but could be sensibly applied.

Three of the studies were conducted in Canada [5, 6, 17], one in America [7] and one in Sweden [16]. Where reported, age and gender were generally consistent across the studies.

Applicability

(b) The evidence is probably applicable to the Australian health care context with some caveats.

(c) The evidence is probably applicable to the Australian health care context with some caveats.

(f) The evidence is probably applicable to the Australian health care context with some caveats.

Discussion about evidence review findings

Findings

(b) Practitioner delivered vs. self-help:

• Evidence from a RCT with a high risk of bias found no significant differences between the self help CBT workbook only and the self help CBT workbook and MI groups on days gambled and dollars lost. Significant differences were found, however, on the dollars lost per gambling day outcome [5].

• Evidence from a RCT with a low risk of bias found significant differences when comparing the self help CBT workbook and MI intervention and the self help CBT workbook and MI intervention and booster telephone support with the self help CBT workbook only intervention, in gambling behaviour and gambling severity [6].

• Evidence from a RCT with a moderate risk of bias found significant differences between a self help CBT workbook and practitioner delivered CBT in gambling severity and in the gambling behaviour measure of dollars gambled but not days gambled [7].

(c) Practitioner delivered vs. no intervention:

• Evidence from a RCT with a moderate risk of bias found significant differences between both the practitioner delivered individual and group CBT treatment when
compared to the control group in gambling behaviour. Significant differences between the individual CBT treatment and the control group were found in psychological distress. Significant differences were found between the group CBT and control on the depression and trait anxiety measures, but not for the state anxiety and self-esteem measures [8].

- Evidence from a RCT with a high risk of bias found significant differences between the practitioner delivered CBT and GA referral in gambling severity, psychological distress and for one of the two quality of life measures [9].
- Evidence from a RCT with a high risk of bias found significant differences between the practitioner delivered CBT and waitlist control in both gambling severity and gambling behaviour [10].
- Evidence from a RCT with a high risk of bias found significant differences between practitioner delivered group CBT and waitlist control in gambling severity, however, no differences were found between the groups in gambling behaviour [11].
- Evidence from a RCT with a moderate risk of bias found significant differences between a practitioner delivered CBT and GA referral group when compared to a GA referral condition, in gambling severity and gambling behaviour [7].
- Evidence from a RCT with a high risk of bias found significant differences between practitioner delivered CBT and waitlist control in gambling behaviour and gambling severity [12].
- Evidence from a high risk of bias found no significant differences between a counseling session and control group in gambling behaviour [15].
- Evidence from a RCT with a high risk of bias found significant differences between a motivational interview combined with a self help workbook and a waitlist control, in gambling behaviour [5].
- Evidence from a RCT with a high risk of bias found significant differences between a motivational interview combined with a self help workbook and a MI combined with a self help workbook and six booster telephone supports when compared with a waitlist control, in gambling behaviour. The evidence showed significant differences when comparing the two MI treatments with the waitlist control, however, there were no differences between the two MI treatment groups in gambling behaviour [6].
- Evidence from a RCT with a high risk of bias found significant differences between a node-link-mapping enhanced treatment and a control group in gambling severity. Significant differences from pretreatment to posttreatment for the node-link-mapping enhanced group were found for the gambling behaviours of expenditure and gambling bout duration [13].
- Evidence from a RCT with a high risk of bias found significant differences between a node-link-mapping enhanced treatment and a control group in gambling severity.
Significant differences from pretreatment to posttreatment for the node-link-mapping enhanced group were found for the gambling behaviour of expenditure but not for gambling bout duration. A significant decrease from pre to post treatment was also found for the node-link-mapping enhanced group, in psychological distress [13].

- Evidence from a RCT with a low risk of bias found no differences between the MET or the MET + CBT groups when compared with the control group in either gambling behaviour or gambling severity over the 6 week study period, however, the MET + CBT condition was found to be significantly more effective than the control group over the 9 month follow up period, for gambling severity. Significant differences were also found between the brief advice and assessment only control in gambling behaviour and gambling severity [3].

- Evidence from a RCT with a low risk of bias found no differences between the two MET interventions (MET and MET + CBT) and the control group for days gambled, however, the MET condition showed a significantly greater reduction in dollars wagered over time compared to the control condition. All three active conditions (MET, MET + CBT and brief advice) also showed significantly greater reductions, in gambling severity, when compared with the control condition [14].

(f) Self-help vs. no intervention:

- Evidence from a RCT with a low risk of found significant differences between a self help internet delivered intervention and waitlist control in gambling severity, psychological distress and quality of life [16].

- Evidence from a RCT with a high risk of bias found significant differences between personalised feedback and waitlist control on the gambling behaviour outcome of total amount of money spent on gambling. No differences were found on the gambling behaviour outcome of maximum amount of money spent and in gambling severity [17].

- Evidence from a RCT with a high risk of bias found no significant differences between the self help CBT workbook and the waitlist control in gambling behavior [5].

- Evidence from a RCT with a low risk of bias found no significant differences between a self help CBT workbook and waitlist control in gambling behaviour during the 6 week study period, however, significant differences were found at the 12 month follow up assessment [6].

- Evidence from a RCT with a moderate risk of bias found no significant differences between a self help CBT workbook and waitlist control in gambling behaviour and gambling severity [7].

Population subgroups
(b) One study performed subgroup analysis and found that age, gender and gambling severity made no difference to treatment outcomes [7].

(c) Several studies performed subgroup analyses on gender and all of the studies found no significant gender differences in treatment response [3, 5, 7, 9, 14]. One study found no difference in treatment response when assessing age, psychological distress and severity of alcohol or drug problems [3] and another study also found no difference in treatment response when assessing gambling severity and the severity of alcohol or drug problems [14].

(f) One study performed subgroup analysis and found that age, gender and gambling severity made no difference to treatment outcomes [7].

Outcomes

(b) All of the included studies assessed gambling behaviour measures, such as, days gambled per month and dollars lost gambling. Two studies assessed gambling severity, one with the NODS [6] and one with the SOGS [7]. None of the studies assessed psychological distress, alcohol or substance use or quality of life.

(c) Almost all of the included studies assessed gambling behaviour, such as days, time and money spent on gambling. Several studies also assessed gambling severity with tools such as the NODS, DSM criteria, PG-YBCOS and the SOGS. Psychological distress was assessed using tools like the BDI, BAI, STAI, HRSD and the HAS and quality of life was assessed by one of the studies using the SDS and the QOLI. None of the included studies assessed alcohol or substance use.

(f) Four of the studies assessed gambling behaviours, such as, days gambled per month, dollars lost gambling and the maximum amount spent on any given day [5-7, 17]. Four studies assessed gambling severity, two with the NODS [6, 17], one with the SOGS [7] and one with the CPGI [17]. One study assessed psychological distress with the Hospital Anxiety and Depression Scale and quality of life with the QOLI [16].

Implications of bias

(b) A study with a moderate or high risk of bias should be interpreted with caution. Several of the included studies were found to have a moderate or high risk of bias due to insufficient power and not reporting the method of randomisation, allocation concealment or blinding of the outcome assessors.

(c) A study with a moderate or high risk of bias should be interpreted with caution. Several of the included studies were found to have a moderate or high risk of bias due to insufficient power and not reporting the method of randomisation, allocation concealment or blinding of the outcome assessors.

(f) A study with a moderate or high risk of bias should be interpreted with caution. Several of the included studies were found to have a moderate or high risk of bias due to not reporting the method of randomisation, allocation concealment or blinding of the outcome
assessors. One study also failed to blind outcome assessors and did not conceal allocation to groups.

Usability of the evidence
The evidence acquired from these studies is probably applicable to the Australian health care context with some caveats.

References


Clinical question 5
For people with gambling problems, are prolonged practitioner-delivered psychological interventions more effective than brief practitioner-delivered psychological interventions?

Background
Minimal or brief interventions are those treatments involving less professional time and/or resources than are typical of traditional therapy [1]. They have been defined as those that range from 10 minutes to four sessions [2]. From a stepped-care perspective, these interventions may provide non-threatening, cost-effective, and time-efficient alternatives to traditional psychological interventions, particularly to those problem gamblers who have earlier onset and less severe gambling problems. A recent literature has successfully employed a range of problem gambling interventions involving minimal therapist contact, including self-help workbooks with booster sessions, brief advice, face-to-face interventions with a small number sessions, brief interventions delivered via telephone and online media, and interventions delivered through audiocassette and videoconferencing. Brief interventions for problem gambling have usually involved a combination of motivational interviewing and cognitive-behavioural techniques.

Methods
Study selection criteria

<table>
<thead>
<tr>
<th></th>
<th>Inclusion Criteria</th>
<th>Exclusion Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participants</td>
<td>People who present for problem gambling treatment. Any age, sex, ethnicity, gambling type, setting, comorbidity.</td>
<td>People who present to treatment for issues other than problem gambling.</td>
</tr>
<tr>
<td>Intervention</td>
<td>Prolonged psychological intervention: any psychological intervention longer than four therapy sessions, that is delivered by a therapist or clinician.</td>
<td>Any pharmacological intervention.</td>
</tr>
<tr>
<td>Comparison</td>
<td>Brief psychological interventions: any psychological intervention ranging from 5 minutes of simple advice to one to four complete therapy sessions, that is administered by a therapist or clinician.</td>
<td>No suitable or appropriate comparison group.</td>
</tr>
<tr>
<td>Outcome</td>
<td>Gambling behavior, gambling severity, psychological distress, alcohol or substance use or quality of life.</td>
<td>Outcomes other than gambling behavior, gambling severity, psychological distress, alcohol or substance use or quality of life.</td>
</tr>
</tbody>
</table>
Summary of clinical evidence

Volume of evidence
No RCTs were identified for inclusion.

Draft recommendation

Draft 1 - Recommendation based on evidence (done by Evidence Officer):
There is no evidence to make a recommendation.

Draft 2 - Recommendation based on evidence and clinical expertise (done by Key contacts):
There is no evidence to make a recommendation.

Draft 3 - Recommendation based on evidence and clinical expertise (done by GDG):
No research evidence to form an evidence-based recommendation. No consensus recommendation will be made.

References
Clinical question 6a
For people with gambling problems, are individual psychological interventions more effective than group psychological interventions?

Clinical question 6b
For people with gambling problems, are group psychological interventions more effective than no intervention?

Background
It is of interest to determine the differential efficacy of individual and group treatment for people with gambling problems as treatment conducted in a group setting may have several advantages over treatment conducted on an individual basis [1, 2]. Group treatment provides a cost-effective form of treatment provision as a function of treating a greater number of pathological gamblers, particularly when demand for treatment exceeds supply. Group therapy may also serve to facilitate a sense of normalisation for pathological gamblers, establish a sense of group cohesiveness and membership, facilitate mutual acceptance and support, reduce the potential for shame and stigma, establish a sense of structure, and reduce the potential for lying or self-deception. It may also serve to promote observational learning, the identification of common problems and solutions, confrontation from other group members, and interpersonal communication skills. Given the potential benefits of group treatment, it is surprising that only a few studies have evaluated the efficacy of group interventions for people with gambling problems. In this literature, the group interventions have generally involved cognitive-behavioural strategies.

Methods

Study selection criteria

<table>
<thead>
<tr>
<th></th>
<th>Inclusion Criteria</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Participants</strong></td>
<td>People who present for problem gambling treatment. Any age, sex, ethnicity, gambling type, setting, comorbidity.</td>
<td>People who present to treatment for issues other than problem gambling.</td>
</tr>
<tr>
<td><strong>Intervention</strong></td>
<td><strong>Individual psychological interventions</strong>: Any psychological intervention conducted with individuals, couples or families.</td>
<td><strong>Group psychological interventions</strong>: Any psychological intervention conducted with two or more unrelated people.</td>
</tr>
<tr>
<td>Comparison</td>
<td>Group psychological interventions: Any psychological intervention conducted with two or more unrelated people</td>
<td>No intervention: any control condition, including, wait list control, assessment only, non-gambling related treatment, treatment as usual and placebo</td>
</tr>
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</tr>
<tr>
<td>Outcome</td>
<td>Gambling behavior, gambling severity, psychological distress, alcohol or substance use or quality of life</td>
<td>Outcomes other than gambling behavior, gambling severity, psychological distress, alcohol or substance use or quality of life</td>
</tr>
</tbody>
</table>

**Summary of clinical evidence**

**Volume of evidence**
(a) One RCT was identified for inclusion. This RCT was found to have a moderate risk of bias.
(b) Four RCTs were identified for inclusion. One RCT was found to have a moderate risk of bias and three RCTs were found to have a high risk of bias.

**Consistency of studies**
(a) This study compared:
- Individually CBT vs. group CBT vs. waitlist control
(b) Various comparisons were addressed by these studies:
- Individual CBT vs. group CBT vs. waitlist control
- Group CBT vs. waitlist control
- Group node-link-mapping enhanced treatment vs. group non-node-link-mapping enhanced treatment vs. waitlist control
- Group node-link-mapping enhanced treatment vs. waitlist control

**Consistency of results**
(a) Significant differences were found between the individual and group CBT format, with individual CBT performing significantly better than group CBT in gambling behaviour.
(b) Two studies compared group CBT with a waitlist control. One study found significant differences between the groups in gambling behaviour and some psychological distress measures and the other study found significant differences between the groups in gambling severity, however, no differences were found in gambling behaviour. Two studies compared
a node-link-mapping-enhanced group with a waitlist control and both found significant differences between the groups in gambling severity and some gambling behaviour measures. One of these studies also found significant differences in psychological distress.

Draft recommendation

<table>
<thead>
<tr>
<th>Draft 1 - Recommendation based on evidence (done by Evidence Officer):</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) There is insufficient evidence to make a recommendation based on the evidence alone.</td>
</tr>
<tr>
<td>(b) For people with gambling problems, group psychological interventions may be more effective than no intervention in reducing gambling behaviour, gambling severity and possibly psychological distress.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Draft 2 - Recommendation based on evidence and clinical expertise (done by Key contacts):</th>
</tr>
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<tbody>
<tr>
<td>Where resources are limited group interventions can be employed in the treatment of people with gambling problems. Recommend further research on the content of groups and further research on whether group is as effective as individual.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Draft 3 - Recommendation based on evidence and clinical expertise (done by GDG):</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) There is insufficient evidence to make a recommendation based on the evidence alone.</td>
</tr>
<tr>
<td>(b) Group psychological interventions could be used to reduce gambling behaviour and gambling severity in people with gambling problems.</td>
</tr>
</tbody>
</table>
Clinical impact statement

Choose from:
Moderate

Explanation:

Implementation of the recommendation
Please indicate yes or no to the following questions. Where the answer is yes please provide explanatory information about this. This information will be used to develop the implementation plan for the guidelines.

Will this recommendation result in changes in usual care? NO

Are there any resource implications associated with implementing this recommendation? YES - Training in administering therapeutic techniques in a group format is required for current and future staff. Two workers are required for group sessions

Will the implementation of this recommendation require changes in the way care is currently organised? NO

Are the guideline development group aware of any barriers to the implementation of this recommendation? YES – Resistance to group treatment is high.

Clinical evidence

Volume of evidence
(a) One study was identified for inclusion:
- One RCT with a moderate risk of bias that compared individual CBT with group CBT and with waitlist control [3].
(b) Four studies were identified for inclusion:
- One RCT with a moderate risk of bias that compared individual CBT with group CBT and with waitlist control [3].
- One RCT with a high risk of bias that compared group node-link-mapping enhanced treatment with group non-node-link-mapping enhanced treatment and with waitlist control [4].
- One RCT with a high risk of bias that compared group node-link-mapping enhanced treatment with waitlist control [4].
- One RCT with a high risk of bias that compared group CBT with a waitlist control [2].

Consistency of studies
(a) Individual interventions vs. group interventions:
This study assessed gambling behaviour and psychological distress [3]. Gambling severity, quality of life and alcohol or substance abuse were not addressed. Treatment lasted 12 sessions and follow up was conducted at 6 months.

(b) Group interventions vs. no interventions:
- All of the studies assessed gambling behaviour [2-4].
- Three of the studies assessed gambling severity [2, 4].
- Two studies assessed psychological distress [3, 4].
- Quality of life and alcohol and substance use were not assessed.
- Treatment duration varied with one RCT consisting of 10 sessions [2], one RCT consisting of 12 sessions [3] and two RCTs had an 8 week duration [4].
- Follow up varied slightly across the RCTs with three studies conducting 6 month follow up [3, 4] and one RCT conducting 24 month follow up [2].

**Consistency of results**

(a) Individual interventions vs. group interventions:
Significant differences were found between the individual and group CBT format, with individual CBT performing significantly better than group CBT in gambling behaviour and in psychological distress [3].

