A Step-wise Approach to Assessment: Informing About Cessation and Optimizing Outcomes

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Like other addictions, tobacco dependence is a chronic disease that often requires repeated interventions and multiple attempts to quit.1 When treating any addiction, clinicians are faced with a host of decisions, many of which will unequivocally impact outcomes. The assessment of addictive disorders, including tobacco addiction, is considered a dynamic and iterative process that consists of multiple stages with several goals.2 These include gathering sufficient information for developing an individualized treatment plan, matching patients with appropriate treatment interventions, and monitoring the progress and effectiveness of treatment. This issue of Smoking Cessation Rounds provides one example of a flexible model of assessment that may serve the needs of primary-care physicians who are attempting to further refine and integrate smoking cessation interventions into a busy daily practice. The goal of this issue is to present a pragmatic approach for the identification and assessment of tobacco use and dependence, with the purpose of informing treatment and measuring outcomes.

In assessing and treating smokers, clearly, “one size does not fit all.” Since no two smokers are the same, it follows that assessment and treatment must be individualized to take into account the dynamic circumstances and changing needs of the individual over time. Assessment aims not only to identify tobacco use and detect dependence, but also to inform individualized and longitudinal treatment decisions, and finally to measure outcomes over time. Assessment should also aim to identify and explore factors that potentially impact outcomes. These include the smoker’s level of motivation, intention to quit, levels of self-efficacy, level of nicotine dependence, social supports, stress, and outcome expectancy.3-5 Comorbid psychiatric conditions and other substance-related disorders, especially when they are neglected, are among the most important factors that have a negative impact on smoking cessation outcomes. To optimize cessation outcomes, it is fundamentally important to identify the factors associated with successful outcomes, and to properly include those elements in any assessment, utilizing the collected information to guide treatment.

There is a panoply of rating scales developed for: measuring various aspects of tobacco use; diagnosing tobacco dependence; measuring the readiness for treatment interventions; guiding the individualized interventions; and finally, measuring outcomes. For many clinicians, it can be a daunting task to select the appropriate scale from a large number of available scales, as well as to decide which scale to use under what circumstance for informing a particular treatment decision.

The following brief assessment protocol is not proposed to replace the need for standardized and validated triage models allowing treatment matching and implementing stepped-care, but rather serves as a generic template for assessment at the primary care level. This is the time when particular treatment decisions and treatment matching can occur, and assessment should primarily assist in guiding this treatment,
as well as maximizing and measuring smoking cessation success.

**Step-wise approach to assessment**

Stepped-care models of assessment have been introduced in the broad context of addiction management, where treatment matching is one of the overarching philosophies of care. For obvious reasons, patients are preferably treated with the least restrictive level of care that is proven safe and likely to be effective. As a result, the assessment of addicted individuals is focused on triaging patients to the most appropriate care level. In tobacco addiction assessment, however, there is a dearth of evidence for validating such triage models. Although great strides have been made in validating treatment matching to plan treatment in tobacco dependence, no peer-reviewed, published, and validated triage mechanism exists to date for treatment matching. Therefore, to adequately guide assessment and treatment decisions, the recommendation is, by default, the existing, and widely endorsed set of clinical practice guidelines.¹

The 5-stage model,² used for other addictions, provides a valuable template that could be used to establish a framework for tobacco addiction assessment; it offers the following major stages of assessment:

- Screening
- Diagnosis
- Triage
- Treatment planning
- Outcome monitoring

To incorporate the relative salience of mental health issues in the treatment of tobacco addiction, this model has been adapted and streamlined to a brief 3-Stage Model of Assessment, consisting of the following:

**Step 1: Identification of smokers**

**Step 2: Triage:**
- Assessment of the smoking history and the level of addiction
- Assessment of motivation to change behaviour
- Assessment to detect comorbid mental illness
- Assessment to detect comorbid substance-related disorders

**Step 3: Measurement of outcomes**

**Description of the proposed step-wise approach to assessment**

**Step 1: Identification of smokers**

The updated guidelines from the United States Department of Health and Human Services (USDHHS)³ confirm earlier key recommendations for the institutionalization of identification and the documentation of tobacco use. These recommendations suggest that all patients be asked about their use of tobacco and that this status be documented on a regular basis. Such screening for current (or past) tobacco use will result in 4 possible responses:

- The patient uses tobacco and is willing to make a quit attempt at this time.
- The patient uses tobacco, but is not willing to make a quit attempt at this time.
- The patient once used tobacco, but has since quit.
- The patient never regularly used tobacco.

