Australian Government
National Health and Medical Research Council
N H M R C

Consensus-Based Clinical Practice Guideline

FOR THE MANAGEMENT OF VOLATILE SUBSTANCE USE IN AUSTRALIA

2011

APPENDICES

Working to build a healthy Australia

Consensus-Based Clinical Practice Guideline

FOR THE MANAGEMENT OF VOLATILE SUBSTANCE USE IN AUSTRALIA

APPENDICES

ISBN Online: 1864965207

ISBN Online: 1864965215

Published: September 2011

Copies of the appendices can be downloaded from www.nhmrc.gov.au

These guidelines were issued by the Chief Executive Officer of the National Health and Medical Research Council (NHMRC) on 8 August 2011, under Section 7 of the *National Health and Medical Research Council Act 1992*. In issuing these guidelines the NHMRC considers that they meet the NHMRC standard for clinical practice guidelines. This approval is valid for a period of five years.

Suggested citation

National Health and Medical Research Council. *Consensus-based clinical practice guideline for the management of volatile substance use in Australia*. Melbourne: National Health and Medical Research Council; 2011.

Contact:

National Health and Medical Research Council
Level 1
16 Marcus Clarke Street
Canberra ACT 2601
GPO Box 1421
Canberra ACT 2601

Ph: 61 2 6217 9000
Fax: 61 2 6217 9100
Email: nhmrc@nhmrc.gov.au

NHMRC Reference code: CP136

Disclaimer

This document is a general guide to appropriate practice, to be followed subject to the clinician's judgement and patient's preference in each individual case. The guideline is designed to provide information to assist decision-making and is based on the best available evidence at the time of development of this publication.

Table of contents

List of Tables

List of Figures

Appendix A: Volatile Substance Use (VSU) Guideline Development Committee

A.1 Membership of the VSU Guideline Development Committee

Members	Position	Affiliation
CHAIR **Dr Tamara Mackean**	Clinical Associate Professor	Centre for Aboriginal Medical and Dental Health University of Western Australia Perth, Western Australia
Dr Sheree Cairney	Cognitive Neuroscientist	Menzies School of Health Research Darwin, Northern Territory
Dr John Coleridge	Emergency Physician and General Practitioner	Alfred Hospital Melbourne, Victoria
Mr Scott Crozier	Consumer Representative	Harm Reduction Victoria Melbourne, Victoria
Dr Jennifer Delima	Remote General Practitioner and Addiction Medicine Visiting Medical Officer	Alice Springs Hospital Northern Territory, Alice Springs
Dr Sonja Hood	Acting Director	Research Implementation Program National Health and Medical Research Council Melbourne, Victoria (until May 2010)
Ms Jenny Kelsall	Consumer Advocate	Harm Reduction Victoria Melbourne, Victoria
Ms Emma Lourey	Research Scientist	Research Implementation Program National Health and Medical Research Council Melbourne, Victoria
Ms Susie Low	Chief Executive Officer	The Mount Theo Program Warlpiri Youth Development Aboriginal Corporation Alice Springs, Northern Territory
Mr Blair McFarland (joint position shared with Tristan Ray)	Co-Manager	Central Australian Youth Link Up Service Alice Springs, Northern Territory
Ms Coralie Ober	Research Fellow	Queensland Alcohol and Drug Research and Education Centre The University of Queensland Brisbane, Queensland
Dr Robert Parker	Director of Psychiatry	Top End Mental Health Service Darwin, Northern Territory
Dr Sue Phillips	Director	Research Implementation Program National Health and Medical Research Council Melbourne, Victoria (from June 2010)
Mr Tristan Ray (joint position shared with Blair McFarland)	Co-Manager	Central Australian Youth Link Up Service Alice Springs, Northern Territory

...continued

Members	Position	Affiliation
Ms Angela Rizk	Coordinator	Volatile Substances Program Drug and Alcohol Office Government of Western Australia Perth, Western Australia
Ms Jan Robertson	Senior Research Officer	School of Public Health, Tropical Medicine and Rehabilitation Sciences James Cook University Cairns, Queensland
Ms Elizabeth Stubbs	Senior Case Manager	Tobacco Alcohol and Other Drugs Services Department of Health and Families Northern Territory Government Darwin, Northern Territory (until January 2011) (When first approached Elizabeth worked as a Volatile Substance Abuse Support Worker at The Council for Aboriginal Alcohol Program Services February 2007 – January 2010)

A.2 Members of the Organising Committee

Members	Position	Affiliation
Dr Maggie Brady	Social Anthropologist	Centre for Aboriginal Economic Policy Research Australian National University Canberra, Australian Capital Territory
Dr Kerryn Coleman	Medical Advisor	Public Health Advisory Unit Office for Aboriginal and Torres Strait Islander Health Executive Office for Aboriginal and Torres Strait Islander Health
Ms Kay Currie	Director (until May 2010)	Guidelines Research Program National Health and Medical Research Council Melbourne, Victoria
Professor Peter d'Abbs	Sociologist	School of Public Health, Tropical Medicine and Rehabilitation Science James Cook University Cairns, Queensland
Ms Emma Lourey	Research Scientist	Research Implementation Program National Health and Medical Research Council Melbourne, Victoria
Dr Sue Phillips	Acting Executive Director	National Health and Medical Research Council Melbourne, Victoria
Prof John Saunders	Clinical Professor	Faculty of Medicine University of Sydney Sydney, New South Wales
Dr John Walker	Director	Substance Use Section Family Health and Wellbeing Branch Office for Aboriginal and Torres Strait Islander Health

A.3 Additional individuals working on the development of the VSU Guideline

Members	Position	Affiliation
Ms Jacqui Cameron	Methodologist	Turning Point Alcohol and Drug Centre Melbourne, Victoria
Ms Amy Goodwin	Project Officer	Research Implementation Program National Health and Medical Research Council Melbourne, Victoria
Ms Jenni Harman	Medical Writer	Meducation Australia Sydney, New South Wales
Dr Nicole Lee	Methodologist	Turning Point Alcohol and Drug Centre Melbourne, Victoria
Dr Sarah MacLean	Methodologist	Turning Point Alcohol and Drug Centre Melbourne, Victoria

A.4 Declaration of interest of the VSU Guideline Development Committee

VSU Guideline Development Committee Members

1. **Dr Jennifer Delima**
   - Participated in the development of the Central Australian Rural Practitioners Association Manual.[1] In particular the section 'Petrol and solvent sniffing'.
   - Provided review and advice on management of the volatile substance affected patient for the Central Australian Rural Practitioners Association Manual.[1]
   - Endorsed the Central Australian Rural Practitioners Association Manual.[1]
2. **Ms Susie Low**
   - Participated in the development of the Warlpiri Youth Development Aboriginal Corporation, Mt Theo Program, Policies and Procedures 2005.
   - Participated in the development of the Northern Territory volatile substance abuse legislation.
   - Holds the position Chief Executive Officer at Warlpiri Youth Development Aboriginal Corporation, Mt Theo Program.
3. **Mr Blair McFarland**
   - Participated in the development of the Central Australian Rural Practitioners Association Manual, gave input towards the VSU response.[2]
   - Major developer of retailers responsible sale of solvents resource and voluntary code of conduct for sale of solvents in the Northern Territory.[3]
   - External manager of Ilpurla Outstation from July – December 2010.
4. **Mr Tristan Ray**
   - Major developer of retailers responsible sale of solvents resource and voluntary code of conduct for sale of solvents in the Northern Territory.[3]
   - External manager of Ilpurla Outstation from July – December 2010.

5. Dr Robert Parker
   - Chair of the Foster Foundation for Drug Rehabilitation Inc, which operates Banyan House (a residential therapeutic community).

Dr Tamara Mackean, Dr Sheree Cairney, Dr John Coleridge, Mr Scott Crozier, Ms Jenny Kelsall, Ms Coralie Ober, Ms Jan Robertson, Ms Angela Rizk, Ms Elizabeth Stubbs had no conflicts to declare.

National Health and Medical Research Council staff

6. Ms Emma Lourey
   - Employed by the NHMRC to produce the VSU guideline.
7. Dr Sonja Hood
   - Employed by the NHMRC to lead the production of the VSU guideline (until May 2010).
8. Dr Sue Phillips
   - Employed by the NHMRC to lead the production of the VSU guideline (from June 2010).
   - Board Member of the Guidelines International Network from November 2009.
   - Member of the Central Australian Rural Practice Association Editorial Board from October 2010 – March 2011.
9. Ms Amy Goodwin
   - Employed by the NHMRC to support the production of the VSU guideline.

Organising Committee members

10. Professor John Saunders
    - Member of the Guideline Development Committee of the World Health Organisation (WHO) Mental Health Global Action Program. Pier Diem and travel costs will be paid for by WHO.
    - Author of Addiction Medicine.[4]
11. Dr John Walker
    - Employed by the Department of Health and Ageing, Office for Aboriginal and Torres Strait Islander Health, the department that funded the NHMRC to produce this guideline.
12. Dr Kerryn Coleman
    - Employed by the Department of Health and Ageing, Office for Aboriginal and Torres Strait Islander Health, the department that funded the NHMRC to produce this guideline.
13. Dr Kay Currie
    - Employed by the NHMRC.
14. Ms Emma Lourey
    - Employed by the NHMRC.
15. Dr Sue Phillips
    - Employed by the NHMRC.

Professor Peter d'Abbs, Dr Maggie Brady had no conflicts to declare.

Methodologists

16. Dr Sarah MacLean
    - Author of *Volatile substance misuse: a review of interventions*.[5]

17. Dr Nicole Lee
    - Involved in the development and preparation of the *Management response to inhalant use: guidelines for the community care and drug and alcohol sector*.[6]

Ms Jacqui Cameron had no conflicts to declare.

Medical writer

18. Ms Jenni Harman
    - Worked as a medical writer on various publications that discuss the use of psychotropic pharmacological agents, including industry-funded projects.

A.5 Terms of Reference of the VSU Guideline Development Committee

Purpose

To produce a systematically developed, usable clinical practice guideline for the management of volatile substance use in metropolitan, rural and remote communities, that will cover the following areas: acute intoxication, managing withdrawal symptoms, case management, comprehensive post-acute assessment, brief intervention, psychological therapies, education, activity and youth development programs, residential rehabilitation, outstation rehabilitation, managing co-existing health conditions, and aftercare.

The role of the VSU Guideline Development Committee

The role of the committee:

- Develop a clinical practice guideline for the management of volatile substance use
- Determine the relevant clinical questions
- Translate the available evidence into recommendations using the NHMRC formal grading system
- Use a formal consensus process to make recommendations where there is disagreement
- Formulate the guideline and summary document
- Ensure that the guideline is a useful and implementable resource for health and medical staff, and that the guideline is relevant to the Australian healthcare context.

Membership of the Guideline Development Committee

The committee will ideally comprise 13–15 members.

Membership of the guideline group should be multidisciplinary compromising clinicians (both content area specialists and generalists) and consumer representatives.

The guideline committee meetings will also included the attendance of technical experts including methodologists, a medical writer and NHMRC staff who have expertise in guideline development. Observers from the Department of Health and Ageing will also be present.

The observers will not be involved in the guideline development process or the formulation of recommendations.

Frequency of meetings

There will be up to six face to face meetings between November 2009 and February 2011.

The VSU Guideline Development Committee will be a working committee and their expertise will be sought in determining the clinical questions and formulating the recommendations.

Deliverables

By the project completion date of June 2011, it is expected that there will be a clinical practice guideline for the management of volatile substance use in Australian health care settings.

A long version of the guideline will be produced which will give details on the background of VSU in Australia, the evidence and recommendations to manage VSU, areas of future research and the guideline development process.

A short, summarised version of the recommendations will be produced for health care workers.

Appendix B: Overview of the Guideline Development Process

In June 2009 the Office for Aboriginal and Torres Strait Islander Health (OATSIH) commissioned the National Health and Medical Research Council (NHMRC) to develop a clinical practice guideline for the management of volatile substance use (VSU).

This guideline has been developed by the NHMRC and draws on the NHMRC's standards and procedures for externally developed guidelines[7] under the direction of a multidisciplinary guideline development committee (Appendix A).

The set-up phase involved convening an organising committee to assist with determining the guideline scope, terms of reference, governance and to also make recommendations as to the different disciplines that should be represented on guideline development committee (Appendix A). The organising committee comprised:

NHMRC staff

Name	Position	Affiliation
Dr Sue Phillips	Director	Research Implementation Program National Health and Medical Research Council
Dr Kay Currie	Director (until February 2010)	Guidelines Research Program National Health and Medical Research Council
Ms Emma Lourey	Assistant Director	Research Implementation Program National Health and Medical Research Council

Department of Health and Ageing staff

Name	Position	Affiliation
Dr John Walker	Director	Substance Use Section Family Health and Wellbeing Branch Office for Aboriginal and Torres Strait Islander Health
Dr Kerryn Coleman	Medical Advisor	Public Health Advisory Unit OATSIH Executive Office for Aboriginal and Torres Strait Islander Health

Individuals with expertise in the area of VSU

Name	Position	Affiliation
Prof John Saunders	Professor	Faculty of Medicine University of Sydney
Prof Peter d'Abbs	Director	Alcohol Education and Rehabilitation Foundation
Dr Maggie Brady (on behalf of **Ms Wendy Casey***)	Fellow	Centre for Aboriginal Economic Policy Research Australian National University

*Wendy Casey is the Manager of the Aboriginal Alcohol and Other Drug Program of the Western Australian Drug and Alcohol Office.

This organising committee only considered matters related to the process of guideline development and did not undertake any direct guideline development.

The organising committee convened for a day-long meeting in early June 2009. Disclosures of interest were obtained from all organising committee members prior to their participation in the committee meeting (Appendix A).

NHMRC staff developed the conflict of interest policy and procedure and the consensus process for decision making independent of the organising committee.

B.1 Appointing the committee

Following the organising committee meeting, a multidisciplinary VSU Guideline Development Committee was established in September 2009 to produce a clinical practice guideline.

The organising committee suggested a list of professional organisations and individuals to contact in regard to membership. Some members were contacted directly due to their specialised expertise in the area of VSU. Organisations were invited to nominate a representative. The following organisations were contacted:

- The Council for Aboriginal Alcohol Program Services
- The Royal Australasian College of Physicians
- The Royal Australian and New Zealand College of Psychiatrists
- Central Australia Youth Link-Up Service
- Drug and Alcohol Office, Government of Western Australia.
- Consumer groups including Health Issues Centre, Consumer Health Forum and Harm Reduction Victoria.

The 16-member VSU Guideline Development Committee was established from the nominations received from the key stakeholder organisations and individual invitations. In total, six face-to-face committee meetings were held over the duration of the guideline development process (November 2009 – February 2011).

B.2 Declaration of interest process

Conflict of interest can be categorised as potential, perceived or actual and relates to a member's interests as well as the interests of their family relating to the guideline topic. Interests may be direct or indirect, pecuniary or non-pecuniary. NHMRC staff developed a conflict of interest policy and procedure and consensus for decision making in accordance with the NHMRC *Members' Responsibility regarding Disclosure of Interest and Confidentiality Document* which applies to all members of the Council of the NHMRC, Principal Committees and Working Committees (in accordance with the requirements of the *National Health and Medical Research Council Act 1992*). In addition, members of this committee were asked to declare specific interests related to guideline development and/or VSU management.

The VSU Guideline Development Committee members were required to declare their relevant interests in writing, prior to appointment. The purpose of declaring conflicts of interest was to avoid any conflict between the private interests of members and their duties as part of the committee (including pecuniary interest or the possibility of other advantage). Committee members were required to update their information as soon as they became aware of any changes to their interests. There was a standing agenda item at each meeting where declarations of interest were called for and updates were recorded in the meeting minutes.

Where committee members were identified as having a significant real or perceived conflict of interest, the Chair could decide that the member either leave the room whilst the specific area they were conflicted in was discussed or the member could remain present in the room but not participate in the discussion, or decision making on the specific area where they were conflicted. There were no instances where this occurred.

All declarations of interest were added to a register of interests (Appendix A.4). This register was made available to the committee throughout the development of the guideline, allowing committee members to take all potential conflicts of interest into consideration during discussions, decision making and formulation of recommendations.

B.3 Steps in the development of an NHMRC clinical practice guideline

The VSU Guideline Development Committee undertook the following steps in developing this guideline (led by the methodologists and supported by the NHMRC project staff):

- developed structured clinical questions
- developed a search strategy and searched the literature
- assessed the eligibility of identified studies
- critically appraised the included studies
- summarised included studies
- assessed the body of evidence and formulated recommendations.

The first committee meeting, held 17 November 2009, focused on finalising the scope and target audience of the guideline. The clinical questions were also formulated.

During the second, third and fourth committee meetings, held 30 and 31 March 2010 and 11 and 12 May 2010, the committee reviewed the evidence derived from the systematic literature search and formulated draft recommendations.

During the fifth committee meeting, held 29 and 30 July 2010, the committee reviewed and finalised the draft recommendations prior to public consultation.

The sixth committee meeting, held 22 and 23 February 2011, reviewed the public consultation feedback and finalised the guideline accordingly.

B.3i Developing structured clinical questions

The VSU Guideline Development Committee formulated a list of clinical questions to be addressed by this guideline during the first meeting. The methodologists assisted the committee in structuring the questions according to the PIPOH formula (Populations, Interventions, Professionals, Outcomes and Health care setting). The full list of clinical questions the guideline addressed is provided in Appendix C.

Inclusion and exclusion criteria for the systematic literature search

Excluded from the systematic literature search were studies on nitrite users, ex-users with acquired brain injury, people with workplace volatile substance exposure, chelation therapy, and population interventions, prevention or diversion. As the clinical practice guideline is intended for use by people with some health care training, teachers, juvenile justice and child protection workers were excluded from the search.

A full list of the inclusion/exclusion criteria is located in Table 5.

B.3ii Developing a search strategy and searching the literature

The following search strategy was developed by the methodologists and was utilised to identify literature relevant to the treatment response for VSU and respond to the clinical questions.

Scoping searches of the literature indicated limited studies concerning treatment interventions for VSU. Thus the systematic search of literature and associated search terms were developed to be broad and comprehensive and extensive grey literature (information that cannot be readily located through standard search engines and is not usually produced by commercial publishing organisations)[8] and hand searching was undertaken in order to retrieve as many citations as possible.

Search terms (Table 4a shaded sections indicated grouped search terms) were developed based on the aims and scope of the review, as reflected by the clinical questions and inclusion and exclusion criteria. Search terms were applied in electronic databases as a combination of MeSH headings, keyword terms and words in the text. The inclusion/exclusion criteria enabled the use of search filters and delimiters in some databases to further focus the search, for example, searching the terms with the exclusion of articles with keywords or headings such as 'nitrite' or 'occupational'.

Groups of key terms were searched, and then systematically combined for exploring the various sets of questions, as outlined in the matrix of search terms (Tables 4a and 4b). Each set (except the final grouping) began with the first two groups of terms; VSU and the population/grouping.

The search strategy was applied to six electronic databases during January-February 2010. The databases searched were: MEDLINE, PsycINFO, CINHAL, Web of Science, Embase and International Bibliography of the Social Sciences (IBSS). In the first instance the search period was not specified (except by the parameters of databases indicated in Table 1).

Table 1: Database search

Database	Accessed via:	Search period (initial screen)	Number of records found	Number of articles screened
MEDLINE	OVIDSP	1996 – present (Feb 2010)	815	468
CINAHL	EBSCO	1982 – 16/02/2010	428	187
PSYCHINFO	OVIDSP	1806 – 18/01/2010	1,134	724
WEB OF SCIENCE	ISI	1960 – 03/01/2010	197	126
EMBASE	OVID	1928 – 19/02/2010	1,236	614
IBSS	OVID	1951 – 03/02/2010	243	155

Further searching for grey literature and to identify additional articles was undertaken via hand-searching and 'pearling' (searching reference lists of included articles for additional relevant studies). This included the use of Google Scholar, the New York Academy of Medicine Library's 'Grey Literature Report', the Cochrane Library website, the National Inhalants Information Service website, Edith Cowan University's Australian Indigenous 'Health Infonet', and requests to international experts and the methodologists' academic and treatment networks. Searching for grey literature resulted in an additional 70 records for screening.

B.3iii Assessing the eligibility of studies

First screen

The methodologists undertook the overall literature search and screening process that is outlined in Figure 1. The citations from all sources were saved into an Endnote XI library and duplicate references were identified and deleted. After removal of duplicates, a total of 2344 references were screened for relevance to the review.

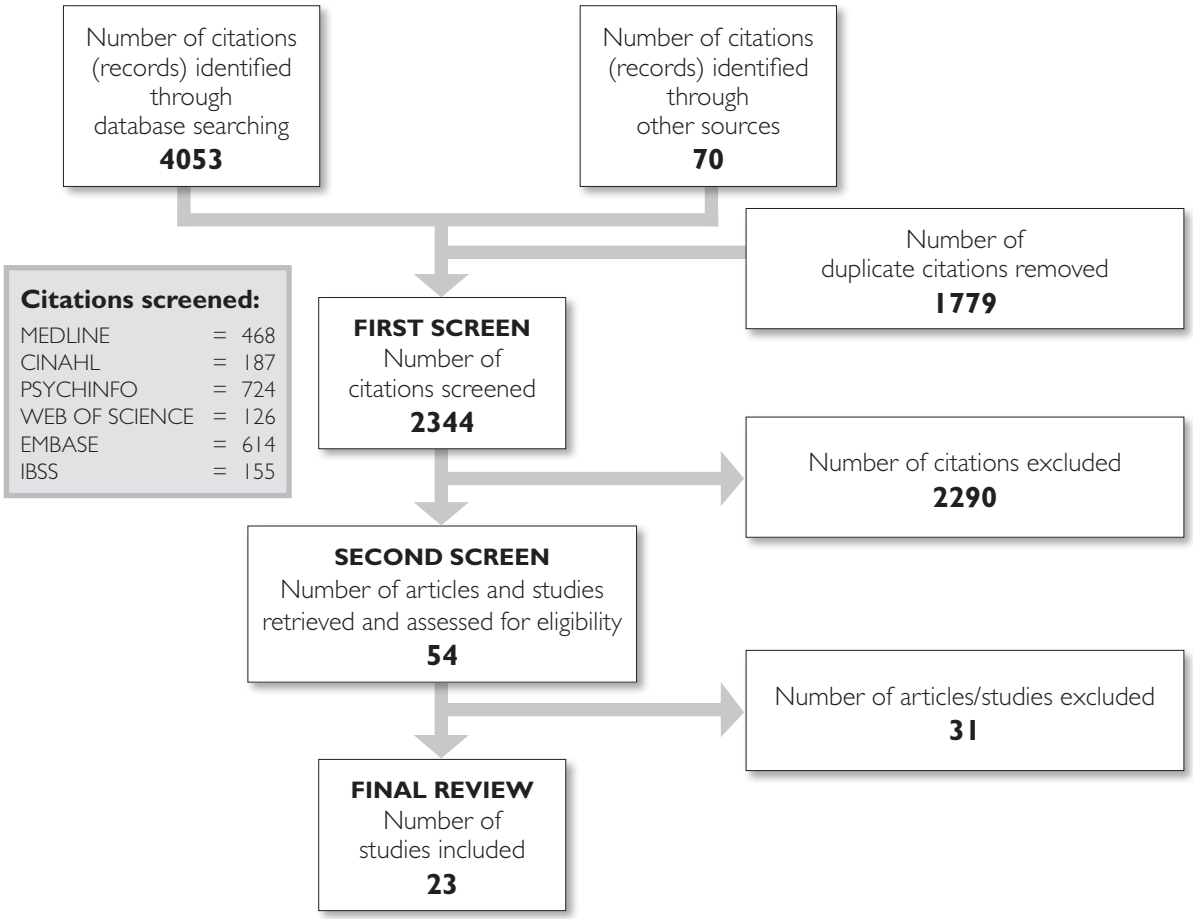
This first screening of reference titles and abstracts excluded a further 2290 articles.

Uncertainty about inclusion status was resolved by group consensus among the methodologists. Despite search terms being highly targeted, and the application of search filters and delimiters where possible, the main reason for exclusion at this stage was that articles were not at all relevant to VSU. Examples included articles about environmental assessment of waste-solvent treatment options, nebulisers or medical inhalers.

Other main reasons for article exclusion were:

- commentary, single case reports, opinion papers
- research reporting on animal trials/testing
- general articles on drugs and/or alcohol, including guidelines and text books
- VSU prevalence studies, studies of correlates of inhalant use, risk factors, descriptions of inhalant users with no intervention or outcomes reported
- interventions and/or settings not within the scope of the clinical questions and review, e.g. prevention interventions and schools based programs.

Figure 1: Process of literature search and retrieval



Second screen

Fifty four references were retrieved for review of the full text. In the final screening stage, two reviewers assessed each article and references were included in the review based on the inclusion criteria or level of applicability to the clinical question area. Uncertainty about inclusion status was resolved by group consensus among the methodologists. There was substantial variability in methodological quality of the available evidence base and references involving controlled trial designs were rare. The first screen included literature reporting on single case studies, these articles were later excluded on second screen on the committee's advice.

Also excluded were: studies from 1980, studies that did not report outcome data, studies describing treatment for oral (not inhaled) use of volatile substances and studies concerned with occupational exposure to solvents, rather than deliberate inhalation.

B.3iv Critically appraising included studies

Final review

The 23 references identified for inclusion in the review were then assessed for their methodological quality and level of evidence using the NHMRC *Levels of evidence and grades for recommendations for developers of guidelines*[9] (Table 2)

Relevant data was extracted for each article using a standardised review form and process developed previously (Table 6). Two reviewers completed this data extraction process and a quality appraisal using the Jadad scale[10,11] (Table 7). Where articles involved statistical analysis quality appraisal was also undertaken by a statistician who was sourced by the methodologists.

In the case of inconsistencies or ambiguity during the data extraction and appraisal process, articles were re-examined and discussed by both the original and additional reviewers for clear consensus.

B.3v Summarising the relevant data

Based on the extraction forms and quality checklists, evidence and summary tables were created for each clinical question (Appendix D). These tables were presented to the VSU Guideline Development Committee.

Table 2: NHMRC Evidence hierarchy: designations of 'levels of evidence' according to type of research question[9]

Level	Intervention	Diagnostic accuracy	Prognosis	Aetiology	Screening Intervention
I	A systematic review of level II studies	A systematic review of level II studies	A systematic review of level II studies	A systematic review of level II studies	A systematic review of level II studies
II	A randomised controlled trial	A study of test accuracy with: an independent, blinded comparison with a valid reference standard, among consecutive persons with a defined clinical presentation	A prospective cohort study	A prospective cohort study	A randomised controlled trial
III-1	A pseudorandomised controlled trial (i.e. alternate allocation or some other method)	A study of test accuracy with: an independent, blinded comparison with a valid reference standard, among non-consecutive persons with a defined clinical presentation	All or none	All or none	A pseudorandomised controlled trial (i.e. alternate allocation or some other method)
III-2	A comparative study with concurrent controls: • non-randomised, experimental trial • cohort study • case-control study • interrupted time series with a control group	A comparison with reference standard that does not meet the criteria required for Level II and III-1 evidence	Analysis of prognostic factors amongst persons in a single arm of a randomised controlled trial	A retrospective cohort study	A comparative study with concurrent controls: • non-randomised, experimental trial • cohort study • case-control study
III-3	A comparative study without concurrent controls: • historical control study • two or more single arm study • interrupted time series without a parallel control group	Diagnostic case-control study	A retrospective cohort study	A case-control study	A comparative study without concurrent controls: • historical control study • two or more single arm study
IV	Case series with either post-test or pre-test/post-test outcomes	Study of diagnostic yield (no reference standard)	Case series, or cohort study of persons at different stages of disease	A cross-sectional study or case series	Case series

B.3vi Assessing the body of evidence and formulating recommendations

At the time of the development there was little evidence available to guide the formulation of recommendations about the clinical management of VSU. The committee found that most available evidence was level IV and could not be used to draw conclusions and formulate recommendations in all but one case. Accordingly, the majority of recommendations in this guideline are based expert opinion and were developed using the consensus process described below. Recommendations developed this way were graded as a consensus-based recommendation (CBR) and are based on what is considered to be best practice by experts in the field.

