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## **Adherence rating scales**

This document describes some features of the more widely used of the currently available adherence rating scales. The objective of some of the earlier tools was primarily to allow the patient's subjective experience of treatment with antipsychotic drugs to be quantified (Barbeña et al, 2006). Later works focused more on the impact of pharmacological therapy on quality of life, and the relationship between this (i.e. the patient's subjective experience) and their attitudes and adherence to medication. Among the various tools developed over the past 40 years are the following:

- Neuroleptic Dysphoria Scale; NDS (Van Putten and May, 1978)
- Dysphoric Response Index; DRI (Singh and Kay, 1979)
- Drug Attitude Inventory; DAI (Hogan et al 1983; Awad, 1993)
- Medication Adherence Questionnaire; MAQ (Morisky et al, 1986)
- Rating of Medication Influences; ROMI (Weiden et al, 1994)
- Subjective Well-Being under Neuroleptic Treatment self-applied scale; SWN (Naber et al, 1995; 2001)
- Clinician Rating Scale; CRS (Kemp et al, 1996, 1998)
- Medication Adherence Rating Scale; MARS (Thompson et al, 2000)
- Attitudes towards Neuroleptic Treatment; ANT (Kampman et al, 2000)
- Personal Evaluations of Transitions in Treatment; PETiT (Voruganti and Awad, 2002)
- Brief Evaluation of Medication Influences; BEMIB (Dolder et al, 2004)
- Brief Adherence Rating Scale; BARS (Byerly et al 2008)

Of the currently available tools, the following are considered among the most useful / appropriate for the specific purpose of assessing the patient's adherence to prescribed medication, and are described in more detail below.

Drug Attitude Inventory ( <b>DAI</b> )	p 2
Personal Evaluations of Transitions in Treatment ( <b>PETiT</b> )	p 5
Medication Adherence Rating Scale ( <b>MARS</b> )	p 7
Clinician Rating Scale ( <b>CRS</b> )	p 8
Brief Adherence Rating Scale ( <b>BARS</b> )	p 9

## 1. Drug Attitude Inventory; DAI (Hogan et al, 1983)

The DAI consists of a questionnaire that is completed by the patient. It includes a series of questions, each with true/false answers, pertaining to various aspects of the patient's perceptions and experiences of treatment. The original scale consists of 30 questions, but a short form consisting of 10 questions has also been validated (page 4; Awad, 1993)

The patient should be asked to read each statement in the questionnaire (see page 3) and decide whether they believe it to be true or false (or *mostly* true/false) as applied to their own experience with medications (only those medications used for the patient's mental health needs). They should circle their answers in ink on the form.

### Scoring

The DAI-30 (page 3) contains 15 items that a patient who is fully adherent to their prescribed medication (and so would be expected to have a 'positive' subjective response to medication) would answer as 'True', and 15 items such a patient would answer as 'False'.

To calculate the score from a set of answers, each 'positive' answer is given a score of plus one, and each 'negative' answer is given a score of minus one. In the following table, the 'positive' answers (score = plus one) are shown in bold text. In question one, for example, an answer of 'False' would score plus one and an answer of 'True' would score minus one.

The total score for each patient is calculated as the sum of the positive scores, minus the negative scores. A positive total score indicates a positive subjective response (adherent) and a negative total score indicates a negative subjective response (non-adherent).

