



Fact Sheet

For Authorised Health Professionals
August 2006

National Standard for Health Assessment of Rail Safety Workers

The Kessler Psychological Distress Scale (K10)

This Fact Sheet has been developed by the National Transport Commission to help support Authorised Health Professionals in conducting health assessments for rail safety workers. It should be read in conjunction with the standards set out in Volume 2 of the National Health Assessments for Rail Safety Workers (Part 2A, Chapter 16).

INTRODUCTION

The health assessment for Safety Critical Workers in the rail industry aims to identify conditions which may impact on the safe conduct of their work.

For Category 1 workers, the risks of collapse and lack of attentiveness to the task are important. For Category 2 workers, collapse is not an issue; however conditions that affect attentiveness remain important.

In recognition of the potential impact of psychological problems on attentiveness to safety critical work, and the increasing incidence of these problems in the community, the K10, a psychological screening tool is included in the Health Questionnaire for Safety Critical Workers. The questionnaire aims to identify workers with significant levels of psychological distress so that they may be appropriately managed with respect to their work and their ongoing health and wellbeing.

The Kessler Psychological Distress Scale (K10) is a scale developed in 1992 by Kessler for use in population surveys. It has been widely used in the United States as well as in Australia, where it has been included in the Australian Survey of Mental Health and Wellbeing (1997) and the Australian National Health Surveys. It has been validated for use in Australia by Professor Gavin Andrews and is available in the public domain.

Research has revealed a strong association between high scores on the K10 and a current CIDI diagnosis of anxiety and affective disorders. There is a lesser but significant association between the K10 and other mental disorder categories and with the presence of any current mental disorder (Andrews & Slade, 2001).

Sensitivity and specificity data analysis also supports the K10 as an appropriate screening instrument to identify likely cases of anxiety and depression in the community and to monitor treatment outcomes.

Thus, the K10 is widely recommended as a simple measure of psychological distress and as a means to monitor progress following treatment for common mental health disorders such as anxiety and depression.

The K10 is a screening instrument, thus Authorised Health Professionals (AHPs) are required to apply clinical judgement in the interpretation of the score and the action required. This Fact Sheet aims to guide AHPs in assessing and managing Safety Critical Workers' responses to the K10.



DISCLAIMER: This fact sheet has been developed in conjunction with Rail Safety Regulators, rail transport operators, industry associations, health professionals, and union representatives as a general guide to interpreting the National Health Assessment Standard. It is for information purposes only and is subject to the medical practitioner's expert judgement in each case.

The K10 scale is based on 10 questions about negative emotional states experienced during the 4 week period leading up to the assessment (please refer Table 1).

For each item there is a five-level response scale based on the amount of time the respondent reports experiencing the particular problem. The response options are: none of the time, a little of the time, some of the time, most of the time, and all of the time.

Each item is scored from 1 for 'none of the time' to 5 for 'all of the time'. Scores for the ten items are then summed, yielding a minimum possible score of 10 and a maximum possible score of 50. Low scores indicate low levels of psychological distress and high scores indicate high levels of psychological distress.

Questions 3 and 6 do not need to be asked if the response to the proceeding question was "none of the time". In such cases Questions 3 and 6 will automatically receive a score of one.

Table 1. K10 Questionnaire

Please tick the answer that is correct for you:	All of the time (Score 5)	Most of the time (Score 4)	Some of the time (Score 3)	A little of the time (Score 2)	None of the time (Score 1)
In the past 4 weeks, about how often did you feel tired out for no good reason?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In the past 4 weeks, about how often did you feel nervous?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In the past 4 weeks, about how often did you feel so nervous that nothing could calm you down?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In the past 4 weeks, about how often did you feel hopeless?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In the past 4 weeks, about how often did you feel restless or fidgety?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In the past 4 weeks, about how often did you feel so restless you could not sit still?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In the past 4 weeks, about how often did you feel depressed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In the past 4 weeks, about how often did you feel that everything was an effort?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In the past 4 weeks, about how often did you feel so sad that nothing could cheer you up?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In the past 4 weeks, about how often did you feel worthless?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



INTERPRETING K10 SCORES

The creators of the K10 have not developed or published details on scoring the scale, thus various interpretations of scoring have been used.