Although single-case studies were not formally appraised during the evidence synthesis phase of guideline development, the committee initially reviewed selected single-case studies solely for the purpose of generating discussion during the consensus process. After trialling this approach for the first six clinical questions (acute intoxication, withdrawal, assessment, brief interventions and early intervention, education, and case management), the committee concluded that discussion of single case studies was not useful and this approach was discontinued for the remaining sections.

The committee formulated recommendations and/or practice points for all topic areas for which clinical questions were developed, with the exception of early intervention and clinicocultural interventions.*

The committee decided not to develop recommendations on early intervention for these reasons:

- No appropriate published or unpublished evidence on early intervention in the management of VSU was identified in the literature search.
- There was general consensus among committee members that the effects of early intervention are unclear to experts in the field.

A set of clinical questions on clinicocultural interventions was included (Appendix C), as the committee initially intended to formulate separate recommendations in this area. However, after reviewing the evidence and considering appropriate clinicocultural interventions for the management of VSU, the committee determined that all recommendations in the guideline should have culturally appropriate underpinnings. In addition, the committee decided that a preamble on cultural considerations should be developed to highlight the importance of understanding a person's culture when caring for people who use volatile substances.

Table 3 outlines the consensus process the committee used to formulate recommendations for the guideline.

* The committee coined the term 'clinicocultural' for clinical interventions developed for specific cultural groups and which deliberately foreground cultural elements or considerations as integral components of care.

Table 3: Consensus Process

Stages of consensus process	Stage in guideline development
Stage One – Review the evidence During committee meetings two and three (March 2010) and meeting four (May 2010) the methodologists guided the committee through the evidence tables (summarised evidence derived from the systematic literature search) and answered any questions the committee had regarding the body of evidence.	**Meetings 2, 3 and 4** (March and May 2010)
Stage Two – Review the evidence The committee used the NHMRC evidence statement form (Appendix E) to grade the body of evidence. This form was used to review the body of evidence with regard to the volume of evidence, its consistency, the clinical impact, generalisability and applicability. These aspects were graded according to the NHMRC grading criteria.[8]	
Stage Three – Open discussion After the committee reviewed the evidence, the Chair opened discussions, ensuring that advice was sought from all committee members. The committee used the results from the NHMRC evidence statement form to firstly discuss if the body of evidence could be used to make recommendations. If the committee determined the evidence could be used to make recommendations the committee then proceeded to make recommendations based on the summarised body of evidence (evidence-based recommendations). Where evidence was sought but lacking or insufficient to make recommendations on then expert opinion was sought from the committee (consensus-based recommendations). This process is detailed in the consensus flow chart (Figure 2). This flowchart was used by the committee to guide discussions. The committee also developed practice points for areas where recommendations where made outside the scope of the search strategy.	
Stage Four – Formulate draft recommendations Through committee discussions, the first draft of recommendations were formulated and graded using the NHMRC evidence statement form and the consensus flow chart.	
Stage Five – First call for agreement The committee assessed the extent of agreement with the draft recommendation and the Chair called for discussion on any aspects where there was disagreement.	

…continued

Stages of consensus process	Stage in guideline development
Stage Six – Second call for agreement The Chair then called for agreement for a second time. If consensus was gained the committee moved to the next section of the guideline and the medial writer proceeded to draft the recommendations in the guideline manuscript. If consensus was not gained then, depending on the issue, one of the following actions was taken: • A sub-committee (based on the committee member's area of expertise) was formed to convene out of session via teleconference. The sub-committees drafted recommendations, which were circulated to the committee prior to the fifth committee meeting and tabled for discussion at the fifth committee meeting. • Individual committee members with expertise in the relevant area were nominated to work with project staff to draft a recommendation for the committee to consider. The draft recommendations were circulated to the committee prior to the fifth committee meeting and tabled for discussion at the fifth committee meeting. • Project staff were assigned to seek further information. This was provided to the committee prior to the fifth committee meeting and tabled for discussion at the fifth meeting (e.g. advice sought from the Therapeutic Goods Administration on the medications listed in the post-acute section 4.2.3).	**Meetings 2, 3 and 4** (March and May 2010)
Stage Seven – Draft recommendations circulated to committee The guideline manuscript, containing the draft recommendations, was circulated to the committee for review before the fifth committee meeting.	**Out of session** (July 2010)
Stage Eight – Finalise recommendations for public consultation The draft recommendations were reviewed, discussed and finalised for public consultation release at the fifth committee meeting (July 2010). For any recommendations that required further editing during this meeting, the same consensus process was used as described in stages five to seven: • Chair made first call for agreement • Recommendation discussed further and refined • Chair made second call for agreement • Sub-committees, individual committee members and project staff were nominated to follow up areas that could not be finalised during the meeting.	**Meeting 5** (July 2010)
Stage Nine – Sign-off on draft recommendations for public consultation Following discussions at the fifth committee meeting, the final draft of the recommendations and practice points were then circulated to the committee for final comment prior to release for public consultation.	**Out of session** (September 2010)

…continued

Stages of consensus process	Stage in guideline development
Stage Ten – Review public consultation comments and finalise recommendations After the public consultation period (Appendix Bviii) closed and the responses were collated, the committee met for the final time to review and consider the comments. For any recommendations that required further discussion, the same consensus process described in stages five to seven was used: • Chair made first call for discussion and agreement • Recommendation discussed further and refined • Chair made second call for agreement	**Meeting 6** (February 2011)
Stage Eleven – Sign-off on final recommendations Following discussions at the sixth committee meeting, the final draft of the recommendations and practice points were circulated to the committee for final comment.	**Out of session** (March 2011)

For each evidence-based recommendation (EBR), supporting references are listed and the grade of recommendation is indicated according to the NHMRC *Levels of evidence and grades for recommendations for developers of guidelines*.[9]

Grade	Description
A	Body of evidence can be trusted to guide practice
B	Body of evidence can be trusted to guide practice in most situations
C	Body of evidence provides some support for recommendation(s) but care should be taken in its application
D	Body of evidence is weak and recommendation must be applied with caution

Recommendations made in the absence of quality evidence (where a systematic review of the evidence was conducted as part of the search strategy) are clearly labelled as consensus-based recommendations (CBR). Any further recommendations included in the guideline where the subject matter is outside of the scope of search strategy are clearly labelled as practice points (PP).

Abbreviation	Type of recommendation
EBR	Evidence-based recommendation
CBR	Consensus-based recommendations
PP	Practice point

B.3vii Targeted consultation

Prior to the draft guideline being released for public consultation, some sections of the guideline underwent targeted consultation. The 'ethical and cultural considerations' section was reviewed by the Chair of the NHMRC Australian Health Ethics Committee, Dr Sandra Hacker. Additionally, Professor Wendy Rogers, Macquarie University, was contracted to review the section on 'Ethical principles when caring for people who use volatile substances'. Advice was sought from the Therapeutic Goods Administration on the indications for the medications listed in the 'Managing acute intoxication' section. The Australian Government Solicitor was contracted to review the 'legal considerations' section of the guideline. Dr Barbara Paterson, Chief Health Officer Northern Territory and NHMRC Council member, also reviewed and commented on the guideline prior to public consultation.

Suggested edits from these consultations were incorporated before the guideline was released for public consultation.

B.3viii Public consultation

The public consultation period on the NHMRC consensus-based clinical practice guideline for the management of volatile substance use in Australila opened on Friday 12 November 2010 and closed on Friday 14 January 2011. The public consultation period was advertised in The Australian Newspaper on Saturday 13 November 2010. The public consultation period was also advertised on the NHMRC Internet and in NHMRC newsletters (Tracker and the National Institute of Clinical Studies Update). Over 300 national stakeholders were notified of the public consultation period via email and mail-out.

Ten submissions were received during the public consultation period.

Organisation Submissions

- Alcohol and Other Drugs Council of Australia
- Queensland Health – Mental Health Alcohol and Other Drugs Directorate
- Re-Solv and Educari
- Northern Territory Department of Health
- Victorian Alcohol and Drug Association
- The Pharmacy Guild of Australia
- Australian Drug Foundation
- Government of South Australia – South Australia Health
- Therapeutic Goods Administration

Individual Submissions

- Dr John Scopel

All submissions were discussed at the sixth guideline development committee meeting held on the 22 and 23 February 2011 and the guideline was edited accordingly. Full details of the submissions and responses are available upon request.

B.3ix Independent clinical expert (peer) and methodological review

As part of the development process both an independent clinical expert review and a methodological review of the guideline was undertaken. The purpose of the independent clinical expert review was to ensure that the content of the guideline reflects the best available evidence and has considered the clinical implications appropriately. The reviewer was selected based on their in-depth knowledge of the subject area and based on having no real or perceived conflicts of interest (e.g. association with the guideline development team and/or funding body).

After the committee reviewed public consultation comments and finalised the guideline independent clinical expert review was conducted on the NHMRC consensus-based clinical practice guideline for the management of volatile substance use in Australila.

A review to verify the methodological process was also undertaken. The purpose of the methodological review is to verify the rigour of the methodology used to develop the guideline including the development of the clinical questions, the search strategy and literature search, assessment of the eligible studies, critical appraisal of included studies, summary of included studies and assessment of the body of evidence and formulation and grading of recommendations and consensus based recommendations.

The guideline was edited accordingly prior to submission to the NHMRC Council for approval.

Table 4a: Search Terms

Search string #1 VSU	Search string #2 Population/ grouping	Search string #3 Treatment	Search string #4 Comorbidity	Search string #5 Other
solvent	misuse	early intervention	comorbidity	assessment
inhalant	use	brief intervention	anti depressant	clinical
volatile substance	abuse	intervention/s	anti psychotic	education
gasoline	pregnancy	treatment/s	dual diagnosis	cultural (specific)
petrol	substance misuse	counselling		activity programs
glue	substance use	narrative therapy		peer support/ programs
	polydrug	family therapy		day programs
	Indigenous	group therapy		life skills
		CBT/ACT		care plans
		residential rehabilitation		treatment plans
		therapeutic community		engagement
		inpatient treatment		retention
		long term rehabilitation		
		sober up/centres		
		withdrawal		
		detoxification		
		case management		

VSU +	
policy	VSU
clinicocultural interventions*	VSU
outstation program	VSU
homeland	VSU
emergency care + medications	VSU
acute care response + medications	VSU
psychiatric care + medications	VSU
first aid	VSU
aftercare	VSU

* To search for clinicocultural interventions the search terms used were: clinicocultural interventions, activity programs, outstation program and homeland.

Table 4b: Guideline topic search strategies

a. MEDLINE, EMBASE, PsycINFO, CINAHL, IBSS and Web of Science
1. exp inhalant abuse/ or exp glue sniffing / or solvents or (solvent* or inhalant* or volatile substance* or gasoline or petrol* or glue*).mp. [mp=title, abstract, heading word, table of contents, key concepts]
2. exp indigenous populations/ exp polydrug abuse/ exp drug abuse/ drug usage (misuse* or use* or abuse* pregnan* or substance misuse* or substance use* or polydrug or indigenous).mp. [mp=title, abstract, heading word, table of contents, key concepts]
3. (early intervention* or brief intervention* or intervention*).mp [mp=title, abstract, heading word, table of contents, key concepts]exp early intervention/ exp treatment/treatment*.mp. mp [mp=title, abstract, heading word, table of contents, key concepts] (counsel* or narrative therapy or family therapy or group therapy or CBT or ACT). mp. [mp=title, abstract, heading word, table of contents, key concepts] exp counselling/exp cognitive behaviour therapy/exp group psychotherapy/family therapy/narrative therapy/ (counsel* or narrative therapy or family therapy or group therapy or CBT or ACT). mp. [mp=title, abstract, heading word, table of contents, key concepts]exp counselling/exp cognitive behaviour therapy/exp group psychotherapy/family therapy/narrative therapy/ (residential rehab* or therapeutic community or inpatient treatment* or long tern rehab* or sober up*).mp [mp=title, abstract, heading word, table of contents, key concepts] therapeutic community/ (withdrawal or detox*).mp [mp=title, abstract, heading word, table of contents, key concepts] detoxification/ or alcohol withdrawal/or drug withdrawal/ exp case management/case management.mp[mp=title, abstract, heading word, table of contents, key concepts]
4. (comorbid* or anti depressant or anti psychotic or dual diagnosis).mp [mp=title, abstract, heading word, table of contents, key concepts]

…continued

a. MEDLINE, EMBASE, PsycINFO, CINAHL, IBSS and Web of Science
5. exp clinical audits/ or treatment effectiveness evaluation/measurement/ or screening/ or screening tests/exp education/(assessment or clinical or education).mp. [mp=title, abstract, heading word, table of contents, key concepts](cultural* specific or activity program* or peer support or day program* or life skills).mp. [mp=title, abstract, heading word, table of contents, key concepts]exp cross cultural treatment/peer counselling/care plan*.mp. [mp=title, abstract, heading word, table of contents, key concepts]treatment plan*.mp. [mp=title, abstract, heading word, table of contents, key concepts]exp treatment planning/ (engagement or retention).mp. [mp=title, abstract, heading word, table of contents, key concepts]exp treatment dropouts/ or treatment compliance/
6. policy, ((emergency* or acute care response or psychiatric care) and medication*).af(emergency care and medication*).af psychiatric care and medication*).af acute care*id. and medications.af. exp policy*id or clinicocultural intervention*.af or activity program*.af. or homeland.af. or first aid. af. or aftercare.af exp policy making/healing centre*.mp. [mp=title, abstract, heading word, table of contents, key concepts] wellness centre*.mp. [mp=title, abstract, heading word, table of contents, key concepts]('healing centre*' or 'wellness centre*').af.
b. Cochrane Database of Systematic Reviews, Database of Abstracts of Reviews of Effects, Cochrane Central Register of Controlled Trials
1. MeSH descriptor volatile substance*
2. MeSH descriptor solvent*
3. MeSH descriptor inhalant*
4. (#1 or #2 or #3)
c. Grey Literature Report, Australian Drug Foundation, National Inhalants Information Service, Drug Policy Alliance
1. volatile substance*
2. solvent*
3. inhalant*

Table 5: Summary of inclusion and exclusion criteria

PIPOH field	Inclusion	Exclusion
Population	• experimental • opportunistic • chronic volatile substance users	• nitrite users • ex-users with acquired brain injury • people with workplace volatile substance (VS) exposure
Intervention	• identification • assessment and diagnosis • early and brief intervention • referral pathways • aftercare • clinicocultural interventions • treatment options for opportunistic users • treatment and rehabilitation options for chronic users • all treatment options	• addressing medical sequelae of VSU • chelation therapy • population level interventions, prevention or diversion
Professionals	People with some basic health care training: • medical practitioners • nurses • Aboriginal health workers • alcohol and other drug worker • allied mental health workers • alcohol and other drug community workers • Ngangkari	People without some basic health care training: • police • teachers • juvenile justice workers • child protection workers
Outcomes	• immediate or short-term measures such as mortality and morbidity • harm and risk reduction measurements • usage measures, such as usage versus no usage and frequency of use • patterns of usage, such as replacing use of a volatile substance with use of a harmful substance/drug • other measures such as quality of life, social functioning, general health status and patient satisfaction • treatment engagement and retention • cultural continuity	
Health care setting	• primary health care services (including Aboriginal health care services) • emergency departments • general practice • alcohol and drug specialty services • mental health services • ambulance or medical retrieval (including aero-medical) • outstations and remote communities	

Table 6: Data extraction form

Researcher:	Initials of researcher performing data extraction:	**Date of data extraction:**	Date completed:
Author/s:	List of authors		
Title:	Title of publication		
Year:	Year of publication		
Publication type:	Journal article, book chapter, discussion paper, report		
Reference/source:	Publication title, volume, page numbers/website address		
Country:	Country where the research was carried out		
Aims/objectives:	Purpose of publication/study as stated by the authors		
Study design:	Description of study method/design e.g. cross-sectional study, qualitative case studies, include description of tools		
Participants/subjects:	Description of participant characteristics e.g. sample no, age, occupation or subjects		
Inclusion/exclusion:	How the participants/subjects were selected		
Setting:	Setting where study was carried out (e.g. hospital) or context of publication		
Intervention:	Details description of the intervention		

Table 7: Quality Checklists[10,11]

RCT checklist – Assessing the validity of RCTs using the Jadad scale

Date:	
Researcher Initials:	
Author/s:	
Title:	
Year:	
Reference/Sources:	
Endnote Reference Nbr:	

CHECKLIST ITEM	YES/NO	COMMENTS
Was the study described randomised?		
Was the study described double-blind?		
Was there a description of withdrawals and drop outs?		

Case-control study checklist

Date:	
Researcher Initials:	
Author/s:	
Title:	
Year:	
Reference/Sources:	
Endnote Reference Nbr:	

CHECKLIST ITEM	YES/NO	COMMENTS
Are the study participants adequately described with descriptive data?		
Age:		
Sex:		
Baseline variables:		
If the study is an assessment of an intervention, is the intervention clearly described, with details of who exactly received it?		
If it is an etiological study were the interdependent and dependent variables adequately measured (that is, was the measurement likely to be valid and reliable)?		
Were they measured in the same way in both case and controls?		
Are the outcome measures used in the study the most relevant ones for answering the research question?		
Are the two groups being compared similar, from the same population, and were they treated similarly within the study?		
If not was any attempt made to control for these differences, either statistically, or by matching?		
Was it successful?		

Single case study checklist

Date:	
Researcher Initials:	
Author/s:	
Title:	
Year:	
Reference/Sources:	
Endnote Reference Nbr:	

CHECKLIST ITEM	YES/NO	COMMENTS
1. Did the paper describe an important clinical problem addressed via a clearly formulated question?		
2. Was a qualitative approach appropriate?		
3. How were the setting and the subjects selected?		
4. What was the researcher's perspective, and has this been taken into account?		
5. What methods did the researcher use for collecting data, and are those described in enough detail?		
6. What methods were used to analyse data, what quality control measures were implemented?		
7. Are the results credible, and if so, are they clinically important?		
8. What conclusions were drawn, and are they justified by the results?		
9. Are the findings of the study transferable to other clinical settings?		

Qualitative studies study checklist

Date:	
Researcher Initials:	
Author/s:	
Title:	
Year:	
Reference/Sources:	
Endnote Reference Nbr:	

CHECKLIST ITEM	COMMENTS
1. How credible are these findings?	
2. How has knowledge or understanding been extended by the research?	
3. How well does the evaluation address its original aims and purpose?	
4. How well is the scope for drawing wider inference explained?	
5. How clear is the basis of evaluative appraisal?	
6. How defensible is the research design?	
7. How well defended are the sample design/target selection of cases/documents?	
8. How well is the eventual sample composition and coverage described?	
9. How well was the data collection carried out?	
10. How well has the approach to, and formulation of, analysis been conveyed?	
11. How well are the contexts of data sources retained and portrayed?	
12. How well has diversity of perspective and content been explored?	
13. How well has the detail, depth and complexity (i.e. the richness) of the data been conveyed?	
14. How clear are the links between data, interpretation and conclusions – i.e. how well can the route to any conclusions be seen?	
15. How clear and coherent is the reporting?	
16. How clear are the assumptions/theoretical perspectives/values that have shaped the form and output of the evaluation?	
17. What evidence is there of attention to ethical issues?	
18. How adequately has the research process been documented?	

Survey appraisal checklist

Date:	
Researcher Initials:	
Author/s:	
Title:	
Year:	
Reference/Sources:	
Endnote Reference Nbr:	

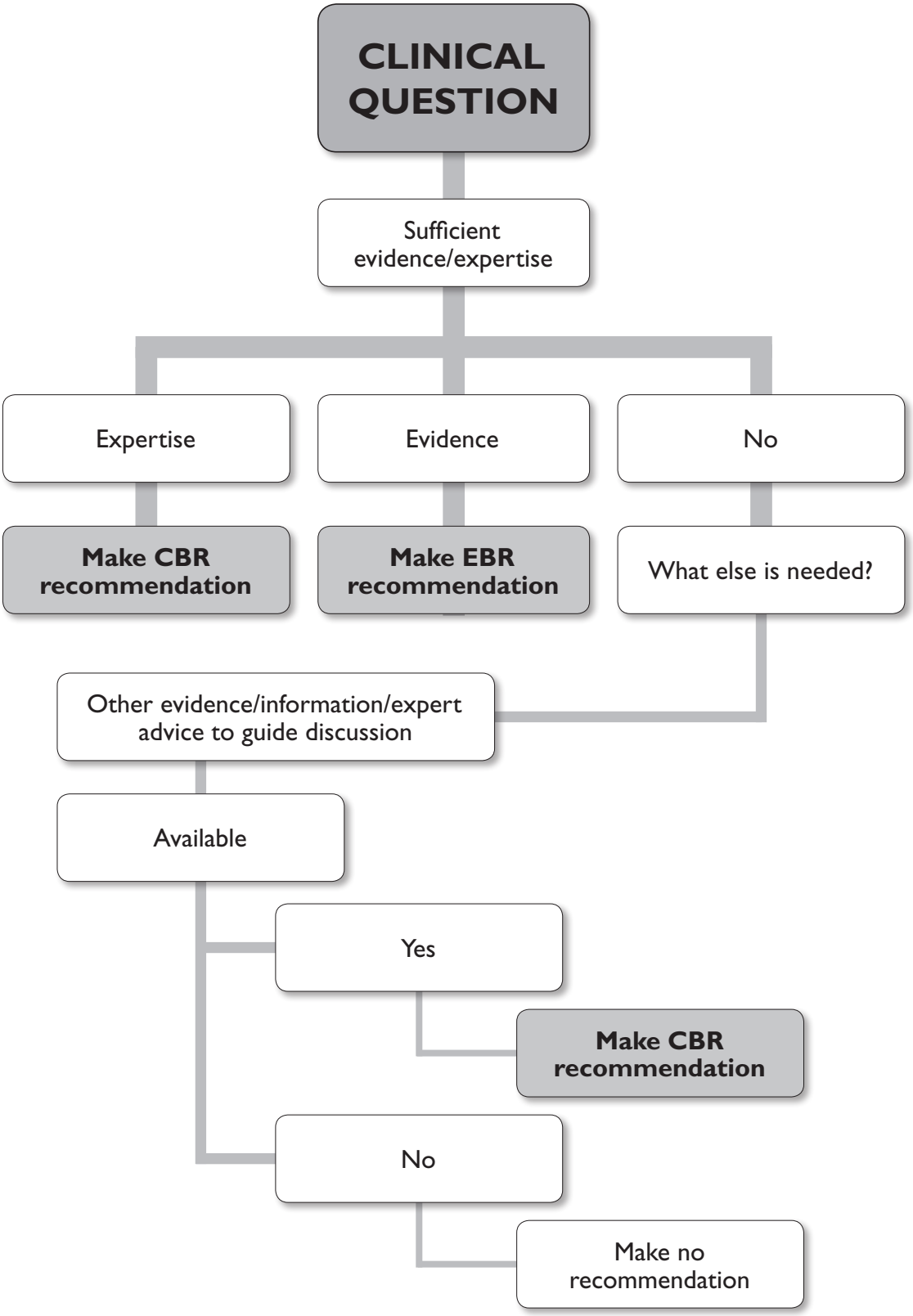
CHECKLIST ITEM	YES/NO	COMMENTS
What question(s) is the study aiming to answer?		
Was the survey specifically designed with this question in mind?		
Do the survey measures used allow this question to be answered clearly, objectively and reliably? (E.g. are they the most appropriate measures for answering the study question?)		
Is the population surveyed clearly described?		
How was the survey carried out? (postal, online, interview) and is the survey method likely to have introduced significant bias?		
What is the response rate and is it high enough to ensure that response bias is not a problem or has response bias been analysed and found to be insignificant?		
Is the denominator reported? (What information is given about the size and type of population from which the sample is drawn?)		
Is the sample surveyed representative? (i.e. representative of the population to whom the results will be generalised?)		
If the study compares different subgroups from the survey, was the data obtained using the same methods from these different groups?		
Is the study large enough? (e.g. sample size justification, or discussion of statistical power)		
Is there an adequate description of the data? (including tables and summary statistics describing the sample and adequate information on results of any analyses)		
Is there evidence of multiple statistical testing, or large numbers of post hoc analyses?		
Are the statistical analyses appropriate?		
Is there evidence of any other biases? (e.g. funding)		

Observational studies study checklist

Date:	
Researcher Initials:	
Author/s:	
Title:	
Year:	
Reference/Sources:	
Endnote Reference Nbr:	

CHECKLIST ITEM	YES/NO	COMMENTS
Are the study participants adequately described with descriptive data?		
Age:		
Sex:		
Baseline variables:		
If the study is an assessment of an intervention, is the intervention clearly described, with details of who exactly received it?		
If it is an etiological study were the interdependent and dependent variables adequately measured (that is, was the measurement likely to be valid and reliable)?		
Are the outcome measures used in the study the most relevant ones for answering the research question?		
If different groups are being compared, are they similar in terms of variables that may affect outcomes (e.g. demographics/socio-demographic characteristics) and were they treated similarly within the study?		
If not was any attempt made to control for these differences, either statistically, or by matching?		
Was it successful?		
If the study followed participants up over time, what was the drop out rate and has this introduced bias?		
Was the study of a duration and size that allowed changes in the outcome of interest to be identified?		
Was outcome assessment blind to exposure status? (e.g. could those measuring outcomes have introduced bias?)		

Figure 2: Consensus process for formulating consensus-based recommendations (CBR)



This page has been intentionally left blank

Appendix C: Clinical Questions

Below is a list of the clinical questions which were addressed within this guideline. These were generated at the first VSU Guideline Development Committee Meeting on 17 November 2009.

1. Acute intoxication
   - 1.1 For *acute behavioural disturbance* in the context of VSU, what elements of emergency care are associated with improved morbidity and mortality outcomes?
   - 1.2 For *acute behavioural disturbance* in the context of VSU, which medications improve morbidity and mortality outcomes/admission to acute psychiatric care?
   - 1.3 For *acute behavioural disturbance* in the context of VSU, does safe containment and monitoring improve morbidity and mortality outcomes?

2. Managing withdrawal symptoms
   - 2.1 What elements of medically managed withdrawal are required for *chronic or acutely affected* volatile substance users?

3. Comprehensive post-acute assessment
   - 3.1 For *occasional* VSU, what elements of assessment are associated with development of effective care plans?
   - 3.2 For *opportunistic and/or polydrug* VSU, what elements of assessment are associated with the development of effective care plans?
   - 3.3 For *chronic* VSU, what elements of assessment are associated with the development of effective care plans?
   - 3.4 For *pregnant* volatile substance users, what elements of assessment are associated with the development of effective care plans?
   - 3.5 For volatile substance users with *comorbid conditions*, what elements of assessment are associated with the development of effective care plans?
   - 3.6 For volatile substance users who are *intellectually and impulse compromised*, what elements of assessment are associated with the development of effective care plans?
   - 3.7 For volatile substance users with *acute behavioural disturbance*, what elements of assessment are associated with the development of effective care plans?
   - 3.8 What assessment procedures are required to identify levels of risk for VSU?