(b) Group interventions vs. no interventions:
- Significant differences were found between group CBT and waitlist control in gambling behaviour but only some psychological distress measures [3]. Significant differences were found between group CBT and waitlist control in gambling severity, however, no differences were found in gambling behaviour [2].
- Significant differences were found between the two RCTs that compared a node-link–mapping enhanced group with a waitlist control in gambling severity measures and some gambling behaviour measures [4]. Significant differences were found between the node-link-mapping enhanced treatment group and the control group in psychological distress [4].

**Generalisability**

(a) The evidence was not directly generalisable to the target population and it is hard to judge whether it is sensible to apply. The study was conducted in Australia, on an all female sample.

(b) The evidence was not directly generalisable to the target population but could be sensibly applied.
- Two RCTs were conducted in America [4] one in Canada [2] and one in Australia [3].
- Age was fairly consistent across studies, however, there was some inconsistencies across gender.
**Applicability**
(a) This evidence is probably applicable to the Australian health care context with some caveats.
(b) This evidence is probably applicable to the Australian health care context with some caveats.

**Discussion about evidence review findings**

**Findings**
(a) Individual interventions vs. group interventions:
Evidence from a RCT with a moderate risk of bias found significant differences between the individual and group CBT format, with individual CBT performing significantly better than group CBT in gambling behaviour and psychological distress [3].
(b) Group interventions vs. no intervention:
- Evidence from a RCT with a moderate risk of bias found significant differences between group CBT and waitlist control in gambling behaviour and some psychological distress measures [3].
- Evidence from a RCT with a high risk of bias found significant differences between a node-link –mapping enhanced group with a waitlist control in gambling severity and some gambling behaviour measures [4].
- Evidence from a RCT with a high risk of bias found significant differences between a node-link –mapping enhanced group with a waitlist control in gambling severity, some gambling behaviour measures and psychological distress [4].
- Evidence from a RCT with a high risk of bias found significant differences between group CBT and waitlist control in gambling severity, however, no differences were found in gambling behaviour [2].

**Population subgroups**
(a) No subgroup analysis was performed.
(b) No subgroup analysis was performed.

**Outcomes**
(a) Where possible, validated tools were used to measure outcomes. This study assessed gambling behaviours, such as, frequency, duration, amount of money inserted and expenditure. Psychological distress was measured through the BDI and STAI.
(b) Where possible, validated tools were used to measure outcomes. All of the RCTs assessed gambling behaviours, such as, amount of money spent, number of hours spent gambling. Three of the RCTs assessed gambling severity using the DSM criteria [2, 4]. Two of the studies assessed psychological distress, one with the BDI and STAI [3] and one with the BDI-II and BAI [4].
**Implications of bias**
A study with a moderate or high risk of bias should be interpreted with caution. Several of the included studies were found to have a moderate or high risk of bias due to not reporting the method of randomisation, allocation concealment, blinding of the outcome assessors or whether a study was adequately powered.

**Usability of the evidence**
The evidence from these studies can be sensibly applied to the target population and to the Australian health care context with few caveats.

**References**


Clinical question 7
For people with gambling problems, are psychological interventions delivered in inpatient or residential settings more effective than psychological interventions delivered in community settings?

Background
In many jurisdictions, people with gambling problems can select psychological interventions delivered in inpatient or residential settings or community or outpatient settings. Inpatient treatment generally involves accommodation for a period of 21 to 28 days while treatment delivered in community settings is generally provided in a clinic that usually does not offer accommodation for 1 or 2 hour weekly sessions lasting several weeks [1]. Given that interventions delivered in inpatient or residential settings are more expensive and more resource intensive, the cost-benefit of delivering these interventions requires evaluation.

Ladouceur and colleagues [1] compared the characteristics of 134 pathological gamblers seeking inpatient treatment and 99 pathological gamblers seeking outpatient treatment. The findings revealed that pathological gamblers seeking inpatient treatment reported more severe gambling problems, higher gambling frequency, higher gambling duration, higher expenditure, lower perception of control, greater negative consequences of gambling, higher average amount of money lost, were more likely to lack the funds to meet their everyday needs, and were more likely to have declared bankruptcy than pathological gamblers receiving outpatient treatment. Compared to outpatient pathological gamblers, inpatient pathological gamblers also reported a higher likelihood of reporting three Axis I disorders, alcohol abuse problems, schizoid-related problems, personality disorders, depression, suicide ideation, attempted suicide, anxiety, alcohol consumption, drug-related problems, and alcohol-related problems, and impulsivity than pathological gamblers receiving outpatient treatment. A greater number of inpatients than outpatients had received help for gambling, but more inpatients than outpatients had dropped out of treatment.

Participants were required to identify their reasons for selecting inpatient or outpatient intervention modalities. Outpatients reported that they selected this modality for the following reasons: to maintain their work (39%), to remain close to their family, spouse or friends (28%), they did not consider their problem severe enough for inpatient treatment (25%), to keep their daily activities (24%), could not afford paying for inpatient treatment (8%) and inpatient treatment did not work for them (5%). Inpatients selecting this modality of treatment for the following reasons: outpatient treatment did not work for them (26%), they needed to concentrate solely on their gambling problem (25%), they wanted support and supervision on a 24 hour a day basis (24%), they preferred to stay away from gambling
activities (21%), and they wanted to engage in a process that they considered to be their “last chance” (14%).

Inpatient rehabilitation programs for gambling problems are more common in some jurisdictions, such as the United States, than other jurisdictions, such as Australia. These programs are strongly influenced by the disease or addiction model of gambling problems derived from the drug and alcohol field. These inpatient or residential programs generally combine programs for problem gambling and alcohol dependence, and are comprised of components such as individual and group therapy, Gamblers Anonymous meetings, education on addictions, psychodrama, lectures, relaxation instruction, family counselling, financial and vocational counselling, and medical and legal consultation [2-6]. The prolific number of components constituting these multimodal therapies generally preclude identification of the salient ingredients contributing to improvement.

Methods

Study selection criteria

<table>
<thead>
<tr>
<th></th>
<th>Inclusion Criteria</th>
<th>Exclusion Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Participants</strong></td>
<td>People who present for problem gambling treatment. Any age, sex, ethnicity, gambling type, setting, comorbidity.</td>
<td>People who present to treatment for issues other than problem gambling.</td>
</tr>
<tr>
<td><strong>Intervention</strong></td>
<td>Psychological interventions delivered in inpatient or residential settings: Any psychological intervention employed to treat a person who is formally admitted to an institution and stays for a minimum of one night in the institution. In-patient care includes</td>
<td>Any psychological intervention delivered in a community setting. Any pharmacological intervention</td>
</tr>
<tr>
<td><strong>Comparison</strong></td>
<td>Psychological interventions delivered in community settings: Any psychological intervention conducted in a setting that does not require an overnight stay in a hospital or residential facility.</td>
<td>No suitable or appropriate comparison group</td>
</tr>
</tbody>
</table>
### Outcome

| Gambling behavior, gambling severity, psychological distress, alcohol or substance use or quality of life | Outcomes other than gambling behavior, gambling severity, psychological distress, alcohol or substance use or quality of life |

### Summary of clinical evidence

**Volume of evidence**

No RCTs were identified for inclusion.

### Draft recommendation

**Draft 1 - Recommendation based on evidence (done by Evidence Officer):**

There is no evidence to make a recommendation.

**Draft 2 - Recommendation based on evidence and clinical expertise (done by Key contacts):**

There is no evidence to make a recommendation.

**Draft 3 - Recommendation based on evidence and clinical expertise (done by GDG):**

No research evidence to form an evidence-based recommendation. No consensus recommendation will be made.

### References


Clinical question 8a
For people with gambling problems, are psychological interventions with a goal of abstinence more effective than psychological interventions with a non-abstinence goal?

Clinical question 8b
For people with gambling problems, are psychological interventions with a non-abstinence goal more effective than no intervention?

Background
Total abstinence has been historically viewed as the only legitimate and acceptable criteria of success for problem or pathological gambling [1, 2]. Proponents for non-abstinence goals typically do not disavow abstinence as a legitimate treatment goal. They do, however, argue that the single strict criterion of complete abstinence may not be appropriate for all problem gamblers and that providing controlled gambling as an alternative goal of treatment may offer a more realistic and appealing option to some problem gamblers [2, 3]. The provision of non-abstinence goals may offer an alternative to those individuals who become overwhelmed when considering the notion of complete abstinence, and for those with less severe gambling problems [1, 2]. Non-abstinence goals may decrease the potential for the high rates of attrition commonly observed in the treatment of problem gambling by increasing self-efficacy and motivation early in the treatment process [1].

The viability of non-abstinent treatment goals is generally supported by the empirical literature [3-6]. A substantial proportion of problem gamblers select non-abstinence gambling goals when they are available [7-10]. While the most common reason for selecting abstinence is a belief that control is not possible, the most common reasons for problem gamblers to select non-abstinence gambling goals are that gambling retains some enjoyment, that abstinence is unrealistic or overwhelming, and that they want to successfully manage social situations involving gambling [9]. There appear to be few differences on demographic, gambling, and psychosocial characteristic between problem gamblers selecting abstinence and non-abstinence goals[8-10]. Like controlled drinking, the choice of treatment goal in problem gambling appears fluid, with 66% of controlled gambling participants shifting to abstinence at least once during the intervention [6].

There is currently no standardised notion of what constitutes controlled gambling [2], with studies applying slightly different frequency, duration, and expenditure limits [5, 6, 9]. With a view to the long-term goal of establishing empirically based guidelines for moderated gambling in order to assist clinicians in the selection of the most appropriate treatment goal, Weinstock, Ledgerwood, and Petry [11] investigated the behavioural indicators for problem-free gambling in a sample of treatment-seeking pathological gamblers one year after initiating treatment. They found that gambling behaviour indices not associated with harm were gambling no more than once per month, gambling for no more than 1.5 hours per month, and spending no more than 1.9% of monthly income on gambling.
Methods

Study selection criteria

<table>
<thead>
<tr>
<th>Inclusion Criteria</th>
<th>Exclusion Criteria</th>
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</thead>
<tbody>
<tr>
<td><strong>Participants</strong></td>
<td>People who present to treatment for issues other than problem gambling.</td>
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<td>People who present for problem gambling treatment.</td>
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<tr>
<td>Any age, sex, ethnicity, gambling type, setting, comorbidity.</td>
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<tr>
<td><strong>Intervention</strong></td>
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<tr>
<td>Psychological interventions with a goal of abstinence:</td>
<td>Psychological interventions with a non-abstinence goal:</td>
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<tr>
<td>Any psychological intervention with an abstinence related goal.</td>
<td>Any psychological intervention with a non-abstinence goal.</td>
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<td>Given the absence of a consistent definition of controlled or moderate gambling, a non-abstinence goal will be as defined by the trialist.</td>
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<tr>
<td><strong>Comparison</strong></td>
<td>Any pharmacological intervention.</td>
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<tr>
<td>Psychological interventions with a non-abstinence goal:</td>
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<tr>
<td>Any psychological intervention with a non-abstinence goal.</td>
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<tr>
<td>Given the absence of a consistent definition of controlled or moderate gambling, a non-abstinence goal will be as defined by the trialist.</td>
<td>No intervention: any control condition, including, wait list control, assessment only, non-gambling related treatment, treatment as usual and placebo</td>
</tr>
<tr>
<td></td>
<td>No suitable or appropriate comparison group</td>
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</tbody>
</table>
Outcome | Gambling behavior, gambling severity, psychological distress, alcohol or substance use or quality of life | Outcomes other than gambling behavior, gambling severity, psychological distress, alcohol or substance use or quality of life

Summary of clinical evidence

Volume of evidence
(a) No RCTs were identified for inclusion.
(b) No RCTs were identified for inclusion.

Draft recommendation

Draft 1 - Recommendation based on evidence (done by Evidence Officer):
(a) There is no evidence to make a recommendation.
(b) There is no evidence to make a recommendation.

Draft 2 - Recommendation based on evidence and clinical expertise (done by Key contacts):
There is no evidence to make a recommendation.

Draft 3 - Recommendation based on evidence and clinical expertise (done by GDG):
No research evidence to form an evidence-based recommendation. No consensus recommendation will be made.
References

**Clinical question 9a**
For people with gambling problems, are antidepressant medications more effective than no intervention?

**Clinical question 9b**
For people with gambling problems, are antidepressant medications more effective than other pharmacological interventions?

**Background**
A substantial body of literature evaluating the efficacy of pharmacological interventions in problem gambling behaviour has recently emerged. The clinical heterogeneity of problem gambling has led to the study of a wide range of psychopharmacological agents, including antidepressants, mood stabilisers, and opioid antagonists.

Selective serotonin reuptake inhibitors (SSRIs) are the most frequently investigated form of antidepressants in the treatment of problem gambling. Their use is based on the hypothesis that the serotoninergic system of problem gamblers is hypoactive [1]. The literature has employed several SSRIs (fluvoxamine, citalopram, paroxetine, sertraline, and escitalopram) in the treatment of problem gambling. These studies have been confounded by high-placebo response rates and have failed to consistently demonstrate the efficacy of SSRIs in the treatment of problem gambling. SSRIs are usually well tolerated in the treatment of problem gambling. Common adverse effects include nausea, headaches, diarrhea, restlessness, increased sweating, weight gain, drowsiness and insomnia [2].

In addition to SSRIs, other studies have examined the efficacy of other antidepressants, such as clomipramine (a tricyclic antidepressant), nefazodone (a synthetically derived antidepressant that is a specific 5-HT₂ receptor antagonist), and bupropion (inhibits the reuptake of dopamine and norepinephrine and has a chemical structure similar to the psychostimulants).

**Methods**

**Study selection criteria**

<table>
<thead>
<tr>
<th>Inclusion Criteria</th>
<th>Exclusion Criteria</th>
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</table>
| **Participants** | People who present for problem gambling treatment.  
Any age, sex, ethnicity, gambling type, setting, comorbidity. | People who present to treatment for issues other than problem gambling. |
| **Intervention** | **Antidepressant medications:** Any psychoactive medication classified as an antidepressant. | Any psychoactive medication not classified as an antidepressant  
Any psychological intervention |
| Comparison | No intervention: any control condition, including, wait list control, assessment only, non-gambling related treatment, treatment as usual and placebo  
| Any other pharmacological intervention: any psychoactive medication not classified as an antidepressant | No suitable or appropriate comparison group |
| Outcome | Gambling behavior, gambling severity, psychological distress, alcohol or substance use or quality of life | Outcomes other than gambling behavior, gambling severity, psychological distress, alcohol or substance use or quality of life |

### Summary of clinical evidence

#### Volume of evidence
(a) Seven RCTs were identified for inclusion. Two RCTs were found to have a moderate risk of bias and five RCTs were found to have a high risk of bias.
(b) Two RCTs were identified for inclusion. Both RCTs were found to have a high risk of bias.

#### Consistency of studies
(a) Various comparisons were addressed by these studies:
- Two studies compared fluvoxamine vs. placebo
- Two studies compared paroxetine vs. placebo
- Bupropion vs. placebo
- Escitalopram vs. placebo
- Sertraline vs. placebo.
(b) Two different comparisons were addressed by these studies:
- The antidepressant fluvoxamine vs. the anticonvulsant topiramate
- The antidepressant bupropion vs. the opioid antagonist naltrexone.

#### Consistency of results
(a) No significant differences were found in the two studies comparing fluvoxamine with placebo, in gambling behaviour or gambling severity. No significant differences were found in the RCT comparing bupropion with placebo in gambling behaviour, gambling severity or psychological distress. No significant differences were found in the RCT comparing sertraline and placebo in gambling severity. Significant differences were found in one of the RCTs comparing paroxetine and placebo, in gambling severity, but not for psychological distress. In the other RCT that compared paroxetine with placebo, no significant differences were found in gambling severity or quality of life. The two phase study that compared escitalopram with placebo showed a mild worsening of gambling severity that did not reach
statistical significance with the participants who continued on from the open label phase to the double blind discontinuation phase.

(b) No significant differences were found between the topiramate and fluvoxamine groups or the bupropion and naltrexone groups in gambling severity.

**Draft recommendation**

**Draft 1 - Recommendation based on evidence (done by Evidence Officer):**

(a) For people with gambling problems, antidepressants are not more effective than no intervention in reducing gambling severity.

(b) There is insufficient evidence to make a recommendation based on evidence alone.

**Draft 2 - Recommendation based on evidence and clinical expertise (done by Key contacts):**

For people with gambling problems, antidepressant medications are not recommended for reducing gambling severity.

