

Lesson 2: The Physiological, Psychological and Behavioral Components of Tobacco Use

Universal Screening for Tobacco Use

Systematic identification of tobacco users is the essential first step in addressing tobacco dependence in clinical practice. Without consistent screening, many tobacco users will not be identified and offered cessation support, representing missed opportunities for one of the most effective health interventions available.

The "Ask" component of the 5 A's framework for tobacco cessation emphasizes that all patients should be asked about tobacco use at every clinical encounter. This universal screening approach ensures that tobacco use is documented and addressed consistently rather than being overlooked or assumed based on appearance or reason for visit. Tobacco use should be assessed as a vital sign, with the same systematic attention given to blood pressure, pulse, and temperature. This elevates tobacco assessment to a standard of care and embeds it in clinical workflows.

Documentation systems should facilitate tobacco screening and intervention. Electronic health records should include tobacco use status as a required field that must be completed for every patient encounter. Standardized options typically include current every day smoker, current some day smoker, former smoker, and never smoker, with additional fields for amount, duration, and quit date when relevant. This systematic documentation allows tracking of tobacco use over time, identifies patients for cessation interventions, and provides data for quality improvement efforts. Some systems include clinical decision support that prompts providers to offer cessation interventions when tobacco use is documented.

Screening should include all forms of tobacco and nicotine products, not just cigarettes. Cigars, pipes, smokeless tobacco, and electronic cigarettes all have health consequences and should be assessed. As new nicotine products enter the market, screening must evolve to capture use of these products. The question "Do you use any form of tobacco or nicotine products?" is more comprehensive than asking only about cigarette smoking.

Screening frequency should occur at every visit because tobacco use status can change over time. Patients who were not ready to quit at a previous visit may have become ready. Former smokers may have relapsed and need support. Never smokers, particularly adolescents and young adults, may have initiated use. Regular screening ensures that changes in tobacco use status are identified and addressed promptly.

Assessing Tobacco Use Patterns and Dependence

Once tobacco use is identified, a more detailed assessment guides intervention

planning and predicts the challenges patients may face in quitting. Understanding use patterns, dependence level, and previous quit attempts informs personalized treatment approaches.

Quantity and duration of tobacco use provide important information about health risk and dependence. For cigarette smokers, assessing cigarettes per day and years of smoking allows calculation of pack-years, a standard measure of cumulative exposure. Pack-years equals packs per day multiplied by years smoked, with one pack-year representing smoking one pack daily for one year or equivalent exposure. Higher pack-year history is associated with greater disease risk, particularly for lung cancer and COPD. For other tobacco products, assessing frequency and duration of use provides similar information. Time to first tobacco use after waking is a particularly strong indicator of dependence, with use within 30 minutes of waking suggesting higher dependence.

The Fagerström Test for Nicotine Dependence is a validated 6-item questionnaire that assesses dependence level and predicts withdrawal severity and relapse risk. The questions address time to first cigarette after waking, difficulty refraining from smoking in forbidden places, which cigarette would be hardest to give up, cigarettes per day, smoking more in the first hours after waking than the rest of the day, and smoking when ill. Scores range from 0-10, with higher scores indicating greater dependence. Scores of 0-3 indicate low dependence, 4-6 moderate dependence, and 7-10 high dependence. This information helps determine appropriate intensity of treatment, with higher dependence suggesting need for pharmacotherapy and more intensive behavioral support.

Previous quit attempts provide valuable information about patient experience, motivation, and challenges. Asking about past quit attempts, including how long they lasted, what methods were used, what helped, and what led to relapse, reveals patterns that can inform current quit planning. Patients who have made multiple quit attempts should be congratulated for their persistence rather than viewed as failures, as most smokers require multiple attempts before achieving long-term abstinence. Understanding what methods have been tried helps avoid repeating unsuccessful approaches and identifies strategies that may have been helpful.

Current readiness to quit is assessed to tailor interventions appropriately. Patients can be categorized as ready to quit within the next 30 days, thinking about quitting within the next 6 months, or not currently thinking about quitting. This assessment, based on the Stages of Change model, guides whether to focus on immediate quit planning, building motivation, or maintaining engagement. Asking "How interested are you in quitting smoking?" on a scale of 0-10 provides a quick assessment of readiness and allows exploration of what would increase interest.