4. Brief intervention
   - 4.1 For *occasional* VSU, is brief or early intervention associated with reduced VSU or harm?
   - 4.2 For *opportunistic and/or polydrug* VSU, is brief or early intervention associated with reduced VSU or harm?
   - 4.3 For *chronic* VSU, is brief or early intervention associated with reduced VSU or harm?
   - 4.4 For *pregnant* volatile substance users, is brief or early intervention associated with reduced VSU or harm?
   - 4.5 For volatile substance users with *comorbid conditions*, is brief or early intervention associated with reduced VSU or harm?
   - 4.6 For volatile substance users who are *intellectually and impulse compromised,* is brief or early intervention associated with reduced VSU or harm?

5. Case management
   - 5.1 For *occasional* VSU, is case management associated with improved outcomes?
   - 5.2 For *opportunistic and/or polydrug* VSU, is case management associated with improved outcomes?
   - 5.3 For *chronic* VSU, is case management associated with improved outcomes?
   - 5.4 For *pregnant* volatile substance uses, is case management associated with improved outcomes?
   - 5.5 For volatile substance users with *comorbid conditions*, is case management associated with improved outcomes?
   - 5.6 For volatile substances who are *intellectually and impulse compromised*, is case management associated with improved outcomes?

6. Education
   - 6.1 For *occasional* VSU, is education on the effects of VSU associated with either reduction in VSU or harm reduction?
   - 6.2 For *opportunistic and/or polydrug* VSU, is education on the effects of VSU associated with either reduction in VSU or harm reduction?
   - 6.3 For *chronic* VSU, is education on the effects of VSU associated with either reduction in VSU or harm reduction?
   - 6.4 For *pregnant* volatile substance users, is education on the effects of VSU associated with either reduction in VSU or harm reduction?
   - 6.5 For volatile substance users with *comorbid conditions*, is education on the effects of VSU associated with either reduction in VSU or harm reduction?
   - 6.6 For volatile substance users who are *intellectually and impulse compromised*, is education on the effects of VSU associated with either reduction in VSU or harm reduction?

7. Clinicocultural interventions
   - 7.1 What clinicocultural interventions are associated with changed outcomes for *occasional* VSU?
   - 7.2 What clinicocultural interventions are associated with changed outcomes for *opportunistic and/or polydrug* VSU?
   - 7.3 What clinicocultural interventions are associated with changed outcomes for *chronic* VSU?
   - 7.4 What clinicocultural interventions are associated with changed outcomes for *pregnant* volatile substance users?
   - 7.5 What clinicocultural interventions are associated with changed outcomes for people with *acute behavioural disturbance* as a result of VSU?
   - 7.6 What clinicocultural interventions are associated with changed outcomes for volatile substance users with *comorbid conditions*?
   - 7.7 What clinicocultural interventions are associated with changed outcomes for volatile substance users who are *intellectually and impulse compromised*?

8. Psychological interventions

8.1 For *occasional* VSU, are any counselling modalities (NT, FT, CBT, GT) associated with changed outcomes?

8.2 For *opportunistic and/or polydrug* VSU, are any counselling modalities (NT, FT, CBT, GT), associated with changed outcomes?

8.3 For *chronic* or mature VSU, are any counselling modalities (NT, FT, CBT, GT) associated with changed outcomes?

8.4 For *pregnant* volatile substance users, are any counselling modalities (NT, FT, CBT, GT) associated with changed outcomes

8.5 For volatile substance users with *comorbid conditions*, are any counselling modalities (NT, FT, CBT, GT) associated with changed outcomes?

8.6 For volatile substance users who are *intellectually and impulse compromised*, are any counselling modalities (NT, FT, CBT, GT) associated with changed outcomes?

(NT – Narrative Therapy, FT – Family Therapy, CBT – Cognitive Behavioural Therapy, GT – Group Therapy)

9. Activity and youth development programs

9.1 For *occasional* VSU, what elements of activity and engagement programs are associated with changed outcomes?

9.2 For *opportunistic and/or polydrug* VSU, what elements of activity and engagement programs are associated with changed outcomes?

9.3 For *chronic* VSU, what elements of activity and engagement programs are associated with changed outcomes?

9.4 For *pregnant* volatile substance users, what elements of activity and engagement programs are associated with changed outcomes?

9.5 For volatile substance users with *comorbid conditions*, what elements of activity and engagement programs are associated with changed outcomes?

9.6 For volatile substance users who are *intellectually and impulse compromised*, what elements of activity and engagement programs are associated with changed outcomes?

10. Residential rehabilitation

10.1 For *opportunistic and/or polydrug* VSU, are residential rehabilitation programs associated with changed outcomes?

10.2 For *chronic* VSU, are residential rehabilitation programs associated with changed outcomes?

10.3 For *pregnant* volatile substance users, are residential rehabilitation programs associated with changed outcomes?

10.4 For volatile substance users with *comorbid conditions*, are residential rehabilitation programs associated with changed outcomes?

10.5 For volatile substance users who are *intellectually and impulse compromised*, are residential rehabilitation programs associated with changed outcomes?

11. Outstation rehabilitation

11.1 For *occasional* VSU, what features of outstation rehabilitation are associated with changed outcomes?

11.2 For *opportunistic and/or polydrug* VSU, what features of outstation rehabilitation are associated with changed outcomes?

11.3 For *chronic* VSU, what features of outstation rehabilitation are associated with changed outcomes?

11.4 For *pregnant* volatile substance users, what features of outstation rehabilitation are associated with changed outcomes?

11.5 For volatile substance users with *comorbid conditions*, what features of outstation rehabilitation are associated with changed outcomes?

11.6 For volatile substance users who are *intellectually and impulse compromised*, what features of outstation rehabilitation are associated with changed outcomes?

12. Managing co-existing health conditions

12.1 For volatile substance users with *comorbid conditions*, are anti-depressive or anti-psychotic medications associated with changed outcomes?

13. Aftercare

13.1 For *opportunistic and/or polydrug* VSU, are any forms of aftercare associated with changed outcomes?

13.2 For *chronic* volatile substance users, are any forms of aftercare associated with changed outcomes?

13.3 For *pregnant* volatile substance users, are any forms of aftercare associated with changed outcomes?

13.4 For volatile substance users with *comorbid conditions*, are any forms of aftercare associated with changed outcomes?

13.5 For volatile substance users who are *intellectually and impulse compromised*, are any forms of aftercare associated with changed outcomes?

Appendix D: Evidence Tables

How to read the evidence summaries, tables and statement forms

Evidence was synthesised to address the 13 sets of clinical questions developed by the committee. Each set of clinical questions concerned a clinical intervention and entailed between one and seven specific sub-questions. Due to the limited evidence in this area the sub-questions are presented in one evidence table, in order to reduce duplication.

At the commencement of the project there were no previous systematic reviews of volatile substance use (VSU) treatment and intervention were available to address issues identified by the committee. Evidence was therefore obtained from a systematic review of literature concerning VSU treatment and intervention. The search included literature published during the period 1980 to December 2009. Grey literature available in the public domain was also included. Parameters for the literature search were derived from inclusion/exclusion criteria developed by the committee utilising the PIPOH clinical tool. Only studies classified as Levels 1–4 study types according to the NHMRC's hierarchy of evidence[12] were included in evidence tables.

Evidence on VSU treatment generally consists of lower level studies (frequently Level IV case series studies). In some cases, information that would generally be recorded in evidence tables is not available within the original studies and cannot be provided. Some studies cited program data indicating client outcomes within a descriptive review of an intervention. However, the method of data collection and analyses used in determining these outcomes were not detailed. Findings from these studies were difficult to interpret with confidence and did not present robust evidence.

Systematic reviews generally entail meta-analysis, often represented as forest plots, to collate and compare statistical effects across individual studies.[10] This enables more precise assessment of the effect of an intervention on identified outcomes. In this systematic review of VSU treatment interventions, no two studies were sufficiently homogenous in design to support meta-analysis.

Evidence summaries

An evidence summary is provided for each set of clinical questions indicating what evidence was available concerning each of the specific clinical questions. For some clinical questions no evidence was identified. Where this occurred, research describing relevant single case studies was summarised in the comments section.

Evidence summaries provide a snapshot of studies addressing each question. For a detailed assessment of each paper's outcomes, quality, and relevance, it is essential to read the evidence tables.

Evidence tables

Evidence summaries are accompanied by evidence tables which provide an analysis of each study that met inclusion criteria, including assessment of study quality.

When reading an evidence table it is common to refer to the highest level of evidence to answer each question and, move through the hierarchy of evidence as required.[12] Studies are presented in the tables in order of level of evidence. When two or more studies were classified at the same level of evidence they are ordered by publication date from most recent to least recent.

Evidence statement forms

The committee used the NHMRC evidence statement form to review the body of available evidence with regard to the volume of evidence and its consistency, clinical impact, generalisability and applicability. The evidence was graded according to NHMRC grading criteria.[9] Evidence tables are accompanied by evidence statement forms to provide information on how the committee made judgments on the basis of the body of evidence relevant to specific research questions.

1a Managing acute intoxication summary table

Clinical questions	References	Comment
1.1. For *acute behavioural disturbance* as a result of VSU what elements of emergency care are associated with improved morbidity and mortality outcomes?	N=0	A single case study Stover-Wall, 2005[13] described treatment of acidosis induced by inhalation during air evacuation of a patient. Intervention comprised 3 L/min of oxygen, intravenous ranitidine 50mg and promethazine 12.5mg, followed by dialysis in hospital.
1.2. For *acute behavioural disturbance* as a result of VSU, which medications improve morbidity and mortality outcomes/ admission to acute psychiatric care?	N=1 Lo Vecchio et al, 2004[14]	LoVecchio et al, 2004[14] was a Level IV retrospective case series study which concluded that aggressive treatment is not required for inhalant toxicity. Five single case studies were identified. Gaynor 2009[15] concluded that it is important to maintain patient dignity, focus on reducing patient arousal, and avoid physical restraint if possible, with midazolam feasible as a chemical restraint. Stover-Wall, 2005[13] described treatment of acidosis induced by inhalation during air evacuation. Katzelnick et al, 1991[16] described treatment of an inhalant user with a learning disability, seizures, and 7-year history of toluene abuse. Treatment consisted of charcoal, Ipecac, and IV fluids with sodium bicarbonate. McCormick et al 1990[17] discussed ethanol infusion as a response to intoxication with carburettor fluid. Administration of undescribed anti-psychotic medications is discussed in Byrne and Kirby 1989.[18]
1.3. For *acute behavioural disturbance* as a result of VSU, does safe containment and monitoring improve morbidity and mortality outcomes?	N= 0	A single case study Gaynor 2009[15] concluded that it is important to maintain patient dignity, focus on reducing patient arousal, and avoid physical restraint if possible, with midazolam feasible as a chemical restraint.

1b Managing acute intoxication evidence table

Reference: author/s, year, title of paper, journal, study purpose	Evidence Level: study quality	Participants	Professionals and Healthcare setting	Intervention	Comparison	Length of follow up	Outcomes	Effect Size: response rates/ cooperation rates, treatment of missing data	Comments	Indigenous involvement: Indigenous ethics approval, researchers, participants
LoVecchio, F., Sawyers, B., Thole, D., Beuler, M. C., Winchell, J., and Curry, S. C. (2004). Outcomes following abuse of methanol-containing carburettor cleaners. *Human and Experimental Toxicology*, 23(10): 473-475. Aim: To conduct a retrospective poison centre chart review over a four-year period (3/98-3/02) of outcomes following methanol-containing carburettor cleaners exposure. Country: USA	Level IV Case series (file audit).	N=33 (N=22 after exclusions) Mean age 17 (14-41) 6 women 16 men.	Professional not identified. Setting was a Poisons Centre.	No actual intervention file audit completed. The file audit indicated: ethanol (n=1) fomepizole (2) IV fluids (15) no treatment (4). (Note: intervention differently described in body and abstract).	No comparison group.	No follow up.	100% neurotoxicity, 64% vomiting, 27% metabolic acidosis. All resolved with little intervention. Concluded aggressive review not required for inhalant toxicity.	Not able to calculate effect size.	The value of this paper is very limited. It has a sample of 22 people (after exclusion) and only reports descriptive statistics with no measure of 'effect'.	Ethics: Not stated. Researchers: Not stated. Participants: Not stated.

Ic Managing acute intoxication NHMRC Evidence Statement Form

Key question(s): Managing acute intoxication Q1.1 – Q1.3		Evidence table ref: 1B
1. Evidence base *(number of studies, level of evidence and risk of bias in the included studies)*		
• The evidence base comprised of one level IV retrospective case series study with 33 participants (22 after exclusion)	A	One or more level I studies with a low risk of bias or several level II studies with a low risk of bias
	B	One or two Level II studies with a low risk of bias or SR/several Level III studies with a low risk of bias
	C	One or two Level III studies with a low risk of bias or Level I or II studies with a moderate risk of bias
	D	Level IV studies or Level I to III studies/SRs with a high risk of bias
2. Consistency *(if only one study was available, rank this component as 'not applicable')*		
• Not applicable (one study only)	A	All studies consistent
	B	Most studies consistent and inconsistency can be explained
	C	Some inconsistency, reflecting genuine uncertainty around question
	D	Evidence is inconsistent
	NA	Not applicable (one study only)
3. Clinical impact *(Indicate in the space below if the study results varied according to some unknown factor (not simply study quality or sample size) and thus the clinical impact of the intervention could not be determined)*		
• The study showed that metabolic disturbances resolved within 24 hours in most cases with supportive care alone (e.g. little intervention such as IV fluids)	A	Very large
	B	Moderate
	C	Slight
	D	Restricted
4. Generalisability *(How well does the body of evidence match the population and clinical settings being targeted by the Guideline?)*		
• This study looked at exposure to methanol containing carburettor cleaners, which was not a significant issue in Australia at the time the guideline was being developed • Mean age 17 years • Gender M: 16 F: 6	A	Evidence directly generalisable to target population
	B	Evidence directly generalisable to target population with some caveats
	C	Evidence not directly generalisable to the target population but could be sensibly applied
	D	Evidence not directly generalisable to target population and hard to judge whether it is sensible to apply
5. Applicability *(Is the body of evidence relevant to the Australian healthcare context in terms of health services/delivery of care and cultural factors?)*		
• Limited as methanol abuse is not a problem in Australia as it is such a rare product and difficult to access	A	Evidence directly applicable to Australian healthcare context
	B	Evidence applicable to Australian healthcare context with few caveats
	C	Evidence probably applicable to Australian healthcare context with some caveats
	D	Evidence not applicable to Australian healthcare context

1c Managing acute intoxication NHMRC Evidence Statement Form *(continued)*

Other factors *(Indicate here any other factors that you took into account when assessing the evidence base (for example, issues that might cause the group to downgrade or upgrade the recommendation))*

EVIDENCE STATEMENT MATRIX

Please summarise the development group's synthesis of the evidence relating to the key question, taking all the above factors into account.

Component	Rating	Description
1. Evidence base	D	
2. Consistency	N/A	
3. Clinical impact	D	
4. Generalisability	D	
5. Applicability	D	

Indicate any dissenting opinions

RECOMMENDATION	GRADE OF RECOMMENDATION	
What recommendation(s) does the guideline development group draw from this evidence? Use action statements where possible.	N/A	

The committee determined the evidence base to be insufficient on which to base evidence-based recommendations (EBRs) for the management of acute intoxication. Accordingly, the committee used expert opinion to develop consensus-based recommendations (CBRs) and practice points (PPs) for the management of acute intoxication.

2a Managing withdrawal symptoms summary table

Clinical questions	References	Comment
2.1 What elements of medically managed withdrawal are required for *chronic or acutely affected* volatile substance users?	N=0	Four articles described single case studies reporting the use of medications for chronic/dependent inhalant use, involving different medications in different settings. Niederhofer, 2007[19] described daily buspirone for gasoline inhalation dependence, leading to a reduction in craving and reduced use. Three studies reported on intervention for co-occurring VSU dependence and mental health disorders/symptoms. Misra et al, 1999[20] described use of risperidone for gasoline and/or carburettor cleaning fluid inhalation-induced psychosis symptoms, observing reduced cravings and other withdrawal symptoms. Duggal et al, 2000[21] advised clinicians to consider diagnosis of primary mood disorder and indicated valproate for dual diagnosis of bipolar disorder and gasoline inhalation dependence. Shen, 2007[22] indicated potential positive effect of the anticonvulsant lamotrigine on cravings and use reduction in a patient with comorbid anxiety and depression diagnosis (VS product not specified). Two studies, Niederhofer, 2007[19] and Shen, 2007[22] referred to ineffectiveness of psychosocial/behavioural therapy and suggest that medication was implicated in abstinence/ reduced use.

3a Comprehensive post-acute assessment summary table

Clinical questions	References	Comment
3.1 For *occasional* VSU, what elements of assessment are associated with development of effective care plans?	N=0	
3.2 For *opportunistic/polydrug* VSU, what elements of assessment are associated with development of effective care plans?	N=0	
3.3 For *chronic* VSU, what elements of assessment are associated with development of effective care plans?	N=0	
3.4 For *pregnant* volatile substance users, what elements of assessment are associated with development of effective care plans?	N=0	
3.5 For volatile substance users with *comorbidity issues*, what elements of assessment are associated with development of effective care plans?	N=0	
3.6 For *intellectually comprised* volatile substance users, what elements of assessment are associated with development of effective care plans?	N=0	
3.7 For volatile substance users with *acute behavioural disturbance*, what elements of assessment are associated with development of effective care plans?	N=0	
3.8 What assessment procedures are required to identify levels of risk for VSU?	N=2 Ridenour et al, 2007[23] Westerberg et al, 1998[24]	Both studies examined the validity of assessment tools. Ridenour et al, 2007[23] was a Level IV tool reliability study which concluded that an adapted version of Substance Abuse Module (SAM) diagnostic assessment produced excellent reliability across VSU abuse criteria sub-types, however for VSU dependence results were poor to good. Westerberg et al, 1998[24] was a Level IV tool reliability study which concluded that Form 90b Tool has excellent reliability for global drug use measures but is less reliable for some categories of drug use including VSU.

3b Comprehensive post-acute assessment evidence table

Reference: author/s, year, title of paper, journal, study purpose	Evidence Level: study quality	Participants	Professionals and Healthcare setting	Intervention	Comparison	Length of follow up	Outcomes	Effect Size: response rates/ cooperation rates, treatment of missing data	Comments	Indigenous involvement: Indigenous ethics approval, researchers, participants
Ridenour, T. A., Bray, B. C., and Cottler, L. B. (2007). Reliability of use, abuse, and dependence of four types of inhalants in adolescents and young adults. *Drug and Alcohol Dependence*, 91(1): 40-49. Aim: This study was conducted to obtain reliability estimates for the new Substance Abuse Module DSM-IV inhalants diagnoses for four types of inhalants: aerosols, gases, nitrites, and solvents as well as different diagnostic configurations of inhalant-related criteria. Country: USA	Level IV Test retest reliability study.	N=162 Male = 66.7% Mean age 20.3yrs (SD=2.4). Community sample which included participants if: an inhalant user, defined as a lifetime use of any type of inhalant >5 times, 15 to 25 years of age. English speaking. High level past/ present drug abuse.	Not stated.	Adapted version of Substance Abuse Module (SAM). Diagnostic Assessment using DSM-IV based diagnostic criteria for subtypes of inhalants- applying to four sub-types (aerosols, gases, nitrites, and solvents). Nitrites were subsequently excluded due to low n. Different interviewers administered the adapted SAM at time 1 and time 2. Interviewers were blind to previous responses. DIP used at 3rd time point if inconsistent responses (this assisted with reliability of measure).	No comparison group.	No follow up stated.	SAM includes questions re: age of onset, quantity and frequency of use, recent occurrence of each dependence/abuse criteria, and experience of withdrawal symptoms. Substance Abuse Module (SAM) which is based on DSM to assess inhalant dependence/abuse. Discrepancy Interview Protocol (DIP) used to query inconsistent responses from time 1 and time 2. Reliability across VSU abuse criteria sub-types was excellent however for VSU dependence reliability was poor to good.	Not stated or applicable to this study.	The study concerns whether SAM is reliable and valid for inhalants. It concludes that SAM has potential to be useful. The generalisation of results is extremely limited due to non-randomised sample of young adults.	Ethics: Yes, approval by 2 University committees. Researchers: Not stated. Participants: Not stated.

3b Comprehensive post-acute assessment evidence table *(continued)*

Reference: author/s, year, title of paper, journal, study purpose	Evidence Level: study quality	Participants	Professionals and Healthcare setting	Intervention	Comparison	Length of follow up	Outcomes	Effect Size: response rates/ cooperation rates, treatment of missing data	Comments	Indigenous involvement: Indigenous ethics approval, researchers, participants
Westerberg, V. S., Tonigan, J., and Miller, W. R. (1998). Reliability of Form 90D: An instrument for quantifying drug use. *Substance Abuse*, 19(4): 179-189. Aim: To question whether the psychometric soundness of the alcohol form (90A) could be retained when querying a broad range of psychoactive substance use. Country: Mexico	Level IV Test retest reliability study.	N = 34 Treatment seeking clients at public outpatient treatment centre. Mean age 36.3 years. 47% female Volunteers seeking AOD treatment.	AOD professional in AOD treatment services.	No specific intervention was used. FORM 90D was tested for reliability for measuring drug use and frequency through self-report. FORM 90D was administered by interviewers with experience of FORM 90A (implies experience of AOD use assessment) randomly assigned at first time, different interviewer at re-test. Urine sample at 1st test only.	No comparison group.	No information on assessment administration time. Recruitment, test and re-test over 3 weeks duration.	Used FORM 90D. Also administered urine drug screen. Tool is a polydrug use assessment instrument using calendar-based timeline and modified timeline approach. Self report of drug use at 2 time points. Urine test compared with self report at 1 time point.	Not applicable.	Tool has excellent reliability for global measures of drug use.	Ethics: Not stated. Researchers: Not stated. Participants: Not stated.

3c Comprehensive post-acute assessment NHMRC Evidence Statement Form

Key question(s): Comprehensive post-acute assessment Q3.1 – Q3.8		Evidence table ref: 3B
1. Evidence base *(number of studies, level of evidence and risk of bias in the included studies)*		
• The evidence base comprised of two level IV studies • Westerberg (1998): test/retest reliability study • Ridenour (2007): reliability study	A	One or more level I studies with a low risk of bias or several level II studies with a low risk of bias
	B	One or two Level II studies with a low risk of bias or SR/several Level III studies with a low risk of bias
	C	One or two Level III studies with a low risk of bias or Level I or II studies with a moderate risk of bias
	D	Level IV studies or Level I to III studies/SRs with a high risk of bias
2. Consistency *(if only one study was available, rank this component as 'not applicable')*		
• Both studies measured the reliability of two different assessment tools • Westerberg (1998): global measure of drug use and frequency. Low reliability for VSU category (due to small sample size) • Ridenour (2007): measure of inhalant use and frequency. Excellent reliability across VSU subtypes (aerosols, gases and solvents). Reliability for VSU dependence was for solvents and aerosols • Rated N/A as neither studies provided relevant outcome data	A	All studies consistent
	B	Most studies consistent and inconsistency can be explained
	C	Some inconsistency, reflecting genuine uncertainty around question
	D	Evidence is inconsistent
	NA	Not applicable (one study only)
3. Clinical impact *(Indicate in the space below if the study results varied according to some unknown factor (not simply study quality or sample size) and thus the clinical impact of the intervention could not be determined)*		
• The clinical impact is not assessable. The two studies examine the reliability of assessments tools and therefore do not contain patient outcome data about the clinical impact of an intervention.	A	Very large
	B	Moderate
	C	Slight
	D	Restricted
4. Generalisability *(How well does the body of evidence match the population and clinical settings being targeted by the Guideline?)*		
• The assessment tools have not been validated for use in an Australian population • Westerberg (1998): Mean age 36.6 yrs and 47% of sample were female. Participants were polydrug users • Ridenour (2007): Mean age 20.3 yrs and 67.7% of sample were male. Participants were inhalant users	A	Evidence directly generalisable to target population
	B	Evidence directly generalisable to target population with some caveats
	C	Evidence not directly generalisable to the target population but could be sensibly applied
	D	Evidence not directly generalisable to target population and hard to judge whether it is sensible to apply
5. Applicability *(Is the body of evidence relevant to the Australian healthcare context in terms of health services/delivery of care and cultural factors?)*		
• Questions in instruments may not apply to the Australian healthcare context • Would need to review the instruments to make a conclusion – out of scope to include in recommendations	A	Evidence directly applicable to Australian healthcare context
	B	Evidence applicable to Australian healthcare context with few caveats
	C	Evidence probably applicable to Australian healthcare context with some caveats
	D	Evidence not applicable to Australian healthcare context

3c Comprehensive post-acute assessment NHMRC Evidence Statement Form*(continued)*

Other factors *(Indicate here any other factors that you took into account when assessing the evidence base (for example, issues that might cause the group to downgrade or upgrade the recommendation))*		
EVIDENCE STATEMENT MATRIX *Please summarise the development group's synthesis of the evidence relating to the key question, taking all the above factors into account.*		
Component	**Rating**	**Description**
1. Evidence base	D	
2. Consistency	N/A	
3. Clinical impact	D	
4. Generalisability	D	
5. Applicability	D	
Indicate any dissenting opinions		

RECOMMENDATION *What recommendation(s) does the guideline development group draw from this evidence? Use action statements where possible.*	**GRADE OF RECOMMENDATION** N/A	
The committee determined the evidence base to be insufficient on which to base evidence-based recommendations (EBRs) about post-acute assessment. Accordingly, the committee used expert opinion to develop consensus-based recommendations (CBRs) and practice points (PPs) about post-acute assessment.		

4a Brief intervention summary table

Clinical questions	References	Comment
4.1 For *occasional* VSU, is brief or early intervention associated with reduced VSU or harm?	N=0	
4.2 For *opportunistic and/or polydrug* VSU, is brief or early intervention associated with reduced VSU or harm?	N=0	
4.3 For *chronic* VSU, is brief or early intervention associated with reduced VSU or harm?	N=0	
4.4 For *pregnant* volatile substance users, is brief or early intervention associated with reduced VSU or harm?	N=0	
4.5 For volatile substance users with *comorbid conditions,* is brief or early intervention associated with reduced VSU or harm?	N=0	
4.6 For volatile substance users who are *intellectually and impulse compromised*, is brief or early intervention associated with reduced VSU or harm?	N=0	

5a Case management summary table

Clinical question	References	Comment
5.1 For *occasional* VSU, is case management associated with improved outcomes? 5.2 For *opportunistic and/or polydrug* VSU, is case management associated with improved outcomes? 5.3 For *chronic* VSU, is case management associated with improved outcomes? 5.4 For *pregnant* volatile substance users, is case management associated with improved outcomes? 5.5 For volatile substance users with *comorbid conditions*, is case management associated with improved outcomes? 5.6 For volatile substance users who are *intellectually and impulse compromised*, is case management associated with improved outcomes?	N=1 Clough et al, 2008[25]	Clough et al, 2008[25] was a Level IV case series study which indicated some positive outcomes of case management for VSU in juvenile justice settings, but involved a small VSU sample. The article does not specify characteristics of volatile substance users within the study sample. Therefore it is not possible to clarify the level of VSU for individuals in the study sample, or whether any were pregnant, experiencing comorbid conditions or intellectually or impulse compromised.