**Draft 3 - Recommendation based on evidence and clinical expertise (done by GDG):**

Antidepressant medications should not be used to reduce gambling severity in people with gambling problems alone.

**Clinical impact statement**

Choose from:

- Slight

**Explanation:**
Implementation of the recommendation

Please indicate yes or no to the following questions. Where the answer is yes please provide explanatory information about this. This information will be used to develop the implementation plan for the guidelines.

Will this recommendation result in changes in usual care? NO

Are there any resource implications associated with implementing this recommendation? NO

Will the implementation of this recommendation require changes in the way care is currently organised? NO

Are the guideline development group aware of any barriers to the implementation of this recommendation? YES – The main barriers of this recommendation are changing the attitudes and education of medical practitioners.

Clinical evidence

Volume of evidence

(a) Six studies have been identified for inclusion:

- One RCT with a moderate risk of bias that compared the antidepressant bupropion with placebo [3].
- One RCT with a high risk of bias that compared the antidepressant fluvoxamine with placebo [4].
- One RCT with a high risk of bias that compared the antidepressant escitalopram with placebo [5].
- One RCT with a high risk of bias that compared the antidepressant paroxetine with placebo [6].
- One RCT with a moderate risk of bias that compared the antidepressant sertraline with placebo [7].
- One randomised controlled, crossover trial with a high risk of bias that compared the antidepressant fluvoxamine with placebo [8].
- One RCT with a high risk of bias that compared the antidepressant paroxetine with placebo [9].

(b) Two studies were identified for inclusion:

- One RCT with a high risk of bias that compared the antidepressant fluvoxamine with the anticonvulsant topiramate [10].
- One RCT with a high risk of bias that compared the antidepressant bupropion with the opioid antagonist naltrexone [11].
**Consistency of studies**

(a) Antidepressants vs. no intervention:

- Six of the studies assessed gambling severity [3, 5-9].
- Three of the studies assessed gambling behaviour [3, 4, 7].
- Three of the studies assessed psychological distress [3, 5, 6].
- One of the studies assessed quality of life [9].
- None of the studies assessed alcohol or substance use.
- Treatment duration varied across the studies. Two studies lasted 8 weeks [5, 6], one study lasted 10 weeks [9], one study lasted 12 weeks [3], one study lasted 16 weeks [8] and two studies lasted 24 weeks [4, 7].
- None of the studies conducted any follow up

(b) Antidepressants vs. other pharmacological interventions:

- All of the studies assessed gambling severity [10, 11].
- One of the studies assessed gambling behaviour [11].
- All of the studies assessed psychological distress [10, 11].
- None of the studies assessed alcohol or substance use.
- None of the studies assessed quality of life.
- Treatment duration was consistent across the studies with both studies lasting 12 weeks.
- Neither of the studies conducted any follow up.

**Consistency of results**

(a) Antidepressants vs. no intervention

There was some inconsistency in the results of these studies:

- No significant differences were found between the bupropion and placebo groups in gambling behaviour and gambling severity. Both groups experienced significant improvement in gambling behaviour and gambling severity but bupropion was not statistically superior to placebo at any time point. No significant differences were found between the two groups in psychological distress [3].
- Two studies compared fluvoxamine with placebo [4, 8]. One study found no significant difference between fluvoxamine and placebo in gambling behaviour [4] and the other study found no significant differences between fluvoxamine and placebo in gambling severity [8].
- No significant differences were found between sertraline and placebo in gambling severity [7].
- Two studies compared paroxetine with placebo. One study found significant differences between paroxetine and placebo in gambling severity but not for
psychological distress [6] and the other study found no significant differences between paroxetine and placebo in gambling severity or quality of life [9].

- The two phase study that compared escitalopram with placebo showed a mild worsening of gambling severity that did not reach statistical significance with the participants who continued on from the open label phase to the double blind discontinuation phase [5].

(b) Antidepressants vs. other pharmacological interventions:
- The study that compared bupropion to the opioid antagonist, naltrexone, found a significant difference in gambling severity between baseline and study end point, for both groups, however, no significant differences were found between the groups in gambling severity or psychological distress [11].
- No differences were found between the topiramate and fluvoxamine groups in gambling severity or psychological distress [10].

Generalisability
(a) The evidence from these studies is not directly generalisable to the target population and it is hard to judge whether it could be sensibly applied.
- The studies were generally consistent in terms of age and can be sensibly applied to the target population. Where reported, the proportion of males and females in each study was inconsistent with one study using an all male sample [8], one study having two times more females than males [6] and three studies having more than two times the number of males than females [3, 4, 7]. This is not directly generalisable to the target population but could be cautiously applied.
- Five of the studies were conducted in America [3, 5, 6, 8, 9] and two in Spain [4, 7].
(b) The evidence from these studies is not directly generalisable to the target population and it is hard to judge whether it is sensible to apply.
- The studies were consistent in terms of age and gender with both studies using an all male sample [10, 11].
- Both studies were conducted in Israel [10, 11].

Applicability
(a) The evidence is probably applicable to the Australian health care context with some caveats.
(b) The evidence is not applicable to the Australian health care context.

Discussion about evidence review findings

Findings
(a) Antidepressants vs. no intervention:
• Evidence from a RCT with a moderate risk of bias found that both the bupropion and placebo groups experienced significant improvement in gambling behaviour, however, the bupropion group was not statistically superior to the placebo group at any time point [3].

• Evidence from a RCT with a high risk of bias found no significant differences between fluvoxamine and placebo in gambling behaviour [4].

• Evidence from a RCT with a high risk of bias that compared escitalopram with placebo showed a mild worsening of gambling severity that did not reach statistical significance with the participants who continued on from the open label phase to the double blind discontinuation phase [5].

• Evidence from a randomised controlled crossover trial with a high risk of bias found no significant differences between fluvoxamine and placebo in gambling severity [8].

• Evidence from a RCT with a high risk of bias found significant differences between paroxetine and placebo in gambling severity but not for psychological distress measures [6].

• Evidence from a RCT with a moderate risk of bias found no significant differences between sertraline and placebo in gambling severity [7].

• Evidence from a RCT with a high risk of bias found no significant differences between paroxetine and placebo in gambling severity or quality of life [9].

(b) Antidepressants vs. other pharmacological interventions:

• Evidence from a RCT with a high risk of bias found no significant differences between fluvoxamine and topiramate in gambling severity or psychological distress [10].

• Evidence from a RCT with a high risk of bias found significant differences in gambling severity between baseline and study end point, for the bupropion and naltrexone groups, but there were no significant differences between the two groups at the study end point. There were also no significant differences between the groups in psychological distress measures [11].

Population subgroups
(a) No subgroup analysis was performed.
(b) No subgroup analysis was performed.

Outcomes
(a) Six of the studies assessed gambling severity through the use of validated and reliable tools, such as, the PG-YBOCS, G-SAS and the SOGS. Three studies assessed gambling behaviours, including, time and money spent on gambling per week. Psychological distress was assessed using tools such as the HAM-A and HAM-D and quality of life was assessed using the SDS.
(b) Gambling severity was assessed by both studies using the PG-YBOCS and psychological distress was assessed by both studies using the HRSA and HRSD.
Implications of bias
(a) A study with a moderate or high risk of bias should be interpreted with more caution than a study with a low risk of bias. Several of the included studies were found to have a moderate or high risk of bias due to insufficient power and not reporting the method of randomisation, allocation concealment or blinding of the outcome assessors.
(b) A study with a high risk of bias should be interpreted with caution. These studies were found to have a high risk of bias due to not reporting the randomisation procedure and whether allocation to intervention groups was concealed. These studies also failed to blind the patients and investigators.

Usability of the evidence
The evidence acquired from these studies should be cautiously applied to the target population. Even though the studies were generally consistent in terms of age, the proportion of males and females in the included studies were inconsistent and the studies were conducted in countries other than Australia, making the applicability of these findings.

References
2. MIMS Australia. MIMS Issue 5. NSW, Australia: CMPMedica; 2009.


Clinical question 10a
For people with gambling problems, are opioid antagonist medications more effective than no intervention?

Clinical question 10b
For people with gambling problems, are opioid antagonist medications more effective than other pharmacological interventions?

Background
A substantial body of literature evaluating the efficacy of pharmacological interventions in problem gambling behaviour has recently emerged. The clinical heterogeneity of problem gambling has led to the study of a wide range of psychopharmacological agents, including antidepressants, mood stabilisers, and opioid antagonists.

The use of opioid antagonists in the treatment of problem gambling is based on the hypothesis that over-production of endogenous opioids contributes to problem gambling and deficits in impulse control [1, 2]. The use of naltrexone, a long acting μ-opioid receptor antagonist that works on the reward system by reducing levels of dopamine, has been supported in the treatment of problem gambling. Naltrexone is usually well tolerated in the treatment of problem gambling. Common adverse effects include abdominal or stomach pain, headaches, dizziness, fatigue and anxiety [3]. There are, however, concerns that the clinical use of naltrexone may be limited by the risk of hepatotoxicity (i.e., chemical-driven liver damage), particularly at high doses [4]. Nalmefene, which is an opioid antagonist similar in both structure and activity to naltrexone but has the advantage of no observed dose-dependent liver toxicity [2, 4] has also been evaluated in the treatment of problem gambling.

Methods

Study selection criteria

<table>
<thead>
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</tr>
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</tr>
<tr>
<td>Any age, sex, ethnicity, gambling type, setting, comorbidity.</td>
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<tr>
<td><strong>Intervention</strong></td>
<td>Any psychoactive medication not classified as an opioid antagonist.</td>
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<tr>
<td>Opioid antagonist medications: Any psychoactive medication classified as an opioid antagonist.</td>
<td>Any psychological intervention</td>
</tr>
<tr>
<td>Comparison</td>
<td>No intervention: any control condition, including: waitlist control, assessment only, non-gambling related treatment, treatment as usual and placebo</td>
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<tr>
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<td>Any other pharmacological intervention: any psychoactive medication not classified as an opioid antagonist</td>
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</table>

| Outcome | Gambling behavior, gambling severity, psychological distress, alcohol or substance use or quality of life | Outcomes other than gambling behavior, gambling severity, psychological distress, alcohol or substance use or quality of life |

### Summary of clinical evidence

#### Volume of evidence
(a) Three RCTs were identified for inclusion. Two RCTs were found to have a moderate risk of bias and one RCT was found to have a high risk of bias.
(b) One RCT was identified for inclusion. This RCT was found to have a high risk of bias.

#### Consistency of studies
(a) Various comparisons were addressed by these studies:
  - Two studies compared naltrexone vs. placebo
  - Nalmefene vs. placebo

(b) One RCT compared the opioid antagonist naltrexone vs. the antidepressant bupropion.

#### Consistency of results
(a) Significant differences were found in the two studies that compared naltrexone with placebo, in gambling severity. One of these studies also found significant differences between naltrexone and placebo, in psychological distress. Significant differences between the groups were found in the study comparing nalmefene with placebo, in gambling severity.

(b) Significant differences were found between the bupropion and the naltrexone groups in clinician rated symptom improvement, but no differences were found between the groups in gambling severity.
## Draft recommendation

**Draft 1 - Recommendation based on evidence (done by Evidence Officer):**

(a) For people with gambling problems, the opioid antagonists, naltrexone and nalmefene, may be more effective than no intervention in reducing gambling severity.

(b) There is insufficient evidence to make a recommendation based on the evidence alone.

**Draft 2 - Recommendation based on evidence and clinical expertise (done by Key contacts):**

Based on the limited evidence available, people with gambling problems can be treated with opioid antagonists.

**Draft 3 - Recommendation based on evidence and clinical expertise (done by GDG):**

Opioid antagonists could be used to reduce gambling severity in people with gambling problems.

## Clinical impact statement

Choose from:

- Slight

**Explanation:**
Implementation of the recommendation

Please indicate yes or no to the following questions. Where the answer is yes please provide explanatory information about this. This information will be used to develop the implementation plan for the guidelines.

Will this recommendation result in changes in usual care? YES – This recommendation would result in changes in usual care seeing as opioid antagonists are currently not approved for use in Australia.

Are there any resource implications associated with implementing this recommendation? YES

Will the implementation of this recommendation require changes in the way care is currently organised? YES

Are the guideline development group aware of any barriers to the implementation of this recommendation? YES - Opioid antagonists are currently not approved for use in Australia. A submission to TGA for approval, would be required.

Clinical evidence

Volume of evidence

(a) Three studies were identified for inclusion:
- One RCT with a moderate risk of bias that compared three arms of the opioid antagonist nalmefene, 25mg/day, 50mg/day and 100mg/day with placebo [4].
- One RCT with a moderate risk of bias that compared three arms of the opioid antagonist naltrexone, 50mg/day, 100mg/day and 150mg/day with placebo [5].
- One RCT with a high risk of bias that compared the opioid antagonist naltrexone with placebo [6].

(b) One study was identified for inclusion:
- One RCT with a high risk of bias that compared the opioid antagonist naltrexone with the antidepressant bupropion [7].

Consistency of studies

(a) Opioid antagonists vs. no intervention:
- All of the included studies assessed gambling severity [4-6].
- Two of the studies assessed psychological distress [5, 6].
- All of the included studies assessed clinician rated symptom improvement [4-6].
- Two studies assessed quality of life [4, 5].
- None of the studies assessed gambling behaviour or alcohol or substance use.
• Treatment duration varied across the studies with one study lasting 12 weeks [6], one study lasting 16 weeks [4] and one study lasting 17 weeks [5].
• None of the included studies conducted any follow up
  (b) Opioid antagonists vs. other pharmacological interventions:
• This study assessed gambling severity, psychological distress and clinician rated symptom improvement [7].
• This study did not address alcohol or substance use or quality of life.
• Treatment lasted 12 weeks and no follow up was conducted.

**Consistency of results**
(a) The results for these studies were fairly consistent.
  • Significant differences were found in the two RCTs comparing naltrexone with placebo in gambling severity [5, 6].
  • Significant differences were found between the naltrexone and placebo groups in psychological distress and quality of life [5].
  • Significant differences were found in clinician rated symptom improvement [6].
  • Significant differences were found in the combined nalmefene groups when compared to the placebo group in gambling severity and quality of life [4].
(b) Significant differences were found, in clinician rated symptom improvement, for both the bupropion and naltrexone groups. There were no significant differences between the groups in gambling severity [7].

**Generalisability**
(a) This evidence is not directly generalisable to the target population and it is hard to judge whether it is sensible to apply.
  • The studies were generally consistent in terms of age.
  • The proportion of males and females in each study were inconsistent with two studies having more females than males [5, 6] and one study having more than two times the number of males than females [4].
  • All of the studies were conducted in America [4-6].
(b) This evidence is not directly generalisable to the target population and it is hard to judge whether it is sensible to apply. This study was conducted in Israel on an all male sample [7].

**Applicability**
(a) This evidence is not applicable to the Australian health care context.
(b) The evidence is not applicable to the Australian healthcare context.
Discussion about evidence review findings

Findings
(a) Opioid antagonists vs. no intervention:

- Evidence from a RCT with a moderate risk of bias found statistically significant differences between nalmefene and placebo in gambling severity. The nalmefene groups that were administered doses of 25mg/day and 50mg/day demonstrated superior efficacy compared to placebo. Significant differences were also found between the groups in quality of life [4].
- Evidence from a RCT with a moderate risk of bias found no significant differences in the three naltrexone arms and as such were combined and compared with the placebo arm. Significant differences were found between naltrexone and placebo in gambling severity, psychological distress and quality of life [5].
- Evidence from a RCT with a high risk of bias found significant differences between the naltrexone and placebo group in gambling severity and clinician rated symptom improvement [6].

(b) Opioid antagonists vs. other pharmacological interventions:

- Evidence from a RCT with a high risk of bias found significant differences in clinician rated symptom improvement, for both the bupropion and naltrexone groups. There were no significant differences between the groups in gambling severity [7].

Population subgroups
(a) The RCT comparing the three naltrexone arms with a placebo arm performed a subgroup analysis on gender and found that there were no significant gender differences in response to naltrexone, both men and women responded equally well to naltrexone [5].
(b) No subgroup analysis was performed.

Outcomes
(a) All of the included studies used validated measures to collect outcome data.

- One of the studies assessed gambling severity through the use of the PG-YBOCS and the G-SAS. Clinician rated impressions of improvement were assessed with the CGI-I and quality of life with the SDS [4].
- One of the studies assessed gambling severity through the use of the PG-YBOCS and the G-SAS. Quality of life was assessed with the SDS. Psychological distress was assessed with the HAM-A and HAM-D [5].
- One of the studies assessed gambling severity with the G-SAS and clinician rated impressions of improvement with the CGI-I [6].