Individuals who are identified as smokers should be subject to more in-depth assessment (Table 1), while previous or never-smokers may be counselled in a fashion to reinforce their respective nonsmoking status. Implementation of the complete 5-A approach (Ask, Advise, Assess, Assist, and Arrange) for brief interventions is also recommended; a full description of this intervention approach can be found in the November 2007 issue of *Smoking Cessation Rounds*.

This first component (identification) of the clinical interview is designed simply to ascertain smoking status, and to document this status in the context of a system. The single question: “Do you currently use any tobacco products?” is designed to yield, with sufficient sensitivity, an accurate identification of most smokers and tobacco users.

**Toxicological testing to verify smoking status**

The primary clinical application of biochemical testing is verification of abstinence. Biochemical verification of smoking status can be conducted, but the clinical application in primary care remains limited. Testing for the main metabolite of nicotine, cotinine, will only be detectable in the body for a limited time after exposure to nicotine. The presence of cotinine in the body is not specific to nicotine from tobacco, since the use of nicotine-replacement therapy (NRT) can result in a positive test, and the test does not distinguish between second-hand exposure to tobacco smoke and smoking itself.

A positive cotinine level has limited value in diagnosing tobacco addiction, but it does confirm recent exposure to nicotine. Testing may have special applications in sub-populations where self-reports may be dubious or inaccuracy is suspected, possibly to avoid facing the consequences, such as in pregnant women or in patients on lung-transplant lists. The costs associated with conducting such testing are significant, and the clinical application of determining cotinine levels in primary-care settings for smoking cessation is limited.

Another test that also determines possible exposure to tobacco smoke involves thiocyanate (another metabolite of nicotine) and similar to cotinine, tests can be conducted on a variety of bodily matrices (eg, blood, sputum, urine, and hair). Sputum measurements are generally considered inferior to serum determinations as a testing matrix, due to the inherent limitations in the saliva distribution of nicotine breakdown.
products. Although it is less invasive, the clinical applications remain limited; nevertheless, cost allowing, serum cotinine point-of-care testing is commercially available and may serve as a detector of possible relapse. Hair analysis for cotinine determination is expensive and has no clinical application in assessment for the purpose of treatment planning on a primary-care level.

Carbon monoxide (CO) measurement has a much larger clinical application in daily smoking cessation practice. It is usually measured in expired air, with the aid of a special device, which is commercially available and relatively inexpensive. A CO reading >10 parts per million (PPM) is usually indicative of the consumption of cigarettes or smoking, but this is not specific to tobacco. It does not detect the use of other nicotine-delivery systems, only the inhalation from a combustible tobacco-delivery system. Serial measurements of CO (eg, every clinic visit) have a useful application in cessation settings for monitoring outcome. It is also a useful tool to further engage smokers in the ongoing process of quitting smoking and receiving treatment, by providing tangible evidence of progress.

**Step 2: Triage**

To conduct a more comprehensive assessment of tobacco addiction, the combination of an unstructured clinical interview and psychometric testing (ie, using selected rating scales) is recommended. An assessment form can summarize the pertinent information to collect in established treatment settings, eg, the Centre for Addiction and Mental Health’s Nicotine Dependence Clinic. A single page can provide the minimum set of clinical data to be collected for treatment planning. (See this issue online for a sample form.)

**Assessment of tobacco use and addiction**

After smoking status has been determined, it is important to confirm the diagnosis of tobacco dependence through the use of either the Diagnostic and Statistical Manual of Mental Disorders Fourth Edition, Text Revision (DSM IV-TR) criteria for the diagnosis of “nicotine dependence” or the International Classification of Diseases (ICD)-10 criteria, which refers to “tobacco dependence” for the same entity. There are subtle differences between these two classification systems, and the use of either to confirm the diagnosis is considered feasible. The diagnostic criteria for nicotine dependence can be found in Table 1; note, however, that nicotine by its nature is generally not considered impairing, hence, the utility of diagnostic criteria may be less useful.