Reasons for wanting to quit or not quit reveal personal motivations and barriers that should be incorporated into counseling. Asking "What are your reasons for wanting to

quit?" and "What concerns do you have about quitting?" provides insight into the patient's perspective. Common motivations include health concerns, cost, family pressure, and desire to be a good role model for children. Common barriers include fear of withdrawal symptoms, weight gain concerns, loss of stress management tool, and social factors. Understanding these factors allows for targeted counseling that builds on motivations and addresses barriers.

Confidence in ability to quit is assessed separately from motivation, as patients may want to quit but doubt their ability to succeed. Asking "On a scale of 0-10, how confident are you that you could quit smoking?" identifies patients who may need additional support to build self-efficacy. Low confidence despite high motivation suggests focusing on building skills, addressing barriers, and providing encouragement based on past successes.

Assessing Comorbid Conditions

Tobacco use commonly co-occurs with other health conditions that may complicate cessation or make it particularly important. Comprehensive assessment identifies these conditions and allows for integrated treatment approaches.

Mental health conditions are strongly associated with tobacco use, with smoking rates 2-3 times higher among individuals with mental illness compared to the general population. Depression, anxiety disorders, post-traumatic stress disorder, bipolar disorder, and schizophrenia all show elevated smoking rates. These patients face unique challenges in quitting, including using tobacco to manage psychiatric symptoms, concerns that quitting will worsen mental health, higher nicotine dependence, and potentially less access to cessation resources. However, research shows that quitting smoking does not worsen and often improves mental health symptoms, making cessation important for this population. Screening for mental health conditions and coordinating cessation treatment with mental health care improves outcomes.

Substance use disorders commonly co-occur with tobacco use, with extremely high smoking rates among individuals in substance use treatment. Historically, tobacco use was often ignored during substance use treatment based on concerns that addressing multiple substances simultaneously would compromise recovery. However, current evidence suggests that addressing tobacco use during substance use treatment does not jeopardize recovery from other substances and may actually improve outcomes by addressing the addictive behaviors comprehensively. Patients in recovery from other substances should be offered tobacco cessation support.

Chronic diseases that are caused or worsened by tobacco use make cessation particularly important. Cardiovascular disease, COPD, diabetes, and cancer all benefit substantially from tobacco cessation, making these diagnoses important motivators for quitting. Assessing these conditions allows counseling to emphasize disease-specific

benefits of cessation. Patients with these conditions should receive clear messages that quitting smoking is one of the most important things they can do for their health, often more important than other medical treatments.

Pregnancy represents a critical time for tobacco cessation given the risks to the developing fetus and the health benefits of quitting. All women of childbearing age should be asked about pregnancy status and plans, as cessation before pregnancy is ideal. Pregnant women who smoke should be offered intensive cessation support with emphasis on non-pharmacological approaches as first-line treatment, though some medications may be appropriate when benefits outweigh risks. The health benefits to the fetus from maternal cessation are substantial and immediate, making pregnancy a powerful motivator for many women.

Medications that interact with tobacco or are affected by cessation should be identified. Tobacco smoke induces certain liver enzymes, affecting metabolism of some medications. When patients quit smoking, levels of these medications may increase, requiring dose adjustments. Important examples include clozapine and olanzapine, antipsychotic medications whose levels can increase significantly after smoking cessation, potentially causing side effects. Warfarin metabolism is affected by smoking status, requiring monitoring when patients quit. Insulin requirements may decrease after smoking cessation due to improved insulin sensitivity. Identifying these medications allows for appropriate monitoring and dose adjustment during the quit process.

Special Populations Requiring Tailored Assessment

Certain populations have unique characteristics that require adapted assessment approaches to ensure appropriate and effective interventions.

Adolescents and young adults are at critical ages for tobacco initiation and escalation to regular use. Assessment should include questions about experimentation with tobacco, peer and family tobacco use, exposure to tobacco marketing, and perceptions of tobacco use. Even occasional or social smoking in this age group is concerning as it often progresses to daily use and dependence. Motivations for use often differ from adults, with social factors and identity exploration playing larger roles than stress management or habit. Interventions should be developmentally appropriate and address the unique factors influencing tobacco use in this age group.

