O-Log Manual
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**Introduction**: The following information was adapted from material written by the O-Log's developer, Thomas Novack, PhD for the COMBI website (www.tbims.org/combi).

Mental confusion can be a significant barrier to independent living and to participation in rehabilitation. Measuring orientation is one way to evaluate confusion and has been helpful in documenting change over time. Orientation assessment is a component of all measures of mental status largely because it is quick to ascertain, can be scored objectively, and is generally agreed to be within the cognitive capacity of normal individuals. Most importantly for our purposes, recovery of orientation to time, place, person and circumstances signals the end of post-traumatic amnesia (PTA). The duration of PTA, measured as the number of days between the TBI and the resumption of continuous day-to-day memory, is among the most important indices of TBI severity. There are scales to assess orientation and PTA, the most widely used being the Galveston Orientation and Amnesia Test (GOAT).

The GOAT was developed for use with people in the acute stages of TBI and was initially studied on a neurosurgical unit. In the rehabilitation setting, there are several drawbacks to the GOAT. It is not relevant to populations other than TBI because some of the questions relate directly to trauma.  Moreover, it is not important to this population how the person was transported to the hospital and it is confusing to ask when the person was hospitalized since there may have been several hospital transfers prior to admission to the rehabilitation program. Some of the questions are also subjective and difficult to score, such as those involving the last recall of events prior to injury and the first recall of events after the trauma. Finally, the scoring of the GOAT can be confusing. The final score is derived by subtracting error points from 100, although the scale items add to 110. Scoring for individual items also varies, presumably based on the difficulty of the item. For instance, a subject may lose 30 points if grossly in error in stating the year, but only five points if the city is misstated. No objective data have been provided to justify such differential scoring, which can result in significant fluctuations in scores day to day if responses are inconsistent.

To address these difficulties the O-Log was developed. The O-Log focuses on orientation to place, time, and circumstance. It was decided not to include questions concerning personal background, such as a person's name and birth date, since such information does not adequately define cognitive impairment (studies using item response analytic techniques have suggested such items are too "easy" to be valuable). Place is evaluated by asking for the name of the city and the hospital. The person is asked for the month, date, year, day of week and time of day to evaluate orientation to time. Orientation to circumstance refers to awareness that an event has taken place, such as a car crash or other etiology of TBI, and awareness of the impact of the event, such as a brain injury

with motor or cognitive difficulties. The scale allows for spontaneous verbal responses, but responses based on cueing and non-verbal communication are possible.

**Scoring:**

The ten items of the O-Log are scored 0 to 3 depending on the response provided. No item is weighted more than another, and responses may be spoken, written or indicated by pointing or nodding the head. A spontaneous, correct response on any item is awarded 3 points. A score of 2 is assigned if the spontaneous response is lacking or incorrect, but a correct response is provided following a *logical cue* (hint) given by the examiner. A score of 1 is given if spontaneous and cued responses are lacking or incorrect, but a correct response is given to *multiple choice or recognition* format in which the examiner presents 3 options from which to choose. Multiple choice/ recognition items may be given either verbally or in writing (for the patient to point to). Examples of correct responses earning 3 points, logical cues that may be used for 2-point answers, and multiple choice options to use in a recognition format are given below for each question. Zero points are assigned if the spontaneous, cued, and recognition formats do not generate a correct response.

Scores for each of the 10 items are summed to obtain a total score that ranges from 0 to 30. Specific domain scores can be calculated as follows: Place = City + Kind of Place + Name of Hospital; Time = Month + Date +Year + Day of Week + Clock Time; Situation = Etiology/Event + Pathology/Deficits.

**Administration:**  For fully oriented individuals the scale takes as little as three minutes to administer, whereas for those who are confused and require a recognition format for every question 10 to 15 minutes may be required. The scale can be administered at bedside or in any other setting.

      If the patient responds to a question with "I don't know," try to get a spontaneous answer (maximum 3 points) by repeating the question and encouraging him/ her to **"Take your best guess."** If s/he still does not volunteer a response, proceed with a logical cue (maximum 2 points) and then if necessary to recognition format (maximum 1 point).