**The Fagerström test for nicotine dependence**

Nicotine dependence level is most commonly determined with the use of a self-report rating scale, the Fagerström test for nicotine dependence (FTND). The 6 questions (Table 2) in this scale are scored individually and the total for all the questions is calculated, providing a cumulative score out of 10. Among these questions, the single factor most strongly associated with the degree of nicotine dependence is the time from waking up to the first cigarette (Question #2). The number of cigarettes per day is considered a less indicative measure for the level of addiction because there is large individual variation in the efficiency with which people smoke. The FTND score provides an indication of the level of dependence, and is categorized as follows: 0-2 = very low level of dependence, 8-10 = very high level of dependence. The FTND remains the gold standard in assessment of tobacco addiction.

Other factors that are commonly assessed to be relevant in planning treatment include the duration of smoking (often expressed as pack-years), the brand smoked (previously the “light” and “mild” designations were relevant), and the use of other products, eg.
smokeless tobacco (snus). Other useful questionnaires, for example, to determine the reasons why an individual smokes (The “Why” Test) and reasons for quitting, are available online, accompanied by instructions for scoring.

Assessing medication use

One of the key recommendations in the updated clinical guidelines is for clinicians to encourage the use of pharmacotherapy by all patients attempting to quit smoking, unless medically contraindicated or in specific populations where there is insufficient evidence of effectiveness (e.g., smokeless-tobacco users, pregnant women, and light smokers). To guide current treatment recommendations in selecting medications, the previous use of medication should be examined to determine which of any of the 6 first-line options (4 NRT options, bupropion, or varenicline) had worked in the past. Previous use may guide the next choice for pharmacotherapy as well as the exploration of any related side effects, and the dose, duration, and adequacy of previous medication use.

The USDHHS clinical practice guidelines suggest that counselling and medication in combination are more effective than either option alone; therefore, it is useful to determine if any psychosocial interventions were used in the past. This will guide the selection of psychosocial interventions and counselling recommendations for the current cessation attempt. Thus, clinicians should encourage all individuals to use both counselling and medication when attempting to quit smoking, and the selection of current interventions may be guided by previous successes and challenges.

Assessment should include detection of potential withdrawal symptoms associated with previous quit attempts, cravings, and possible triggers and sources of second-hand smoke exposure (e.g., others smoking in the home or vehicle where the patient may be present). Postcessation weight gain is a common concern expressed by smokers; therefore, serial weight monitoring is necessary to allow the prevention of avoidable or significant changes in weight when quitting smoking.

Assessment of motivation to change behaviour

The updated clinical practice guidelines underscore the necessity to assess readiness to quit (the third A of the 5-Å Approach). For those who are not ready to quit, the use of the motivational 5-R's (Relevance, Risks, Rewards, Roadblocks, Repetition) is recommended, which then becomes part of the assessment in those unwilling to make a quit attempt.

Scaling questions to assess readiness to quit assists in matching stage-appropriate motivational interventions to the level of readiness of the smoker. Two questions are routinely posed:

- On a scale from 0-10, how important is it for you to quit at this time?
- On a scale from 0-10, how confident are you that you can quit smoking at this time?

In addition to these questions, asking whether the patient has set a quit date, and when it is planned, may also assist in determining the relative readiness to change. Valuable questions for assessing the process of cessation are listed in Table 3.

Assessment to detect comorbid mental illness

Evaluation of the mental status and psychiatric history of a patient may be best achieved by conducting a standardized psychiatric interview. However, the most relevant questions in a smoking-cessation context would be to exclude any previous history of psychiatric illness (e.g., major depressive disorder, schizophrenia, bipolar disorder), previous hospitalizations or treatment for psychiatric reasons, previous suicide attempts, and a determination of any significant level of exacerbation in preexisting psychopathology during the last quit attempt. Safety of patients is paramount; therefore, assessment in this context serves to exclude any imminent risk of harm to self or others.