The 2001 Victorian Population Health Survey adopted a set of cut-off scores based on how practitioners use the K10 as a screening tool. These scores are outlined in Table 2 and provide a useful overview of how the K10 can be applied for screening purposes in general practice.

Table 2. K10 cut-off scores

K10 score	Likelihood of having a mental disorder
10 - 19	Likely to be well
20 - 24	Likely to have a mild disorder
25 - 29	Likely to have a moderate mental disorder
30 - 50	Likely to have a severe mental disorder

2001 Victorian Population Health Survey to estimate the prevalence of levels of psychological distress

National population results based on this scoring system (National Health Survey 2001) are shown in Table 3, indicating that 85.8% of males and 79.6 % of females have low levels of psychological distress or are likely to be well with respect to their mental health.

8.3% of males and 10.6% of females are likely to have a mild mental disorder, 3.1% of males and 5.5% of females are likely to have a moderate disorder and 2.7% of males and 4.4% of females are likely to have a severe disorder.

Table 3. National Health Survey 2001 - Level of Psychological Distress

Level of psychological distress (K10 score)	Males%*	Females%*
Low (10 - 19)	85.8	79.6
Moderate (20 - 24)	8.3	10.6
High (25 - 29)	3.1	5.5
Very High (30 - 50)	2.7	4.4
Total	100.0	100.0

* Age standardised percentages.

In defining the cut-off scores for rail safety workers, key considerations are the specificity and sensitivity of the test – sensitivity being the measure of a test's

ability to detect an illness and specificity being a measure of a test's ability to only diagnose those persons who have the condition, not those who do not have it. The aim is to optimise the ability to detect people with the illness whilst limiting the number of false positives.

Table 4 (Andrews and Slade 2001) shows the sensitivity and specificity for the K10 at various scoring levels. A cut-off score of 19 results in a sensitivity of 71% and a specificity of 90% (ie 10% incorrect detection). A cut off score of 20 results in lower sensitivity (66%) and slightly higher specificity. Given the importance of psychological health for safety critical work, the cut-off of 19 with 71% sensitivity has been identified for initiating intervention in these workers albeit with a 10% false positive rate.

Table 4. Sensitivity and specificity of the K10 in identifying people who met CIDI criteria for any current anxiety or affective disorder (prevalence 7.1%)

K10 score greater than or equal to	Sensitivity (hit rate)	Specificity correct (rejection rate)
14	0.94	0.63
15	0.90	0.72
16	0.86	0.78
17	0.81	0.83
18	0.77	0.87
19	0.71	0.90
20	0.66	0.92
21	0.60	0.94
22	0.55	0.95
23	0.50	0.97
24	0.45	0.97
25	0.41	0.98
26	0.36	0.98
27	0.33	0.99
28	0.31	0.99
29	0.27	0.99
30	0.24	0.99
31	0.21	1.00
32	0.16	1.00

USE OF THE K10 FOR SAFETY CRITICAL WORKERS

The purpose of applying the K10 to safety critical workers is to screen for mental health disorders that may affect attentiveness and thus the ability to perform safety critical work.

The examining health professional is required to evaluate the responses to the questionnaire in conjunction with supporting information provided by the rail organisation, such as absenteeism and accident history, which may provide indications of a mental health problem. The AHP should also form a clinical impression of the patient and consider if this is consistent with the score on the K 10.

The AHP may also feel it is appropriate to make contact with a worker's general practitioner to discuss their history. Based on these inputs the AHP will form a view as to whether they believe there is a significant current risk that the worker might be impaired at work.

ADMINISTERING THE K10

In the safety critical worker assessment, the K10 questionnaire is administered in a self-report format; however it can also be administered by interview if necessary.

The cognitive capacities (e.g. literacy, forgetfulness) and the level of cooperation or defensiveness of the worker should be considered in selecting the appropriate format.

Dishonest completion may be an issue, so review of the responses with the worker is desirable, as is consideration of the overall clinical picture. It may be helpful to reassure the worker that all responses are confidential and are not forwarded to the employer.