(b) This study assessed gambling severity through the use of the PG-YBOCS. Clinician rated impressions of improvement were assessed with the CGI-I. Psychological distress was assessed with the HRSA and HRSD [7].
**Implications of bias**

(a) A study with a moderate or high risk of bias should be interpreted with caution. Several of the included studies were found to have a moderate or high risk of bias due to some conflict of interest in the funding of the studies and not reporting the method of randomisation, allocation concealment or blinding of the outcome assessors.

(b) A study with a high risk of bias should be interpreted with caution. The included study was found to have a high risk of bias due to a lack of blinding of the participants and care providers, as well as, not reporting the randomisation procedure, the allocation concealment and whether the study was sufficiently powered.

**Usability of the evidence**

(a) The evidence from these studies is applicable to the Australian health care context with few caveats.

(b) The evidence from this study is probably applicable to the Australian health care context with some caveats.

**References**


Clinical question 11a
For people with gambling problems, are mood stabiliser/anticonvulsant medications more effective than no intervention?

Clinical question 11b
For people with gambling problems, are mood stabiliser/anticonvulsant medications more effective than b other pharmacological interventions?

Background

A substantial body of literature evaluating the efficacy of pharmacological interventions in problem gambling behaviour has recently emerged. The clinical heterogeneity of problem gambling has led to the study of a wide range of psychopharmacological agents, including antidepressants, mood stabilisers, and opioid antagonists. The use of mood stabilisers/anticonvulsants in the treatment of problem gambling is based on the similarity in the clinical features of problem gambling and bipolar disorder [1]. This literature has predominantly evaluated the use of lithium, but also comprises studies evaluating the use of carbamazepine, valproate, and topiramate. These pharmacological agents are usually well tolerated in the treatment of problem gambling. Common adverse effects for mood stabilisers include hair loss, skin reactions, weight gain and prolonged bleeding time [2].

Methods

Study selection criteria

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<td>People who present for problem gambling treatment.</td>
<td>People who present to treatment for issues other than problem gambling.</td>
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<td>Any age, sex, ethnicity, gambling type, setting, comorbidity.</td>
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<tr>
<td><strong>Intervention</strong></td>
<td><a href="#">Mood stabiliser/anticonvulsant medications:</a> Any psychoactive medication not classified as a mood stabiliser or anticonvulsant.</td>
<td>Any psychoactive medication not classified as a mood stabiliser or anticonvulsant.</td>
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<td>Any psychological intervention.</td>
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<tr>
<td><strong>Comparison</strong></td>
<td>No intervention: any control condition, including, wait list control, assessment only, non-gambling related treatment, treatment as usual and placebo</td>
<td>No suitable or appropriate comparison group</td>
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<td>Any other pharmacological intervention: any psychoactive medication not classified as a mood stabiliser or anticonvulsant</td>
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<td>Outcome</td>
<td>Gambling behavior, gambling severity, psychological distress, alcohol or substance use or quality of life</td>
<td>Outcomes other than gambling behavior, gambling severity, psychological distress, alcohol or substance use or quality of life</td>
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</tbody>
</table>

Summary of clinical evidence

**Volume of evidence**
(a) One RCT was identified for inclusion. This RCT was found to have a high risk of bias.
(b) One RCT was identified for inclusion. This RCT was found to have a high risk of bias.

**Consistency of studies**
(a) This study compared:
   - Sustained-released lithium vs. placebo.
(b) This study compared:
   - The anticonvulsant topiramate vs. the antidepressant fluvoxamine.

**Consistency of results**
(a) Significant differences were found between sustained-released lithium and placebo in gambling severity but not in psychological distress.
(b) No significant differences were found between baseline and end point scores for gambling severity, however, clinician rated symptom improvement scores were significantly better for the topiramate group at the 12 week end point compared with baseline scores. No significant differences were found between topiramate and fluvoxamine in gambling severity.

Draft recommendation

**Draft 1 - Recommendation based on evidence (done by Evidence Officer):**
(a) There is insufficient evidence to make a recommendation.
(b) There is insufficient evidence to make an evidence-based recommendation
<table>
<thead>
<tr>
<th>Draft 2 - Recommendation based on evidence and clinical expertise (done by Key contacts):</th>
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<tbody>
<tr>
<td>There is insufficient evidence to make a recommendation.</td>
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<table>
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<tr>
<th>Draft 3 - Recommendation based on evidence and clinical expertise (done by GDG):</th>
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<tbody>
<tr>
<td>There is insufficient evidence to make a recommendation. No consensus recommendation will be made.</td>
</tr>
</tbody>
</table>

**Clinical impact statement**

Choose from:
- Very Large
- Moderate
- Slight
- Restricted

**Explanation:**

**Implementation of the recommendation**

Please indicate yes or no to the following questions. Where the answer is yes please provide explanatory information about this. This information will be used to develop the implementation plan for the guidelines.

- Will this recommendation result in changes in usual care? YES/NO
- Are there any resource implications associated with implementing this recommendation? YES/NO
- Will the implementation of this recommendation require changes in the way care is currently organised? YES/NO
- Are the guideline development group aware of any barriers to the implementation of this recommendation? YES/NO

**Clinical evidence**
Volume of evidence
(a) One RCT with a high risk of bias compared the mood stabiliser, sustained-released lithium with placebo [3].
(b) One RCT with a high risk of bias compared the anticonvulsant topiramate with the antidepressant fluvoxamine [4].

Consistency of studies
(a) This study assessed gambling severity and psychological distress. Gambling behaviour, alcohol or substance use and quality of life were not addressed. The treatment lasted 10 weeks and no follow up assessment was conducted [3].
(b) This study assessed gambling severity and psychological distress. Gambling behaviour, alcohol or substance use and quality of life were not addressed. The treatment lasted 12 weeks and no follow up assessment was conducted [4].

Consistency of results
(a) Significant differences were found between sustained-released lithium and placebo in gambling severity but not in psychological distress [3].
(b) No significant differences were found between baseline and end point scores on gambling severity, however, the CGI-I score was significantly better for the topiramate group at the 12 week end point visit compared with baseline. No significant differences were found between the topiramate and the fluvoxamine groups in gambling severity or psychological distress [4].

Generalisability
(a) This study was conducted in America on a fairly evenly distributed sample of males and females. The sample consisted of pathological gamblers with a co-occurring bipolar spectrum disorder, which limits the generalisability of the results. The evidence is not directly generalisable to the target population and it is difficult to judge whether it is sensible to apply [3].
(b) This study was conducted in Israel on an all male sample with a mean age of 35.9. The evidence is not directly generalisable to the target population and it is difficult to judge whether it is sensible to apply [4].

Applicability
(a) The evidence is probably applicable to the Australian health care context with some caveats [3].
(b) The evidence is not applicable to the Australian health care context [4].
Discussion about evidence review findings

Findings
(a) Evidence from a RCT with a high risk of bias found significant differences between sustained-released lithium and placebo in gambling severity. No significant differences were found between the groups in psychological distress [3].
(b) Evidence from a RCT with a high risk of bias indicates that there is no statistical difference between baseline and end point scores on gambling severity, as measured by the PG-YBOCS, however, the CGI-I score was significantly better for the topiramate group at the 12 week end point visit compared with baseline. No significant differences were found between the topiramate and the fluvoxamine groups in gambling severity or psychological distress [4].

Population subgroups
(a) No subgroup analysis was performed [3].
(b) No subgroup analysis was performed [4].

Outcomes
(a) The study used validated and reliable tools to measure outcomes. Gambling severity was assessed using the PG-YBOCS and psychological distress was assessed using the HAM-D and HAM-A [3].
(b) The study used validated measures outcomes. Gambling severity was assessed using the PG-YBOCS, clinician rated impressions of improvement using the CGI-I and the HRSA and HRSD to assess psychological distress [4].

Implications of bias
(a) The findings from this study should be interpreted with caution as it has a high risk of bias due to the study’s lack of reporting the method of randomisation or allocation concealment used as well as there being a conflict of interest in the funding of this study [3].
(b) The findings from this study should be interpreted with caution as it a high risk of bias due to the study’s lack of blinding of the participants and care providers and not reporting the method of randomisation or allocation concealment [4].

Usability of the evidence
(a) The evidence obtained from this study has limited generalisability to the target population as the sample consists of pathological gamblers with co-occurring bipolar spectrum disorders [3].
(b) The evidence obtained from this study is probably not generalisable to the target population seeing as the study was conducted in Israel on a male only sample [4].
References


2. MIMS Australia. MIMS Issue 5. NSW, Australia: CMPMedica; 2009.


Clinical question 12a
For people with gambling problems, are pharmacological interventions other than antidepressant, opioid antagonist and mood stabiliser/anticonvulsant medications more effective than no intervention?

Clinical question 12b
For people with gambling problems, are pharmacological interventions other than antidepressant, opioid antagonist and mood stabiliser/anticonvulsant medications more effective than other pharmacological interventions?

Background
A substantial body of literature evaluating the efficacy of pharmacological interventions in problem gambling behaviour has recently emerged. The clinical heterogeneity of problem gambling has led to the study of a wide range of psychopharmacological agents, including antidepressants, mood stabilisers, and opioid antagonists. However, an emerging literature has also evaluated other pharmacological agents, such as the amino acid N-acetyl cysteine and the second generation antipsychotic olanzapine. Common side effects for the amino acid N-acetyl cysteine include fever and drowsiness and common adverse effects for the antipsychotic olanzapine include drowsiness, fatigue and rapid weight gain [1].

Methods
Study selection criteria

<table>
<thead>
<tr>
<th>Participants</th>
<th>Inclusion Criteria</th>
<th>Exclusion Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>People who present for problem gambling treatment.</td>
<td>People who present to treatment for issues other than problem gambling.</td>
</tr>
<tr>
<td></td>
<td>Any age, sex, ethnicity, gambling type, setting, comorbidity.</td>
<td></td>
</tr>
<tr>
<td>Intervention</td>
<td>Other psychoactive medication: Any other psychoactive medication other than those classified as an antidepressant, opioid antagonist or mood stabiliser/anticonvulsant.</td>
<td>Any pharmacological intervention classified as an antidepressant, opioid antagonist or mood stabiliser/anticonvulsant. Any psychological intervention.</td>
</tr>
<tr>
<td></td>
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</tr>
<tr>
<td>Comparison</td>
<td>No intervention: any control condition including, wait list control, assessment only, non-gambling related treatment, treatment as usual and placebo Any other pharmacological intervention: any psychoactive medication classified as an antidepressant, opioid antagonist, mood stabiliser/anticonvulsant</td>
<td>No suitable or appropriate comparison group</td>
</tr>
<tr>
<td>Outcome</td>
<td>Gambling behavior, gambling severity, psychological distress, alcohol or substance use or quality of life</td>
<td>Outcomes other than gambling behavior, gambling severity, psychological distress, alcohol or substance use or quality of life</td>
</tr>
</tbody>
</table>

**Summary of clinical evidence**

**Volume of evidence**
(a) Three RCTs were identified for inclusion. One RCT was found to have a moderate risk of bias and two RCTs were found to have a high risk..
(b) No RCTs were identified for inclusion.

**Consistency of studies**
(a) Two different comparisons were made by these studies:
   - Two RCTs compared the antipsychotic olanzapine vs. placebo
   - One RCT compared the glutamate modulating agent, n-acetyl cysteine, vs. placebo.

**Consistency of results**
(a) No significant differences were found in either of the RCTs that compared olanzapine with placebo in gambling severity, gambling behaviour or psychological distress. No significant differences were found in the RCT comparing n-acetyl cysteine with placebo in gambling severity or quality of life.

**Draft recommendation**

Draft 1 - Recommendation based on evidence (done by Evidence Officer):
(a) There is insufficient evidence to make a recommendation based on the evidence alone.
(b) There is no research evidence to form an evidence-based recommendation.

Draft 2 - Recommendation based on evidence and clinical expertise (done by Key contacts):
There is not enough evidence to make a recommendation.

**Draft 3 - Recommendation based on evidence and clinical expertise (done by GDG):**

There is insufficient evidence to make an evidence-based recommendation. No consensus recommendation will be made.

**Clinical impact statement**

Choose from:
NA

**Explanation:**

**Implementation of the recommendation**

Please indicate yes or no to the following questions. Where the answer is yes please provide explanatory information about this. This information will be used to develop the implementation plan for the guidelines.

Will this recommendation result in changes in usual care? NA

Are there any resource implications associated with implementing this recommendation? NA

Will the implementation of this recommendation require changes in the way care is currently organised? NA

Are the guideline development group aware of any barriers to the implementation of this recommendation? NA

**Clinical evidence**

**Volume of evidence**

Two studies were identified for inclusion.

- One RCT with a high risk of bias compared the antipsychotic olanzapine with placebo [2].
- One RCT with a high risk of bias compared the antipsychotic olanzapine with placebo [3].
- One RCT with a moderate risk of bias compared the glutamate modulating agent, n-acetyl cysteine with placebo [4].
**Consistency of studies**
- All of the studies assessed gambling severity [2-4].
- Two of the studies assessed gambling behaviour [2, 3].
- Two of the studies assessed psychological distress [2, 3].
- One of the studies assessed quality of life [4].
- None of the studies assessed alcohol and substance use.
- Treatment duration varied with one study lasting 6 weeks [4], one study lasting 7 weeks [2] and the other study lasting 12 weeks [3].
- No follow up was conducted in either of the included studies.

**Consistency of results**
- No significant differences were found in the RCT comparing olanzapine with placebo in gambling urges, gambling behaviour and psychological distress. Pathological gamblers in both experimental conditions consistently reported reductions in these outcomes. Olanzapine was not associated with significantly improved outcomes over placebo [2].
- No significant differences were found in the RCT comparing olanzapine with placebo in gambling severity, gambling behaviour and psychological distress [3].
- In the RCT comparing n-acetyl cysteine with placebo, no significant differences were found between the two groups in gambling severity or quality of life [4].

**Generalisability**
The evidence is not directly generalisable to the target population but could be sensibly applied.
- All of the studies were conducted in America [2-4].
- Where reported the age and gender were consistent. However, one of the studies only looked at pathological gamblers where video poker was their primary game of choice [2]. This limits the generalisability of these results.

**Applicability**
The evidence could probably be applied to the Australian healthcare context with some caveats.

**Discussion about evidence review findings**

**Findings**
- Evidence from a RCT with a high risk of bias found no significant differences between olanzapine and placebo in gambling urge, gambling behaviour or psychological distress in pathological gamblers whose primary game of choice is video poker [2].
• Evidence from a RCT with a high risk of bias found no significant differences between olanzapine and placebo in gambling severity, gambling behaviour or psychological distress [3].
• Evidence from a RCT with a moderate risk of bias found no significant difference between n-acetyl cysteine in gambling symptom severity or quality of life [4].

**Population subgroups**
No subgroup analysis was performed.

**Outcomes**
• Two of the studies used validated and reliable measures when collecting data. One study used the PG-YBOCS and the G-SAS to measure gambling severity and the SDS to measure quality of life [4]. The other study used the PG-YBOCS to measure gambling severity, hours and times gambled per week to measure gambling behaviour and the HAM-D to measure psychological distress [3].
• The other RCT, however, used measures that may not have been sensitive or specific enough to detect the effects of olanzapine [2]. This study utilised outcome instruments that have been used by clinicians that treat pathological gamblers along with tracking gambling behaviours. Outcome measures used in other pharmacological trials of pathological gamblers, such as the Pathological Gambling Yale-Brown Obsessive Compulsive Scale (PG-YBOCS), or the Gambling Symptom Assessment Scale (G-SAS) were not selected for use in this study because the study was completed before their use increased in clinical trials. This suggests that rather than basing their choice of outcome measure on the psychometric properties of the instruments, the decision was determined by the amount of times the instruments had been reported to be used in other studies which does not seem appropriate. The tools used were the Brecksville Gambling Craving Scale, Desire to Gamble Scale, CGI-I and a Gambling Behaviour Diary to measure gambling severity and behaviours and the Brief Psychiatric Rating Scale, BDI, HAM-D, HAM-A and the Barratt Impulsiveness Scale were used to assess psychological distress.

**Implications of bias**
A study with a moderate or high risk of bias should be interpreted with caution. The included studies were found to have a moderate or high risk of bias for various reasons, mainly due to conflicts of interest in the funding and writing of these studies, not reporting blinding of outcome assessors and for being inadequately powered. The RCTs with a high risk of bias were also unclear about the randomisation process and allocation concealment used [2, 3].
Usability of the evidence

The evidence from this study is generalisable to the target population in regards to age and gender, however, considering one of the studies excluded participants based on their preferred gambling modality this limits the generalisability of this evidence.