**DAI-30 questionnaire**

<b>Name</b>		<b>Date</b>	
		<b>Question</b>	<b>Answer<sup>*,*</sup></b>
1		I don't need to take medication once I feel better	<b>T / F</b>
2		For me, the good things about medication outweigh the bad	<b>T / F</b>
3		I feel strange, "doped up", on medication	<b>T / F</b>
4		Even when I am not in hospital I need medication regularly	<b>T / F</b>
5		If I take medication, it's only because of pressure from other people	<b>T / F</b>
6		I am more aware of what I am doing, of what is going on around me, when I am on medication	<b>T / F</b>
7		Taking medications will do me no harm	<b>T / F</b>
8		I take medications of my own free choice	<b>T / F</b>
9		Medications make me feel more relaxed	<b>T / F</b>
10		I am no different on or off medication	<b>T / F</b>
11		The unpleasant effects of medication are always present	<b>T / F</b>
12		Medication makes me feel tired and sluggish	<b>T / F</b>
13		I take medication only when I feel ill	<b>T / F</b>
14		Medications are slow-acting poisons	<b>T / F</b>
15		I get along better with people when I am on medication	<b>T / F</b>
16		I can't concentrate on anything when I am taking medication	<b>T / F</b>
17		I know better than the doctors when to stop taking medication	<b>T / F</b>
18		I feel more normal on medication	<b>T / F</b>
19		I would rather be ill than taking medication	<b>T / F</b>
20		It is unnatural for my mind and body to be controlled by medications	<b>T / F</b>
21		My thoughts are clearer on medication	<b>T / F</b>
22		I should keep taking medication even if I feel well	<b>T / F</b>
23		Taking medication will prevent me from having a breakdown	<b>T / F</b>
24		It is up to the doctor to decide when I should stop taking medication	<b>T / F</b>
25		Things that I could do easily are much more difficult when I am on medication	<b>T / F</b>
26		I am happier and feel better when I am taking medications	<b>T / F</b>
27		I am given medication to control behaviour that other people (not myself) don't like	<b>T / F</b>
28		I can't relax on medication	<b>T / F</b>
29		I am in better control of myself when taking medication	<b>T / F</b>
30		By staying on medications I can prevent myself getting sick	<b>T / F</b>
If you have any further comments about medication or this questionnaire, please write them below			

T = True, F = False

\*Answers shown in **bold** are scored +1; answers in normal font are scored -1

The DAI-10 was derived by means of stepwise discriminant analyses applied to the responses of 150 schizophrenia patients to the DAI-30 (Awad, 1993).

The DAI-10 contains six items that a patient who is fully adherent to prescribed medication would answer as 'True', and four they would rate as 'False'.

Scores are allocated to each answer and the total score is calculated in the same way as for the DAI-30. Similarly, a positive total score indicates a positive subjective response (adherent) and a negative total score indicates a negative subjective response (non-adherent).

### DAI-10 questionnaire

Name	Date		Answer (True/False)*
1		For me, the good things about medication outweigh the bad	<b>T</b> / F
2		I feel strange, "doped up", on medication	T / <b>F</b>
3		I take medications of my own free choice	<b>T</b> / F
4		Medications make me feel more relaxed	<b>T</b> / F
5		Medication makes me feel tired and sluggish	T / <b>F</b>
6		I take medication only when I feel ill	T / <b>F</b>
7		I feel more normal on medication	<b>T</b> / F
8		It is unnatural for my mind and body to be controlled by medications	T / <b>F</b>
9		My thoughts are clearer on medication	<b>T</b> / F
10		Taking medication will prevent me from having a breakdown	<b>T</b> / F
If you have any further comments about medication or this questionnaire, please write them below			

T = True, F = False

\*Answers shown in **bold** are scored +1; answers in normal font are scored -1

## 2. Personal Evaluations of Transitions in Treatment; PETiT (Voruganti and Awad, 2002)

PETiT is another self-administered patient questionnaire. It was developed with the aim of producing a tool that could monitor **changes** perceived by a patient receiving therapy based on antipsychotic drugs, and particularly to measure the effects of atypical antipsychotic drugs on outcomes such as subjective well-being.

The patient should be advised that the questions are about how they have been feeling and doing **during the past week**. They should read each of the statements in the questionnaire (page 6) and should choose the answer that best indicates their feelings, by circling it with a pen. They should use the following key:

<b>Often</b>	Frequently feel or act in the way described
<b>Sometimes</b>	Only feel or act that way occasionally
<b>Never</b>	Had not felt or acted that way during the past week

At the time of publication (2002), the authors advised that further information on the method of administration, scoring and interpretation of data was available (free of charge) by contacting them directly:

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**PETiT questionnaire****General questions**