      The examiner may give 2 logical cues to refine the patient's response. For example, if a cue that "we are near the beginning of the week" leads to a response of "Tuesday," the examiner may say "That's tomorrow, so today is ----" and assign 2 points for the correct answer of Monday.

      When giving multiple choices, be sure to insert the correct response.  Across items, vary where you insert the correct response (first, second, or third).  Select foils that are appropriate to the question. **Across days, periodically alter the foils you use on the same item.**

## Item Administration and Scoring Instructions

1. **City: What city are we in?** For a correct response (Elkins Park), assign 3 points.

   Logical cue: If they do not know the city or give an incorrect response: **"We are in a city in the suburbs of Philadelphia."** If they give the correct response, assign 2 points.

   Recognition: If they still do not know the city, say **"Are we in Ambler, Elkins Park or Springfield?"** For a correct response, assign 1 point. *Remember to switch up the foils if the recognition format is used on multiple occasions; that is, do not always use the same choices with a given patient.*

2. **Kind of Place: What kind of place is this?** For a correct response (hospital) assign 3 points.

   Logical cue: If they do not know or give an incorrect response, say **"This is a place where doctors and nurses work."** For a correct response, assign 2 points.

   Recognition: If they still do not know the kind of place, say "**Are we at a hospital, in a store, or at home?**" and assign 1 point for a correct response. *Remember to switch up the foils if the recognition format is used on multiple occasions; that is, do not always use the same choices with a given patient.*

3. **Name of Hospital**: **What is the name of this hospital?** For a correct response (Moss or Moss Rehab), assign 3 points.

   Logical cue: If they do not know at all, say **"This is a special kind of hospital."** *Do not say that this is a rehab hospital.*
       If they say Elkins Park (Hospital), say **"You are correct that we are at Elkins Park Hospital, but this section also has its own name."**
       If they say "This is a rehab hospital," say **"Yes, it's 'blank' Rehab Hospital. What is the name of it?"**
       Assign 2 points for a correct answer given to any logical cue.

   Recognition: If they still don't know or are incorrect, say **"Perhaps you have heard the name and can recognize it, are we at: Magee Rehab, Bryn Mawr Rehab or Moss Rehab?"** For a correct response assign 1 point. *Remember to switch up the foils if the recognition format is used on multiple occasions; that is, do not always use the same choices with a given patient.*

4. **Month**: **What month is it?** For a correct response, assign 3 points.

   Logical cue: If they do not know at all, provide a cue that orients them to the season and/ or use a major holiday, e.g.: **"It's summer time"** or **"It's almost Christmas."**

*But do not include the name of the month—for example, do not say "Last week it was the 4<sup>th</sup> of July."*

    If they give the incorrect month, give them a cue based on their response that enables them to figure it out such as **"That was last month, so now it's----"** Or **"That's actually 2 months from now, so now it's---"**

    Assign 2 points for a correct answer given to any logical cue.

Recognition: If they still do not know the month, **give 3 choices of months** (including the correct one) and assign 1 point for a correct response. *Remember to switch up the foils if the recognition format is used on multiple occasions; that is, do not always use the same choices with a given patient.*

5. **Date**: **What is today's date?** For a correct response indicating the numerical day of the month, assign 3 points.

Logical cue: If they do not know at all, provide a cue that orients them to the appropriate section of the month, e.g.: **"Well, we are (near the beginning/ about at the middle/ near the end) of the month."**
If they give the incorrect day, give them a cue based on their response that enables them to figure it out such as **"That was 2 days ago, so now it's----"** Or **"That's actually 4 days from now, so now it's---"**
    Assign 2 points for a correct answer given to any logical cue.

Recognition: If they still do not know the numerical day, **give 3 choices of numerical days** (including the correct one) and assign 1 point for a correct response. *Remember to switch up the foils if the recognition format is used on multiple occasions; that is, do not always use the same choices with a given patient.*

6. **Year**: **What year is it?** For a correct response, assign 3 points. *Note: If they say "'0X" make sure to ask what the entire year is and give full credit only to "200X."*

Logical cue: If they say "190X" to clarify a response of '0X, say **"That was 100 years ago."**
    If they give a different type of incorrect response give them a cue based on their response that enables them to figure it out such as **"That was last year, so now it's----"** Or **"That's actually 5 years from now, so now it's---"**
    If they do not know at all, say **"We are in the first decade of the century."**
    Assign 2 points for a correct answer given to any logical cue.