References

1. MIMS Australia. MIMS Issue 5. NSW, Australia: CMPMedica; 2009.
Clinical question 13
For people with gambling problems, are pharmacological interventions more effective than psychological interventions?

Background
Although the evaluation of interventions for problem gambling remains relatively limited, the treatment outcome literature for problem gambling provides some evidence that this disorder is amenable to intervention. There is some empirical evidence for a number of psychological interventions, including:

- **Cognitive-Behavioural interventions**: In accordance with learning principles, behavioural approaches have commonly applied classical and operant conditioning techniques in order to reduce the arousal and excitement associated with gambling. Cognitive formulations of the development and maintenance of problem gambling imply that intervention should identify cognitive distortions and biases and correct them through cognitive restructuring techniques.

- **Motivational enhancement therapies**: Motivational interviewing (MI) and its derived manual-guided motivational enhancement therapy (MET) are client-centred, directive methods for enhancing intrinsic motivation to change by exploring and resolving ambivalence [1].

- **Minimal or brief practitioner-delivered interventions**: Minimal or brief interventions are those treatments involving less professional time and/or resources than are typical of traditional therapy [2].

- **Self-help programs**: Self-help interventions are those treatments involving no professional time and/or resources. To date, the self-help treatment outcome literature for problem gambling has comprised predominantly of the use of cognitive-behavioural self-help workbooks.

- **Gamblers Anonymous**: Gamblers Anonymous, the parallel organisation for Alcoholics Anonymous, is a voluntary fellowship that employs abstinent gamblers as counsellors.

The approximate overall success rates for psychological treatments have been estimated to be 70% at 6-months follow-up, 50% at 1-year follow-up, and 30% at 2-year follow-up [3]. Although there has been improvement in the evidence base, no psychological treatment satisfies the current standards for evidence of efficacy [4]. Cognitive-behavioural therapies have been cautiously recommended as ‘best practice’ for the psychological treatment of problem gambling [3, 4]. However, available evidence does not enable clear recommendations as to which psychological interventions are suited to individual problem gamblers.

A substantial body of literature evaluating the efficacy of pharmacological interventions to directly treat problem gambling behaviour has recently emerged. The clinical heterogeneity of problem gambling has led to the study of a wide range of psychopharmacological agents, including antidepressants, mood stabilisers, and opioid antagonists. However, to date, no specific pharmacological agent has been found effective in at least two double-blind studies conducted by independent research teams. Moreover, there is little empirical data to guide
the selection of one pharmacological intervention over another, with few differences in outcome between the main classes of pharmacological interventions.

Available evidence does not enable clear recommendations as to which medication is best suited to individual patients. The current trend in the pharmacotherapy literature is to select a medication from a class of interventions according to the dominant presenting comorbid psychopathology [5]. Recommendations include opioid antagonists when there is a co-occurring alcohol/substance use disorder, SSRIs when there is co-occurring depressive or anxiety symptoms, and lithium when there are comorbid symptoms of subsyndromal hypomania or mania.

The degree to which psychological interventions are more effective than pharmacological interventions remains unclear given the use of different control conditions and outcome measures.

**Methods**

**Study selection criteria**

<table>
<thead>
<tr>
<th></th>
<th>Inclusion Criteria</th>
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<tbody>
<tr>
<td><strong>Participants</strong></td>
<td>People who present for problem gambling treatment. Any age, sex, ethnicity, gambling type, setting, comorbidity.</td>
<td>People who present to treatment for issues other than problem gambling.</td>
</tr>
<tr>
<td><strong>Intervention</strong></td>
<td>Any pharmacological intervention.</td>
<td>Any psychological intervention.</td>
</tr>
<tr>
<td><strong>Comparison</strong></td>
<td>Any psychological intervention.</td>
<td>No suitable or appropriate comparison group</td>
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<td><strong>Outcome</strong></td>
<td>Gambling behavior, gambling severity, psychological distress, alcohol or substance use or quality of life</td>
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</tbody>
</table>

**Summary of clinical evidence**

*Volume of evidence*

No RCTs were identified for inclusion.
Draft recommendation

**Draft 1 - Recommendation based on evidence (done by Evidence Officer):**

There is no evidence to make a recommendation.

**Draft 2 - Recommendation based on evidence and clinical expertise (done by Key contacts):**

There is no evidence to make a recommendation.

**Draft 3 - Recommendation based on evidence and clinical expertise (done by GDG):**

No research to form an evidence-based recommendation. No consensus recommendation will be made.

References

Clinical question 14a
For people with gambling problems, are combined psychological and pharmacological interventions more effective than no intervention?

Clinical question 14b
For people with gambling problems, are combined psychological and pharmacological interventions more effective than either psychological or pharmacological interventions alone?

Background
There is some empirical evidence for a number of psychological interventions, including:

- **Cognitive-Behavioural interventions**: In accordance with learning principles, behavioural approaches have commonly applied classical and operant conditioning techniques in order to reduce the arousal and excitement associated with gambling. Cognitive formulations of the development and maintenance of problem gambling imply that intervention should identify cognitive distortions and biases and correct them through cognitive restructuring techniques. Cognitive-behavioural therapies have been cautiously recommended as ‘best practice’ for the psychological treatment of problem gambling [1, 2].

- **Motivational enhancement therapies**: Motivational interviewing (MI) and its derived manual-guided motivational enhancement therapy (MET) are client-centred, directive methods for enhancing intrinsic motivation to change by exploring and resolving ambivalence [3].

- **Minimal or brief practitioner-delivered interventions**: Minimal or brief interventions are those treatments involving less professional time and/or resources than are typical of traditional therapy [4].

- **Self-help programs**: Self-help interventions are those treatments involving no professional time and/or resources. To date, the self-help treatment outcome literature for problem gambling has comprised predominantly of the use of cognitive-behavioural self-help workbooks.

- **Gamblers Anonymous**: Gamblers Anonymous, the parallel organisation for Alcoholics Anonymous, is a voluntary fellowship that employs abstinent gamblers as counsellors.

A substantial body of literature evaluating the efficacy of pharmacological interventions to directly treat problem gambling behaviour has recently emerged. The clinical heterogeneity of problem gambling has led to the study of a wide range of psychopharmacological agents, including antidepressants, mood stabilisers, and opioid antagonists.

Intuitively, the combination of psychological and pharmacological interventions should be superior to either form of treatment alone. The combination of psychological and pharmacological therapies can have significant advantages over monotherapies by providing additive, or even synergistic, effects on efficacy [5]. However, the combination of psychological and pharmacological interventions has not always been superior to either form of treatment alone in treatment outcome studies for psychiatric disorders [6, 7].
remains a dearth of studies that evaluate the use of psychological interventions in conjunction with pharmacological interventions in the treatment of problem gambling.

**Methods**

**Study selection criteria**

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<td><strong>Participants</strong></td>
<td>People who present for problem gambling treatment. Any age, sex, ethnicity, gambling type, setting, comorbidity.</td>
<td>People who present to treatment for issues other than problem gambling.</td>
</tr>
<tr>
<td><strong>Intervention</strong></td>
<td>Any psychological intervention in combination with any pharmacological intervention</td>
<td>Any psychological intervention or pharmacological intervention only</td>
</tr>
<tr>
<td><strong>Comparison</strong></td>
<td>No intervention: Any control condition, including: waitlist control, assessment only, non-gambling related treatment, treatment as usual or placebo. Either psychological or pharmacological interventions alone: Any psychological intervention or pharmacological intervention</td>
<td>No suitable or appropriate comparison group</td>
</tr>
<tr>
<td><strong>Outcome</strong></td>
<td>Gambling behaviour, gambling severity, psychological distress, alcohol or substance use or quality of life</td>
<td>Outcomes other than gambling behaviour, gambling severity, psychological distress, alcohol or substance use or quality of life</td>
</tr>
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</table>

**Summary of clinical evidence**

**Volume of evidence**

(a) No RCTs were identified for inclusion.
(b) One RCT was identified for inclusion. This RCT was found to have a moderate risk of bias.

**Consistency of studies**

(b) This study compared a combined naltrexone and CBT intervention vs. a combined placebo and CBT intervention.

**Consistency of results**

(b) No significant differences were found between the combined CBT and naltrexone group when compared with the combined CBT and placebo group, in either gambling frequency, gambling expenditure per day or alcohol use.
Draft recommendation

Draft 1 - Recommendation based on evidence (done by Evidence Officer):

(a) There is no evidence to make a recommendation.

(b) There is insufficient evidence to make a recommendation on evidence alone.

Draft 2 - Recommendation based on evidence and clinical expertise (done by Key contacts):

There is insufficient evidence to make a recommendation.

Draft 3 - Recommendation based on evidence and clinical expertise (done by GDG):

There is insufficient evidence to make a recommendation on evidence alone. No consensus recommendation will be made.

Clinical impact statement

Choose from:
NA

Explanation:

Implementation of the recommendation

Please indicate yes or no to the following questions. Where the answer is yes please provide explanatory information about this. This information will be used to develop the implementation plan for the guidelines.

Will this recommendation result in changes in usual care? NA
Are there any resource implications associated with implementing this recommendation? NA

Will the implementation of this recommendation require changes in the way care is currently organised? NA

Are the guideline development group aware of any barriers to the implementation of this recommendation? NA

**Clinical evidence**

*Volume of evidence*

One RCT was identified for inclusion:

- One RCT with a moderate risk of bias that compared a combined CBT and naltrexone intervention with a combined CBT and placebo intervention [8].

**Consistency of studies**

This study assessed gambling behaviour and alcohol use. Gambling severity, psychological distress and quality of life were not addressed. Treatment duration was 12 weeks with up to 12 month follow up.

**Consistency of results**

No significant differences were found between the combined CBT and naltrexone group when compared with the combined CBT and placebo group, in either gambling frequency or gambling expenditure per day. No significant differences were found between the two groups on alcohol frequency or quantity per drinking day [8].

**Generalisability**

This study was conducted in Canada, with 93% of the sample composed of males with a mean age of 40 years. This evidence is not directly generalisable to the target population, however, it could be sensibly applied.

**Applicability**

This evidence is probably applicable to the Australian health care context with some caveats.

**Discussion about evidence review findings**

**Findings**

Evidence from a RCT with a moderate risk of bias found no significant differences between the combined CBT and naltrexone group when compared with the combined CBT and placebo group, in either gambling frequency or gambling expenditure per day. No significant differences were found between the two groups on alcohol frequency or quantity per
drinking day. Gambling severity, psychological distress and quality of life were not addressed [8].

**Population subgroups**
No subgroup analysis was performed.

**Outcomes**
Outcomes were measured using self monitored alcohol quantity and frequency, gambling episodes and expenditure on a daily basis using a specially designed calendar.

**Implications of bias**
Studies with a moderate risk of bias should be interpreted with caution. This study was found to have a moderate risk of bias as it failed to report the randomisation procedure used and whether the participants’ allocation to an intervention group was concealed.

**Usability of the evidence**
The evidence from this study is not directly generalisable to the target population but it could be sensibly applied.

**References**
use disorder and pathological gambling. Am J Addict. [Randomized Controlled Trial Research Support, Non-U.S. Gov’t]. 2009 May-Jun;18(3):219-25.
Clinical question 15a
For people with gambling problems and co-occurring psychiatric symptoms or disorders, are psychological or pharmacological interventions more effective than no intervention?

Clinical question 15b
For people with gambling problems and co-occurring psychiatric symptoms or disorders, are psychological or pharmacological interventions more effective than any other intervention?

Background
The treatment of problem gambling is complicated by substantial heterogeneity in the clinical presentation of problem gamblers, which is due, in part, to a high comorbidity with other psychiatric disorders. There is a large and burgeoning body of research that has investigated the association between problem gambling and co-morbid conditions. There is now evidence from several major population studies with high quality standardised measurement tools and sound methodologies that problem gambling is associated with depression and mood disorders, anxiety disorders, alcohol use problems, substance use problems, and personality disorders [1-3]. For example, in a North American survey of 43,093 respondents, Petry, Stinson, and Grant [2] found that problem gamblers were more likely than non-problem gamblers to report a lifetime major depressive disorder (37%, odds ratio = 3.0), anxiety disorder (41%, odd ratio = 3.4), alcohol use disorder (73%, odd ratio = 6.3), drug use (38%, odd ratio = 5.4), nicotine dependence (60%, odds ratio = 7.2), and personality disorder (61%, odds ratio = 9.1).

There is a general consensus that understanding the functional relationship between problem gambling and any comorbidity is critical for effective treatment as the presence of a comorbid disorder may influence the selection of treatment and impact on the effectiveness of treatment, even when multiple disorders within the one individual are etiologically independent [4, 5]. There is also growing evidence that problem gamblers with comorbid psychiatric conditions have more severe problems than problem gamblers without comorbid conditions [6, 7]. However, the presence of comorbid psychiatric disorders and their implications for problem gambling treatment have received little attention.

The recognition of the psychiatric comorbidity in problem gambling and the development of subtypes (e.g., 8, 9) may eventually have implications for individually tailored intervention approaches. Such a matching procedure could serve to maximise treatment response, enhance client satisfaction, reduce attrition, and lower treatment costs [10]. The current trend in the pharmacotherapy literature is to select a medication from a class of interventions according to the dominant presenting comorbid psychopathology [11]. Recommendations include opioid antagonists when there is a co-occurring alcohol/substance use disorder, SSRIs when there is co-occurring depressive or anxiety...
symptoms, and lithium when there are comorbid symptoms of subsyndromal hypomania or mania. Recent research has successfully applied such targeted interventions to subgroups of problem gamblers with co-occurring disorders, including bipolar spectrum disorders, anxiety, ADHD features, anger, and substance use. Despite these advances, many clinical questions relating to the treatment implications of comorbid psychiatric conditions remain.

Methods

Study selection criteria

<table>
<thead>
<tr>
<th></th>
<th>Inclusion Criteria</th>
<th>Exclusion Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Participants</strong></td>
<td>People who present for problem gambling treatment with co-occurring psychiatric symptoms or disorders. Co-occurring psychiatric symptoms defined by the trialist and can be any symptom associated with a DSM-IV Axis I or Axis II diagnosis. These symptoms are measured using any standardised or validated measure. Examples include: depressive disorders, anxiety disorders, bipolar disorders, alcohol and other substance use disorders, ADHD, personality disorders, schizophrenia and other psychotic disorders, impulsivity and anger. Any age, sex, ethnicity, gambling type, setting.</td>
<td>People who present for problem gambling treatment without co-occurring psychiatric symptoms or disorders. People who present to treatment for issues other than problem gambling.</td>
</tr>
<tr>
<td><strong>Intervention</strong></td>
<td>Any psychological intervention or pharmacological intervention</td>
<td>No intervention</td>
</tr>
<tr>
<td><strong>Comparison</strong></td>
<td>No intervention: Any control condition, including: waitlist control, assessment only, non-gambling related treatment, treatment as usual or placebo. Other intervention: Any other psychological intervention or pharmacological intervention</td>
<td>No suitable or appropriate comparison group</td>
</tr>
<tr>
<td>Outcome</td>
<td>Gambling behaviour, gambling severity, psychological distress, alcohol or substance use or quality of life. Outcomes related to the co-occurring psychiatric symptoms.</td>
<td>Outcomes other than gambling behaviour, gambling severity, psychological distress, alcohol or substance use or quality of life, or symptoms related to the co-occurring psychiatric symptoms.</td>
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</table>

**Summary of clinical evidence**

**Volume of evidence**
(a) Two RCTs were identified for inclusion. Both RCTs were found to have a high risk of bias.
(b) Two RCTs were identified for inclusion. Both RCTs were found to have a moderate risk of bias.

**Consistency of studies**
(a) Different comparisons were made by these studies:
- One study compared the antidepressant escitalopram vs. placebo, on gamblers with co-occurring anxiety.
- One study compared the mood stabiliser sustained-released lithium vs. placebo, on gamblers with co-occurring bipolar spectrum disorders.
(b) Different comparisons were made by these studies:
- One study compared DBT vs. TAU, on gamblers with co-occurring anger and substance use problems
- One study compared a combined naltrexone and CBT intervention vs. a combined placebo and CBT intervention, on gamblers with co-occurring alcohol use disorder.