Table 2: The Fagerström test for nicotine dependence

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>How many cigarettes per day do you usually smoke?</td>
<td>10 or less</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>11-20</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>21-30</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>31 or more</td>
<td>3</td>
</tr>
<tr>
<td>How soon after you wake up do you smoke your first cigarette?</td>
<td>≤ 5 minutes</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>6-30 minutes</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>&gt;30 minutes</td>
<td>1</td>
</tr>
<tr>
<td>Do you find it difficult to stop smoking in no-smoking areas?</td>
<td>No</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>1</td>
</tr>
<tr>
<td>Which cigarette would you most hate to give up?</td>
<td>The first one of the morning</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>0</td>
</tr>
<tr>
<td>Do you smoke more frequently in the first hours after waking up than during the rest of the day?</td>
<td>No</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>1</td>
</tr>
<tr>
<td>Do you smoke if you are so ill that you are in bed most of the day?</td>
<td>No</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>1</td>
</tr>
</tbody>
</table>
In some individuals, mood exacerbations can occur up to 6 months after tobacco abstinence, with or without the use of pharmacotherapy; as a result, this aspect must be serially and diligently monitored. The proposed assessment also incorporates screening for possible mood disorders, as well as quantifying any changes in mood over time during the cessation process. The use of standardized rating scales supplement the interview, and the use of a Beck Depression Inventory or a Hamilton Depression Scale may offer useful mood-related information, if administered over time and serially. Changes in mood or the development of an imminent and substantial risk of harm (as a result of a psychiatric condition) warrant the attention of the primary-care provider or attending psychiatrist, and must be sufficiently addressed to ensure the patient’s safety and optimal outcome. Ongoing mood monitoring is generally required and recommended for those with a history of major mood conditions or other neuropsychiatric conditions.

**Monitoring of possible drug interactions**

The patient may be using certain psychotropic drugs that must be identified and may require special attention; among the most salient examples are the cytochrome P450 1A2 (CYP1A2) substrates, eg, haloperidol, clozapine, olanzapine, and caffeine. Serial blood level determinations (of selected 1A2 metabolized psychotropics) may be required to monitor potential changes in blood levels of these drugs when patients quit smoking. Monitoring of caffeine consumption may prevent exacerbations of pre-existing anxiety conditions when patients quit smoking.

### Table 3: Questions to assess the stage of change for quitting smoking

<table>
<thead>
<tr>
<th>Question</th>
<th>Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are you intending to quit smoking in the next six months?</td>
<td>Precontemplation</td>
</tr>
<tr>
<td>If no, the patient is in precontemplation. If yes, proceed to the next question.</td>
<td></td>
</tr>
<tr>
<td>Are you intending to stop smoking in the next month?</td>
<td>Contemplation</td>
</tr>
<tr>
<td>If no, the smoker is in the contemplation stage. If yes, proceed to the next question.</td>
<td></td>
</tr>
<tr>
<td>Did you try to quit smoking in the past year?</td>
<td>Preparation</td>
</tr>
<tr>
<td>If no, the smoker is in the contemplation stage. If yes, the smoker is in the preparation stage.</td>
<td></td>
</tr>
<tr>
<td>(If the smoker has already quit) How long ago did you stop smoking?</td>
<td>Action/Maintenance</td>
</tr>
<tr>
<td>If &lt;6 months ago, the patient is in the action stage. If &gt;6 months, he/she is in the maintenance stage.</td>
<td></td>
</tr>
</tbody>
</table>

**Assessment to detect substance-related disorders**

Failure to identify and treat comorbid substance-use disorders in those quitting smoking may compromise outcomes and pose independent health risks. The detection of substance-related disorders is best done through a standard psychiatric interview, where direct inquiry about the use of alcohol, painkillers, street drugs, and caffeine is conducted.

The supplementation of the clinical interview with standardized rating scales may enhance the sensitivity of the interview and, for the purposes of detecting alcohol problems, the CAGE (cut down, annoyed, guilty, eye opener) questionnaire remains a sufficiently sensitive and specific screening tool. Obtaining collateral information and conducting laboratory testing (eg, liver function testing) and toxicological testing (eg, Panel 5 [5 illicit drugs]) can enhance the detection of drug use. Positive drug tests do not equate with addiction to drugs, but warrant further investigation. Inquiry about caffeine is relevant, since individuals who quit smoking may develop symptoms of caffeine intoxication due to a change in the pharmacokinetics of CYP1A2 substrates shortly after quitting smoking.