Older adults may have smoked for decades and face unique challenges and considerations. Assessment should address beliefs about whether quitting at their age will help, which is a common barrier. Physical limitations or cognitive impairment may affect ability to use certain cessation aids or attend counseling programs. Social isolation may reduce access to support. Medical comorbidities are common and may make cessation particularly important but also complicate treatment. Despite these challenges, older adults who quit smoking experience significant health benefits, and

age should never be considered a reason not to offer cessation support.

Pregnant women require sensitive assessment that acknowledges the challenges of quitting during pregnancy while emphasizing the benefits for both mother and baby. Assessment should include current smoking status, partner and household members' smoking status, previous quit attempts including during pregnancy, knowledge of risks of smoking during pregnancy, and readiness to quit. Stigma around smoking during pregnancy can lead to under-reporting, so questions should be asked in a non-judgmental manner that emphasizes support rather than blame. Biochemical verification with carbon monoxide testing may be appropriate to ensure accurate assessment.

Individuals with low socioeconomic status face multiple barriers to cessation including higher stress levels, less access to cessation resources, more exposure to smoking in their environment, targeted marketing by tobacco companies, and potentially lower health literacy. Assessment should identify these barriers while avoiding assumptions based on socioeconomic status. Interventions should address practical barriers and connect patients with free or low-cost cessation resources.

Cultural and linguistic minorities may have culture-specific tobacco use patterns, beliefs about tobacco and health, and preferences for cessation approaches. Assessment should be conducted in the patient's preferred language using professional interpretation when needed. Cultural beliefs about tobacco, health, and medical treatment should be explored respectfully. Culturally adapted cessation materials and programs may be more effective than generic approaches for some populations.

LGBTQ+ individuals have higher smoking rates than the general population, likely due to multiple factors including targeted marketing by tobacco companies, higher stress levels from discrimination and minority stress, social norms in some LGBTQ+ communities, and historically greater acceptance of smoking in LGBTQ+ venues. Assessment should be conducted in an affirming manner that acknowledges these factors. Cessation interventions should be culturally appropriate and may be more effective when delivered in LGBTQ+-affirming settings.

Biochemical Verification of Tobacco Use

While self-report is the primary method for assessing tobacco use in most clinical settings, biochemical verification can be useful in certain situations to confirm tobacco use status or monitor abstinence.

Carbon monoxide measurement using breath testing provides immediate feedback about recent smoking. Carbon monoxide is produced by combustion of tobacco and has a half-life of 2-8 hours, making it a marker of very recent smoking. Levels above 6-8 parts per million generally indicate current smoking, though cutoffs vary by device and population. CO testing is non-invasive, provides immediate results, and is relatively

inexpensive. Limitations include inability to detect smokeless tobacco use, light smoking, or smoking that occurred more than a day ago. CO levels can be elevated from environmental exposure to smoke or vehicle exhaust. Despite these limitations, CO testing can be motivating for patients when declining levels demonstrate progress, and it can be useful for verifying abstinence in research or clinical programs.

Cotinine measurement in saliva, urine, or blood provides a more sensitive and specific marker of nicotine exposure. Cotinine is the primary metabolite of nicotine and has a half-life of 16-20 hours, allowing detection of tobacco use over the past few days. Cotinine testing can detect lower levels of exposure than CO testing and can identify smokeless tobacco use. However, it requires laboratory analysis, is more expensive than CO testing, and results are not immediately available. Cotinine testing is primarily used in research settings but may be useful clinically when verification of abstinence is important, such as for pre-operative clearance or monitoring during pregnancy.

Biochemical verification is most useful in settings where objective confirmation of tobacco use status is needed, including pregnancy care where under-reporting is common and risks to the fetus make accurate assessment critical, pre-operative assessment when smoking status affects surgical risk and planning, research studies evaluating cessation interventions where objective outcomes are needed, and programs providing incentives for abstinence where verification prevents gaming the system. In routine clinical care, self-report is generally sufficient and biochemical testing is not necessary for most patients.

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