**Consistency of results**
(a) No significant differences were found in the RCT comparing escitalopram with placebo in gambling severity. Significant differences were found between sustained-released lithium and placebo in gambling severity but not in psychological distress.
(b) Significant reductions in gambling severity and behaviour were found in both the DBT and TAU interventions, however, there were no significant differences between the groups. Significant reductions in substance use were found in the DBT group but no the TAU group and both groups reduced trait anger and expression. No significant differences were found between the combined CBT and naltrexone group when compared with the combined CBT and placebo group, in either gambling frequency, gambling expenditure per day or alcohol use.
Draft recommendation

**Draft 1 - Recommendation based on evidence (done by Evidence Officer):**

(a) There is insufficient evidence to make a recommendation based on the evidence alone.

(b) There is insufficient evidence to make a recommendation based on the evidence alone.

**Draft 2 - Recommendation based on evidence and clinical expertise (done by Key contacts):**

There is insufficient evidence to make a recommendation.

**Draft 3 - Recommendation based on evidence and clinical expertise (done by GDG):**

There is insufficient evidence to make a recommendation.

Clinical impact statement

Choose from:
- Very Large
- Moderate
- Slight
- Restricted

Explanation:

Implementation of the recommendation

Please indicate yes or no to the following questions. Where the answer is yes please provide explanatory information about this. This information will be used to develop the implementation plan for the guidelines.
Will this recommendation result in changes in usual care? YES/NO

Are there any resource implications associated with implementing this recommendation? YES/NO

Will the implementation of this recommendation require changes in the way care is currently organised? YES/NO

Are the guideline development group aware of any barriers to the implementation of this recommendation? YES/NO

Clinical evidence

Volume of evidence

(a) Two studies were identified for inclusion:
  - One RCT with a high risk of bias that compared the antidepressant escitalopram with placebo on gamblers with co-occurring anxiety [12].
  - One RCT with a high risk of bias that compared the mood stabiliser, sustained-released lithium with placebo on gamblers with co-occurring bipolar spectrum disorders [13].

(b) Two studies were identified for inclusion:
  - One RCT with a moderate risk of bias that compared DBT with TAU on gamblers with co-occurring anger and substance use problems [14].
  - One RCT with a moderate risk of bias that compared a combined naltrexone CBT intervention with a combined placebo and CBT intervention on gamblers with co-occurring alcohol use disorder [15].

Consistency of studies

(a)
  - Both of the studies assessed gambling severity [12, 13]
  - Both of the studies assessed psychological distress [12, 13]
  - One of the studies assessed quality of life [12]
  - None of the studies assessed gambling behaviour
  - None of the studies assessed alcohol or substance use
  - Treatment duration varied with one study lasting 8 weeks [12] and one study lasting 10 weeks [13]. No follow up was conducted in either of the studies.

(b)
  - Both of the studies assessed gambling behaviour [14, 15].
  - One study assessed gambling severity [14].
  - Both of the studies assessed alcohol or substance use [14, 15].
  - One of the studies assessed anger [14].
  - None of the studies assessed psychological distress.
None of the studies assessed quality of life. Treatment duration varied across the studies with one lasting 14 weeks [14] and one lasting 12 weeks [15].

Follow up varied across the studies. One study reported 3 months follow up [14] and one study reported 12 months follow up [15].

**Consistency of results**

(a)

- In the two phase study comparing escitalopram and placebo on problem gamblers with co-occurring anxiety there was a reduction in the improvement of gambling severity that did not reach statistical significance, in the second double blind discontinuation phase [12].
- Significant differences were found between sustained-released lithium and placebo in gambling severity but not in psychological distress [13].

(b)

- Significant reductions in gambling severity and behaviour were found in both the DBT and TAU interventions, however, there were no significant differences between the groups. Significant reductions in substance use were found in the DBT group but not in the TAU group. Both groups also reduced trait anger and anger expression over time with the DBT group having significantly greater reductions in trait anger [14].
- No significant differences were found between the combined CBT and naltrexone group when compared with the combined CBT and placebo group, in either gambling frequency or gambling expenditure per day. No significant differences were found between the two groups on alcohol frequency or quantity per drinking day [15].

**Generalisability**

(a) The evidence is not directly generalisable to the target population and it is hard to judge whether it is sensible to apply

- Both studies were conducted in America [12, 13].
- Where reported, age and gender were consistent.

(b) The evidence is not directly generalisable but could be sensibly applied.

- Both studies were conducted in Canada [14, 15].
- Where reported the sample consisted of significantly more males than females with one study reporting 93% [15] of their sample as male and the other 86% male [14].
- Where reported, the studies were consistent in terms of age.

**Applicability**

(a) The evidence is probably applicable to the Australian health care context with some caveats.
(b) The evidence is probably applicable to the Australian health care context with some caveats.

Discussion about evidence review findings

Findings
(a)
- Evidence from a RCT with a high risk of bias found that in the two phase study comparing escitalopram and placebo on problem gamblers with co-occurring anxiety there was a reduction in the improvement of gambling severity that did not reach statistical significance for the escitalopram group, in the double blind discontinuation phase. For the participant in the placebo group gambling severity worsened over the discontinuation phase to the point where the subject discontinued treatment. Anxiety symptoms showed minimal elevation for this subject [12].
- Evidence from a RCT with a high risk of bias found significant differences between sustained-released lithium and placebo in gambling severity. No significant differences were found between the groups in psychological distress [13].

(b)
- Evidence from a RCT with a moderate risk of bias found significant reductions in gambling severity and behaviour in both the DBT and TAU interventions, however, there were no significant differences between the two groups. Significant reductions in substance use were found in the DBT intervention but not for the TAU intervention. Both groups also reduced trait anger and anger expression over time with the DBT group having significantly greater reductions in trait anger [14].
- Evidence from a RCT with a moderate risk of bias found no significant differences between the combined CBT and naltrexone group when compared with the combined CBT and placebo group, in either gambling frequency or gambling expenditure per day. No significant differences were found between the two groups in alcohol frequency or quantity per drinking day [15].

Population subgroups
(a) No subgroup analysis was performed.
(b) No subgroup analysis was performed.

Outcomes
Where possible, all of the included studies used validated tools to measure their outcomes.
(a)
- One study used the PG-YBOCS and the G-SAS to measure gambling severity. The HAM-A and HAM-D were used to measure psychological distress. The CGI-I was used
to measure change in clinical symptoms and the Perceived Stress Scale measured the degree to which individuals found their lives stressful and unpredictable. Quality of life was measured by the Quality of Life Inventory and SDS [12].

- One study used the PG-YBOCS to assess gambling severity and psychological distress was assessed using the HAM-D and HAM-A [13].

(b)

- One study used the Canadian Problem Gambling Inventory which yields a Problem Gambling Severity Index to assess gambling severity. The Drug History Questionnaire was used to assess substance use and the State-Trait Anger Expression Inventory was used to assess trait anger and anger expression [14].
- One study used a calendar specially designed for the study for subjects to self-monitor alcohol quantity and frequency, gambling episodes and expenditures on a daily basis [15].

**Implications of bias**

A study with a moderate or high risk of bias should be interpreted with caution. The included studies were found to have a moderate or high risk of bias for various reasons, mainly not reporting the randomisation procedure, whether allocation was concealed and whether the outcome assessors were blinded [12, 13 15] as well as not having sufficient power [12, 14].

**Usability of the evidence**

The evidence from these studies is probably applicable to the Australian health care context with some caveats.

**References**


Clinical question 16a
For people with gambling problems and co-occurring psychiatric symptoms or disorders, are interventions sequenced to treat gambling problems first more effective than interventions sequenced to treat co-occurring psychiatric symptoms or disorders first?

Clinical question 16b
For people with gambling problems and co-occurring psychiatric symptoms or disorders, are sequenced interventions more effective than simultaneous interventions?

Background

The treatment of problem gambling is complicated by substantial heterogeneity in the clinical presentation of problem gamblers, which is due, in part, to a high comorbidity with other psychiatric disorders. There is a large and burgeoning body of research that has investigated the association between problem gambling and co-morbid conditions. There is now evidence from several major population studies with high quality standardised measurement tools and sound methodologies that problem gambling is associated with depression and mood disorders, anxiety disorders, alcohol use problems, substance use problems, and personality disorders [1-3]. For example, in a North American survey of 43,093 respondents, Petry, Stinson, and Grant [2] found that problem gamblers were more likely than non-problem gamblers to report a lifetime major depressive disorder (37%, odds ratio = 3.0), anxiety disorder (41%, odd ratio = 3.4), alcohol use disorder (73%, odd ratio = 6.3), drug use (38%, odd ratio = 5.4), nicotine dependence (60%, odd ratio = 7.2), and personality disorder (61%, odd ratio = 9.1).

There is a general consensus that understanding the functional relationship between problem gambling and any comorbidity is critical for effective treatment as the presence of a comorbid disorder may influence the selection of treatment and impact on the effectiveness of treatment, even when multiple disorders within the one individual are etiologically independent [4, 5].

Many clinical questions relating to the treatment implications of comorbid psychiatric conditions remain. Should problem gambling and the co-existing psychiatric condition be treated concomitantly or sequentially? If the disorders are to be treated sequentially, which disorder would be treated first on what basis? Winters and Kushner [5] provide some guidelines derived from the more advanced substance abuse literature. They recommend: 1) screening for common comorbid disorders upon intake for problem gambling treatment; 2) a period of observing the comorbid symptomatology as treatment for problem gambling begins; 3) reassessment of the comorbid disorder after a period of abstinent or reduced gambling; and 4) specific treatment for the comorbid condition should it persist in the absence of problem gambling behaviour. Despite these recommendations, the problem gambling literature has yet to evaluate sequenced interventions for problem gambling and comorbid conditions.
## Methods

### Study selection criteria

<table>
<thead>
<tr>
<th></th>
<th>Inclusion Criteria</th>
<th>Exclusion Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Participants</strong></td>
<td>People who present for problem gambling treatment with co-occurring psychiatric symptoms or disorders. Co-occurring psychiatric symptoms defined by the trialist and can be any symptom associated with DSM-IV Axis I or Axis II diagnosis. These symptoms are measured using any standardised or validated measure. Examples include: depressive disorders, anxiety disorders, bipolar disorders, alcohol and other substance use disorders, ADHD, personality disorders, schizophrenia and other psychotic disorders, impulsivity and anger. Any age, sex, ethnicity, gambling type, setting, comorbidity.</td>
<td>People who present for problem gambling treatment without co-occurring psychiatric symptoms or disorders. People who present to treatment for issues other than problem gambling.</td>
</tr>
<tr>
<td><strong>Intervention</strong></td>
<td><strong>Interventions sequenced to treat gambling problems first:</strong> Any psychological intervention or pharmacological intervention that aims to treat gambling problems first then the co-occurring psychiatric symptoms or disorders</td>
<td><strong>Sequenced interventions:</strong> Any psychological intervention or pharmacological intervention that aims to treat gambling problems or then the co-occurring psychiatric symptoms or disorder first</td>
</tr>
<tr>
<td><strong>Comparison</strong></td>
<td>Interventions</td>
<td>Simultaneous</td>
</tr>
<tr>
<td>sequenced to treat co-occurring psychiatric symptoms or disorder first: Any psychological intervention or pharmacological intervention that aims to treat the co-occurring psychiatric symptoms or disorder first then the gambling problems</td>
<td>interventions: Any psychological intervention or pharmacological intervention that aims to treat both gambling problems and co-occurring psychiatric symptoms or disorder simultaneously.</td>
<td>comparison group</td>
</tr>
</tbody>
</table>

| Outcome | Gambling behavior, gambling severity, psychological distress, alcohol or substance use or quality of life. Outcomes related to the co-occurring psychiatric symptoms. | Outcomes other than gambling behavior, gambling severity, psychological distress, alcohol or substance use, quality of life or symptoms related to the co-occurring psychiatric symptoms. |  |

**Summary of clinical evidence**

**Volume of evidence**
(a) No studies were identified for inclusion.
(b) No studies were identified for inclusion.

**Draft recommendation**

**Draft 1 - Recommendation based on evidence (done by Evidence Officer):**

(a) There is no evidence to make a recommendation.

(b) There is no evidence to make a recommendation.
### Draft 2 - Recommendation based on evidence and clinical expertise (done by Key contacts):

There is no evidence to make a recommendation.

### Draft 3 - Recommendation based on evidence and clinical expertise (done by GDG):

No research to form an evidence-based recommendation. No consensus recommendation will be made.

### References

Clinical question 17a
For women with gambling problems, are psychological or pharmacological interventions more effective than no intervention?

Clinical question 17b
For women with gambling problems, are psychological or pharmacological interventions more effective than any other intervention?

Background
Historically, the prevailing cultural view of gambling is that of a stereotypically masculine activity. However, the introduction of electronic gaming machines (EGMs) in many jurisdictions has significantly altered this male dominated culture. Women tend to participate in a narrower range of gambling activities than men, with preferences for “games of chance”, such as lottery, bingo, and EGMs. Recent international epidemiological prevalence surveys have generally indicated that females are just as likely as males to participate in gambling and that females comprise approximately one-quarter to one-third of pathological gamblers [1]. The British Gambling Prevalence Survey found that men were more likely than women to have gambled in the past 12 months with 71% for males and 65% for females [2]. The California Problem Gambling Prevalence Survey found a 0.7% lifetime prevalence rate of pathological gambling in women and a 1.3% rate for problem gambling [3].

Stereotypically, it is argued that men are attracted to skill-based activities (e.g., racing, casino games) because they are more likely to gamble for non-emotional or positive emotional reasons such as excitement, social reasons, and financial reasons; while women may prefer chance-based activities because they are more likely to gamble to escape aversive emotions, life problems, trauma, and abuse. It is on this basis that men have traditionally been referred to as “action” gamblers, while women have been referred to as “escape” gamblers. There is growing empirical evidence to suggest that gender influences the meaning of gambling and motivations to gamble.

Although there is an apparent faster rate of progression in women, recent findings suggest that factors other than gender (e.g., gambling type, psychosocial factors) may be more important in explaining this telescoping effect [4]. There is also evidence that women are as likely to develop interpersonal and leisure use problems, but less likely to experience financial losses and legal problems consequent to gambling problems. Although gender uniquely contributes to gambling patterns, it is important to note that gambler profiles based on demographic, economic, and health-related factors may be more important in understanding these patterns [5].

Female problem gamblers report comparable or higher rates of mood and anxiety disorders, but comparable or lower rates of alcohol/substance abuse and dependence and personality disorders, than their male counterparts [6]. There may also be gender differences in the degree of psychiatric symptomatology at different levels of problem gambling severity [6].
In many jurisdictions, women access gambling assistance services at a comparable level to men, with EGMs as the most common problematic form of gambling. Although there is currently little sound research investigating the efficacy of treatment for female problem gambling, there is evidence that cognitive-behavioural therapy (CBT) is effective for women [7-9].

Methods

Study selection criteria

<table>
<thead>
<tr>
<th>Inclusion Criteria</th>
<th>Exclusion Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Participants</strong></td>
<td>Women who present for problem gambling treatment. Any age, ethnicity, gambling type, setting, comorbidity.</td>
</tr>
<tr>
<td></td>
<td>Men who present for problem gambling treatment. People who present to treatment for issues other than problem gambling.</td>
</tr>
<tr>
<td><strong>Intervention</strong></td>
<td>Any psychological intervention or pharmacological intervention</td>
</tr>
<tr>
<td></td>
<td>No intervention</td>
</tr>
<tr>
<td><strong>Comparison</strong></td>
<td>No intervention: Any control condition, including: waitlist control, assessment only, non-gambling related treatment, treatment as usual or placebo. Other intervention: Any other psychological intervention or pharmacological intervention</td>
</tr>
<tr>
<td></td>
<td>No suitable or appropriate comparison group</td>
</tr>
<tr>
<td><strong>Outcome</strong></td>
<td>Gambling behaviour, gambling severity, psychological distress, alcohol or substance use or quality of life</td>
</tr>
<tr>
<td></td>
<td>Outcomes other than gambling behaviour, gambling severity, psychological distress, alcohol or substance use or quality of life</td>
</tr>
</tbody>
</table>

Summary of clinical evidence

*Volume of evidence*

(a) One RCT was identified for inclusion. This RCT was found to have a moderate risk of bias.

(b) No RCTs were identified for inclusion.

*Consistency of studies*

(a) This study compared individually administered CBT vs. group administered CBT vs. a waitlist control group.
**Consistency of results**

(a) Significant differences were found between the two CBT treatment groups and the control condition in gambling behaviour and psychological distress.

**Draft recommendation**

**Draft 1 - Recommendation based on evidence (done by Evidence Officer):**

(a) There is insufficient evidence to make a recommendation based on evidence alone.

(b) There is no evidence to make a recommendation.

**Draft 2 - Recommendation based on evidence and clinical expertise (done by Key contacts):**

There is insufficient evidence to make a recommendation.