SCORING THE K10 AND MANAGING SAFETY CRITICAL WORKERS

A total score of 50 is possible, as indicated above.

High scores indicate a greater likelihood of mental disorder and a need for more intensive treatment.

Table 5 provides a guide for management of safety critical workers according to their K10 score. AHPs should also consider supporting information such as accident/incident history and sick leave, as well as the clinical examination when selecting the appropriate intervention. AHPs should also consider the specific nature of the worker's task when making decisions about their fitness for duty.

As a general rule, patients who rate most commonly "Some of the time" or "All of the time" categories are in need of a more detailed assessment, and may not be fit to continue safety critical work.

Workers who rate most commonly "A little of the time" or "None of the time", generally do not require

further assessment; however the clinical examination may indicate otherwise and will guide the final decision in this regard.

It is important to note that high scores may be the result of acute distress brought on by domestic or work stress, or may be due to endogenous causes. Interventions appropriate to the particular situation will therefore need to be identified.

Where work stress is identified as a factor in a raised score, the AHP is in a good position to constructively intervene and advise on remedial steps regarding work load, job re-organisation, training, conflict resolution, etc.

Risk Zone I — K10 scores between 10 and 19

Scores below 19 indicate that the worker is likely to be well but should be considered in the context of the overall clinical impression of the patient. Although no formal intervention is required, reference to the importance of mental health for safety critical work is appropriate. Information and resources may also be provided to highlight symptoms and sources of support.

Risk Zone II — K10 scores between 19 and 24

Scores in this zone indicate that the worker is likely to have a mild disorder (specificity greater than 90%). The AHP should explore possible reasons including domestic or work stress and provide brief counselling as required. The AHP should identify sources of support or guidance that may be helpful to the worker including work-based employee assistance programs; community support services or the worker's general practitioner.

The examining health professional may assess the worker as Fit Subject to Review in order to flag the issue for attention at subsequent assessments. The period of review may be earlier or in line with normal periodic frequencies, depending on the clinical assessment and other indicators.

Risk Zone III — K10 scores between 25 and 29

This zone indicates the worker is likely to suffer from a moderate mental disorder (specificity greater than 98%).

Again, the AHP should explore possible reasons and consider the supporting information and clinical picture. Workers in this zone should be managed by a combination of brief counselling, referral to the worker's general practitioner and continued monitoring.

The examining health professional may assess the worker as Fit Subject to Review and should refer for external assessment via the worker's general practitioner. Alternatively, the AHP may classify the worker as Temporarily Unfit if there are immediate concerns for the safe conduct of rail safety work. This might be particularly relevant for Category 1 workers.

Risk Zone IV — K10 scores equal to or greater than 30

Scores in this zone indicate that the worker is likely to have a severe mental disorder (specificity greater than 99%).

They should be assessed as Temporarily Unfit for Duty pending further assessment and referred in the first instance to their general practitioner.



Table 5. K10 Risk Levels and interventions

Risk Levels	K10 Score	Intervention	Assessment conclusion for Safety Critical Worker
Zone I	10 - 18	No formal intervention. Consider the consistency of the clinical impression with the score. General advice about the importance of mental health for safety critical work and alert to further information and resources.	Fit for Duty
Zone II	19 - 24	Brief counselling and reference to self-help materials and support services as applicable to the situation.	May be assessed Fit Subject to Review. Review period may be in line with normal periodic review periods or more frequent if situation warrants it.
Zone III	25 - 29	Brief counselling, referral to general practitioner and continued monitoring.	May be assessed Fit Subject to Review or Temporarily Unfit depending on situation. Review period will depend on the individual situation.
Zone IV	30 - 50	Refer for diagnostic evaluation and treatment. Review as appropriate.	Should be assessed Temporarily Unfit for Duty while being evaluated and while treatment initiated. Return to work will depend on effectiveness of treatment.

REFERENCES

Andrew G, Slade T. Interpreting scores on the Kessler Psychological Distress Scale. Australian and New Zealand Journal of Public Health 2001. 25(6): 494-497. Clinical Research Unit for Anxiety Disorders (CRUFAD) www.crufad.com