5b Case management evidence table

Reference: author/s, year, title of paper, journal, study purpose	Evidence Level: study quality	Participants	Professionals and Healthcare setting	Intervention	Comparison	Length of follow up	Outcomes	Effect Size: response rates/ cooperation rate, treatment of missing data	Comments	Indigenous involvement: Indigenous ethics approval, researchers, participants
Clough, A. R., Lee, K. K. S., and Conigrave, K. M. (2008). Promising performance of a juvenile justice diversion programme in remote Aboriginal communities, Northern Territory, Australia. *Drug and Alcohol Review*, 27(4): 433-438. Aim: Describes processes and early outcomes of the diversion programme using client assessment records and staff interviews. Country: Australia	Level IV Case Series.	N= 35 Median age = 15 yrs (11-18) Indigenous young residents of remote NT community diverted from criminal justice system, during 2003 to 2006. n=18 were using substances at time of offence – 5 of these using petrol. n=17 with history of substance use including 6 petrol sniffing.	Community Workers – Local Youth Development Unit (YDU) Youth Development setting	Case management community based justice system diversion programme. Programmes include one or more session of AOD counselling, community work/ activities, training/ education and/or restitution. Programme completion time ranged from 2-60 weeks (median = 26 weeks). Local case management provided by Youth Development Unit.	No comparison group.	None Follow up data post-programme completion not available. Local case workers indicated some informally observed positive outcomes.	Outcomes for N=28 89% programme completion rate. 1 re-offender. 8 clients employed or returned to school.	Study is descriptive, outcomes are observational. No effect size can be calculated. Outcomes for N=28 – as 3 didn't continue to diversion and 4 still in programmes.	Some positive outcomes of diversion programme using case management are indicated, but minimal evidence/ evaluation of the programme intervention types and no outcomes specific for VSU.	Ethics: University ethics. Researchers: Not stated. Participants: Aboriginal participant.

5c Case management NHMRC Evidence Statement Form

Key question(s): Case management Q5.1 – Q5.6		Evidence table ref: 5B
1. Evidence base *(number of studies, level of evidence and risk of bias in the included studies)*		
• The evidence base comprised of one level IV case series study with a high risk of bias. N= 35, of which 5 were users of volatile substances	A	One or more level I studies with a low risk of bias or several level II studies with a low risk of bias
	B	One or two Level II studies with a low risk of bias or SR/several Level III studies with a low risk of bias
	C	One or two Level III studies with a low risk of bias or Level I or II studies with a moderate risk of bias
	D	Level IV studies or Level I to III studies/SRs with a high risk of bias
2. Consistency *(if only one study was available, rank this component as 'not applicable')*		
• Not applicable (one study only)	A	All studies consistent
	B	Most studies consistent and inconsistency can be explained
	C	Some inconsistency, reflecting genuine uncertainty around question
	D	Evidence is inconsistent
	NA	Not applicable (one study only)
3. Clinical impact *(Indicate in the space below if the study results varied according to some unknown factor (not simply study quality or sample size) and thus the clinical impact of the intervention could not be determined)*		
• The clinical impact of the intervention is not clear. There is not enough information provided in the paper to determine the effect of the intervention on reduction in use and other positive outcomes (e.g. social functioning)	A	Very large
	B	Moderate
	C	Slight
	D	Restricted
4. Generalisability *(How well does the body of evidence match the population and clinical settings being targeted by the Guideline?)*		
• The age group is generalisable to 11-18 years olds • Generalisable to remote areas	A	Evidence directly generalisable to target population
	B	Evidence directly generalisable to target population with some caveats
• The study population were offenders which may limit generalisability • The study participants are from remote Aboriginal communities	**C**	Evidence not directly generalisable to the target population but could be sensibly applied
	D	Evidence not directly generalisable to target population and hard to judge whether it is sensible to apply
5. Applicability *(Is the body of evidence relevant to the Australian healthcare context in terms of health services/delivery of care and cultural factors?)*		
• Referral to a diversion programs is an option in some Australian settings	A	Evidence directly applicable to Australian healthcare context
	B	Evidence applicable to Australian healthcare context with few caveats
	C	Evidence probably applicable to Australian healthcare context with some caveats
	D	Evidence not applicable to Australian healthcare context

5c Case management NHMRC Evidence Statement Form *(continued)*

Other factors *(Indicate here any other factors that you took into account when assessing the evidence base (for example, issues that might cause the group to downgrade or upgrade the recommendation))*		
EVIDENCE STATEMENT MATRIX *Please summarise the development group's synthesis of the evidence relating to the key question, taking all the above factors into account.*		
Component	**Rating**	**Description**
1. Evidence base	D	
2. Consistency	N/A	
3. Clinical impact	D	
4. Generalisability	C	
5. Applicability	C	
Indicate any dissenting opinions		
RECOMMENDATION *What recommendation(s) does the guideline development group draw from this evidence? Use action statements where possible.*	**GRADE OF RECOMMENDATION** N/A	
The committee determined the evidence base to be insufficient on which to base evidence-based recommendations (EBRs) about case management. Accordingly, the committee used expert opinion to develop consensus-based recommendations (CBRs) and practice points (PPs) about case management.		

6a Health education in VSU management summary table

Clinical questions	References	Comment
6.1 For *occasional* VSU, is education on the effects of VSU associated with either reduction in VSU or harm reduction?	N=0	The research literature provides evidence on outcomes of preventive interventions targeting whole populations, for instance through school-based alcohol and drug education. No studies concerning outcomes associated with provision of education as part of a treatment response to VSU were identified.
6.2 For *opportunistic and/or polydrug* VSU, is education on the effects of VSU associated with either reduction in VSU or harm reduction?	N=0	
6.3 For *chronic* VSU, is education on the effects of VSU associated with either reduction in VSU or harm reduction?	N=0	
6.4 For *pregnant* volatile substance users, is education on the effects of volatile substance users associated with either reduction in VSU or harm reduction?	N=0	
6.5 For volatile substance users with *comorbid conditions*, is education on the effects of VSU associated with either reduction in VSU or harm reduction?	N=0	
6.6 For volatile substance users who are *intellectually and impulse compromised*, is education on the effects of VSU associated with either reduction in VSU or harm reduction?	N=0	

7a Clinicocultural interventions summary table

Clinical question	References	Comment
7.1 What clinicocultural interventions are associated with changed outcomes for *occasional* VSU?	N = 3 Preuss and Napananka Brown, 2006[26] Polsen and Chiauzzi, 2003[27] Bryce et al, 1992[28]	Preuss and Napanangka Brown, 2006[26] was a Level IV qualitative program evaluation including case series data. It suggested that clinicocultural programs were part of an effective multi-faceted approach to addressing petrol sniffing in an Australian Indigenous community. Outcomes not differentiated by level of VSU. Polsen and Chiauzzi, 2003[27] was a conference paper that contained Level IV case series data which provided some indication that cultural activities were part of an effective multimodal response to VSU. Outcomes not differentiated by level of VSU. Bryce et al, 1992[28] included Level IV case series data. It indicated that strategies which included a clinicocultural approach have achieved at least short-term reductions on VSU prevalence in some Indigenous communities. Outcomes not differentiated by level of VSU.
7.2 What clinicocultural interventions are associated with changed outcomes for *opportunistic and/or polydrug* VSU?	N = 3 Preuss and Napananka Brown, 2006[26] Polsen and Chiauzzi, 2003[27] Bryce et al, 1992[28]	Preuss and Napanangka Brown, 2006[26] was a Level IV qualitative program evaluation including case series data. It suggested that clinicocultural programs were part of an effective multi-faceted approach to addressing petrol sniffing in an Australian Indigenous community. Outcomes not differentiated by level of VSU. Polsen and Chiauzzi, 2003[27] was a conference paper that contained Level IV case series data which provided some indication that cultural activities were part of an effective multimodal response to VSU. Outcomes not differentiated by level of VSU. Bryce et al, 1992[28] included Level IV case series data. It indicated that strategies which included a clinicocultural approach have achieved at least short-term reductions on VSU prevalence in some Indigenous communities. Outcomes not differentiated by level of VSU.

…continued

Clinical question	References	Comment
7.3 What clinicocultural interventions are associated with changed outcomes for *chronic* VSU?	N=6 Preuss and Napananka Brown, 2006[26] Youth Solvent Addiction Committee, 2006[29] Coleman et al, 2001[30] Dell et al, 2005[31] Polsen and Chiauzzi, 2003[27] Bryce et al, 1992[28]	Preuss and Napanangka Brown, 2006[26] was a Level IV qualitative program evaluation including case series data. It suggested that clinicocultural programs were part of an effective multi-faceted approach to addressing petrol sniffing in an Australian Indigenous community. Outcomes not differentiated by level of VSU. Youth Solvent Addiction Committee, 2006[29] was an annual report from Canadian solvent abuse treatment centres for Indigenous youth. It contained Level IV case series data on different measures for two services. It provided some positive indication of the effectiveness of clinicocultural residential treatment for Indigenous Canadian VSU however outcome data unavailable for the other 8 centres. Outcomes not differentiated by level of use however the report indicates that clients were chronic VSU. Coleman et al, 2001[30] was a Level IV, pre-post test case series. It suggests poor outcomes from residential drug treatment and aftercare for chronic VSU aged 19-21. Dell et al, 2005[31] contained Level IV pre-post test case series data. Data provided suggested positive outcomes for one service only (no outcome data available for other services). Outcomes not differentiated by level of use however indication that clients were chronic VSU. Polsen and Chiauzzi, 2003[27] was a conference paper that contained Level IV case series data which provided some indication that cultural activities were part of an effective multimodal response to VSU. Outcomes not differentiated by level of VSU. Bryce et al, 1992[28] included Level IV case series data. It indicated that strategies which included a clinicocultural approach have achieved at least short-term reductions on VSU prevalence in some Indigenous communities. Outcomes not differentiated by level of VSU.
7.4 What clinicocultural interventions are associated with changed outcomes for *pregnant* volatile substance users?	N=0	
7.5 What clinicocultural interventions are associated with changed outcomes for people with *acute behavioural disturbance* as a result of VSU?	N=0	

…continued

Clinical question	References	Comment
7.6 What clinicocultural interventions are associated with changed outcomes for volatile substance users with *comorbid conditions*?	N=0	
7.7 What clinicocultural interventions are associated with changed outcomes for volatile substance users who are *intellectually and impulse compromised*?	N=0	

7b Clinicocultural interventions evidence table

Reference: author/s, year, title of paper, journal, study purpose	Evidence Level: study quality	Participants	Professionals and Healthcare setting	Intervention	Comparison	Length of follow up	Outcomes	Effect Size: response rates/ cooperation rate, treatment of missing data	Comments	Indigenous involvement: Indigenous ethics approval, researchers, participants
Preuss, K., and Napanangka Brown, J. (2006). Stopping petrol sniffing in remote Aboriginal Australia: key elements of the Mt Theo Program. *Drug and Alcohol Review,* 25:189-93. Aim: To demonstrate key elements that have contributed to the Mt Theo Program's achievements. Country: Australia	Level IV Qualitative program evaluation including pre-post test case series data. Study findings are credible but outcomes report only on program data. The case evaluation is a narrative account with little detail of sample or outcomes.	Participants not clearly described. Chronic, occasional and experimental young VSU (age not reported) in an NT remote Indigenous community. Number of participants not clearly reported but outcomes state pre -intervention numbers of 70 VSU.	Aboriginal health and youth workers, community members. Outstation and community.	Petrol sniffers were taken to a culturally important place, Mt Theo Outstation, for 1 month. The outstation is residential and entirely Aboriginal run; elders lead activities and provide guidance. Concurrent youth activities program provided in Yuendumu including: sports, discos, film nights, cultural activities.	No comparison group or intervention was reported.	No follow up period was reported.	No outcome measures provided. Number of petrol sniffers reduced from 70 to 0 over 9 year period. Outcomes are reported from data in unpublished program documents.	Quantitative data is not presented to allow analysis of effect size.	Suggests that outstation rehabilitation programs may be a feasible part of a multi-faceted approach to reduced petrol sniffing. The study is a descriptive evaluation, drawing on program reports. Little detail is provided of evaluation methods, participants etc. Assessment of quality of the results is not possible without access to program data.	Ethics: Not stated. Researchers: Indigenous Australians. Participants: Indigenous Australians.

7b Clinicocultural interventions evidence table *(continued)*

Reference: author/s, year, title of paper, journal, study purpose	Evidence Level: study quality	Participants	Professionals and Healthcare setting	Intervention	Comparison	Length of follow up	Outcomes	Effect Size: response rates/ cooperation rate, treatment of missing data	Comments	Indigenous involvement: Indigenous ethics approval, researchers, participants
Youth Solvent Addiction Committee. (2006). *Youth Solvent Addiction Committee Annual Report 2006*. [no place of publication] Youth Solvent Addiction Committee. Aim: Reports on work of committee and 10 First Nation Youth Treatment Centres. Country: Canada	Level IV Program evaluation including pre-post test case series data. This study reports minimal program data and provides no detail of outcome measures, results or study design.	Clients at Nimkee Nupigawagan Health Centre (NNHC): N=27. Age range: 12-17 yrs. Clients at Ka-Na-Chi-Hih Treatment Centre (KNCHC) N=37. Age range: 16-25 yrs.	(Canadian) Aboriginal Health workers, AOD workers and traditional practitioners; First Nation Youth Treatment Centres (specialist solvent abuse treatment services).	Interventions are culturally based; care is provided by traditional practitioners in a residential setting. Interventions included: fasting ceremonies, bi-weekly sweat lodge ceremonies, memorial feasts.	No comparison group was reported. The two centres were not compared to each other as outcomes measured differed across sites.	Follow up relapse rate reported but timeframe and method not stated. Estimated maximum of one year (no further details provided).	Outcomes indicated for two centres only. NNHC: 84% did not relapse with inhalants post-treatment 67% abstinent of 'any substance'. KNCHC: 75% of graduates entered education programs post treatment. No other outcome measures provided.	No effect size or other analysis was reported nor could be calculated from data provided.	Provides some positive indication for the effectiveness of clinicocultural residential treatment for Indigenous Canadian VSU. This is an annual report with very minimal treatment outcome data reported.	Ethics: Not stated. Researchers: Indigenous Canadians. Participants: Indigenous Canadians.

7b Clinicocultural interventions evidence table *(continued)*

Reference: author/s, year, title of paper, journal, study purpose	Evidence Level: study quality	Participants	Professionals and Healthcare setting	Intervention	Comparison	Length of follow up	Outcomes	Effect Size: response rates/ cooperation rate, treatment of missing data	Comments	Indigenous involvement: Indigenous ethics approval, researchers, participants
Dell, C., Dell, D., and Hopkins, C. (2005). Resiliency and holistic inhalant abuse treatment. *Journal of Aboriginal Health*, 2: 1-12. Aim: Describes an approach to treatment termed 'holistic resiliency'. Country: Canada	Level IV Includes pre-post test case series data Low quality study which was a qualitative case series but lacks description of evaluation process, data collection, analysis etc.	Number of participants was not reported. First Nation Canadian young people aged 12-26 years.	Professionals not specified. Healing centres.	A solvent addiction residential treatment, which was a culturally-based program governed by First Nation people using a holistic concept of resilience. Treatment included interaction with family and community. Cultural activities include sweat lodge, fasting, drumming and socials, use of natural medicines and traditional assessments by Elders.	No comparison group was reported.	Six months post treatment.	Outcome data for one service only was reported. High rates of abstinence at follow up, which had increased over one year from 82% to 95%. High and increasing rates of treatment completion: 73%-80%. Other data and outcomes not reported.	No effect size was reported and none can be calculated.	Outcome data provided suggested positive outcomes for one service described. This study lacks detail to evaluate effectiveness of treatment model or the validity of the authors' proposal that adherence to a 'holistic conception of resiliency' has enabled successful residential treatment for young VS users. Also comparable outcomes for other programs utilising the approach are not provided; it may be the case that these services have poorer outcomes.	Ethics: No. Researchers: Indigenous Canadians. Participants: Indigenous Canadians.

7b Clinicocultural interventions evidence table *(continued)*

Reference: author/s, year, title of paper, journal, study purpose	Evidence Level: study quality	Participants	Professionals and Healthcare setting	Intervention	Comparison	Length of follow up	Outcomes	Effect Size: response rates/ cooperation rate, treatment of missing data	Comments	Indigenous involvement: Indigenous ethics approval, researchers, participants
Polsen, M., and Chiauzzi, A. (2003). *Volatile substance use in Mount Isa: Community solutions to a community identified issue,* in *Inhalant Use and Disorder Conference.* Australian Institute of Criminology: Townsville. Aim: Reviews the Mount Isa Volatile Substance Misuse Action Group's work including the Family Healing Program for young VSU. Country: Australia	Level IV Study design not reported, but cites pre-post test case series data. This is a conference presentation with very limited reporting of the sample. Data measures and outcomes not clearly stated.	N=9 Indigenous young people (not clear – but implied for whole sample), aged 10-16 yrs. At least two female participants (gender ratio not clearly stated). Participants were an identified friendship group who used inhalants together and were of concern to community.	Youth workers in multiple settings, youth centre, community.	The 'Family Healing Program' is a 12 week pilot program targeting 'at risk' youth. Interventions included bush camps, family case management, cultural education, life skills and activities and some counselling. Used a 'cultural approach'. Many aspects of the pilot study program were minimally implemented, omitted or adapted due to changing circumstances.	No comparison or control group was reported.	No follow up period was reported but outcomes given in form of an update '18 months on'.	No clear outcome measures reported. Male participants engaged by the program observed to have ceased VSU (not specified but implied >50% of sample). Female participants observed to still be occasional VSU. 6 of 9 participants had very short term re-engagement with primary school education. Males increased participation in representative football.	Quantitative data is not presented to allow analysis of effect size.	This pilot program was one part of a community mobilisation effort that included traders reducing supply, up-skilling in schools and collaboration to develop care pathways. The low quality of methods and reporting make it difficult to draw firm conclusions about the benefits of this program. It provides some indication that recreation and life skill activities may effectively be part of a mixed response to VSU but provides insufficient data to adequately evaluate. It also highlights some of the implementation difficulties with multi-agency and culturally based approaches.	Ethics: Not stated. Researchers: Not stated. Indigenous Participants: Indigenous Australian.

7b Clinicocultural interventions evidence table *(continued)*

Reference: author/s, year, title of paper, journal, study purpose	Evidence Level: study quality	Participants	Professionals and Healthcare setting	Intervention	Comparison	Length of follow up	Outcomes	Effect Size: response rates/ cooperation rate, treatment of missing data	Comments	Indigenous involvement: Indigenous ethics approval, researchers, participants
Coleman, H., Charles, G., and Collins, J. (2001). Inhalant use by Canadian aboriginal youth, *Journal of Child and Adolescent Substance Abuse*, 10:1-20. Aim: To explore predictors of relapse for youth receiving residential culturally-informed treatment for VSU. Country: Canada	Level IV Pre-post test case series. Low quality study with some outcomes that are inconsistently reported. Statistical reporting in other parts of the study included negative betas accompanied by odds ratios greater than one – suggesting incorrect analysis or reporting of the data.	N=78 Mean age: 14yrs; range (7–19). Female n=21 Male n=57. Aboriginal young people presenting to treatment with inhalant abuse over a 2.5 year period. 70% concurrent abuse of other drugs. 91% sniffing gasoline.	Professionals not stated. AOD speciality residential rehabilitation service for first component, followed by treatment within home communities.	Residential VSU treatment program for Aboriginal youth. Intervention based on Aboriginal and non-Aboriginal approach to healing. Provided residential detoxification and included traditional ceremonies, individual, family and group therapy and access to specialist clinical services. Average treatment length was 176.4 days Range 7-423 days.	No comparison group was reported.	Follow up approximately two years post discharge.	55 (83%) of 66 clients for whom follow up data was available left treatment before completion. 56 (71.8%)† of 78 clients relapsed after treatment.	Descriptive results only were reported. No effect sizes were reported or could be calculated from the data.	High levels of early drop out and relapse indicated after residential treatment. Study focused on variables predictive of relapse. Inconsistent reporting of some treatment outcomes.	Ethics: Not stated. Researchers: Not stated. Participants: Indigenous Canadians.

† This percentage is reported as 74% in the abstract.

7b Clinicocultural interventions evidence table *(continued)*

Reference: author/s, year, title of paper, journal, study purpose	Evidence Level: study quality	Participants	Professionals and Healthcare setting	Intervention	Comparison	Length of follow up	Outcomes	Effect Size: response rates/ cooperation rate, treatment of missing data	Comments	Indigenous involvement: Indigenous ethics approval, researchers, participants
Bryce, S., Rowse, T., and Scrimgeour, D. (1992). Evaluating the petrol sniffing prevention programs of the healthy Aboriginal life team (HALT), *Australian and New Zealand Journal of Public Health*, 16: 387–396. Aim: Evaluate HALT – which aimed to strengthen adult Aboriginal authority to address petrol sniffing. Country: Australia	Level IV Descriptive case series. Detail of qualitative methods not reported.	The number of participants not reported. Participants were adults who were residents and ex-residents and some ex-users of remote communities where the HALT program was implemented. Other details of participants not specified. Three communities: 1) Yuendumu 2) Kintore and 3) Nyirrpi.	Community Workers in Aboriginal health care and community settings.	Strengthening family 'networks' and acting in response to community requests/need: 'Family mapping' activities, individual and family counselling, workshops, and included connecting sniffers with relatives by assisting to relocate them and community patrols. Intervention was responsive to community needs and tailored to three communities.	No comparison group reported.	No specific follow up period reported.	Mixed results. The varied interventions of HALT appeared to be associated with short term reduction in sniffing in two communities. Unclear to what degree counselling was used in each community but authors reported a short term positive effect of counselling for some individuals. No effect of HALT program in one region.	No effect size reported or able to be calculated from this data. The interventions and their impact were reported as a qualitative and observed evaluation with no quantitative data.	The evaluation suggests mixed effect in applying clinicocultural intervention in different settings/ communities but indicates that culturally informed approaches are a feasible part of interventions which achieve at least short-term effects in some settings. Counselling in this context indicated to have positive outcomes. This qualitative evaluation of programs is based on interviews and existing data/ reports and while of interest, provides minimal detail regarding sample and data collection methods.	Ethics: Not stated. Researchers: Indigenous Australians. Participants: Indigenous Australians.

7c Clinicocultural intervention NHMRC Evidence Statement Form

Key question(s): Clinicocultural interventions Q7.1 – Q7.7		Evidence table ref: 7B
1. Evidence base *(number of studies, level of evidence and risk of bias in the included studies)*		
The evidence base comprised of: • one level IV case series data • two level IV pre-post test case series • one level IV qualitative program evaluation including pre-post test case series data • one conference paper containing level IV pre-post test case series data • one annual report containing level IV pre-post test case series data	A	One or more level I studies with a low risk of bias or several level II studies with a low risk of bias
	B	One or two Level II studies with a low risk of bias or SR/several Level III studies with a low risk of bias
	C	One or two Level III studies with a low risk of bias or Level I or II studies with a moderate risk of bias
	D	Level IV studies or Level I to III studies/SRs with a high risk of bias
2. Consistency *(if only one study was available, rank this component as 'not applicable')*		
• Overall the body of evidence indicated that a clinicocultural approach to the treatment of VSU is effective when part of a multi-faceted approach • The inconsistencies can be explained in most cases e.g. the length of follow up varied between studies	A	All studies consistent
	B	Most studies consistent and inconsistency can be explained
	C	Some inconsistency, reflecting genuine uncertainty around question
	D	Evidence is inconsistent
	NA	Not applicable (one study only)
3. Clinical impact *(Indicate in the space below if the study results varied according to some unknown factor (not simply study quality or sample size) and thus the clinical impact of the intervention could not be determined)*		
• Variable impact. The impact for some of the studies was large but mixed or short-term for other studies • Clinical impact can be maximised through clinicocultural elements being part of a multi-faceted approach to treatment • Many studies did not differentiate by level of use so the impact for different types of users is unknown	A	Very large
	B	Moderate
	C	Slight
	D	Restricted
4. Generalisability *(How well does the body of evidence match the population and clinical settings being targeted by the Guideline?)*		
• The evidence is generalisable in a particular context e.g. outstation rehabilitation facilities. • Some of the evidence is generalisable to Indigenous populations • Mean age between studies is inconsistent (not reported in some studies)	A	Evidence directly generalisable to target population
	B	Evidence directly generalisable to target population with some caveats
	C	Evidence not directly generalisable to the target population but could be sensibly applied
	D	Evidence not directly generalisable to target population and hard to judge whether it is sensible to apply
5. Applicability *(Is the body of evidence relevant to the Australian healthcare context in terms of health services/delivery of care and cultural factors?)*		
• The body of evidence is relevant to the Australian healthcare context Incorporating a clinicocultural approach to treatment is possible Australian health care settings, but is complex and needs to be tailored.	A	Evidence directly applicable to Australian healthcare context
	B	Evidence applicable to Australian healthcare context with few caveats
	C	Evidence probably applicable to Australian healthcare context with some caveats
	D	Evidence not applicable to Australian healthcare context

7c Clinicocultural intervention NHMRC Evidence Statement Form *(continued)*

Other factors *(Indicate here any other factors that you took into account when assessing the evidence base (for example, issues that might cause the group to downgrade or upgrade the recommendation))*

EVIDENCE STATEMENT MATRIX

Please summarise the development group's synthesis of the evidence relating to the key question, taking all the above factors into account.

Component	Rating	Description
1. Evidence base	D	
2. Consistency	B	
3. Clinical impact	B	
4. Generalisability	C	
5. Applicability	C	

Indicate any dissenting opinions

RECOMMENDATION *What recommendation(s) does the guideline development group draw from this evidence? Use action statements where possible.*	**GRADE OF RECOMMENDATION** N/A	
The committee initially intended to formulate separate recommendations in this area. However, after reviewing the evidence and considering appropriate clinicocultural interventions for the management of VSU, the committee determined that all recommendations in the guideline should have culturally appropriate underpinnings and form part of a multi-faceted approach to treatment.		