**Step 3: Measurement of outcomes**

CO measurement (ie, Step 1) in expired air remains the standard outcome measurement in smoking-cessation trials. Measurement of short- and long-term abstinence (LTA) rates is valuable for describing cessation outcomes, and the improvement in quality of life may be more sensitive in detecting subtle changes over the process of quitting. Assessing for the number of quit attempts may also be indicative of the impact of tobacco-control interventions, but key challenges remain in the methodology for accurate measurement. Treatment retention and recidivism may also serve as predictors of outcome. Fundamentally, however, the measurement of outcome should not be based only on LTA rates, and this is especially the case in those persons with mental illness or addiction. Outcome measures should include some level of mood symptom monitoring irrespective of the selected medication by which cessation is achieved.

**Summary**

This issue of Smoking Cessation Rounds provides an overview of the assessment of tobacco addiction, recommending a brief and pragmatic approach to comprehensive assessment. The goals of the assessment are to accurately screen for tobacco use, diagnose and further quantify tobacco
addiction, describe patterns of tobacco use, and further to inform treatment and measure outcomes. In the comprehensive assessment of smokers and other tobacco users, a variety of further questions are posed in the form of both structured and semi-structured rating scales and a clinical interview, which may take on various levels of structuring. The identification of any comorbid psychiatric condition, medical or weight problems, or substance-related disorder is of vast importance, as these may complicate treatment, impact patient safety, and negate treatment, especially if neglected.

Adequate assessment of tobacco use and addiction can be brief, concrete, and practical. The submitted assessment tool, pooled from existing measures used in clinical practice, is presented for adaptation or direct incorporation into daily clinical practice. Proper assessment guides treatment and lays the foundation for safe and effective therapy; it is fundamental to optimized outcomes.

References:

Abstract of Interest
An algorithm for tailoring pharmacotherapy for smoking cessation: results from a Delphi panel of international experts.

BADER P, Mc Donald P, Selby P. TORONTO, ONTARIO

BACKGROUND: Evidence-based smoking cessation guidelines recommend nicotine replacement therapy (NRT), bupropion SR and varenicline as first-line therapy in combination with behavioural interventions. However, there are limited data to guide clinicians in recommending one form over another, using combinations, or matching individual smokers to particular forms.

OBJECTIVE: To develop decision rules for clinicians to guide differential prescribing practices and tailoring of pharmacotherapy for smoking cessation.

METHODS: A Delphi approach was used to build consensus among a panel of 37 international experts from various health disciplines. Through an iterative process, panelists responded to three rounds of questionnaires. Participants identified and ranked “best practices” used by them to tailor pharmacotherapy to aid smoking cessation. An independent panel of 10 experts provided cross-validation of findings.

RESULTS: There was a 100% response rate to all three rounds. A high level of consensus was achieved in determining the most important priorities: (1) factors to consider in prescribing pharmacotherapy: evidence, patient preference, patient experience; (2) combinations based on: failed attempt with monotherapy, patients with breakthrough cravings, level of tobacco dependence; (3) specific combinations, main categories: (a) two or more forms of NRT, (b) bupropion + form of NRT; (4) specific combinations, subcategories: (1a) patch + gum, (1b) patch + inhaler, (1c) patch + lozenge; (2a) bupropion + patch, (2b) bupropion + gum; (5) impact of comorbidities on selection of pharmacotherapy: contraindications, specific pharmacotherapy useful for certain comorbidities, dual purpose medications; (6) frequency of monitoring determined by patient needs and type of pharmacotherapy.

CONCLUSION: An algorithm and guide were developed to assist clinicians in prescribing pharmacotherapy for smoking cessation. There appears to be good justification for “off-label” use such as higher doses of NRT or combination therapy in certain circumstances. This practical tool reflects best evidence to date of experts in tobacco cessation.

Upcoming Meeting
27 – 30 April 2009
2009 Joint Conference of the Society for Research on Nicotine and Tobacco (SRNT) and SRNT-Europe
Dublin, Ireland

CONTACT: Website: http://www.srnt.org/meeting/2009/index.html
Email: meetings@srnt.org

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