**Draft 3 - Recommendation based on evidence and clinical expertise (done by GDG):**

There is insufficient evidence to make a recommendation based on evidence alone. No consensus recommendation will be made.

**Clinical impact statement**

Choose from:

NA

**Explanation:**
Implementation of the recommendation

Please indicate yes or no to the following questions. Where the answer is yes please provide explanatory information about this. This information will be used to develop the implementation plan for the guidelines.

Will this recommendation result in changes in usual care? NA

Are there any resource implications associated with implementing this recommendation? NA

Will the implementation of this recommendation require changes in the way care is currently organised? NA

Are the guideline development group aware of any barriers to the implementation of this recommendation? NA

Clinical evidence

Volume of evidence

One RCT was identified for inclusion. One RCT with a moderate risk of bias compared individually administered CBT with group administered CBT and with a waitlist control [8].

Consistency of studies

This study assessed gambling behaviour and psychological distress. Gambling severity, alcohol or substance use and quality of life were not addressed. Treatment duration was 12 sessions with up to 6 months follow up.

Consistency of results

Significant differences were found between the two CBT treatment groups and the control condition in gambling behaviour and most psychological distress measures. However, no significant differences were found between group CBT and the waitlist control in several of the psychological functioning measures [8].

Generalisability

The evidence is not directly generalisable to the target population but could be sensibly applied.

- The study was conducted in Australia, on a sample of female problem gamblers with a primary gambling modality of electronic gaming machines, with a mean age of 43.47.

Applicability

The evidence is probably applicable to the Australian health care context with some caveats.
Discussion about evidence review findings

Findings
Evidence from a RCT with a moderate risk of bias found significant differences between the individual CBT treatment and the control group on all gambling behaviour measures, including, gambling frequency, gambling duration, money inserted and expenditure. Significant differences between the individual CBT treatment and the control group were found on all psychological functioning measures, including, depression, state and trait anxiety and self-esteem. Significant differences were found between the group CBT treatment and the control group on all gambling behaviour measures. Significant differences between the group CBT treatment and the control group were found for the depression and trait anxiety measures, but not for the state anxiety and self-esteem measures [8].

Population subgroups
No subgroup analysis was performed.

Outcomes
Where possible, the study used validated measures to collect their outcome data, with gambling diary records used to measure the gambling behaviour outcomes of frequency of gambling, gambling duration, amount of money inserted and expenditure, and validated tools, such as, the BDI-II, the STAI and the Coopersmith Self-Esteem Inventory to measure psychological functioning [8].

Implications of bias
A study with a moderate risk of bias should be interpreted with caution. The included study was found to have a moderate risk of bias due to a lack of blinding of the outcome assessors and not reporting whether the study had sufficient power.

Usability of the evidence
The evidence from this study is applicable to the Australian health care context with few caveats.

References


Clinical question 18a
For men with gambling problems, are psychological or pharmacological interventions more effective than no intervention?

Clinical question 18b
For men with gambling problems, are psychological or pharmacological interventions more effective than any other intervention?

Background
Historically, the prevailing cultural view of gambling is that of a stereotypically masculine activity. Although the introduction of electronic gaming machines (EGMs) in many jurisdictions has significantly altered this male dominated culture, male gender remains a significant risk factor for the development of frequent gambling and gambling problems [1, 2]. Moreover, studies indicate that the heritability of problem gambling is stronger for male offspring [3]. Recent international epidemiological prevalence surveys have generally indicated that males still comprise approximately two-thirds to three-quarters of pathological gamblers [4]. The California Problem Gambling Prevalence Survey found a 2.3% lifetime prevalence rate of pathological gambling and a 3.1% rate for problem gambling, in men [5].

Men tend to participate in a broader range of gambling activities than women, with preferences for “games of skill”, such as racing and casino games. Stereotypically, it is argued that men are attracted to these activities because they are more likely to gamble for non-emotional or positive emotional reasons such as excitement, social reasons, and financial reasons; while women may prefer chance-based activities because they are more likely to gamble to escape aversive emotions, life problems, trauma, and abuse. It is on this basis that men have traditionally been referred to as “action” gamblers, while women have been referred to as “escape” gamblers. There is growing empirical evidence to suggest that gender influences the meaning of gambling and motivations to gamble.

There is some evidence that although men and women are as likely to develop interpersonal and leisure use problems, men are more likely to experience financial losses and legal problems consequent to gambling problems. Male problem gamblers also report comparable or higher rates of alcohol/substance abuse and dependence and personality disorders, but comparable or lower rates of mood and anxiety disorders, than their female counterparts [6].

In many jurisdictions, men access gambling assistance services at higher or comparable levels to women, with EGMs as the most common problematic form of gambling [7]. Men have been over-represented in treatment outcomes studies for gambling problems. Interestingly, however, most of the group-design studies have evaluated the efficacy of
treatment on mixed gender samples and few have conducted gender analyses to elicit the specific treatment response of male pathological gamblers.

Methods

Study selection criteria

<table>
<thead>
<tr>
<th>Participants</th>
<th>Inclusion Criteria</th>
<th>Exclusion Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Any age, ethnicity, gambling type, setting, comorbidity.</td>
<td>People who present to treatment for issues other than problem gambling.</td>
</tr>
<tr>
<td>Intervention</td>
<td>Any psychological intervention or pharmacological intervention</td>
<td>No intervention</td>
</tr>
<tr>
<td>Comparison</td>
<td>No intervention: Any control condition, including: waitlist control, assessment only, non-gambling related treatment, treatment as usual or placebo. Other intervention: Any other psychological intervention or pharmacological intervention</td>
<td>No suitable or appropriate comparison group</td>
</tr>
<tr>
<td>Outcome</td>
<td>Gambling behaviour, gambling severity, psychological distress, alcohol or substance use or quality of life</td>
<td>Outcomes other than gambling behaviour, gambling severity, psychological distress, alcohol or substance use or quality of life</td>
</tr>
</tbody>
</table>

Summary of clinical evidence

Volume of evidence
(a) Two RCTs were identified for inclusion, one of which was a crossover trial. Both of these studies were found to have a high risk of bias.
(b) Two RCTs were identified for inclusion. Both of these studies were found to have a high risk of bias.

Consistency of studies
(a) Different comparisons were addressed by these studies:
  • One RCT compared CBT vs. a waitlist control
  • One RCT compared the antidepressant fluvoxamine vs. placebo
(b) Different comparisons were addressed by these studies:

- One RCT compared the anticonvulsant topiramate vs. the antidepressant fluvoxamine
- One RCT compared the antidepressant bupropion vs. the opioid antagonist naltrexone.

**Consistency of results**

(a) One crossover RCT found no significant differences in gambling severity, in men, when comparing the antidepressant fluvoxamine with placebo, but did find differences in clinician rated symptom improvement during the second phase of the study only. One RCT found significant differences in gambling severity and gambling behaviours, in men, when comparing CBT with a waitlist control.

(b) One RCT found no differences between the anticonvulsant topiramate and the antidepressant fluvoxamine in reducing gambling severity in men. One RCT found that both the antidepressant bupropion and the opioid antagonist naltrexone were effective in reducing changes in clinician rated symptom improvement, in men, but there were no significant differences between the groups in gambling severity or psychological distress.

**Draft recommendation**

**Draft 1 - Recommendation based on evidence (done by Evidence Officer):**

(a) There is insufficient evidence to make a recommendation based on evidence alone.

(b) There is insufficient evidence to make a recommendation based on evidence alone.

**Draft 2 - Recommendation based on evidence and clinical expertise (done by Key contacts):**

There is insufficient evidence to make a recommendation.
Draft 3 - Recommendation based on evidence and clinical expertise (done by GDG):

There is insufficient evidence to make a recommendation based on evidence alone. No consensus recommendation will be made.

Clinical impact statement

Choose from:
NA

Explanation:

Implementation of the recommendation.

Please indicate yes or no to the following questions. Where the answer is yes please provide explanatory information about this. This information will be used to develop the implementation plan for the guidelines.

Will this recommendation result in changes in usual care? NA

Are there any resource implications associated with implementing this recommendation? NA

Will the implementation of this recommendation require changes in the way care is currently organised? NA

Are the guideline development group aware of any barriers to the implementation of this recommendation? NA

Clinical evidence

Volume of evidence

(a) Two studies were identified for inclusion:

- One crossover RCT with a high risk of bias that compared the antidepressant fluvoxamine with placebo, in a male only sample [10].
• One RCT with a high risk of bias that compared individually administered CBT with a waitlist control, in a male only sample [11].

(b) Two studies were identified for inclusion:
• One RCT with a high risk of bias that compared the anticonvulsant topiramate with the antidepressant fluvoxamine, in a male only sample [8].
• One RCT with a high risk of bias that compared the antidepressant bupropion with the opioid antagonist naltrexone, in a male only sample [9].

**Consistency of studies**

(a)
• Both studies assessed gambling severity [10, 11].
• One of the studies assessed gambling behaviours [11].
• None of the studies assessed psychological distress.
• One study assessed clinician rated symptom improvement [10].
• None of the included studies assessed alcohol or substance use.
• None of the included studies assessed quality of life.
• Treatment duration varied with one study lasting 16 weeks [10] and one study had participants receiving an average of 16.7 hours of CBT depending on the participant’s goals [11].
• One of the studies reported up to a 12 month follow up [11] and the other study reported no follow up [10].

(b)
• Both of the included studies assessed gambling severity [8, 9].
• None of the studies assessed gambling behaviours.
• Two of the studies assessed psychological distress [8, 9].
• Both studies assessed clinician rated symptom improvement [8, 9].
• None of the included studies assessed alcohol or substance use.
• None of the included studies assessed quality of life.
• Treatment duration was consistent across the studies with both studies lasting 12 weeks [8, 9].
• Both studies reported no follow up.

**Consistency of results**

(a)
• No significant differences were found between the fluvoxamine and placebo groups, in gambling severity. Significant differences were found in clinician rated symptom improvement but only in the second phase of the crossover trial [10].
Significant differences were found between CBT and waitlist control groups in gambling severity and gambling behaviours [11].

No significant differences were found in gambling severity for either the topiramate or fluvoxamine groups when comparing baseline and end point scores. Significant differences were found for the topiramate group in clinician rated symptom improvement but not for the fluvoxamine group [8].

Significant differences were found, in clinician rated symptom improvement, for both the bupropion and naltrexone groups. There were no significant differences between the groups in gambling severity [9].

**Generalisability**
(a) The evidence is not directly generalisable but could be sensibly applied to the target population
- One study was conducted in America [10] and one in Canada [11].
- The mean ages of the participants across the studies were fairly consistent.
(b) The evidence is not directly generalisable but could be sensibly applied
- Both of the studies were conducted in Israel [8, 9].
- The mean ages of the participants across the studies were fairly consistent.

**Applicability**
(a) The evidence is probably applicable to the Australian health care context with some caveats.
(b) The evidence is not applicable to the Australian healthcare context

**Discussion about evidence review findings**

**Findings**
(a) Evidence from a crossover RCT with a high risk of bias found no significant differences between the fluvoxamine and placebo groups, in gambling severity. Significant differences were found in clinician rated symptom improvement but only in the second phase of the crossover trial [10].
(b) Evidence from a RCT with a high risk of bias found significant differences between CBT and waitlist control groups in gambling severity and gambling behavior [11].
(b) Evidence from a RCT with a high risk of bias found no significant in gambling severity, for either the topiramate or fluvoxamine groups when comparing baseline and end
point scores. Significant differences were found for the topiramate group in clinician rated symptom improvement but not for the fluvoxamine group. Neither the topiramate or fluvoxamine groups were effective in reducing psychological distress [8].

- Evidence from a RCT with a high risk of bias found significant differences in clinician rated symptom improvement, for both the bupropion and naltrexone groups. There were no significant differences between the groups in gambling severity or psychological distress [9].

**Population subgroups**

(a) None of the studies performed subgroup analysis.
(b) None of the studies performed subgroup analysis.

**Outcomes**

(a)  
- Both of the included studies assessed gambling severity, through the use of tools, such as, PG-YBOCS, SOGS and the DSM criteria [10, 11].
- One of the studies assessed gambling behaviours, including, the number of gambling sessions, number of hours spent gambling and the total amount of money spent on gambling [11].
- One of the studies assessed clinician rated symptom improvement, through the CGI-I [10].
- One of the studies also assessed the participant’s perception of control, desire to gamble and self-efficacy perceptions [11].

(b)  
- Both of the included studies assessed gambling severity using the PG-YBOCS [8, 9].
- Both of the studies assessed psychological distress, using the HRSA and the HRSD [8, 9].
- Both of the studies assessed clinician rated symptom improvement, through the CGI-I [8, 9].

**Implications of bias**

(a) A study with a high risk of bias should be interpreted with caution. The included studies were found to have a high risk of bias due to not reporting the randomisation procedure, whether participants’ allocation to an intervention group was concealed and whether patients, care providers or outcome assessors were blinded [11].

(b) A study with a high risk of bias should be interpreted with caution. The included studies were found to have a high risk of bias due to not reporting the randomisation procedure, whether participants’ allocation to an intervention group was concealed and because patients and investigators were not blinded [8,9]
Usability of the evidence

The evidence from these studies is probably applicable to the Australian health care context with some caveats.

References

Clinical question 19a
For young people with gambling problems, are psychological or pharmacological interventions more effective than no intervention?

Clinical question 19b
For young people with gambling problems, are psychological or pharmacological interventions more effective than any other intervention?

Background
Age restrictions prohibiting children and adolescents from engaging in government regulated gambling activities have been established in most jurisdictions. However, large-scale prevalence studies conducted in many jurisdictions reveal high prevalence rates of gambling participation among adolescents [1]. Meta-analytic studies of adolescent gambling participation have revealed that adolescent gambling rates during the past year range from 52 to 89%, with a median of 73% [2].

Despite high variability reported for adolescent prevalence rates of problem gambling [3], there is consensus that adolescents constitute a high risk population for gambling problems compared to adults [4]. Adolescent prevalence rates of pathological gambling generally range from 4 to 8%, which represents approximately two to four times the prevalence rates generally found in the adult population (e.g. [3]). Moreover, an additional 10–15% of adolescents are described as ‘at risk’, ‘problem’ or ‘potential problem’ gamblers [3, 4].

An emerging literature has evaluated the factors associated with youth problem gambling. Youth problem gambling has been associated with personality factors such as impulsivity [5], excitability [6], disinhibition [6], intensity-seeking [5], and risk-propensity [7]. There is also substantial evidence that problem gambling behaviour amongst adolescents, particularly males, seems to be part of a constellation of other antisocial, risk-taking, and delinquent behaviours [5-9]. These behaviours include alcohol or substance use, physical violence, vandalism, shoplifting, illegal activities, truancy, poor academic achievement, school problems, and problems with the police, conduct problems, and lower school connectedness.

Another important finding from this emerging area of research is that adolescents with gambling-related problems, particularly females, report higher rates of a range of mental health issues such as anxiety, depression, and suicidal ideation and attempts [6-8], and unhelpful coping styles, such as emotion-based, avoidant, and distraction oriented coping styles [5, 7]. Several studies have also found that youth problem gambling is associated with familial factors, such as parental attachment, parental monitoring, sibling risk behaviours, poor perceived familial social support, family problems, and low family connectedness [7].
Despite these findings, age-specific approaches for the treatment of adolescent problem gamblers remain to be adequately evaluated. Although there is some evidence that problem gambling is amenable to intervention [10, 11], age-specific approaches for the treatment of problem gambling require further development and evaluation.

**Methods**

**Study selection criteria**

<table>
<thead>
<tr>
<th></th>
<th>Inclusion Criteria</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Participants</td>
<td>Young people who present for problem gambling treatment; Younger than 25 years of age. Any sex, ethnicity, gambling type, setting, comorbidity.</td>
<td>Older people who present for problem gambling treatment; 25 years or older. People who present to treatment for issues other than problem gambling.</td>
</tr>
<tr>
<td>Intervention</td>
<td>Any psychological intervention or pharmacological intervention.</td>
<td>No intervention</td>
</tr>
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<td>Comparison</td>
<td>No intervention; any control condition, including, wait list control, assessment only, non-gambling related treatment, treatment as usual and placebo. Other intervention: any other psychological or pharmacological intervention.</td>
<td>No suitable or appropriate comparison group</td>
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<td>Outcome</td>
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<td>Outcomes other than gambling behavior, gambling severity, psychological distress, alcohol or substance use or quality of life</td>
</tr>
</tbody>
</table>

**Summary of clinical evidence**

**Volume of evidence**

(a) No studies were identified for inclusion.
(b) No studies were identified for inclusion.