8a Psychological therapies summary table

Clinical question	References	Comment
8.1 For *occasional* VSU, are any counselling modalities (NT, FT, CBT, GT)‡ associated with changed outcomes?	N=1 Andretta and da Silva Olivera 2008[32]	Andretta and da Silva Olivera, 2008[32] was a Level IV pre-post test case series study, however only two (non-dependent) VSU were included in the sample. Both ceased VSU at follow up after motivational interviewing.
8.2 For *opportunistic and/or polydrug* VSU, are any counselling modalities (NT, FT, CBT, GT), associated with changed outcomes?	N=3 Bryce et al, 1992[28] Simpson, 1992[33] Skuse and Burrell, 1982[34]	Simpson, 1992[33] was a Level IV pre-post test case series study. It found that interventions involving counselling were associated with better outcomes for experimental and monthly VSU, than for weekly VSU. Bryce et al, 1992[28] provided Level IV case series data which indicate that strategies which include counselling achieve at least short-term effects in some Indigenous communities. Skuse and Burrell, 1982[34] was a Level IV case series study involving a retrospective study of case files. Outcomes are provided by user group rather than intervention group.
8.3 For *chronic* or mature VSU, are any counselling modalities (NT, FT, CBT, GT) associated with changed outcomes?	N=7 Lowenstein, 1982[35] O'Connor, 1982[36] Sakai et al, 2006[37] Bryce et al, 1992[28] Simpson, 1992[33] Framrose, 1982[38] Skuse and Burrell, 1982[34]	Lowenstein, 1982[35] was a Level III-2 non-randomised case control study that suggests clients receiving group therapy and aversion therapy had better outcomes on a range of measures than clients receiving group therapy alone. The study was poorly designed and reported. O'Connor, 1982[36] used a Level III-2 matched control design but was of very poor quality. Adolescents in group receiving hypnosis with suggestion had better outcomes than matched sample that received psychotherapy without hypnosis. Sakai et al, 2006[37] was a Level IV pre-post test case series study comparing outcomes for adolescent males conduct disorder (CD) and lifetime VSU against those with CD and without lifetime VSU. Treatment was residential and included counselling. Lifetime VSU predicted more severe conduct disorder post-treatment. Follow up data for seven clients with baseline past month VSU provides some indication of positive effects of multimodal interventions including individual and family counselling. Bryce et al, 1992[28] provided Level IV case series data. It indicated that strategies which include counselling achieve at least short-term effects on VSU prevalence in some Indigenous communities. Simpson, 1992[33] was a Level IV pre-post test case series study. It found that interventions involving counselling were associated with better outcomes for experimental and monthly VSU, than for weekly VSU. Framrose, 1982[38] was a Level IV: case series study. The study described counselling for 35 solvent abusers and their families, indicating a positive outcome for 74% of solvent users, defined as cessation of solvent abuse and improved family functioning. Skuse and Burrell, 1982[34] was a Level IV case series involving a retrospective study of case files. Outcomes were provided by user group rather than intervention group, however the study suggested that abstinence for chronic users was associated with at least six months FT or 'several months' in residential management.

…continued

‡ NT= narrative therapy, FT = family therapy and conferencing, CBT = cognitive behavioural therapy and GT = group therapy.

Clinical question	References	Comment
8.4 For *pregnant* volatile substance users, are any counselling modalities (NT, FT, CBT, GT) associated with changed outcomes	N=0	
8.5 For volatile substance users with *comorbid* conditions, are any counselling modalities (NT, FT, CBT, GT) associated with changed outcomes?	N=2 Sakai et al, 2006[37] Framrose, 1982[38]	Sakai et al, 2006[37] was a Level IV pre-post test case series study comparing outcomes for adolescent males with conduct disorder symptoms (CD) and lifetime VSU against those with CD and without lifetime VSU. Treatment was residential and included counselling. Lifetime VSU predicted more severe conduct disorder post-treatment. Follow up data for seven clients with baseline past month VSU provided some indication of positive effects of multimodal interventions including individual and family counselling. Framrose, 1992[38] was a Level IV case series study. The study described counselling for 35 solvent abusers in inpatient psychiatric care and their families, indicating a positive outcome for 74% of solvent users, defined as cessation of solvent abuse and improved family functioning.
8.6 What clinicocultural interventions are associated with changed outcomes for volatile substance users who are *intellectually and impulse* compromised?	N=0	

8b Psychological therapies evidence table

Reference: author/s, year, title of paper, journal, study purpose	Evidence Level: study quality	Participants	Professionals and Healthcare settings	Intervention	Comparison	Length of follow up	Outcomes	Effect Size: response rates/ cooperation rate, treatment of missing data	Comments	Indigenous involvement: Indigenous ethics approval, researchers, participants
Lowenstein, L. F. (1982) Glue sniffing: Background features and treatment by aversion methods and group-therapy. *Practitioner*, 226: 1113-1116. Aim: Not stated or clear. Country: USA.	Level III-2 Non-randomised case control study. Study design is not stated but appears to be a matched control study with extremely small sample (n=3). Poorly reported methods and results. Randomisation, blinding poorly conducted.	The reporting of the number of participants is extremely unclear. There appears to be three boys in the 'experimental group' from the reporting of methods and results. There is no mention of a control group in the methods but results were reported in the paper's outcomes. The paper notes that three boys were assigned (by alphabetical order) to experimental and control groups, but also states that there were three boys in the experimental group. The participants were adolescent males aged 14-16. No other detail of the participants was reported.	Psychologist; setting not stated.	Combination of group therapy and aversion therapy, which consisted of exposure to sniffing glue until participants became ill.	No information about the interventions offered to control group were reported.	Follow up is poorly reported. The only follow up appears to be immediately post the one month treatment.	Outcome measures used were not specifically stated. The experimental group participants had stopped sniffing glue after one month of treatment and were reported to show improved motivation towards extracurricular work, art, mechanical skills and other constructive enterprises. Control group participants continued to sniff glue. No other changes were described for the control group.	No meaningful effect size can be calculated on the basis of these data.	The sample, method, and analysis of this study are extremely poorly reported. The outcome is reported to be associated with the aversion therapy rather than the group counselling; however the basis for this conclusion is unclear. This is an old study and it would not now be considered ethical to offer children aversion therapy of this type. The study is so poorly reported few conclusions can be drawn from it.	Ethics: Not stated. Researchers: Not stated. Participants: Not stated.

8b Psychological therapies evidence table *(continued)*

Reference: author/s, year, title of paper, journal, study purpose	Evidence Level: study quality	Participants	Professionals and Healthcare settings	Intervention	Comparison	Length of follow up	Outcomes	Effect Size: response rates/ cooperation rate, treatment of missing data	Comments	Indigenous involvement: Indigenous ethics approval, researchers, participants
O'Connor, D. (1982). The use of suggestion techniques with adolescents in the treatment of glue sniffing and solvent abuse. *Human Toxicology*, 1: 313-320. Aim: To describe and evaluate a method of solvent abuse treatment incorporating hypnosis. Country: UK	Level III-2. Matched control design. Potential for response bias as group had received psychotherapy in the past.	N=12 Chronic VSU. Experimental group: n= 6, average age 15 yrs (range 14 – 16), n=4 males. Average duration of use 1.25 years. Control Group: n=6, average age 15 yrs (range 14 – 16), n=4 males. Average duration of use 1.1 years.	Counsellors in an outpatient clinic. Setting is not well described.	Participants were matched and allocated to one of two groups. The two groups were matched for sex, age, length of solvent use, products used and type of problem. Randomisation of the pairs was not reported. Treatment group received. psychotherapy with hypnosis and suggestion techniques.	Control group received psychotherapy without hypnosis.	15 weeks.	Measures were frequency and quantity of VSU product consumed per week pre and post treatment. Users in the experimental group ceased use. Average pre-treatment frequency of use was six days and 3.3 hours per week. Users in the control group had mixed outcome of no change (n=2), reduced use (n=2) and abstinence (n=2).	There is no effect size reported or able to be calculated for this study.	Outcome measures appear to be based on subjective report of use. No standardised measures were reported. Likelihood of response bias is high. This study is of too poor quality to draw conclusions.	Ethics: Not stated. Researchers: No. Participants: No.

8b Psychological therapies evidence table *(continued)*

Reference: author/s, year, title of paper, journal, study purpose	Evidence Level: study quality	Participants	Professionals and Healthcare settings	Intervention	Comparison	Length of follow up	Outcomes	Effect Size: response rates/ cooperation rates, treatment of missing data	Comments	Indigenous involvement: Indigenous ethics approval, researchers, participants
Andretta, I., and da Silva Oliveira, M. (2008). A study of the effects of motivational interviewing on adolescent offenders. *Estudos de psicologia*, 25: 45-53. Aim: An evaluation of motivational sessions to reduce drug use in young offenders. Country: Brazil	Level IV Pre-post test case series study.	N=50 Adolescent drug users who were referred from justice system to treatment for drug use issues. n=2 non-dependent VSU. Mean age for whole sample =16; age range 13-20. No data are reported for VSU subsample.	Not stated but appears to be some kind of health care setting.	Four sessions of motivational interviewing over 15 days based on Cannabis Youth Treatment; a treatment program for juvenile delinquents.	No comparison group was reported.	15 days.	Measures included socio demographic data, drug choice, frequency and length of use. Semi structured interview using DSM – IV – TR. University of Rhode Island Change Assessment (URICA). The Inventory Beck Depression Inventory (BDI), Anxiety Inventory Beck (BAI) and the Inventory of Beliefs Becks (IBB). There was a reported increase in number of days abstinent and reduction in use for all drugs including solvents. n=2 VSU completed treatment (four sessions). Both abstinent at follow up assessment.	Data regarding inhalant users (n=2) was not statistically significant; sample size was too small. Inhalants consumption reduced from 38.88–0 (Wilcox test 1.000 p value 0.32). Other results were undifferentiated by drug type and showed high loss to follow up rate at 44% of sample. Reductions in the pre-contemplative thinking and ($p<0.04$) and beliefs about with drug use ($P<0.01$), measured by URICA and IBB.	No effect size reported or able to be calculated due to small sample size.	Ethics: Approved. Researchers: No. Participants: No.

8b Psychological therapies evidence table *(continued)*

Reference: author/s, year, title of paper, journal, study purpose	Evidence Level: study quality	Participants	Professionals and Healthcare setting	Intervention	Comparison	Length of follow up	Outcomes	Effect Size: response rates/ cooperation rates, treatment of missing data	Comments	Indigenous involvement: Indigenous ethics approval, researchers, participants
Sakai, J. T., Mikulich-Gilbertson, S. K., and Crowley, T. J. (2006). Adolescent inhalant use among male patients in treatment for substance and behaviour problems: Two-year outcome. *The American Journal of Drug and Alcohol Abuse*, *32*(1): 29-40. Aim: To compare outcomes for adolescents with and without reported lifetime VSU admitted to substance dependence and conduct disorder residential service. Country: USA	Level IV Pre-post test case series. The study is well conducted and described, however the focus of analysis and reporting is on correlates of VSU, not treatment outcomes for VSU. Note: This table reports on treatment outcome data for the sub-sample who met baseline DSM III-R criteria for abuse and dependence as these data address the clinical question.	Outcomes of interest relate to a small sub-sample (n=14). Study sample comprises adolescents aged 13-19 admitted to residential treatment with diagnosis of substance dependence and at least three symptoms of conduct disorder (N=111). Baseline assessment available for n=80, all followed up. 34 reported lifetime VSU and 46 reported use of other drugs at baseline. At baseline 14 clients met DSM III-R criteria for lifetime VS abuse or dependence and seven reported past month VSU.	Professionals not stated, however included psychiatric interventions. University residential treatment facility.	Multimodal residential treatment program for adolescent males with serious VSU and behavioural disorder. Interventions included structured and clinical interviews, medical evaluation, referral for neuropsychological testing and psychiatric medication as required, individual and family counselling and individualised educational instruction. No details of psychiatric medications were reported.	Multimodal residential treatment program for adolescent males with behavioural disorder but without VSU.	Two years post-baseline follow up (treatment admission).	Comprehensive Addiction Severity Index (CASI) used to assess substance dependence. Of 14 clients meeting DSM III-R criteria for lifetime VS abuse or dependence at baseline, none reported met VSU abuse or dependence criteria at follow up. Of seven who reported past month VSU, one client reported two days of VSU within the past month. No outcomes are provided specifically for clients receiving psychiatric medications.	Outcomes for clients with lifetime VSU dependence and are described in text as a percentage. No data was available to enable calculation of effect size.	This study compared outcomes for adolescents with lifetime VSU with those without lifetime VSU. History of VSU predicted more severe conduct disorder post-treatment. Outcome data for clients with baseline past month VSU provides some indication of positive effects of residential rehabilitation, however conclusions cannot be drawn as to the effects of psychiatric medication.	Ethics: Approval but not Indigenous approval. Researchers: Not stated. Participants: Not stated.

8b Psychological therapies evidence table *(continued)*

Reference: author/s, year, title of paper, journal, study purpose	Evidence Level: study quality	Participants	Professionals and Healthcare settings	Intervention	Comparison	Length of follow up	Outcomes	Effect Size: response rates/ cooperation rate, treatment of missing data	Comments	Indigenous involvement: Indigenous ethics approval, researchers, participants
Bryce, S., Rowse, T., and Scrimgeour, D. (1992) Evaluating the petrol sniffing prevention programs of the healthy Aboriginal life team (HALT), Australian and *New Zealand Journal of Public Health*, 16: 387–396. Aim: Evaluate HALT - which aimed to strengthen adult Aboriginal authority to address petrol sniffing. Country: Australia	Level IV Descriptive case series. Detail of qualitative methods not reported.	The number of participants not reported. Participants were adults who were residents and ex-residents and some ex-users of remote communities where the HALT program was implemented. Other details of participants not specified. Three communities: 1) Yuendumu 2) Kintore and 3) Nyirrpi.	Community Workers in Aboriginal health care and community settings.	Strengthening family 'networks' and acting in response to community requests/need: 'Family mapping' activities, individual and family counselling, and workshops, also included connecting sniffers with relatives by assisting to relocate them and community patrols. Intervention was responsive to community needs and tailored to three communities.	No comparison group reported.	No specific follow up period reported.	Mixed results. The varied interventions of HALT appeared to be associated with short term reduction in sniffing in two communities. Unclear to what degree counselling was used in each community, however authors reported a short term positive effect of counselling for some individuals. No effect of HALT program in one region.	No effect size reported or able to be calculated from this data. The interventions and their impact were reported as a qualitative and observed evaluation with no quantitative data.	The evaluation suggests mixed effect in applying clinicocultural intervention in different settings/ communities but indicates that culturally informed approaches are a feasible part of interventions which achieve at least short-term effects in some settings. Counselling in this context indicated to have positive outcomes. This qualitative evaluation of programs is based on interviews and existing data/ reports. While of interest, it provides minimal detail regarding sample and data collection methods.	Ethics: Not stated. Researchers: Indigenous Australians. Participants: Indigenous Australians.

8b Psychological therapies evidence table *(continued)*

Reference: author/s, year, title of paper, journal, study purpose	Evidence Level: study quality	Participants	Professionals and Healthcare settings	Intervention	Comparison	Length of follow up	Outcomes	Effect Size: response rates/ cooperation rate, treatment of missing data	Comments	Indigenous involvement: Indigenous ethics approval, researchers, participants
Simpson, D. D. (1992). *A longitudinal study of inhalant use: implications for treatment and prevention inhalant abuse: A volatile research agenda.* National Institute on Drug Abuse research monograph series 129. Aim: Summarises follow up research of young Mexican American youth in Texas who entered the Youth Advocacy Program (YAP). Country: USA	Level IV Pre-post test case series. Follow up of clients attending Youth Advocacy Program (YAP) between 1979-1985.	N= 75 Mexican-American youth aged 13-17 years at time of treatment. Follow up data successfully obtained for n=110 clients (86% of original sample). Analysed in three groups of user: (1) Weekly n=21, (2) Monthly n=19, (3) Experimental (no definition reported) n=21, (4) NoVSU n=41.	Professionals not stated. Non residential setting, not described.	Individual counselling (not described), a variety of recreation activities, cultural enrichment, academic tutoring and related life skills. Average duration of treatment was 13 months where they completed individual counselling and recreational activity.	No comparison group was reported.	'One year' follow up period not clearly reported but appears to be one year post admission. 'Four year' follow up occurred at an 'average of four years post admission'.	Inhalant use was measured pre-admission but measures were not specified. The percentage of clients using any inhalants per year decreased from 36% at intake to 24% (year one follow up) and 6% at year four follow up. The study reported better outcomes for experimental versus monthly or weekly inhalant users at intake. Experimental users at intake reported no past year VSU at four year follow up. 5% of 19 monthly inhalant users at intake reported past year VSU at four year follow up. 24% of 21 weekly inhalant users at intake reported past year VSU at four year follow up.	No effect size reported or able to be calculated from the data presented in this paper.	The authors concluded that intervention is increasingly difficult as youth become more involved with drugs. It is not possible to determine to what extent these outcomes are related to maturation or other factors, rather than the interventions described. The effect of counselling interventions on these outcomes cannot be determined.	Ethics: Not stated. Researchers: No. Participants: No.

8b Psychological therapies evidence table *(continued)*

Reference: author/s, year, title of paper, journal, study purpose	Evidence Level: study quality	Participants	Professionals and Healthcare settings	Intervention	Comparison	Length of follow up	Outcomes	Effect Size: response rates/ cooperation rate, treatment of missing data	Comments	Indigenous involvement: Indigenous ethics approval, researchers, participants
Framrose, F. (1982) From structure to strategy with the families of solvent abusers, *Journal of Family Therapy*, 4, 43-59. Aim: To consider outcomes of a structural approach to working with solvent users and their families. Country: UK	Level IV Descriptive case series. The study is based on an unrepresentative clinic sample. Outcome data based on subjective assessments by treatment providers.	The initial sample was N=45 teenage solvent abusers (three female and 42 male) in inpatient psychiatric care and their families. Of the 45 solvent users, n=35 were engaged in treatment.	Psychologists in child and adolescent psychiatric unit.	Users and their families engaged in either family therapy using either a 'structural' (one third) or 'strategic' approach (two thirds). Interventions not well described, but the structural approach appears to be focused on addressing family structure in responding to drug use (e.g. who took charge of discipline). The strategic approach appears to be focused on dysfunctional family behaviours (e.g. parental reinforcement of behaviours).	There were no control or comparison groups.	Length of follow up not reported. States that majority of outcomes were confirmed at six months post treatment.	There was no indication of how outcomes were measured, other than that they were described as 'subjective'. At treatment termination a positive outcome (cessation of solvent abuse, improved family functioning) was recorded in 26 (74%) of those families (n=41) that engaged in treatment.	35 families attended treatment and of these 26 (74%) had a positive result as defined as cessation of solvent abuse and improved family functioning.	The study was not a comparison of structural and strategic family therapy and does not identify which intervention was related to this outcome. Outcome data only available for treatment attendees, and thus may reflect their motivation to cease VSU.	Ethics: Not stated. Researchers: No. Participants: No.

8b Psychological therapies evidence table *(continued)*

Reference: author/s, year, title of paper, journal, study purpose	Evidence Level: study quality	Participants	Professionals and Healthcare settings	Intervention	Comparison	Length of follow up	Outcomes	Effect Size: response rates/ cooperation rate, treatment of missing data	Comments	Indigenous involvement: Indigenous ethics approval, researchers, participants
Skuse, D and Burrell, S. (1982) A review of solvent abusers and their management by a child psychiatric out-patient service. *Human and Experimental Toxicology*, 1: 321-329. Aim: To define profile of volatile substance users. Country: UK	Level IV Case series – Retrospective study of case files completed between 1979–1981. This is a low quality study with Inconsistent reporting of sample sizes.	N = 45 solvent users. Mean age = 14 (range 14 – 15). 28 males 17 females. Defined by three groups: (1) Chronic n=16, (2) Periodic n=14, (3) Experimental n=15. Cases were selected if counselling was identified in the file within the retrospective survey time period.	Not clearly stated but setting was a psychiatric child and adolescent outpatient service.	Participants provided with a range of interventions by level of inhalant use: (a) Residential or individual or family counselling for 1-36 months. (b) Family intervention with individual support. (c) Referral and or advice.	Three groups of users were compared not by treatment type, but by user group.	For chronic users follow up was six months. For periodic and experimental users follow up not stated.	A chart was developed to record information on a range of variables and authors collaborated on coding information. No further information provided. Chronic users: 11 kept appointments; of these six 'showed no change' and five 'improved', with successful outcomes associated with either at least six months FT or 'several months' in residential management. Periodic users: Of 12 engaged in treatment, six 'improved', four showed 'no change', and two 'became more disturbed'. Experimental users: No outcomes provided.	No effect size can be calculated without access to outcome data.	Poorly reported study. Treatment was provided in the form of counselling but interventions poorly described. Outcomes provided by user group rather than intervention group. No data is provided to assess the authors' claim that successful outcomes are associated with at least six months' FT or residential management over several months.	Ethics: Not stated. Researchers: No. Participants: No.

8c Psychological therapies NHMRC Evidence Statement Form

Key question(s): Psychological therapies Q8.1 – Q8.6		Evidence table ref: 8B
1. Evidence base *(number of studies, level of evidence and risk of bias in the included studies)*		
The evidence base comprised of: • Three level IV pre-post test case series studies • Three Level IV case series studies • One level III-2 matched control design One level III-2 non-randomised case control study (which was discounted as was based on aversion therapy and considered unethical)	A	One or more level I studies with a low risk of bias or several level II studies with a low risk of bias
	B	One or two Level II studies with a low risk of bias or SR/several Level III studies with a low risk of bias
	C	One or two Level III studies with a low risk of bias or Level I or II studies with a moderate risk of bias
	D	Level IV studies or Level I to III studies/SRs with a high risk of bias
2. Consistency *(if only one study was available, rank this component as 'not applicable')*		
• Not all the studies were measuring the same outcome. However, the studies indicate that in general psychological therapies have a positive effect in the treatment of VSU, for some studies the effects were only short-term • Reasons for inconsistency can be explained in some cases. E.g. Lack of description, quality of studies	A	All studies consistent
	B	Most studies consistent and inconsistency can be explained
	C	Some inconsistency, reflecting genuine uncertainty around question
	D	Evidence is inconsistent
	NA	Not applicable (one study only)
3. Clinical impact *(Indicate in the space below if the study results varied according to some unknown factor (not simply study quality or sample size) and thus the clinical impact of the intervention could not be determined)*		
• Many of the studies were looking at multimodal interventions, so the committee found it difficult to determine exactly what intervention was responsible for causing the positive effect • The committee had too many concerns about quality of the studies to determine clinical impact	A	Very large
	B	Moderate
	C	Slight
	D	Restricted
4. Generalisability *(How well does the body of evidence match the population and clinical settings being targeted by the Guideline?)*		
Of the seven studies considered (the eighth study was discounted from consideration): • Most studies had adolescent participants, with only one study examining an adult population • Only one study had Australian Aboriginal participants, the remaining were based in the UK (3), USA (1), Brazil (1). Participant details were not reported for one study	A	Evidence directly generalisable to target population
	B	Evidence directly generalisable to target population with some caveats
	C	Evidence not directly generalisable to the target population but could be sensibly applied
	D	Evidence not directly generalisable to target population and hard to judge whether it is sensible to apply
5. Applicability *(Is the body of evidence relevant to the Australian healthcare context in terms of health services/delivery of care and cultural factors?)*		
• Yes, a wide range of psychological interventions are available in the Australian healthcare context	A	Evidence directly applicable to Australian healthcare context
	B	Evidence applicable to Australian healthcare context with few caveats
	C	Evidence probably applicable to Australian healthcare context with some caveats
	D	Evidence not applicable to Australian healthcare context

8c Psychological therapies NHMRC Evidence Statement Form *(continued)*

Other factors *(Indicate here any other factors that you took into account when assessing the evidence base (for example, issues that might cause the group to downgrade or upgrade the recommendation))*		
EVIDENCE STATEMENT MATRIX *Please summarise the development group's synthesis of the evidence relating to the key question, taking all the above factors into account.*		
Component	**Rating**	**Description**
1. Evidence base	D	
2. Consistency	B	
3. Clinical impact	D	
4. Generalisability	B	
5. Applicability	B	
Indicate any dissenting opinions		

RECOMMENDATION *What recommendation(s) does the guideline development group draw from this evidence? Use action statements where possible.*	**GRADE OF RECOMMENDATION** N/A	
The committee had concerns about the quality of the evidence base and found it to be insufficient to attribute effect to specific therapies as many of the study designs were multimodal. Therefore, evidence-based recommendations (EBRs) about the use of psychological therapies in the management of VSU were not made. Accordingly, the committee used expert opinion to develop consensus-based recommendations (CBRs) and one practice point (PP) about psychological therapies.		

9a Activity and youth development programs summary table

Clinical question	References	Comment
9.1 For *occasional* VSU, what elements of activity and engagement programs are associated with changed outcomes?	N=6 Preuss and Napananka Brown, 2006[26] Butt, 2004[39] Cheverton et al, 2003[40] Polsen and Chiauzzi, 2003[27] Burns et al 1995[41] Simpson, 1992[33]	Preuss and Napanangka Brown, 2006[26] was a Level IV qualitative program evaluation including pre-post test case series data. It suggested that activity programs were part of an effective multi-faceted approach to maintaining reduced petrol sniffing in an Australian Indigenous community. Outcomes were not differentiated by level of VSU. Butt, 2004[39] was a Level IV study which included case series data. It suggested that targeted activities were associated with a reduction in VSU during participation and some change in cannabis use patterns. Outcomes not differentiated by level of use. Cheverton et al, 2003[40] was a Level IV case series study that indicated short-term reduction of substance use (including VSU) for young people engaged in intensive and 'exciting/high risk' supported activities. Outcomes not differentiated by level of use. Polsen and Chiauzzi, 2003[27] was a conference paper that contained Level IV case series data which provided some indication that recreation and life skill activities were part of an effective multimodal response to VSU. Outcomes not differentiated by level of use. Burns et al[41], was a well-reported Level IV pre-post test case series study. It suggested that approaches including activities and supply reduction in one Aboriginal community had a significant impact on petrol sniffing over an extended period, while emphasising the need for coordinated strategies. Simpson, 1992[33] was a Level IV pre-post test case series study of an intervention involving counselling and a range of activities. It reported progressively poorer outcomes for VSU as level of VSU at baseline increased.

…continued

Clinical question	References	Comment
9.2 For *opportunistic and/or polydrug* VSU, what elements of activity and engagement programs are associated with changed outcomes?	N=6 Preuss and Napananka Brown, 2006[26] Butt, 2004[39] Cheverton et al, 2003[40] Polsen and Chiauzzi, 2003[27] Burns et al, 1995[41] Simpson, 1992[33]	Preuss and Napanangka Brown, 2006[26] was a Level IV qualitative program evaluation including case series data. It suggested that activity programs were part of an effective multi-faceted approach to maintaining reduced petrol sniffing in an Australian Indigenous community. Outcomes not differentiated by level of VSU. Butt, 2004[39] was a Level IV study which included case series data. It suggested that targeted activities were associated with a reduction in VSU during participation and some change in cannabis use patterns. Outcomes not differentiated by level of VSU. Cheverton et al, 2003[40] was a Level IV case series study that indicated short-term reduction of substance use (including VSU) for young people engaged in intensive and 'exciting/high risk' supported activities. Outcomes not differentiated by level of use. Polsen and Chiauzzi, 2003[27] was a conference paper that contained Level IV case series data which provides some indication that recreation and life skill activities may be part of an effective multimodal response to VSU. Outcomes not differentiated by level of VSU. Burns et al, 1995[41] was a well-reported Level IV pre-post test case series study. It suggested that approaches including activities and supply reduction in one Aboriginal community had a significant impact on petrol sniffing over an extended period, while emphasising the need for coordinated strategies. Simpson, 1992[33] was a Level IV pre-post test case series study of an intervention involving counselling and a range of activities. It reported progressively poorer outcomes for VSU as level of use at baseline increased.