Recognition: If still incorrect or don't know, **give three choices (1908, 1998 or 2008)** and assign 1 point for the correct answer. *Remember to switch up the foils if the recognition format is used on multiple occasions; that is, do not always use the same choices with a given patient.*

7. **Day of Week: What day of the week is today?** For a correct response, assign 3 points.

    Logical cue: If they do not know at all, provide a cue that orients them to the appropriate section of the week, e.g.: **"Well, we are (near the beginning/ in the middle/ near the end) of the week."**
      If they give the incorrect day, give them a cue based on their response that enables them to figure it out such as **"That was yesterday, so now it's----"** Or **"That's actually 2 days from now, so now it's---"**
      Assign 2 points for a correct answer given to any logical cue.

    Recognition: If still incorrect or don't know, give 3 choices of days of week. Assign 1 point for the correct response. *Remember to switch up the foils if the recognition format is used on multiple occasions; that is, do not always use the same choices with a given patient.*

8. **Clock Time**: **What time is it?** If they give the correct time (+/- 30 minutes), say **AM or PM?** (this must also be correct for 3 points credit). *They can use a clock to answer this item, but the examiner cannot point out the clock to them or tell them where it is.*

    Logical cue: If they gave the correct time but the wrong AM/ PM designation, **cue them to the most recent meal** and ask again if it is AM or PM.
      If they give the incorrect time or don't know the time, use a logical cue such a meal that uses their answer or orients them to time of day, such as (if they said 11 and it's 1) **"No, you said it was before lunch but it is actually after lunch, so it's ---"** or (if they have no idea) **"Well, it's pretty early and you haven't even had breakfast yet so it's---"**
       Assign 2 points for a correct answer (+/- 30 minutes of the actual time) given to any logical cue.

    Recognition: If still incorrect or don't know, give 3 choices of times of day. *Make sure your choices are more than 30 minutes apart.* Assign 1 point for the correct response. *Remember to switch up the foils if the recognition format is used on multiple occasions; that is, do not always use the same choices with a given patient.*

9. **Etiology/Event**: **Why are you in the hospital?** Assign 3 points for any spontaneous answer that includes the EVENT that led to hospitalization such as I was in a car wreck, I fell, I was shot/ beaten up (assaulted), etc. If they reply with a correct but inexact response such as "I'm here for rehab," ask **"Yes, but why are you in the hospital for rehab?"** *They do NOT need to actually remember this event to get credit. Note also that sometimes the event leading to the injury is unknown. In this case the patient can get credit for a plausible response such as "I was found unconscious" or "I must have been jumped" or "They don't know, but I might have fallen."*

    Logical cue: If they don't know, say **"Something happened to you. What was it?"**

If they give an incorrect answer say **"That's not quite it. Do you remember what people have told you about why you are in the hospital?"**
Assign 2 points for a correct answer given to any logical cue/ follow-up question.

Recognition: If still incorrect or don't know, give 3 choices including the correct one, such as, **"Are you here because of an infection, were you in a car wreck, or did you have a fall?"** Assign 1 point for a correct response. *Remember to switch up the foils if the recognition format is used on multiple occasions; that is, do not always use the same choices with a given patient.*

10. **Pathology/deficits**: **What kind of injuries do you have?** This question is looking specifically for awareness that the person has experienced a head injury or TBI. Give 3 points to any response that includes head injury (they can also say they were hurt on the head or hit on the head), brain injury, or TBI.

Logical cue: If they list injuries without mentioning HI, BI or TBI, say **"You had another type of injury (or, another part of your body was injured). What was it?"**
If they do not know what kind of injuries they had, say **"A specific part of your body was injured, do you know which part?"**
If they respond with brain or head to either of these questions, assign 2 points.

Recognition: If this does not generate a response, give 3 choices such as **"Did you have a back injury, a head injury or a leg fracture?"** and assign 1 point for a correct response. *For patients with multiple injuries, make sure only one of your choices is correct. Remember to switch up the foils if the recognition format is used on multiple occasions; that is, do not always use the same choices with a given patient.*