**Draft recommendation**
Draft 1 - Recommendation based on evidence (done by Evidence Officer):

(a) There is no evidence to make a recommendation.

(b) There is no evidence to make a recommendation.

Draft 2 - Recommendation based on evidence and clinical expertise (done by Key contacts):

There is no evidence to make a recommendation.

Draft 3 - Recommendation based on evidence and clinical expertise (done by GDG):

There is no evidence to make a recommendation. A consensus recommendation will not be made.

References


Clinical question 20a
For seniors with gambling problems, are psychological or pharmacological interventions more effective than no intervention?

Clinical question 20b
For seniors with gambling problems, are psychological or pharmacological interventions more effective than any other intervention?

Background

Studies consistently show that gambling is a common social activity among seniors, a trend which appears to cut across many cultures [1, 2]. An Australian survey revealed that most seniors (86%) participated in gambling to some degree during the previous 12 months, a rate similar to the general community (87% in 1996) [3]. Using the Problem Gambling Severity Index of the Canadian Problem Gambling Screen, another Australian study found that the rate of problem gambling in seniors was 0.18% and the rate of moderate risk gambling in seniors was 0.53%, compared to 0.55% and 1.97% for the general population respectively [4]. The California Problem Gambling Prevalence Study found that the rate of problem gambling in seniors was 2.0% and the rate of pathological gambling was 0.5% [5]. Current gambling assessment tools, however, may have questionable validity when used with seniors. Moreover, seniors are often either under-represented in prevalence studies, or findings related to them are amalgamated with the rest of the adult population [6]. Our current understanding of seniors and problem gambling behaviours may therefore be somewhat superficial.

Some senior gamblers are simply gamblers who have aged, whereas others should be considered as ‘late-uptake’ gamblers. Seniors who grew up in an environment where gambling was part of the family or cultural tradition may re-engage in this activity, or augment their involvement in this activity, in late-life when they experience a need to reconnect with their familial/cultural roots (such as late-life relocation of residence), or where there is a desire to preserve certain special memories [1, 7].

Although stigma is a major impediment to help-seeking for problem gamblers in general, it may be felt more acutely among seniors [7, 8], who often feel that at their age they should “know better” [9]. Indeed, this consciousness and perceived standards of conduct suggest that seniors may be most prone to hiding problematic behaviours [8, 10]. Thus, gambling problems may have to be severe before there is willingness to seek formal assistance. Studies have shown that seniors can take as long as 16-17 years before seeking help [11, 12].
Often, at the point of help seeking, seniors may present with complex co-morbidities such as depression, anxiety, malnutrition, and other health detriments, which may mask the underlying gambling problems [8, 2]. Analyses of problem gambling in seniors suggests that most seniors with gambling problems are behaviourally conditioned and emotionally vulnerable [13] and that late-onset problem gambling is more associated with affective issues than problematic family histories or legal issues [14].

Methods

Study selection criteria

<table>
<thead>
<tr>
<th></th>
<th>Inclusion Criteria</th>
<th>Exclusion Criteria</th>
</tr>
</thead>
</table>
| Participants           | Seniors who present for problem gambling treatment; 60 years and over.  
                        | Any sex, ethnicity, gambling type, setting, comorbidity.          | Younger people who present for problem gambling treatment; aged less than 60 years.  
                        |                                                                  | People who present to treatment for issues other than problem gambling.            |
| Intervention           | Any psychological intervention or pharmacological intervention.  | No intervention                                                                     |
| Comparison             | No intervention: any control condition, including, wait list control, assessment only, non-gambling related treatment, treatment as usual and placebo.  
                        | Other intervention: any other psychological or pharmacological intervention. | No suitable or appropriate comparison group                                           |
| Outcome                | Gambling behavior, gambling severity, psychological distress, alcohol or substance use or quality of life | Outcomes other than gambling behavior, gambling severity, psychological distress, alcohol or substance use or quality of life |

Summary of clinical evidence

Volume of evidence
(a) No studies were identified for inclusion.
(b) No studies were identified for inclusion.

Draft recommendation
**Draft 1 - Recommendation based on evidence (done by Evidence Officer):**

(a) There is no evidence to make a recommendation.

(b) There is no evidence to make a recommendation.

**Draft 2 - Recommendation based on evidence and clinical expertise (done by Key contacts):**

There is no evidence to make a recommendation.

**Draft 3 - Recommendation based on evidence and clinical expertise (done by GDG):**

There is no evidence to make a recommendation. No consensus recommendation will be made.

**References**


Clinical question 21a
For people with gambling problems on electronic gaming machines, are psychological or pharmacological interventions more effective than no intervention?

Clinical question 21b
For people with gambling problems on electronic gaming machines, are psychological or pharmacological interventions more effective than any other intervention?

Background
The world gaming machine market comprises a range of different types of electronic gaming machines (EGMs) in terms of technology, winnings, payout rates and the range of bets [1]. These machines can be classified as pachinko machines, amusement machines with prizes and high-intensity gaming machines [1]. While pachinko machines and amusement machines have a low maximum spending per game and a slow speed of play, high-intensity gaming machines are characterised by high maximum spending per game and speed of play. These machines include slot machines, video poker machines, video lottery terminals (VLTs) and ‘poker machines’.

Although lacking definitive evidence from the empirical literature, there is a general consensus that electronic gaming is the most ‘addictive’ form of gambling, in that it contributes more to causing problem gambling than any other form of gambling [2]. In many jurisdictions, EGMs are among the most popular gambling activities [1] and they are associated with a rapid onset of problem gambling relative to other forms of gambling [3]. Using multiple indices, EGM players have among the highest proportion of gambling problems, although other forms of gambling are also associated with high prevalence rates [2]. There is also substantial evidence to suggest that EGM gambling is the predominant form of gambling displayed by problem and pathological gamblers presenting to treatment services in countries across the world.

It has been argued that by exploiting the psychological principles of learning, the situational and structural characteristics of EGMs contribute to the development and maintenance of problem gambling behaviour [1, 4]. Situational characteristics are primarily features of the environment that are external to the gambling activity. Situational characteristics generally associated with EGMs include the availability and accessibility in terms of location, saturation, venue type, opening hours and membership requirements; the use of advertising; consumer incentives; the degree to which they are associated with other interests and facilities; the facilitation of a surreal environment characterised by the absence of clocks and windows; the availability of cash withdrawal facilities; and the availability of alcohol. In contrast, structural characteristics are those inherent in the gambling activity. Structural characteristics of EGMs include rapid playing speeds and payout intervals, multiplier potential in terms of multi-credit and multi-line machines, a
range of machine denominations, multiple coin and note acceptors, credited wins, reinforcing payout schedules and advanced audiovisual effects.

Problem gamblers classified on the basis of their nominated gambling preference differ on various dimensions such as demographic characteristics, gambling behaviour, severity of gambling problems, gambling motivations, biochemistry, consequences of problem gambling behaviour, personality characteristics, comorbid diagnoses and psychiatric difficulties, psychiatric treatment histories, substance use, substance use treatment histories, childhood histories, and family background[6-9]. It has been argued that EGM gamblers begin to gamble to escape from life problems and the high levels of arousal associated with stress are reinterpreted as excitement within the gambling environment [10]. In contrast, horse race and/or casino gamblers gamble to replace the low levels of arousal associated with boredom with an optimal level of arousal in the form of excitement [10]. The recognition of differences between problem gamblers reporting problems on different forms of gambling may have implications for specifically designed interventions. However, this has generally not been addressed by the treatment outcome literature, which is underpinned by the assumptions that all forms of gambling are equivalent and that findings relating to one form of gambling can be generalised to other forms [11].

Methods

Study selection criteria

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<tbody>
<tr>
<td>Participants</td>
<td>People who present for problem gambling treatment with a primary modality of gambling on electronic gaming machines. Any age, sex, ethnicity, setting, comorbidity.</td>
<td>People who present for problem gambling treatment with a primary modality of gambling on a form other than electronic gaming machines. People who present to treatment for issues other than problem gambling.</td>
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<td>Intervention</td>
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**Summary of clinical evidence**

**Volume of evidence**
(a) Two RCTs were identified for inclusion. One RCT was found to have a moderate risk of bias and one RCT was found to have a high risk of bias.
(b) No RCTs were identified for inclusion.

**Consistency of studies**
(a) Two different comparisons were made by these studies:
- One RCT compared individually administered CBT vs. group administered CBT vs. a waitlist control
- One RCT compared the antipsychotic olanzapine vs. placebo.

**Consistency of results**
(a) Significant differences were found in the RCT comparing the two CBT conditions with the control condition, in gambling behaviour and psychological distress. No statistically significant differences were found in the RCT comparing olanzapine with placebo in gambling urges, gambling behaviour or psychological distress.

**Draft recommendation**

**Draft 1 - Recommendation based on evidence (done by Evidence Officer):**
(a) There is insufficient evidence to make a recommendation based on the evidence alone.

(b) There is no evidence to make a recommendation.

**Draft 2 - Recommendation based on evidence and clinical expertise (done by Key contacts):**
There is insufficient evidence to make a recommendation.

<table>
<thead>
<tr>
<th>Draft 3 - Recommendation based on evidence and clinical expertise (done by GDG):</th>
</tr>
</thead>
<tbody>
<tr>
<td>There is insufficient evidence to make a recommendation. No consensus recommendation will be made.</td>
</tr>
</tbody>
</table>

**Clinical impact statement**

Choose from:
NA

**Explanation:**

**Implementation of the recommendation**

Please indicate yes or no to the following questions. Where the answer is yes please provide explanatory information about this. This information will be used to develop the implementation plan for the guidelines.

Will this recommendation result in changes in usual care? NA

Are there any resource implications associated with implementing this recommendation? NA

Will the implementation of this recommendation require changes in the way care is currently organised? NA

Are the guideline development group aware of any barriers to the implementation of this recommendation? NA

**Clinical evidence**

**Volume of evidence**

Two studies were identified for inclusion:
• One RCT with a moderate risk of bias that compared individually administered CBT with group administered CBT and with a waitlist control [12].
• One RCT with a high risk of bias that compared the antipsychotic olanzapine with placebo [13].

Consistency of studies
• Both studies assessed gambling behaviours [12, 13].
• Only one study assessed gambling severity [13].
• Both of the studies assessed psychological distress [12, 13].
• None of the included studies addressed alcohol or substance use.
• None of the included studies addressed quality of life.
• Treatment duration lasted 12 sessions [12] for one of the studies and 7 weeks for the other [13].
• One study reported a 6 month follow up [12] and one reported no follow up [13].

Consistency of results
• Significant differences were found between the two CBT treatment groups and the control condition in gambling behaviour and most psychological distress measures. However, no significant differences were found between group CBT and the waitlist control in several of the psychological functioning measures [12].
• No statistically significant differences were found in the RCT comparing olanzapine with placebo on gambling urges, gambling behaviour and psychological distress. Pathological gamblers in both experimental conditions consistently reported reductions in these outcomes. Olanzapine was not associated with significantly improved outcomes over placebo [13].

Generalisability
The evidence is not directly generalisable to the target population and it is hard to judge whether it is sensible to apply
• One of the studies was conducted in Australia [12] and one was conducted in America [13].
• One of the studies had an all female sample (Dowling 2007) and one had approximately 48% females in its sample [13].
• The mean age of the participants across the two studies was consistent.

Applicability
The evidence is probably applicable to the Australian health care context with some caveats.

Discussion about evidence review findings
Findings

- Evidence from a RCT with a moderate risk of bias found significant differences between the individual CBT treatment and the control group on all gambling behaviour measures, including, gambling frequency, gambling duration, money inserted and expenditure. Significant differences were found between the group CBT treatment and the control group in gambling behaviour. Significant differences between the individual CBT treatment and the control group were found on all psychological functioning measures, including, depression, state and trait anxiety and self-esteem. Significant differences between the group CBT treatment and the control group were found for the depression and trait anxiety measures, but not for the state anxiety and self-esteem measures [12].

- Evidence from a RCT with a high risk of bias found no significant differences between olanzapine and placebo on gambling urges, gambling behaviour and psychological distress. Pathological gamblers in both experimental conditions consistently reported reductions in these outcomes. Olanzapine was not associated with significantly improved outcomes over placebo [13].

Population subgroups
No subgroup analysis was performed.

Outcomes

- One of the studies used validated measures to collect their outcome data, with gambling diary records used to measure the gambling behaviour outcomes and validated tools, such as, the BDI-II, the STAI and the Coopersmith Self-Esteem Inventory to measure psychological functioning [12].

- The other RCT, however, used measures that may not have been sensitive or specific enough to detect the effects of olanzapine [13]. This study utilised outcome instruments that have been used by clinicians that treat pathological gamblers along with tracking gambling behaviours. Outcome measures used in other pharmacological trials of pathological gamblers, such as the Pathological Gambling Yale-Brown Obsessive Compulsive Scale (PG-YBOCS), or the Gambling Symptom Assessment Scale (G-SAS) were not selected for use in this study because the study was completed before their use increased in clinical trials. This suggests that rather than basing their choice of outcome measure on the psychometric properties of the instruments, the decision was determined by the amount of times the instruments had been reported to be used in other studies which does not seem appropriate. The tools used were the Brecksville Gambling Craving Scale, Desire to Gamble Scale, CGI-I and a Gambling Behaviour Diary to measure gambling symptoms and behaviours and
the Brief Psychiatric Rating Scale, BDI, HAM-D, HAM-A and the Barratt Impulsiveness Scale were used to assess psychological functioning.

**Implications of bias**
A study with a moderate or high risk of bias should be interpreted with caution. The included studies were found to have a moderate or high risk of bias for various reasons, mainly not reporting the randomisation procedure and whether allocation was concealed [13] as well as not blinding the outcome assessors [12].

**Usability of the evidence**
The evidence from these studies is applicable to the Australian health care context with few caveats.

**References**
Pharmacology, biochemistry, and behavior. [Controlled Clinical Trial. Journal Article]. 2008 May;89(3):298-303.
Clinical question 22a
For people with gambling problems on any gambling activity other than electronic gaming machines, are psychological or pharmacological interventions more effective than no intervention?

Clinical question 22b
For people with gambling problems on any gambling activity other than electronic gaming machines, are psychological or pharmacological interventions more effective than any other intervention?

Background
The treatment of problem gambling is complicated by substantial heterogeneity in the clinical presentation of problem gamblers, which is due, in part, to a high comorbidity with other psychiatric disorders. Gambling forms differ on their situational characteristics, which are primarily features of the environment that are external to the gambling activity, and structural characteristics, which are features that are inherent in the gambling activity [1-3]. For example, gambling forms may differ on dimensions such as the timing of the gambling sequence, stake size, accessibility and availability, frequency and amount of payouts, amount of skill involved, subjective experience, level of involvement, presence of non-gambling stimuli and features of the gambling environment [4-6]. They may also differ in the extent to which they are associated with a rapid onset of problem gambling and the proportion of gambling problems among players [3, 5, 7].

Problem gamblers classified on the basis of their nominated gambling preference may also differ on various dimensions such as demographic characteristics, gambling behaviour, severity of gambling problems, gambling motivations, biochemistry, consequences of problem gambling behaviour, personality characteristics, comorbid diagnoses and psychiatric difficulties, psychiatric treatment histories, substance use, substance use treatment histories, childhood histories, and family background [6, 8-10]. It has been argued that horse race and/or casino gamblers gamble to replace the low levels of arousal associated with boredom with an optimal level of arousal in the form of excitement [11]. In contrast, EGM gamblers begin to gamble to escape from life problems and the high levels of arousal associated with stress are reinterpreted as excitement within the gambling environment [11].

The recognition of differences between gambling forms and problem gamblers reporting problems on different forms of gambling may have implications for specifically designed interventions. However, this has generally not been addressed by the treatment outcome literature, which is underpinned by the assumptions that all forms of gambling are equivalent and that findings relating to one form of gambling can be generalised to other forms [4].
**Methods**

**Study selection criteria**

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**Summary of clinical evidence**

**Volume of evidence**
(a) No RCTs were identified for inclusion.
(b) No RCTs were identified for inclusion.

**Draft recommendation**

**Draft 1 - Recommendation based on evidence (done by Evidence Officer):**
(a) There is no evidence to make a recommendation.
(b) There is no evidence to make a recommendation.

Draft 2 - Recommendation based on evidence and clinical expertise (done by Key contacts):

There is no evidence to make a recommendation.

Draft 3 - Recommendation based on evidence and clinical expertise (done by GDG):

There is no evidence to make a recommendation. No consensus recommendation will be made.

References