…continued

Clinical question	References	Comment
9.3 For *chronic* VSU, what elements of activity and engagement programs are associated with changed outcomes?	N=7 Preuss and Napananka Brown, 2006[26] Butt, 2004[39] Cheverton et al, 2003[40] Gostzyla and George, 2003[42] Polsen and Chiauzzi, 2003[27] Burns et al, 1995[41] Simpson, 1992[33]	Preuss and Napanangka Brown, 2006[26] was a Level IV qualitative program evaluation including case series data. It suggested that activity programs were part of an effective multi-faceted approach to maintaining reduced petrol sniffing in an Australian Indigenous community. Outcomes not differentiated by level of VSU. Butt, 2004[39] was a Level IV study which included case series data. It suggested that targeted activities were associated with a reduction in VS use during participation and some change in cannabis use patterns. Outcomes not differentiated by level of VSU. Cheverton et al, 2003[40] was a Level IV case series study that indicated short-term reduction of substance use (including VSU) for young people engaged in intensive and 'exciting/high risk' supported activities. Outcomes not differentiated by level of use. Gostzyla and George, 2003[42] was a conference paper that contained Level IV case series data. It gave some indication that recreation activities can be part of a mixed response to chronic VSU (referred to as 'chroming regularly' in the paper). Polsen and Chiauzzi, 2003[27] was a conference paper that contained Level IV case series data which provides some indication that recreation and life skill activities may be part of an effective multimodal response to VSU. Outcomes not differentiated by level of VSU. Burns et al,[41] was a well-reported Level IV pre-post test case series study. It suggested that approaches including activities and supply reduction can have significant impact on petrol sniffing over an extended period, while emphasising the need for coordinated strategies. Outcomes not differentiated by level of VSU. Simpson, 1992[33] was a Level IV pre-post test case series study of an intervention involving counselling and a range of activities. It reported progressively poorer outcomes for VSU as level of VSU at baseline increased.
9.4 For *pregnant* volatile substance users, what elements of activity and engagement programs are associated with changed outcomes?	N=0	

…continued

Clinical question	References	Comment
9.5 For volatile substance users with *comorbid conditions*, what elements of activity and engagement programs are associated with changed outcomes?	N=0	
9.6 For volatile substance users who are *intellectually and impulse compromised*, what elements of activity and engagement programs are associated with changed outcomes?	N=0	

9b Activity and youth development programs evidence table

Reference: author/s, year, title of paper, journal, study purpose	Evidence Level: study quality	Participants	Professional and Healthcare setting	Intervention	Comparison	Length of follow up	Outcomes	Effect Size: response rates/ cooperation rate, treatment of missing data	Comments	Indigenous involvement: Indigenous ethics approval, researchers, participants
Preuss, K., and Napanangka Brown, J. (2006). Stopping petrol sniffing in remote Aboriginal Australia: Key elements of the Mt Theo Program. *Drug and Alcohol Review,* 25: 189-93. Aim: To demonstrate key elements that have contributed to the Mt Theo Program's achievements. Country: Australia	Level IV Qualitative program evaluation including pre-post test case series data. Study findings are credible but outcomes report only on program data. The case evaluation is a narrative account with little detail of design, sample or outcomes.	Participants not clearly described. Chronic, occasional and experimental young VSU (age not reported) in an NT remote Indigenous community. Number of participants not clearly reported but outcomes state pre intervention numbers of 70 VSU.	Aboriginal health and youth workers, community members. Outstation and community.	Petrol sniffers were taken to a culturally important place, Mt Theo Outstation, for one month. The outstation is residential and entirely Aboriginal run; elders lead activities and provide guidance. Concurrent youth activities program provided in Yuendumu including: sports, discos, film nights, cultural activities.	No comparison group or intervention was reported.	No follow up period was reported.	No outcome measures provided. Number of petrol sniffers reduced from 70 to zero over nine year period. Outcomes are reported from data in unpublished program documents.	Quantitative data is not presented to allow analysis of effect size.	Suggests that outstation rehabilitation programs may be a feasible part of a multi-faceted approach to reduced petrol sniffing. The study is a descriptive evaluation, drawing on program reports. Little detail is provided of evaluation methods, participants etc. Assessment of quality of the results is not possible without access to program data.	Ethics: Not stated. Researchers: Indigenous Australians. Participants: Indigenous Australians.

9b Activity and youth development programs evidence table *(continued)*

Reference: author/s, year, title of paper, journal, study purpose	Evidence Level: study quality	Participants§	Professional and Healthcare setting	Intervention	Comparison	Length of follow up	Outcomes	Effect Size: response rates/ cooperation rate, treatment of missing data	Comments	Indigenous involvement: Indigenous ethics approval, researchers, participants
Butt, J. (2004). *Independent evaluation of the Get Real Challenge (GRC): issues facing Indigenous youth who misuse volatile substances and outcomes of a program targeting these issues*. Brisbane City Council: Brisbane. Aim: GRC aimed to provide alternative activities and harm minimisation education for VSU and non-VSU at risk Indigenous young people. Country: Australia	Level IV Case series with data at two time points (not pre-intervention). This was an independent evaluation that reported on staff and stakeholder interviews and psychosocial assessments at two time points (but not a true pre-post measure). Survey assessments had low numbers and no statistical analysis done. Some outcome reporting is unclear in regard to the various participant sub-samples included in evaluation.	(1) GRC activity group: N=24 overall sample during seven month evaluation. Male=67% Mean age = 15 (12-18 yrs) Indication of high levels of chronic and binge VS use. Both newly started and long term (>40 weeks) VS users involved. Subsamples include: (2) Clinical outcomes: n=6 completed psychosocial assessment at two time points (intake and endpoint).	Youth service staff in a primary care – Indigenous youth health service.	14 activities were provided during the GRC, including beach visit, health checks, indoor rock climbing, visit to Dreamworld, and deep sea fishing. 3-14 young people attended each activity. Participants attended an average of three different activities (range 1-10).	No comparison or control group was reported.	Length of follow up not stated. Assessment Group: Psychosocial assessment conducted at two time points; time one at an early point in young people's participation in GRC activities, time two at evaluation end-point. Implies varied time periods and time one is not presented as true baseline or pre-intervention data.	Multiple outcome measures included: participant interviews and staff questionnaires, ICD-10 for VSU diagnosis, Depression and Anxiety Scale (DASS-21) scale, Children's Global Assessment Scale (C-GAS). (1) GRC Activity group: N=24 participants attended activities drug free (no detail provided). (2) Clinical outcomes: n=6 reduced incidence of inhalant use disorder: harmful VSU (n=2) and VSU substance dependence (n=1), n=0 at 2nd assessment. No increased frequency of VSU at time two. Reduced cannabis dependence: n=3 to n=1 meeting ICD-10 criteria.	No effect size can be calculated from the data presented in the study.	The low quality of methods and reporting meant assumptions were required to be made about methods and results (e.g. results were reported in % only with no numbers). Firm conclusions cannot be drawn from this study. Results seem to suggest targeted activities may be associated with a reduction in VSU during participation and some change in cannabis use patterns.	Ethics: Yes. Researchers: Not stated. Participants: Indigenous Australians.

§ Pilot program also reported with minimal detail: N=12 participants had ceased VSU and commenced school, and young people had attended activities drug-free.

9b Activity and youth development programs evidence table *(continued)*

Reference: author/s, year, title of paper, journal, study purpose	Evidence Level: study quality	Participants§	Professional and Healthcare setting	Intervention	Comparison	Length of follow up	Outcomes	Effect Size: response rates/ cooperation rate, treatment of missing data	Comments	Indigenous involvement: Indigenous ethics approval, researchers, participants
		Male n=5, Mean age =15. Involved with GRC for average 4 months. Average attendance = five activities. (3) Staff assessed outcomes: n=18 Participants retrospectively rated by staff based on clinical perspective Male = 67%; Mean age 15.6 yrs.		The activity program appeared to be ongoing, with intervention activities and outcomes reported for the seven month evaluation period.			66% increased their average school attendance past month. Unclear reporting of three measures; depression, anxiety and stress. Clinical depression decreased. Stress levels fluctuated. (3) Staff assessed outcomes: (n=18); 67% male. Daily VSU reduced from 56. 3% (intake) to 16.7% (endpoint). Greater change in VSU demonstrated by those who attended more activities. Data showed a decrease in the number of daily users, but an overall increase in number of participants using cannabis at the endpoint daily use: 37.5%-16.7%. 68% improved in levels of general functioning rating (C-GAS).		Participants not being substance affected during activities appeared to reflect a short term benefit by providing an incentive to be drug-free while involved in activities. The long term benefits of this program are unclear.	

9b Activity and youth development programs evidence table *(continued)*

Reference: author/s, year, title of paper, journal, study purpose	Evidence Level: study quality	Participants	Professional and Healthcare setting	Intervention	Comparison	Length of follow up	Outcomes	Effect Size: response rates/ cooperation rate, treatment of missing data	Comments	Indigenous involvement: Indigenous ethics approval, researchers, participants
Cheverton, J. Schrader, T., and Scrogings, Z. (2003). *Sniffing around the valley: Chroming in Brisbane's inner city.* Brisbane Youth Service: Brisbane. Aim: Reports on a project aiming to engage with homeless young people involved in chroming. Country: Australia	Level IV Case series. Low quality, qualitative reporting of observed participant outcomes and participant feedback. No description provided of tools or observation methods used.	N=8 homeless young people in inner Brisbane aged 12-25 yrs. Participants were required to be physically able to participate, able to commit to the project period and performance at training end, and be abstinent during rehearsal.	Health and arts youth workers in a youth health service ran program through an arts training centre.	Participation in a performance project at the Rock and Roll Circus Training Centre–training in walk on the wall skills. A trial day followed by two week intensive daily training. This is one component of a set of separate but inter-related activities within the project; however no participant outcomes were reported for the other activities.	No control or comparison group was reported.	No follow up was reported. An evaluation conducted four weeks post activity end, reported qualitative feedback only from participants.	No clear outcome measures were reported. Seven participants were reported to have remained sober throughout the project (three weeks). Six participants maintained stable accommodation throughout project. One young person returned to school.	No effect size can be calculated from the data reported.	This is a qualitative study providing only very basic quantitative project outcome data for eight participants of one activity (over 40 young people were involved in other activity). It is difficult to draw firm conclusions about the effectiveness of this program from the reported results. There appeared to be a short term reduction of substance use (including VSU) for young people during supported involvement in intensive and 'exciting/high risk' activities.	Ethics: Not stated. Researchers: Not stated. Participants: Not stated.

9b Activity and youth development programs evidence table *(continued)*

Reference: author/s, year, title of paper, journal, study purpose	Evidence Level: study quality	Participants	Professional and Healthcare setting	Intervention	Comparison	Length of follow up	Outcomes	Effect Size: response rates/ cooperation rate, treatment of missing data	Comments	Indigenous involvement: Indigenous ethics approval, researchers, participants
Gostzyla, E. George, S. (2003) *Our kids matter, paint sniffing: The charters Towers story*, in Inhalant Use and Disorder Conference, Australian Institute of Criminology: Townsville. Aim: Basic introduction and info about the 'Our Kids Matter' project which involved community mobilisation and a multi-agency response to local, young inhalant users. Country: Australia	Level IV Study design not reported, but includes observational case series data. This is a conference presentation with a very low level of reporting on data collection, participating sample, details of the activities, levels of engagement or results.	Number of participants not stated. The project was aimed at approximately 20 young people, mainly aged 14-19 yrs, who were described as 'chroming regularly'.	Youth and community workers, and volunteers in a health centre setting (the project involved multiple agencies and site type).	Community-based intervention including activities. Activities were offered by multiple agencies and included boxing, music, discos, employment programs and craft. Some assistance provided with transport to events. This project used multiple approaches to reducing VSU including night patrols, retailers reducing paint access and links with education programs. It is unclear what level of support was provided for young people or families.	No comparison or control group was reported.	Length of follow up not stated. Indicates a reflection of participant's outcomes but no project timeframe is provided.	No clear outcome measures were reported. Study reports a reduced use of inhalants by young people from over 20 regular users to one or two sporadic users (no specific numbers or analysis reported). Majority of users were reported to be involved in activities including boxing and employment programs post intervention at time of reporting.	Quantitative data is not presented to allow analysis of effect size.	Provides basic and insufficient detail of intervention and results for quality assessment, making it difficult to draw firm conclusions about the effectiveness of this program. However, the study gives some indication that recreation activities can be part of a mixed response to VSU, and also highlights the collaboration of community and multiple agencies. More rigorous evaluation is required to determine the extent of effect of the program and its components.	Ethics: Not stated. Researcher: Not stated. Participants: Involvement of Indigenous Australians is implied but not stated.

9b Activity and youth development programs evidence table *(continued)*

Reference: author/s, year, title of paper, journal, study purpose	Evidence Level: study quality	Participants	Professional and Healthcare setting	Intervention	Comparison	Length of follow up	Outcomes	Effect Size: response rates/ cooperation rate, treatment of missing data	Comments	Indigenous involvement: Indigenous ethics approval, researchers, participants
Polsen, M. Chiauzzi, A. (2003) *Volatile substance use in Mount Isa: community solutions to a community identified issue*, in Inhalant Use and Disorder Conference, Australian Institute of Criminology: Townsville. Aim: Reviews the Mount Isa Volatile Substance Misuse Action Group's work including the Family Healing Program for young VSU. Country: Australia	Level IV Study design not reported which includes observational case series data. This is a conference presentation with very limited reporting of the sample. Data measures and outcomes not clearly stated.	N=9 Indigenous young people (not clear – but implied for whole sample), aged 10-16 yrs. At least two female participants (gender ratio not clearly stated). Participants were an identified friendship group who used inhalants together and were of concern to the community.	Youth workers in multiple settings, youth centre, community.	The 'Family Healing Program' was a 12 week pilot program that targeted 'at risk' youth. Interventions included bush camps, family case management, cultural education, life skills and activities and some counselling. Used a 'cultural approach'. Many aspects of the pilot study program were minimally implemented, omitted or adapted due to changed circumstances.	No comparison or control group was reported.	No follow up period was reported but outcomes given in form of an update '18 months on'.	No clear outcome measures reported. Male participants engaged by the program observed to have ceased VSU (not specified but implied >50% of sample) Female participants observed to still be occasional VSU. Six of nine participants had very short term re-engagement with primary school education. Males increased participation in representative football.	Quantitative data is not presented to allow analysis of effect size.	This pilot program was one part of a community mobilisation effort that included traders reducing supply, up-skilling in schools and collaboration to develop care pathways. The low quality of methods and reporting make it difficult to reach firm conclusions about the benefits of this program. It provides some indication that recreation and life skill activities may effectively be part of a mixed response to VSU, however insufficient data is provided for adequate evaluation. It also highlights some of the implementation difficulties with multi-agency and culturally based approaches.	Ethics: Not stated. Researchers: Not stated. Participants: Indigenous Australians.

9b Activity and youth development programs evidence table *(continued)*

Reference: author/s, year, title of paper, journal, study purpose	Evidence Level: study quality	Participants	Professional and Healthcare setting	Intervention	Comparison	Length of follow up	Outcomes	Effect Size: response rates cooperation rate, treatment of missing data	Comments	Indigenous involvement: Indigenous ethics approval, researchers, participants
Burns, C. Currie, B. et al. (1995). Evaluation of strategies used by remote Aboriginal community to eliminate petrol sniffing, *Medical Journal Of Australia,* 163(2): 82-86. Aim: To evaluate strategies for reducing petrol sniffing in a remote NT community. Country: Australia	Level IV Pre -post test case series. Well reported study based on pre & post intervention questionnaire, community reporting and crime statistics (court files 1987-1994). Suitable ethics and data analysis used and reported.	N=55 males Maningrida, an NT Aboriginal community (29% of the male population). Mean age = 21 yrs (range 13-32 yrs). Non-sniffers (n=13) Petrol sniffers (n=27) Ex-sniffers (n=15).	Community workers in a community health setting.	Employment and skills training programs for young people, initiated by community council, targeted at young people. This was concurrent with the strategy of substituting petrol with aviation gasoline (avgas).	No comparison or control group was reported within subjects design with pre and post intervention blood tests and interviews. Brief note of other communities using petrol replacement strategy that did not compare as well with Maningrida in regards to longer term success.	Follow up study conducted 20 months after strategies. Median blood lead level (µmol/L), and employment measured in 1992 (pre) and 1994 (post).	Measures of petrol sniffing status included blood tests of lead levels and self and community reporting; employment status was measured by questionnaire; court files pre and post intervention measured community crime offending behaviours. Petrol sniffing in Maningrida reportedly ceased in the four months after introduction of avgas and no evidence found of petrol sniffing at follow up. Two participants reportedly continued sniffing elsewhere. Significantly increased employment status (includes participation in school or other formal education) for petrol sniffer group: (n=27) pre n=2 (7%) to post n=17 (63%). Significantly decreased mean blood lead levels (µmol/L) for petrol sniffer group; (n = 18) pre 1.72 (1.22 – 2.9) post 0.85 (0.51 – 1.31). Reduced petrol sniffing related crime in the community reduced from annual average 1982-93 of 57 court files to 0 since 1993.	An effect size was reported for median blood lead level (µmol/L) -0.74; p = <0.001. 15 participants did not participate in follow up interviews, with 13 no longer residing in Maningrida. Missing follow up data on employment status and VS use were supplied by local Aboriginal research assistants, family members and Aboriginal health workers.	Study concluded that success of supply reduction and replacement appears to depend on community resolve and input as well as accompanying strategies such as employment and skills training. Suggests that combined approaches can have significant impact on petrol sniffing over extended period, while emphasising a need for coordinated strategies.	Ethics: Study protocol approved by ethics and Indigenous subcommittee. Researchers: Indigenous Australians. Participants: Indigenous Australians.

9b Activity and youth development programs evidence table *(continued)*

Reference: author/s, year, title of paper, journal, study purpose	Evidence Level: study quality	Participants	Professional and Healthcare setting	Intervention	Comparison	Length of follow up	Outcomes	Effect Size: response rates/ cooperation rate, treatment of missing data	Comments	Indigenous involvement: Indigenous ethics approval, researchers, participants
Simpson, D. D. (1992). A longitudinal study of inhalant use: implications for treatment and prevention. In *Inhalant abuse: a volatile research agenda. National Institute on Drug Abuse research monograph series 129.* Aim: Summarizes follow up research of young Mexican American youth in Texas who entered the Youth Advocacy Program (YAP). Country: USA	Level IV Pre-post test case series. Follow up of clients attending Youth Advocacy Program (YAP) between 1979-1985.	N=175 Mexican-American youth aged 13-17 years at time of treatment. Follow up data successfully obtained for n=110 clients (86% of original sample). Analysed in three groups of user: (1) Weekly n=21, (2) Monthly n=19, (3) Experimental (no definition reported) n=21, (4) No VSU n=41.	Individual counselling (not described), a variety of recreation activities, cultural enrichment, academic tutoring and related life skills. Average duration of treatment was 13 months where they completed individual counselling and recreational activities.	No comparison group was reported.	Inhalant use was measured preadmission but measures were not specified. The percentage of clients using any inhalants decreased from 36% at intake to 24% (year one follow up) and 6% at year four follow up. The study reported better outcomes for experimental versus monthly or weekly inhalant users at intake. Experimental users at intake reported no past year VSU at four year follow up. 5% of 19 monthly inhalant users at intake reported past year VSU at four year follow up. 24% of 21 weekly inhalant users at intake reported past year VSU at four year follow up.	Professionals not stated. Non residential setting, not described.	'One year' follow up period not clearly reported, but appears to be one year post admission. 'Four year' follow up occurred at an 'average of four years post admission'.	No effect size reported or able to be calculated from the data presented in this paper.	The authors concluded that intervention is increasingly difficult as youth become more involved with drugs. It is not possible to determine to what extent these outcomes are related to maturation or other factors, rather than the interventions described. The effect of counselling interventions on these outcomes cannot be determined.	Ethics: Not stated. Researchers: No. Participants: No.

9c Activity and youth development programs NHMRC Evidence Statement Form

Key question(s): Activity and Youth Development Programs Q9.1 – Q9.6		Evidence table ref: 9B
1. Evidence base *(number of studies, level of evidence and risk of bias in the included studies)*		
The evidence base comprised of: • One level IV qualitative program evaluation • Two level IV case series study • Two conference papers containing level IV case series data • Two level IV pre-post test case series study	A	One or more level I studies with a low risk of bias or several level II studies with a low risk of bias
	B	One or two Level II studies with a low risk of bias or SR/several Level III studies with a low risk of bias
	C	One or two Level III studies with a low risk of bias or Level I or II studies with a moderate risk of bias
	D	Level IV studies or Level I to III studies/SRs with a high risk of bias
2. Consistency *(if only one study was available, rank this component as 'not applicable')*		
• For the studies related to chronic use the results were consistent indicating that in general activity programs have a positive impact	**A**	All studies consistent
	B	Most studies consistent and inconsistency can be explained
	C	Some inconsistency, reflecting genuine uncertainty around question
	D	Evidence is inconsistent
	NA	Not applicable (one study only)
3. Clinical impact *(Indicate in the space below if the study results varied according to some unknown factor (not simply study quality or sample size) and thus the clinical impact of the intervention could not be determined)*		
• For the studies related to chronic use there is a large impact although the impact is often short-term	**A**	Very large
	B	Moderate
	C	Slight
	D	Restricted
4. Generalisability *(How well does the body of evidence match the population and clinical settings being targeted by the Guideline?)*		
• For the studies focusing on chronic users most evidence was generalisable • Mainly adolescent participants. A couple of studies did include slightly older participants (young adults) • Only two of the studies were non-indigenous (one Australian and one American). • Some of the activities in the studies were high risk e.g. exciting – so results may only be generalisable to similar activities	A	Evidence directly generalisable to target population
	B	Evidence directly generalisable to target population with some caveats
	C	Evidence not directly generalisable to the target population but could be sensibly applied
	D	Evidence not directly generalisable to target population and hard to judge whether it is sensible to apply
5. Applicability *(Is the body of evidence relevant to the Australian healthcare context in terms of health services/delivery of care and cultural factors?)*		
• Yes, activity and youth development programs are currently available in Australia	A	Evidence directly applicable to Australian healthcare context
	B	Evidence applicable to Australian healthcare context with few caveats
	C	Evidence probably applicable to Australian healthcare context with some caveats
	D	Evidence not applicable to Australian healthcare context

9c Activity and youth development programs NHMRC Evidence Statement Form *(continued)*

Other factors *(Indicate here any other factors that you took into account when assessing the evidence base (for example, issues that might cause the group to downgrade or upgrade the recommendation))*

EVIDENCE STATEMENT MATRIX

Please summarise the development group's synthesis of the evidence relating to the key question, taking all the above factors into account.

Component	Rating	Description
1. Evidence base	D	
2. Consistency	A	
3. Clinical impact	A	
4. Generalisability	B	
5. Applicability	B	

Indicate any dissenting opinions

RECOMMENDATION *What recommendation(s) does the guideline development group draw from this evidence? Use action statements where possible.*	**GRADE OF RECOMMENDATION** D	

In relation to other recommendations, the committee determined the evidence base to be insufficient on which to base further evidence-based recommendations (EBRs) about activity and youth development programs. Therefore the committee used expert opinion to develop practice points (PPs) about activity and youth development program in addition to the graded recommendation above.

10a Residential rehabilitation summary table

Clinical question	References	Comment
10.1 For *opportunistic and/or polydrug* VSU, are residential rehabilitation programs associated with changed outcomes?	N=2 Youth Solvent Addiction Committee, 2006[29] Dell et al, 2005[31]	Youth Solvent Addiction Committee, 2006[29] was an annual report from Canadian solvent abuse treatment centres for Indigenous youth. It contains Level IV case series data on different measures for two services. It provided some positive indication of the effectiveness of clinicocultural residential treatment for Indigenous Canadian VSU, however outcome data are unavailable for the other eight centres. Outcomes not differentiated by level of use. Dell et al, 2005[31] contained Level IV case series pre-post test data. Data provided suggests positive outcomes for one service only (no outcome data available for other services). Outcomes not differentiated by level of use.
10.2 For *chronic* VSU, are residential rehabilitation programs associated with changed outcomes?	N=5 Sakai et al, 2006[37] Youth Solvent Addiction Committee, 2006[29] Dell et al, 2005[31] Coleman et al, 2001[30] Dinwiddie et al, 1987[43]	Sakai et al, 2006[37] was a well-designed Level IV pre-post test case study series. Outcome data for clients with baseline past month VSU provides some indication of positive effects of residential rehabilitation (very small sample). Youth Solvent Addiction Committee, 2006[29] was an annual report from Canadian solvent abuse treatment centres for Indigenous youth. It contains Level IV case series data on different measures for two services. It provided some positive indication of the effectiveness of clinicocultural residential treatment for Indigenous Canadian VSU however outcome data are unavailable for the other eight centres. Outcomes not differentiated by level of use. Dell et al, 2005[31] was a Level IV that contains pre-post test case series data. Data provided suggest positive outcomes for one service only (no outcome data available for other services). Outcomes not differentiated by level of use. Coleman et al, 2001[30] was a Level IV, pre-post test case series study. It suggested poor outcomes from residential drug treatment and aftercare for chronic VSU aged 7-19. Dinwiddie et al, 1987[43] was a Level IV retrospective case file analysis study involving a small sample and suggesting poor outcomes from residential drug treatment and aftercare for chronic adult VSU.
10.3 For *pregnant* volatile substance users, are residential rehabilitation programs associated with changed outcomes?	N=0	

…continued

Clinical question	References	Comment
10.4 For volatile substance users with *comorbid conditions*, are residential rehabilitation programs associated with changed outcomes?	N=1 Sakai et al, 2006[37]	Sakai et al, 2006[37] was a well-designed Level IV pre-post test case series study. Outcome data for clients diagnosed with at least three conduct disorder symptoms and with baseline past month VSU provides some indication of positive effects of residential rehabilitation (very small sample).
10.5 For volatile substance users who are *intellectually and impulse compromised*, are residential rehabilitation programs associated with changed outcomes?	N=0	

10b Residential rehabilitation evidence table

Reference: author/s, year, title of paper, journal, study purpose	Evidence Level: study quality	Participants	Professionals and Healthcare setting	Intervention	Comparison	Length of follow up	Outcomes	Effect Size: response rates/ cooperation rate, treatment of missing data	Comments	Indigenous involvement: Indigenous ethics approval, researchers, participants
Sakai, J. T., Mikulich-Gilbertson, s. K., and Crowley, T. J. (2006). Adolescent inhalant use among male patients in treatment for substance and behaviour problems: two-year outcome. *The American Journal of Drug and Alcohol Abuse*, 32: 29-40. Aim: To compare outcomes for adolescents with and without reported lifetime inhalant use admitted to substance dependence and conduct disorder (CD) residential services. Country: USA	Level IV Pre-post test case series. The study appears well conducted and described, however the focus of analysis and reporting is on correlates with VSU, rather than treatment outcomes.	80 male adolescents aged 13-19 with a diagnosis of substance dependence and at least three symptoms of conduct disorder (n=111). 34 reported lifetime VSU and 46 reported other drug use (not VSU) at baseline.	Professionals not stated, but from description likely to be psychiatry related. Setting was a university residential treatment program for males with serious substance and behavioural disorders.	Treatment model: A modified therapeutic community, utilising a behavioural approach to rewarding positive and punishing poor behaviour. Interventions include structured and clinical interviews, medical evaluation, referral for neuropsychological testing and psychiatric medication as required, individual and family counselling and individualised educational instruction. Residential treatment duration was 6-12 months.	No comparison group reported.	2 years post-treatment admission.	Comprehensive Addiction Severity Index (CASI) used to assess substance dependence and Diagnostic Interview for Children (DIC) to assess conduct disorder. At baseline 14 clients met DSM III-R for lifetime abuse or dependence. Main finding: inhalant use predicts more severe conduct disorder post-treatment. Seven reported past month VSU at baseline and at follow up one client reported two days of VSU within the past month.	Effect size was not reported and no data were reported for sample of inhalants users at baseline. Outcomes are described in text only.	Study provides some indication of positive effects of residential rehabilitation. However methods and results not well reported so firm conclusions cannot be made.	Ethics: Approval but not Indigenous approval. Researchers: Not stated. Participants: Not stated.