	<b>Question</b>	<b>Often</b>	<b>Sometimes</b>	<b>Never</b>
1	My mind is sharp and clear			
2	I am worried about what is happening to my health			
3	I feel dull and sluggish			
4	I believe that people feel comfortable around me			
5	I feel too tired to do things that I should do			
6	I find it hard to come up with new ideas			
7	I am unable to trust people			
8	I am satisfied with my life			
9	I am able to concentrate on reading or television			
10	I am unhappy			
11	I have family or friends who really understand me			
12	My sex drive is weak			
13	I am able to communicate better with people			
14	Chores such as cleaning, washing and shopping are too much for me			
15	I am able to remember things easily			
16	I feel ready to work either as a volunteer or for pay			
17	I feel good about myself			
18	My future seems gloomy			
19	I avoid meeting new people			
20	I feel weird and strange			
21	I can handle the daily hassles of life			
22	I dislike the way I look			
23	I am not sleeping well			
24	I am able to do things as well as other people			

**Questions about medication**

	<b>Question</b>	<b>Often</b>	<b>Sometimes</b>	<b>Never</b>
1	I forget to take my medication			
2	My medication is helping me			
3	I dislike my current medication			
4	Friends and family believe that my current medication is good for me			
5	Taking medication is unpleasant			
6	I feel that the good things about taking medication outweigh the bad			

### 3. Medication Adherence Rating Scale; MARS (Thompson et al, 2000)

Thompson et al (2000) identified several deficiencies in the DAI as a measure of adherence and proposed a new inventory, the MARS scale, that incorporates features of both the DAI and the MAQ (Morisky et al, 1986) but which they claimed to have greater validity and clinical utility. They concluded that it was a valid and reliable measure of adherence to psychoactive medications.

The patient should be asked to respond to the statements in the questionnaire by circling the answer which best describes their behaviour or attitude towards their medication **during the past week**.

At the time of publication (2000), the authors advised that further information regarding the scale and scoring procedures was available (free of charge) by contacting them directly:

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#### **MARS questionnaire**

	<b>Question</b>	<b>Answer</b>
1	Do you ever forget to take your medication?	Yes / No
2	Are you careless at times about taking your medication?	Yes / No
3	When you feel better, do you sometimes stop taking your medication?	Yes / No
4	Sometimes if you feel worse when you take the medication, do you stop taking it?	Yes / No
5	I take my medication only when I am sick	Yes / No
6	It is unnatural for my mind and body to be controlled by medication	Yes / No
7	My thoughts are clearer on medication	Yes / No
8	By staying on medication, I can prevent getting sick.	Yes / No
9	I feel weird, like a 'zombie' on medication	Yes / No
10	Medication makes me feel tired and sluggish	Yes / No

#### 4. Clinician Rating Scale; CRS (Kemp et al, 1996; 1998)

The CRS uses an ordinal scale of 1–7 to quantify the clinician’s assessment of the level of adherence shown by the patient. Higher numbers represent greater adherence.

The CRS has been used in two controlled trials of ‘compliance therapy’, in which it demonstrated sensitivity in detecting differences in outcomes among patients receiving compliance therapy versus non-specific counselling (Kemp et al, 1996; 1998).

#### CRS

Level of adherence	Rating
Complete refusal	1
Partial refusal or only accepts minimum dose	2
Accepts only because compulsory, or very reluctant / requires persuasion, or questions the need for medication often (e.g. every 2 days)	3
Occasional reluctance (e.g. questions the need for medication once a week)	4
Passive acceptance	5
Moderate participation, some knowledge and interest in medication and no prompting required	6
Active participation, readily accepts, and shows some responsibility for regimen	7

### 5. **Brief Adherence Rating Scale; BARS** (Byerly et al 2008)

The BARS is a recently developed clinician-administered adherence assessment tool consisting of

- three questions (adapted with permission from a questionnaire used in the CATIE trial) about the patient's knowledge of their own medication regimen and episodes of missed medication taking, as follows:
  1. number of prescribed doses of medication per day
  2. number of days in the past month when the patient did not take the prescribed doses
  3. number of days in the past month when the patient took less than the prescribed dose.
- A visual analogue scale (VAS) used to assess the proportion of doses taken by the patient in the past month (0–100%).

The visual analogue scale rating is the key measure of adherence provided by the BARS.

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