10b Residential rehabilitation evidence table *(continued)*

Reference: author/s, year, title of paper, journal, study purpose	Evidence Level: study quality	Participants	Professionals and Healthcare setting	Intervention	Comparison	Length of follow up	Outcomes	Effect Size: response rates/ cooperation rate, treatment of missing data	Comments	Indigenous involvement: Indigenous ethics approval, researchers, participants
Youth Solvent Addiction Committee. (2006). *Youth Solvent Addiction Committee Annual Report.* [no place of publication]. Youth Solvent Addiction Committee. Aim: Reports on work of committee and 10 First Nation Youth Treatment Centres. Country: Canada	Level IV Program evaluation including pre-post test case data. This study reports minimal program data and provides no detail of outcome measures, results or study design.	Clients at Nimkee Nupigawagan Health Centre (NNHC): N=27. Age range: 12-17 yrs. Clients at Ka-Na-Chi-Hih Treatment Centre (KNCHC) N=37. Age range: 16-25 yrs.	(Canadian) Aboriginal Health workers, AOD workers and traditional practitioners; First Nation Youth Treatment Centres (specialist solvent abuse treatment services).	Interventions are culturally based; care is provided by traditional practitioners in a residential setting. Interventions included: fasting ceremonies, bi-weekly sweat lodge ceremonies, memorial feasts.	No comparison group was reported. The two centres were not compared to each other as outcomes measured differed across sites.	Follow up relapse rate reported but timeframe and method not stated. Estimated maximum of one year (no further details provided).	Outcomes indicated for two centres only. NNHC: 84% did not relapse with inhalants post-treatment 67% abstinent of 'any substance'. KNCHC: 75% of graduates entered education programs post treatment. No other outcome measures provided.	No effect size or other analysis was reported nor could be calculated from data provided.	Provides some positive indication for the effectiveness of clinicocultural residential treatment for Indigenous Canadian VSU. This is an annual report with very minimal treatment outcome data reported.	Ethics: Not stated. Researchers: Indigenous Canadians. Participants: Indigenous Canadians.

10b Residential rehabilitation evidence table *(continued)*

Reference: author/s, year, title of paper, journal, study purpose	Evidence Level: study quality	Participants	Professionals and Healthcare setting	Intervention	Comparison	Length of follow up	Outcomes	Effect Size: response rates/ cooperation rate, treatment of missing data	Comments	Indigenous involvement: Indigenous ethics approval, researchers, participants
Dell, C., Dell, D., and Hopkins, C. (2005). Resiliency and holistic inhalant abuse treatment. *Journal of Aboriginal Health*, 2: 1-12. Aim: Describes an approach to treatment termed 'holistic resiliency'. Country: Canada	Level IV Includes pre-post test case series data. Low quality study which was a qualitative case series but lacks description of evaluation process, data collection, analysis.	Number of participants was not reported. First Nation Canadian young people aged 12-26 years.	Professionals not specified. Healing centres.	A solvent addiction residential treatment, which was a culturally-based program governed by First Nation people using a holistic concept of resilience. Treatment included interaction with family and community. Cultural activities include sweat lodge, fasting, drumming and socials, use of natural medicines and traditional assessments by Elders.	No comparison group was reported.	Six months post treatment.	Outcome data for one service only was reported. High rates of abstinence at follow up, which had increased over one year from 82% to 95% . High and increasing rates of treatment completion: 73%-80%. Other data and outcomes not reported.	No effect size was reported and none can be calculated.	Outcome data provided suggested positive outcomes for one service described. This study lacks detail to evaluate effectiveness of treatment model or the validity of the authors' proposal that adherence to a 'holistic conception of resiliency' has enabled successful residential treatment for young volatile substance users. Also comparable outcomes for other programs utilising the approach are not provided; it may be the case that these services have poorer outcomes.	Ethics: No. Researchers: Indigenous Canadians. Participants: Indigenous Canadians.

10b Residential rehabilitation evidence table *(continued)*

Reference: author/s, year, title of paper, journal, study purpose	Evidence Level: study quality	Participants	Professionals and Healthcare setting	Intervention	Comparison	Length of follow up	Outcomes	Effect Size: response rates/ cooperation rate, treatment of missing data	Comments	Indigenous involvement: Indigenous ethics approval, researchers, participants
Coleman, H., Charles, G. and Collins, J. (2001). Inhalant use by Canadian Aboriginal youth. *Journal of Child and Adolescent Substance Abuse*, 10: 1-20. Aim: To explore predictors of relapse for youth receiving residential culturally-informed treatment for VSU. Country: Canada	Level IV Pre-post test case series. Low quality study with some outcomes that are inconsistently reported. Statistical reporting in other parts of the study included negative betas accompanied by odds ratios greater than one; suggesting incorrect analysis or reporting of the data.	N=78 Mean age: 14yrs; range 7 –19yrs) . Female n=21; Male n=57. Aboriginal young people presenting to treatment with inhalant abuse over 2.5 year period. 70% concurrent abuse of other drugs. 91% sniffing gasoline.	Professionals not stated. AOD speciality residential rehabilitation service for first component, followed by treatment within home communities.	Residential VSU treatment program for Aboriginal youth. Intervention based on Aboriginal and non-Aboriginal approach to healing. Provided residential detoxification and included traditional ceremonies, individual, family and group therapy and access to specialist clinical services. Average treatment length was 176.4 days (Range 7-423 days).	No comparison group was reported.	Follow up approximately two years post discharge.	55 (83%) of 66 clients for whom follow up data was available left treatment before completion. 56 (71.8%)[4] of 78 clients relapsed after treatment.	Descriptive results only were reported. No effect sizes were reported or could be calculated from the data.	High levels of early drop out and relapse indicated after residential treatment. Study focused on variables predictive of relapse. Inconsistent reporting of some treatment outcomes.	Ethics: Not stated. Researchers: Not stated. Participants: Indigenous Canadians.

10b Residential rehabilitation evidence table *(continued)*

Reference: author/s, year, title of paper, journal, study purpose	Evidence Level: study quality	Participants	Professional and Healthcare setting	Intervention	Comparison	Length of follow up	Outcomes	Effect Size: response rates/ cooperation rate, treatment of missing data	Comments	Indigenous involvement: Indigenous ethics approval, researchers, participants
Dinwiddie, S.H. Zorumski, C.F., and Rubin, E.H. (1987). Psychiatric correlates of chronic solvent abuse. *J. Clinical Psychiatry*, 48(8): 334-337. Aim: To identify medical and psychiatric illness and other substance use in a sample of 11 adult chronic solvent users. Country: USA	Level IV Case series. Retrospective case file analysis. Included outpatient records for information about relapse. Interventions poorly described, and methods poorly reported.	N=11 chronic VSU admitted to an inpatient drug rehabilitation program for solvent abuse (n=10) and psychiatric program in same service (n=1). Mean age 23.2 +/-4.3 (range 19-32 yrs). Seven males, four females. Average of first use of solvents was 15.7 +/-5.4 years. High rates of polydrug use (mostly cannabis and alcohol). Six participants with anti-social personality disorder.	Professionals not specified. Inpatient drug and alcohol treatment program with an outpatient follow up.	Inpatient drug and alcohol treatment program with an outpatient follow up. No further details provided.	No comparison group or intervention.	No systematic follow up reported as it was a retrospective case file review. Last date of observed relapse was 180 days.	Primary measure was patient success in completing inpatient drug rehabilitation. Compliance with outpatient aftercare also measured. Five patients left residential treatment against medical advice. All 10 attended aftercare sporadically. All 10 relapsed within six months, with average relapse time of 40 days (range 1-180 days). One patient abstained for more than two months, two reported resuming VSU on day of discharge.	This was a retrospective case file analysis and no effect size was reported or can be calculated.	The study involved a small sample size and no comparison data were reported. It suggests poor outcomes from residential drug treatment and aftercare for chronic VSU. The authors point out that this outcome may be related to the chronicity of solvent abuse within the sample, however as there is no comparison group this assertion cannot be evaluated.	Ethics: Not stated. Researchers: Not stated. Participants: Not stated.

10c Residential rehabilitation NHMRC Evidence Statement Form

Key question(s): Residential rehabilitation Q10.1 – Q10.5		Evidence table ref: 10B
1. Evidence base *(number of studies, level of evidence and risk of bias in the included studies)*		
The evidence base comprised of: • Three level IV pre-post test case series study • One annual report containing level IV case series data • One level IV retrospective case file analysis study There were concerns about the quality of the studies and drop out rates	A	One or more level I studies with a low risk of bias or several level II studies with a low risk of bias
	B	One or two Level II studies with a low risk of bias or SR/several Level III studies with a low risk of bias
	C	One or two Level III studies with a low risk of bias or Level I or II studies with a moderate risk of bias
	D	Level IV studies or Level I to III studies/SRs with a high risk of bias
2. Consistency *(if only one study was available, rank this component as 'not applicable')*		
• Results are inconsistent. There are some negative and some positive outcomes. • Three studies reported positive effects of residential treatment while two studies reported that it was associated with negative outcomes • There may be some variables that may explain the inconsistency such as selective reporting, context and culture	A	All studies consistent
	B	Most studies consistent and inconsistency can be explained
	C	Some inconsistency, reflecting genuine uncertainty around question
	D	Evidence is inconsistent
	NA	Not applicable (one study only)
3. Clinical impact *(Indicate in the space below if the study results varied according to some unknown factor (not simply study quality or sample size) and thus the clinical impact of the intervention could not be determined)*		
• Positive outcomes were quite marginal	A	Very large
	B	Moderate
	C	Slight
	D	Restricted
4. Generalisability *(How well does the body of evidence match the population and clinical settings being targeted by the Guideline?)*		
• All of the studies were based in North America. Elements of the residential rehabilitation were described in detail so comparisons to Australian residential rehabilitation services cannot be made. Therefore it is unknown if the body of evidence is generalisable	A	Evidence directly generalisable to target population
	B	Evidence directly generalisable to target population with some caveats
	C	Evidence not directly generalisable to the target population but could be sensibly applied
	D	Evidence not directly generalisable to target population and hard to judge whether it is sensible to apply
5. Applicability *(Is the body of evidence relevant to the Australian healthcare context in terms of health services/delivery of care and cultural factors?)*		
• Residential rehabilitation is a service that is offered in Australia	A	Evidence directly applicable to Australian healthcare context
	B	Evidence applicable to Australian healthcare context with few caveats
	C	Evidence probably applicable to Australian healthcare context with some caveats
	D	Evidence not applicable to Australian healthcare context

10c Residential rehabilitation NHMRC Evidence Statement Form *(continued)*

Other factors *(Indicate here any other factors that you took into account when assessing the evidence base (for example, issues that might cause the group to downgrade or upgrade the recommendation))*

EVIDENCE STATEMENT MATRIX

Please summarise the development group's synthesis of the evidence relating to the key question, taking all the above factors into account.

Component	Rating	Description
1. Evidence base	D	
2. Consistency	D	
3. Clinical impact	D	
4. Generalisability	D	
5. Applicability	C	

Indicate any dissenting opinions

RECOMMENDATION *What recommendation(s) does the guideline development group draw from this evidence? Use action statements where possible.*	GRADE OF RECOMMENDATION N/A	

The committee determined the evidence base to be insufficient on which to base evidence-based recommendations (EBRs) about the role of residential rehabilitation in the management of VSU. Accordingly, the committee used expert opinion to develop consensus-based recommendations (CBRs) and one practice point (PP) for residential rehabilitation.

11a Outstation rehabilitation summary table

Clinical Question	References	Comment
11.1 For *occasional* VSU, what features of outstation programs are associated with changed outcomes?	N=1 Preuss and Napanangka Brown, 2006[26]	Preuss and Napanangka Brown, 2006[26] was a Level IV qualitative program evaluation including pre-post test case series data. It suggested that outstation rehabilitation programs may be part of an effective multi-faceted approach to reducing petrol sniffing in Indigenous communities. Outcomes are not differentiated by level of VSU. Data reported in this study are also reported in an unpublished study (Stojanovski 1994)*.
11.2 For *opportunistic and/ or polydrug* VSU, what features of outstation programs are associated with changed outcomes?	N=1 Preuss and Napanangka Brown, 2006[26]	Preuss and Napanangka Brown, 2006[26] was a Level IV qualitative program evaluation including pre-post test case series data. It suggested that outstation rehabilitation programs may be part of an effective multi-faceted approach to reducing petrol sniffing in Indigenous communities. Outcomes are not differentiated by level of VSU.
11.3 For *chronic* VSU, what features of outstation programs are associated with changed outcomes?	N=1 Preuss and Napanangka Brown, 2006[26]	Preuss and Napanangka Brown, 2006[26] was a Level IV qualitative program evaluation including pre-post test case series data. It suggested that outstation rehabilitation programs may be part of an effective multi-faceted approach to reducing petrol sniffing in Indigenous communities. Outcomes are not differentiated by level of VSU.
11.4 For *pregnant* volatile substance users, what features of outstation programs are associated with changed outcomes?	N=0	
11.5 For volatile substance users with *comorbid conditions*, what features of outstation programs are associated with changed outcomes?	N=0	
11.6 For volatile substance users who are *intellectually and impulse compromised*, what features of outstation programs are associated with changed outcomes?	N=0	

* Stojanovski, A. J. (1994). The Yuendumu story–about petrol sniffing: July 1993 through to September 1994: Unpublished paper commissioned by Petrol Link Up and funded through the National Drug Strategy.

11b Outstation rehabilitation evidence table

Reference: author/s, year, title of paper, journal, study purpose	Evidence Level: study quality	Participants	Professional and Healthcare setting	Intervention	Comparison	Length of follow up	Outcomes	Effect Size: response rates/ cooperation rate, treatment of missing data	Comments	Indigenous involvement: Indigenous ethics approval, researchers, participants
Preuss, K., and Brown, J. N. (2006). Stopping petrol sniffing in remote Aboriginal Australia: Key elements of the Mt Theo Program. Drug and Alcohol Review, 25(3): 189-193. Aim: To demonstrate key elements that have contributed to the Mt Theo Program's achievements. Country: Australia	Level IV Qualitative program evaluation includes pre-post test data. Study findings are credible but outcomes report only on program data. The case evaluation is a narrative account with little detail of sample or outcomes.	Participants not clearly described. Chronic, occasional and experimental young VSU (age not reported) in an NT remote Indigenous community. Number of participants not clearly reported but outcomes state pre- intervention numbers of 70 VSU.	Aboriginal health and youth workers, community members. Outstation and community.	Petrol sniffers were taken to a culturally important place, Mt Theo Outstation, for one month. The outstation is residential and entirely Aboriginal run; elders lead activities and provide guidance. Concurrent youth activities program provided in Yuendumu including: sports, discos, film nights, cultural activities.	No comparison group or intervention was reported.	No follow up period was reported.	No outcome measures provided. Number of petrol sniffers reduced from 70 to zero over nine year period. Outcomes are reported from data in unpublished program documents.	Quantitative data is not presented to allow analysis of effect size.	Suggests that outstation rehabilitation programs may be part of an effective multi-faceted approach to reduced petrol sniffing. The study is a descriptive evaluation, drawing on program reports. Little detail is provided of evaluation methods, participants etc. Assessment of quality of the results is not possible without access to program data.	Ethics: Not stated. Researchers: Indigenous Australians. Participants: Indigenous Australians.

11c Outstation rehabilitation NHMRC Evidence Statement Form

Key question(s): Outstation rehabilitation Q11.1 – Q11.6		Evidence table ref: 11B
1. Evidence base *(number of studies, level of evidence and risk of bias in the included studies)*		
• The evidence base comprised one level IV qualitative program evaluation with a high risk of bias	A	One or more level I studies with a low risk of bias or several level II studies with a low risk of bias
	B	One or two Level II studies with a low risk of bias or SR/several Level III studies with a low risk of bias
	C	One or two Level III studies with a low risk of bias or Level I or II studies with a moderate risk of bias
	D	Level IV studies or Level I to III studies/SRs with a high risk of bias
2. Consistency *(if only one study was available, rank this component as 'not applicable')*		
• Not applicable. Only one study	A	All studies consistent
	B	Most studies consistent and inconsistency can be explained
	C	Some inconsistency, reflecting genuine uncertainty around question
	D	Evidence is inconsistent
	NA	Not applicable (one study only)
3. Clinical impact *(Indicate in the space below if the study results varied according to some unknown factor (not simply study quality or sample size) and thus the clinical impact of the intervention could not be determined)*		
• Moderate / large when part of a multifaceted approach • Not enough detail was reported in the study to determine which features are important for positive outcomes	A	Very large
	B	Moderate
	C	Slight
	D	Restricted
4. Generalisability *(How well does the body of evidence match the population and clinical settings being targeted by the Guideline?)*		
• Results are specific to remote Central Australia. So the body of evidence is probably not generalisable to the whole of Australia. • The therapeutic community model is generalisable • Mean age 24.9 years M: 40 F: 0	A	Evidence directly generalisable to target population
	B	Evidence directly generalisable to target population with some caveats
	C	Evidence not directly generalisable to the target population but could be sensibly applied
	D	Evidence not directly generalisable to target population and hard to judge whether it is sensible to apply
5. Applicability *(Is the body of evidence relevant to the Australian healthcare context in terms of health services/delivery of care and cultural factors?)*		
• Currently, there are only two outstations in Australia, primarily designed for people Aboriginal people who use volatile substances	A	Evidence directly applicable to Australian healthcare context
	B	Evidence applicable to Australian healthcare context with few caveats
	C	Evidence probably applicable to Australian healthcare context with some caveats
	D	Evidence not applicable to Australian healthcare context

11c Outstation rehabilitation NHMRC Evidence Statement Form *(continued)*

Other factors *(Indicate here any other factors that you took into account when assessing the evidence base (for example, issues that might cause the group to downgrade or upgrade the recommendation))*

EVIDENCE STATEMENT MATRIX

Please summarise the development group's synthesis of the evidence relating to the key question, taking all the above factors into account.

Component	Rating	Description
1. Evidence base	D	
2. Consistency	N/A	
3. Clinical impact	B	
4. Generalisability	B	
5. Applicability	C	

Indicate any dissenting opinions

RECOMMENDATION *What recommendation(s) does the guideline development group draw from this evidence? Use action statements where possible.*	GRADE OF RECOMMENDATION N/A	

The committee determined the evidence base to be insufficient on which to base evidence-based recommendations (EBRs) about the role of outstation rehabilitation in the management of VSU. Accordingly, the committee used expert opinion to develop consensus-based recommendations (CBRs) and one practice point (PP) for outstation rehabilitation.

12a Managing co-existing health conditions summary table

Clinical question	References	Comment
12.1 For volatile substance users with *comorbid conditions*, are anti-depressive or anti-psychotic medications associated with changed outcomes?	N=2 Hernandez-Avila et al, 1998[44] Sakai et al, 2006[37]	Hernandez-Avila et al, 1998[44] was a Level II study with a double blind RCT. The study indicated that carbamazepine and haloperidol have similar efficacy in treating inhalant induced psychotic disorder, with approximately 50% treatment response, but that carbamazepine was associated with fewer and less severe side effects. Sakai et al, 2006[37] was a Level IV pre-post test case series study involving patients prescribed unidentified psychiatric medications as part of treatment.

12b Managing co-existing health conditions evidence table

Reference: author/s, year, title of paper, journal, study purpose	Evidence Level: study quality	Participants	Professionals and Healthcare setting	Intervention	Comparison	Length of follow up	Outcomes	Effect Size: response rates/ cooperation rates, treatment of missing data	Comments	Indigenous involvement: Indigenous ethics approval, researchers, participants
Hernandez-Avila et al. (1998). Treatment of inhalant induced psychotic disorder with carbamazepine v. haloperidol. *Psychiatric Services*, 49(6): 812-815. Aim: To compare the efficacy and effects of carbamazepine and haloperidol in treatment of inhalant-induced psychosis. Country: Mexico	Level II Double blind RCT. This is an RCT but it is poorly reported. Randomisation and blinding methods are not described.	N=40 Adult males with inhalant dependence and induced organic mental disorder. Mean age 24.9 yrs with mean 119.6 months of inhalant use and mean BPRS score 25.2	Mental health workers in acute psychiatric unit.	n=20 200mg of carbamazepine ingested in capsule form. Initially one capsules three times a day; non responders up to eight capsules a day increased by one capsule a week. Plus 5mg haloperidol PRN for management of severe anxiety (45% of patients).	n=20 5mg haloperidol ingested in capsule form. Initially 1 capsules 3 times a day; non responders up to 8 capsules a day increased by 1 capsule a week. Plus 5mg haloperidol PRN for management of severe anxiety (20% of patients).	Reports on symptoms after five weeks of treatment. No post-treatment follow up.	Brief Psychiatric Rating Scale (BPRS) and DiMascio Extrapyramidal Symptoms (DMEPS) Scale used to measure psychiatric symptoms and side effects weekly. Both groups showed statistically significant reduction in severity of psychotic symptoms assessed by the BPRS (48.3% carbamazepine v 52.7% haloperidol). No statistically significant difference between groups. 45% carbamazepine and 50% haloperidol considered responders (ie at least 50% reduction on BPRS). Significantly fewer and less severe side effects (extrapyramidal symptoms) were associated with carbamazepine than haloperidol (DMEPS).	There was no significant difference between those receiving carbamazepine and haloperidol on the BPRS. There was a significant difference between the two groups on extrapyramidal symptoms (as side effects) on the DMEPS. No effect size was reported but an effect size of 3.6 on BPRS was calculated from the reported data: 4.3 +/- 2.9 for haloperidol; 0.7 +/- 1.1 for carbamazepine, with the higher number indicating more severe symptoms.	The study indicates that both medications have similar efficacy with approximately 50% treatment response, but that carbamazepine is associated with fewer and less severe side effects. Findings are compromised by haloperidol PRN in both groups making it difficult to draw conclusions about the comparative effects of the medications. Nine patients terminated treatment because of side effects (five carbamazepine group; four haloperidol group). This was due to: psychomotor agitation (three patients in carbamazepine group and two in haloperidol group); skin rash (One in carbamazepine group); elevated liver enzymes (one in carbamazepine group); anticholinergic delirium after administration of biperiden (one in haloperidol group) and severe extrapyramidal symptoms (one in haloperidol group).	Ethics: Not stated. Researchers: Not stated. Participants: Not stated.

12b Managing co-existing health conditions evidence table *(continued)*

Reference: author/s, year, title of paper, journal, study purpose	Evidence Level: study quality	Participants	Professionals and Healthcare setting	Intervention	Comparison	Length of follow up	Outcomes	Effect Size: response rates/ cooperation rates, treatment of missing data	Comments	Indigenous involvement: Indigenous ethics approval, researchers, participants
Sakai, J. T., Mikulich-Gilbertson, S. K., and Crowley, T. J. (2006). Adolescent inhalant use among male patients in treatment for substance and behaviour problems: Two-year outcome. *The American Journal of Drug and Alcohol Abuse, 32*(1): 29-40. Aim: To compare outcomes for adolescents with and without reported lifetime VSU admitted to substance dependence and conduct disorder residential service. Country: USA	Level IV Pre - post test case series. The study is well conducted and described, however the focus of analysis and reporting is on correlates of VSU, not treatment outcomes for VSU. NOTE: This table reports on treatment outcome data for the sub-sample who met baseline DSM III-R criteria for abuse and dependence as these data address the clinical question.	Outcomes of interest relate to a small sub-sample (n=14). Study sample comprises adolescents aged 13-19 admitted to residential treatment with diagnosis of substance dependence and at least three symptoms of conduct disorder (N=111). Baseline assessment available for n=80, all followed up. 34 reported lifetime VSU and 46 reported use of other drugs at baseline. At baseline 14 clients met DSM III-R criteria for lifetime VS abuse or dependence and seven reported past month VSU.	Professionals not stated but included psychiatric interventions. University residential treatment facility.	Multimodal residential treatment program for adolescent males with serious VSU and behavioural disorder. Interventions included structured and clinical interviews, medical evaluation, referral for neuropsychological testing and psychiatric medication as required, individual and family counselling and individualised educational instruction. No details of psychiatric medications were reported.	Multimodal residential treatment program for adolescent males with behavioural disorder but without VSU.	Two years post-baseline follow up (treatment admission).	Comprehensive Addiction Severity Index (CASI) used to assess substance dependence. Of 14 clients meeting DSM III-R criteria for lifetime volatile substance abuse or dependence at baseline, none reported met VSU abuse or dependence criteria at follow up. Of seven who reported past month VSU one client reported two days of VSU within the past month. No outcomes are provided specifically for clients receiving psychiatric medications.	Outcomes for clients with lifetime VSU dependence are described in text as a percentage without a table presenting data to enable calculation of effect size.	This study compared outcomes for adolescents with lifetime VSU with those without lifetime VSU. History of VSU predicted more severe conduct disorder post-treatment. Outcome data for clients with baseline past month VSU provides some indication of positive effects of residential rehabilitation, but conclusions cannot be drawn as to the effects of psychiatric medication.	Ethics: Approval but not Indigenous approval. Researchers: Not stated. Participants: Not stated.

12c Managing co-existing health conditions NHMRC Evidence Statement Form

Key question(s): Managing co-existing health conditions Q12.1 – Q12.1		Evidence table ref: 12B
1. Evidence base *(number of studies, level of evidence and risk of bias in the included studies)*		
• The evidence base comprised one level IV pre-post test case series study with a high risk of bias and one level II double-blinded RCT	A	One or more level I studies with a low risk of bias or several level II studies with a low risk of bias
	B	One or two Level II studies with a low risk of bias or SR/several Level III studies with a low risk of bias
	C	One or two Level III studies with a low risk of bias or Level I or II studies with a moderate risk of bias
	D	Level IV studies or Level I to III studies/SRs with a high risk of bias
2. Consistency *(if only one study was available, rank this component as 'not applicable')*		
• The medications used in the level IV pre-post test case series study were not identified which makes it impossible to compare the consistency between the two studies. Both studies were poorly reported also making comparisons difficult	A	All studies consistent
	B	Most studies consistent and inconsistency can be explained
	C	Some inconsistency, reflecting genuine uncertainty around question
	D	Evidence is inconsistent
	NA	Not applicable (one study only)
3. Clinical impact *(Indicate in the space below if the study results varied according to some unknown factor (not simply study quality or sample size) and thus the clinical impact of the intervention could not be determined)*		
• Both drugs evaluated in the RCT study have significant risks and should be used with extreme caution in this population • The level IV pre-post test case series study prescribed unidentified psychiatric medications making drawing conclusions about clinical impact are difficult	A	Very large
	B	Moderate
	C	Slight
	D	Restricted
4. Generalisability *(How well does the body of evidence match the population and clinical settings being targeted by the Guideline?)*		
• There is not enough information reported in the studies to draw conclusions about the generalisability • One study based in North America, the origin for the other is unknown	A	Evidence directly generalisable to target population
	B	Evidence directly generalisable to target population with some caveats
	C	Evidence not directly generalisable to the target population but could be sensibly applied
	D	Evidence not directly generalisable to target population and hard to judge whether it is sensible to apply
5. Applicability *(Is the body of evidence relevant to the Australian healthcare context in terms of health services/delivery of care and cultural factors?)*		
• The drugs evaluated in the RCT study would not be used in this way in the Australian context	A	Evidence directly applicable to Australian healthcare context
	B	Evidence applicable to Australian healthcare context with few caveats
	C	Evidence probably applicable to Australian healthcare context with some caveats
	D	Evidence not applicable to Australian healthcare context

12c Managing co-existing health conditions NHMRC Evidence Statement Form *(continued)*

Other factors *(Indicate here any other factors that you took into account when assessing the evidence base (for example, issues that might cause the group to downgrade or upgrade the recommendation))*		
EVIDENCE STATEMENT MATRIX *Please summarise the development group's synthesis of the evidence relating to the key question, taking all the above factors into account.*		
Component	**Rating**	**Description**
1. Evidence base	B	
2. Consistency	N/A	
3. Clinical impact	D	
4. Generalisability	D	
5. Applicability	D	
Indicate any dissenting opinions		

RECOMMENDATION *What recommendation(s) does the guideline development group draw from this evidence? Use action statements where possible.*	**GRADE OF RECOMMENDATION** N/A	
The committee determined the evidence base to be insufficient on which to base evidence-based recommendations (EBRs) about comorbid mental health conditions in people who use volatile substances. Accordingly, the committee used expert opinion to develop consensus-based recommendations (CBRs) and practice points (PPs) about comorbid mental health conditions in people who use volatile substances.		

13a Aftercare summary table

Clinical question	References	Comment
13. 1 For *opportunistic and/ or polydrug* VSU, are any forms of aftercare associated with changed outcomes?	N=0	
13.2 For *chronic* VSU, are any forms of aftercare associated with changed outcomes?	N=2 Coleman et al, 2001[30] Dinwiddie et al, 1987[43]	Coleman et al, 2001[30] was a Level IV pre-post test case series study. It suggested poor outcomes from residential drug treatment and aftercare for chronic VSU aged 7-19. Dinwiddie et al, 1987[43] was a Level IV retrospective case file analysis study involving a small sample and suggesting poor outcomes from residential drug treatment and aftercare for chronic adult VSU.
13.3 For *pregnant* volatile substance users, are any forms of aftercare associated with changed outcomes?	N=0	
13.4 For volatile substance users with *comorbid conditions*, are any forms of aftercare associated with changed outcomes?	N=0	
13.5 For volatile substance users who are *intellectually and impulse compromised,* are any forms of aftercare associated with changed outcomes?	N=0	

13b Aftercare evidence table

Reference: author/s, year, title of paper, journal, study purpose	Evidence Level: study quality	Participants	Professionals and Healthcare setting	Intervention	Comparison	Length of follow up	Outcomes	Effect Size: response rates/ cooperation rate, treatment of missing data	Comments	Indigenous involvement: Indigenous ethics approval, researchers, participants
Coleman, H., Charles, G., and Collins, J. (2001). Inhalant use by Canadian aboriginal youth. *Journal of Child and Adolescent Substance Abuse*, 10: 1-20. Aim: To explore predictors of relapse for youth receiving residential culturally-informed treatment for VSU. Country: Canada	Level IV Pre-post test case series. Low quality study with some outcomes that are inconsistently reported. Statistical reporting in other parts of the study included negative betas accompanied by odds ratios greater than one – suggesting incorrect analysis or reporting of the data.	N=78 Mean age =14 (range 7-19) n=21 female n=57 male. Aboriginal young people presenting to treatment with inhalant abuse over 2.5 year period. 70% concurrent abuse of other drugs. 91% sniffing gasoline.	Professionals not stated. AOD speciality residential rehabilitation service for first component, followed by treatment within home communities.	Residential VSU treatment program for aboriginal youth. Intervention based on aboriginal and non-aboriginal approach to healing. Provided residential detoxification and includes traditional ceremonies, individual, family and group therapy and access to specialist clinical services. Average treatment length was 176.4 days (7- 423 days).	No comparison group was reported.	Follow up approximately two years post discharge.	55 (83%) of 66 clients for whom follow up data was available left treatment before completion. 56 (71.8%)¶ of 78 clients relapsed after treatment.	Descriptive results only were reported. No effect sizes were reported or could be calculated from the data.	High levels of early drop out and relapse indicated after residential treatment. Study focused on variables predictive of relapse. Inconsistent reporting of some treatment outcomes.	Ethics: Not stated. Researchers: Not stated. Participants: Indigenous Canadians.

¶ This percentage is reported as 74% in the abstract.

13b Aftercare evidence table *(continued)*

Reference: author/s, year, title of paper, journal, study purpose	Evidence Level: study quality	Participants	Professional and Healthcare setting	Intervention	Comparison	Length of follow up	Outcomes	Effect Size: response rates/ cooperation rate, treatment of missing data	Comments	Indigenous involvement: Indigenous ethics approval, researchers, participants
Dinwiddie, S.H. Zorumski, C.F., and Rubin, E.H. (1987). Psychiatric correlates of chronic solvent abuse. *J. Clinical Psychiatry*, 48(8): 334-337. Aim: To identify medical and psychiatric illness and other substance use in a sample of 11 adult chronic solvent users. Country: USA	Level IV Case series. Retrospective case file analysis. Included outpatient records for information about relapse. Interventions poorly described, methods poorly reported.	N=11 Chronic VSU admitted to an inpatient drug rehabilitation program for solvent abuse (n=10) and psychiatric program in same service (n=1). Mean age 23.2 +/-4.3 (range 19-32 yrs) n= seven males n= four females Average age of first use of solvents was 15.7 +/-5.4 years. High rates of polydrug use (mostly cannabis and alcohol). Six participants with anti-social personality disorder.	tProfessionals not specified. Inpatient drug and alcohol treatment program with an outpatient follow up.	Inpatient drug and alcohol treatment program with an outpatient follow up. No further details provided.	No comparison group or intervention.	No systematic follow up reported as it was a retrospective case file review. Last date of observed relapse was 180 days.	Primary measure was patient success in completing inpatient drug rehabilitation. Compliance with outpatient aftercare also measured. Five patients left residential treatment against medical advice. All 10 attended aftercare sporadically All 10 relapsed within six months, with average relapse time of 40 days (range 1-180 days). One patient abstained for more than two months, two reported resuming VSU on day of discharge.	This was a retrospective case file analysis and no effect size was reported or can be calculated.	The study involved a small sample size and no comparison data were reported. It suggests poor outcomes from residential drug treatment and aftercare for chronic VSU. The authors point out that this outcome may be related to the chronicity of solvent abuse within the sample but as there is no comparison group this assertion cannot be evaluated.	Ethics: Not stated. Researchers: Not stated. Participants: Not stated.

13c Aftercare NHMRC Evidence Statement Form

Key question(s): Aftercare Q13.1 – Q13.5		Evidence table ref: 13B
1. Evidence base *(number of studies, level of evidence and risk of bias in the included studies)*		
• The evidence base comprised one level IV retrospective case file analysis study and one level IV pre-post test case series study	A	One or more level I studies with a low risk of bias or several level II studies with a low risk of bias
	B	One or two Level II studies with a low risk of bias or SR/several Level III studies with a low risk of bias
	C	One or two Level III studies with a low risk of bias or Level I or II studies with a moderate risk of bias
	D	Level IV studies or Level I to III studies/SRs with a high risk of bias
2. Consistency *(if only one study was available, rank this component as 'not applicable')*		
• Both studies suggest poor outcomes from residential drug treatment and aftercare for chronic users	**A**	All studies consistent
	B	Most studies consistent and inconsistency can be explained
	C	Some inconsistency, reflecting genuine uncertainty around question
	D	Evidence is inconsistent
	NA	Not applicable (one study only)
3. Clinical impact *(Indicate in the space below if the study results varied according to some unknown factor (not simply study quality or sample size) and thus the clinical impact of the intervention could not be determined)*		
• As the studies were of poor quality and examined multimodal interventions, the committee was unable to attribute the outcomes solely to aftercare • Not enough information was reported, making it difficult to determine the clinical impact and make judgments about the body of evidence	A	Very large
	B	Moderate
	C	Slight
	D	Restricted
4. Generalisability *(How well does the body of evidence match the population and clinical settings being targeted by the Guideline?)*		
• One study examined Indigenous Canadians. The other study does not report the population the participants were recruited from. • The age range of participants was 7-19 years in one study and 19-32 years in the other study	A	Evidence directly generalisable to target population
	B	Evidence directly generalisable to target population with some caveats
	C	Evidence not directly generalisable to the target population but could be sensibly applied
	D	Evidence not directly generalisable to target population and hard to judge whether it is sensible to apply
5. Applicability *(Is the body of evidence relevant to the Australian healthcare context in terms of health services/delivery of care and cultural factors?)*		
• Aftercare is a treatment option that is available in Australia	A	Evidence directly applicable to Australian healthcare context
	B	Evidence applicable to Australian healthcare context with few caveats
	C	Evidence probably applicable to Australian healthcare context with some caveats
	D	Evidence not applicable to Australian healthcare context

13c Aftercare NHMRC Evidence Statement Form *(continued)*

Other factors *(Indicate here any other factors that you took into account when assessing the evidence base (for example, issues that might cause the group to downgrade or upgrade the recommendation))*

EVIDENCE STATEMENT MATRIX

Please summarise the development group's synthesis of the evidence relating to the key question, taking all the above factors into account.

Component	Rating	Description
1. Evidence base	D	
2. Consistency	A	
3. Clinical impact	D	
4. Generalisability	D	
5. Applicability	C	

Indicate any dissenting opinions

RECOMMENDATION *What recommendation(s) does the guideline development group draw from this evidence? Use action statements where possible.*	GRADE OF RECOMMENDATION N/A	

The committee determined the evidence base to be insufficient on which to base evidence-based recommendations (EBRs) about the role of aftercare in the management of VSU. Accordingly, the committee used expert opinion to develop consensus-based recommendations (CBRs) and practice points (PPs) for afercare.

Appendix E: NHMRC Evidence Statement Form

NHMRC Evidence Statement Form

Key question(s):		Evidence table ref:
1. Evidence base *(number of studies, level of evidence and risk of bias in the included studies)*		
	A	One or more level I studies with a low risk of bias or several level II studies with a low risk of bias
	B	One or two Level II studies with a low risk of bias or SR/several Level III studies with a low risk of bias
	C	One or two Level III studies with a low risk of bias or Level I or II studies with a moderate risk of bias
	D	Level IV studies or Level I to III studies/SRs with a high risk of bias
2. Consistency *(if only one study was available, rank this component as 'not applicable')*		
	A	All studies consistent
	B	Most studies consistent and inconsistency can be explained
	C	Some inconsistency, reflecting genuine uncertainty around question
	D	Evidence is inconsistent
	NA	Not applicable (one study only)
3. Clinical impact *(Indicate in the space below if the study results varied according to some unknown factor (not simply study quality or sample size) and thus the clinical impact of the intervention could not be determined)*		
	A	Very large
	B	Moderate
	C	Slight
	D	Restricted
4. Generalisability *(How well does the body of evidence match the population and clinical settings being targeted by the Guideline?)*		
	A	Evidence directly generalisable to target population
	B	Evidence directly generalisable to target population with some caveats
	C	Evidence not directly generalisable to the target population but could be sensibly applied
	D	Evidence not directly generalisable to target population and hard to judge whether it is sensible to apply
5. Applicability *(Is the body of evidence relevant to the Australian healthcare context in terms of health services/delivery of care and cultural factors?)*		
	A	Evidence directly applicable to Australian healthcare context
	B	Evidence applicable to Australian healthcare context with few caveats
	C	Evidence probably applicable to Australian healthcare context with some caveats
	D	Evidence not applicable to Australian healthcare context

NHMRC Evidence Statement Form *(continued)*

Other factors *(Indicate here any other factors that you took into account when assessing the evidence base (for example, issues that might cause the group to downgrade or upgrade the recommendation))*

EVIDENCE STATEMENT MATRIX

Please summarise the development group's synthesis of the evidence relating to the key question, taking all the above factors into account.

Component	Rating	Description
1. Evidence base		
2. Consistency		
3. Clinical impact		
4. Generalisability		
5. Applicability		

Indicate any dissenting opinions

RECOMMENDATION *What recommendation(s) does the guideline development group draw from this evidence? Use action statements where possible.*	**GRADE OF RECOMMENDATION**	

Appendix E: NHMRC Evidence Statement Form *(continued)*

UNRESOLVED ISSUES If needed, keep note of specific issues that arise when each recommendation is formulated and that require follow up.	
IMPLEMENTATION OF 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

This page has been intentionally left blank

Appendix F: Abbreviations and Glossary of Terms

Abbreviations

AOD	Alcohol and other drug
BPRS	Brief Psychiatric Rating Scale
CARPA	Central Australian Rural Practitioners Association
CASI	Comprehensive Addiction Severity Index
CBT	Cognitive Behavioural Therapy
CD	Conduct disorder
C-GAS	Children's Global Assessment Scale
DASS	Depression and Anxiety Scale
DIP	Discrepancy Interview Protocol
DMEPS	DiMascio Extrapyramidal Symptoms Scale
DoHA	Commonwealth Department of Health and Ageing
DSM	Diagnostic and Statistical Manual of Mental Disorders
FT	Family therapy
GRC	Get Real Challenge
GT	Group Therapy
HALT	Healthy Aboriginal Life Team
IV	Intravenous
KNCHC	Ka-Na-Chi-Hih Treatment Centre
L	Litre
MeSH	Medical Subject Headings
mg	Milligram
NHMRC	National Health and Medical Research Council
NNHC	Nimkee Nupigawagan Health Centre
NT	Narrative therapy
OATSIH	Office for Aboriginal and Torres Strait Islander Health
PRN	Pro re nata (as required)
RCT	Randomised controlled trial
SAM	Substance Abuse Module
SD	Standard deviation
VS	Volatile substance
VSU	Volatile substance use
YAP	Youth Advocacy Program

Glossary of terms

Case file analysis	Study involving analysis of a case series using data from case notes or files
Case series	Report of a number of cases of a given disease, usually covering the course of the disease and the response to treatment. There is no comparison (control) group of patients
Case series study	Study involving analysis of a case series
Case study	A study reporting observations on a single individual. Also called anecdote, case history, or single case report
Case-control study	A study that compares people with a specific disease or outcome of interest (cases) to people from the same population without that disease or outcome (controls), and which seeks to find associations between the outcome and prior exposure to particular risk factors. This design is particularly useful where the outcome is rare and past exposure can be reliably measured. Case-control studies are usually retrospective, but not always
Clinician	A health care professional providing direct patient care, for example doctor, nurse or physiotherapist
Clinicocultural intervention	Clinical interventions developed for specific cultural groups and which deliberately foreground cultural elements or considerations as integral components of care. This term was coined by the VSU Guideline Development Committee
Delimiters	Broad limits on included studies. In this review delimiters were those studies published prior to 1980 and available only in languages other than English were excluded
Double blind study	A study in which neither the subject (patient) nor the observer (investigator/clinician) is aware of which treatment nor intervention the subject is receiving. The purpose of blinding is to protect against bias
Evidence Summary	Prepared for each recommendation, this is a brief summary of the outcomes of each clinical study on which the recommendation was based, their level of evidence and reference details
Evidence table	Tables prepared by the developer of a clinical practice guideline to summarise the systematic assessment and critical appraisal of all studies that met inclusion criteria (i.e. the body of evidence on which a recommendation will be based) for each clinical question

Grade of recommendation	A rating assigned to a clinical practice recommendation according to the strength of the evidence on which it is based. The NHMRC-preferred system for grading recommendations is described in *NHMRC levels of evidence and grades for recommendations for developers of guidelines*[9] where the overall grade of the recommendation based on a summation of the rating for each individual component of the body of evidence
Grey literature	Information that cannot be easily found through conventional search engines and is not generally produced by commercial publishing organisations
Health professionals	Any health workers who provide health care and related medical services, including doctors, nurses, Aboriginal health workers and allied health professionals
Intervention	Any action taken to improve a person's health, including any form of treatment. (In this guideline, 'intervention' does not just refer to an organised action taken by several people at once to help a person whose health is in danger due to substance use.)
Matched control design	A comparison between groups in which each subject is matched by a comparable subject in terms of age and all other measurable parameters. Also called matched or paired control
Pre-Post Test	Measures on an outcome are taken before and after the intervention is introduced to a series of people and are then compared (also known as a 'before-and-after study')
Qualitative evaluation	Evaluative research involving discursive rather than numerical analyses
Randomised controlled trial	A comparative study in which participants are randomly allocated to intervention and control groups and followed up to examine differences in outcomes between the groups
Retrospective study	A retrospective study deals with the present/past and does not involve studying future events. This contrasts with studies that are prospective
Test-retest reliability study	Study assessing the consistency of measurement based on the correlation between test and retest scores for the same individual

This page has been intentionally left blank

Appendix G: Acknowledgements

Organisations

Alcohol and Other Drugs Council of Australia
Australian Drug Foundation
Bushmob
Central Australia Youth Link Up Service
Drug and Alcohol Office, Western Australia
Government of South Australia
Harm Reduction Victoria
Indigenous Allied Health Australia
National Inhalants Information Service
Ngaanyatjarra Pitjantjatjara Yankunytjatjara (NPY) Women's Council
Northern Territory Department of Health
Queensland Health
Re-Solv and Educari
Royal Australian and New Zealand College of Psychiatrists
Royal Australian College of Physicians
The Council for Aboriginal Alcohol Program Services
The Pharmacy Guild of Australia
Therapeutic Goods Administration
Victorian Alcohol and Drug Association

Individuals

Ms Sarah Aird
Executive Administration Officer, National Health and Medical Research Council

Dr Heather Buchan
Executive Knowledge and Development Officer, National Health and Medical Research Council

Dr Stephen Castle
Director, Volatile Substance Use Section, Department of Health and Ageing, Office for Aboriginal and Torres Strait Islander Health

Mr Owen Cox
Publications and Web Manager, Strategic Communications, National Health and Medical Research Council

Dr Tanyth de Gooyer
Research Scientist, Guidelines Research Program, National Health and Medical Research Council

Mr Geraint Duggan
Assistant Director, Guidelines Research Program, National Health and Medical Research Council

Ms Rosie Forster
Acting Executive Director, National Health and Medical Research Council

Dr Sandra Hacker
Chair, Health Ethics Committee, National Health and Medical Research Council

Associate Professor Noel Hayman
Director, Inala Indigenous Health Service

Ms Laura Heath
Business Manager, National Health and Medical Research Council

Dr Nancy Huang
Director, Guidelines Research Program, National Health and Medical Research Council

Mr Luke Hurley
Project Officer, Effective Practice Program, National Health and Medical Research Council

Ms Zoe Kelly
Acting Assistant Director, Research Implementation Program, National Health and Medical Research Council

Ms Catherine King
Senior Project Officer, Guidelines Research Program, National Health and Medical Research Council

Ms Andrea Maher
Project Officer, Department of Health and Ageing, Office for Aboriginal and Torres Strait Islander Health

Mr Adam Morris
Project Officer, Volatile Substance Use Section, Department of Health and Ageing, Office for Aboriginal and Torres Strait Islander Health

Ms Marita Opray
Assistant Director, Volatile Substance Use Section, Department of Health and Ageing, Office for Aboriginal and Torres Strait Islander Health

Ms Crystal Parker
Administrative Officer, Research Implementation Program, National Health and Medical Research Council

Dr Barbara Paterson
Chief Health Officer, Northern Territory Government

Professor Wendy Rogers
Professor of Clinical Ethics, Department of Philosophy and Australian School of Advanced Medicine, Macquarie University

Dr John Scopel
General Practitioner

Ms Julie Stragalinos
Communications Manager, National Health and Medical Research Council

Ms Megan Strange
Project Officer, Volatile Substance Use Section, Department of Health and Ageing, Office for Aboriginal and Torres Strait Islander Health

Dr John Walker
Director, Substance Use Section, Department of Health and Ageing, Office for Aboriginal and Torres Strait Islander Health

Ms Debby Weber
Graphic Designer, Strategic Communications, National Health and Medical Research Council

Dr Agnes Wilson
Research Scientist, Research Implementation Program, National Health and Medical Research Council

References

1. Central Australian Rural Practitioners Association. CARPA standard treatment manual. 5th ed. Alice Springs: Central Australian Rural Practitioners Association; 2009.
2. Central Australian Rural Practitioners Association. CARPA standard treatment manual. 4th ed. Alice Springs: Central Australian Rural Practitioners Association; 2003.
3. Mosey A. Retailers responsible sale of solvents resource and voluntary code of conduct for sale of solvents in the Northern Territory. Alice Springs: Central Australian Youth Link-Up Service and Tangentyere Council; 2004.
4. Latt N, Conigrave K, Saunders J, Marshall E, Nutt D. Addiction Medicine. United Kingdom: Oxford University Press; 2009.
5. d'Abbs P, MacLean S. Volatile substance misuse: a review of interventions. National Drug Strategy monograph series 65. Canberra: Australian Government Department of Health and Ageing; 2008.
6. Victorian Government Department of Human Services (Drugs Policy and Services Branch and Child Protection and Juvenile Justice Branch). Management response to inhalant use. Guidelines for the community care and drug and alcohol sector. Melbourne: Victorian Government Department of Human Services; 2003.
7. National Health and Medical Research Council. NHMRC standards and procedures for externally developed guidelines. Canberra: National Health and Medical Research Council; 2007.
8. National Library of Australia. Grey litrature definition; 2010 [cited 1 September 2010]; Available from: http://www.nla.gov.au/padi/topics/372.html
9. National Health and Medical Research Council. Levels of evidence and grades for recommendations for developers of guidelines. Canberra: NHMRC; 2009.
10. Petticrew M, Roberts H. Systematic reviews in the social sciences: a practical guide. Malden, MA: Blackwell Publishing; 2006.
11. Jadad AR, Moore RA, Carroll D, Jenkinson C, Reynolds DJ, et al. Assessing the quality of reports of randomized clinical trials: is blinding necessary? Control Clin Trials 1996; 17: 1-12.
12. National Health and Medical Research Council. How to use the evidence: assessment and application of scientific evidence. Canberra: National Health and Medical Research Council; 2000.
13. Stover-Wall T. A case study in metabolic acidosis induced by inhalation. Air Med J 2005; 24: 66-69.
14. LoVecchio F, Sawyers B, Thole D, Beuler MC, Winchell J, et al. Outcomes following abuse of methanol-containing carburetor cleaners. Hum Toxicol 2004; 23: 473-475.
15. Gaynor NJ. Clinical management of acute behavioural disturbance associated with volatile solvent intoxication. Australasian Emergency Nursing Journal 2009; 12: 55-58.
16. Katzelnick DJ, Davar G, Scanlon JP. Reversibility of psychiatric symptoms in a chronic solvent abuser: a case report. J Neuropsychiatry Clin Neurosci 1991; 3: 319-321.
17. McCormick MJ, Mogabgab E, Adams SL. Methanol poisoning as a result of inhalational solvent abuse. Ann Emerg Med 1990; 19: 639-642.
18. Byrne A, Kirby B. Solvent Abuse Psychosis. Br J Psychiatry 1989; 155: 132.

19. Niederhofer H. Treating inhalant abuse with buspirone. Am J Addict 2007; 16: 69.

20. Misra LK, Kofoed L, Fuller W. Treatment of inhalant abuse with risperidone. J Clin Psychiatry 1999; 60: 620.

21. Duggal HS, Sinha BNP, Nizamie SH. Gasoline inhalation dependence and bipolar disorder. Aust N Z J of Psychiatry 2000; 34: 531-532.

22. Shen YC. Treatment of inhalant dependence with lamotrigine. Prog Neuropsychopharmacol Biol Psychiatry 2007; 31: 769-771.

23. Ridenour TA, Bray BC, Cottler LB. Reliability of use, abuse, and dependence of four types of inhalants in adolescents and young adults. Drug Alcohol Depend 2007; 91: 40-49.

24. Westerberg VS, Tonigan J, Miller WR. Reliability of Form 90D: an instrument for quantifying drug use. Subst Abuse 1998; 19: 179-189.

25. Clough AR, Kim San Lee K, Conigrave KM. Promising performance of a juvenile justice diversion programme in remote Aboriginal communities, Northern Territory, Australia. Drug Alcohol Rev 2008; 27: 433-438.

26. Preuss K, Brown JN. Stopping petrol sniffing in remote Aboriginal Australia: key elements of the Mt Theo Program. Drug Alcohol Rev 2006; 25: 189-193.

27. Polsen M, Chiauzzi A. Volatile substance use in Mount Isa: community solutions to a community identified issue. Inhalant Use and Disorder Conference; 7-8 July; Townsville: Australian Institute of Criminology; 2003.

28. Bryce S, Rowse T, Scrimgeour D. Evaluating the petrol sniffing prevention programs of the Healthy Aboriginal Life Team (HALT). Aust J Public Health 1992; 16: 387–396.

29. Youth Solvent Addiction Committee [Canada]. Youth Solvent Addiction Committee Annual Report 2005-2006. Saskatoon: Youth Solvent Addiction Committee; 2006.

30. Coleman H, Charles G, Collins J. Inhalant use by Canadian Aboriginal youth. J Child Adolesc Subst Abuse 2001; 10: 1-20.

31. Dell C, Dell D, Hopkins C. Resiliency and holistic inhalant abuse treatment. Journal of Aboriginal Health 2005; 2: 1-12.

32. Andretta l, da Silva O M. [A study of the effects of motivational interviewing on adolescent offenders]. Estud de Psicol 2008; 25: 45-53.

33. Simpson DD. A longitudinal study of inhalant use: implications for treatment and prevention. In: Sharp CW, Beauvais F, Spence R, editors. Inhalant abuse: a volatile research agenda NIDA research monograph series 129. Rockville, MD: US Department of Health and Human Services; 1992. p. 215-227.

34. Skuse D, Burrell S. A review of solvent abusers and their management by a child psychiatric out-patient service. Hum Toxicol 1982, 1: 321-329.

35. Lowenstein LF. Glue sniffing. Background features and treatment by aversion methods and group therapy. Practitioner 1982; 226: 1113-1116.

36. O'Connor D. The use of suggestion techniques with adolescents in the treatment of glue sniffing and solvent abuse. Hum Toxicol 1982; 1: 313-320.

37. Sakai JT, Mikulich-Gilbertson SK, Crowley TJ. Adolescent inhalant use among male patients in treatment for substance and behavior problems: two-year outcome. Am J Drug Alcohol Abuse 2006; 32: 29-40.

38. Framrose R. From structure to strategy with the families of solvent abusers. Journal of Family Therapy 1982; 4: 43-59.

39. Butt J. Independent evaluation of the Get Real Challenge: issues facing Indigenous youth who misuse volatile substances and outcomes of a program targeting these issues. Brisbane: Brisbane City Council; 2004.

40. Cheverton J, Schrader T, Scrogings Z. Sniffing around the valley: chroming in Brisbane's inner-city. Brisbane: Brisbane Youth Service; 2003.

41. Burns CB, Currie BJ, Clough AB, Wuridjal R. Evaluation of strategies used by a remote aboriginal community to eliminate petrol sniffing. Med J Aust 1995; 163: 82-86.

42. Gostzyla E, George S. Our kids matter: paint sniffing, the Charters Towers story. Inhalant Use and Disorder Conference; 7-8 July; Townsville: Australian Institute of Criminology; 2003.

43. Dinwiddie SH, Zorumski CF, Rubin EH. Psychiatric correlates of chronic solvent abuse. J Clin Psychiatry 1987; 48: 334-337.

44. Hernandez-Avila CA, Ortega-Soto HA, Jasso A, Hasfura-Buenaga CA, Kranzler HR. Treatment of inhalant-induced psychotic disorder with carbamazepine versus haloperidol. Psychiatr Serv 1998; 49: 812-815.

This page has been intentionally left blank

GPO Box 1421, Canberra ACT 2601
16 Marcus Clarke Street, Canberra City ACT
T. 13 000 NHMRC (13 000 64672) or +61 2 6217 9000 F. 61 2 6217 9100 E. nhmrc@nhmrc.gov.au
www.nhmrc.gov.au