Chapter 5
Screening and Assessment for Substance Abuse

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Key Points

- Definitions
- Pathobiochemical process
- Risk factors
- Undertreatment of pain
- Screening tools
- Questionnaires
- The cold pressor test
- Urine drug screening
- Random pill counts
- Opioid withdrawal challenge
- Database check

Introduction

Substance abuse has become a rising public health problem in the United States [1]. Notably, the incidence of opioid abuse as well as accidental opioid-related overdose has dramatically increased in the past decade [2–5]. Despite overall healthcare workers' efforts to limit the amount of opioids prescribed and unnecessary

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escalation of dosages, opioid abuse continues to be a concern in the medical community. To begin with, there are a number of challenges when assessing patients for opioid abuse. Chronic pain patients are a special group of patients due to the complexity of their condition. The underlying pathophysiology is a combination of factors that include neurobiochemical processes as well as psychosocial, environmental, and genetic variability.

The current tools that we have for screening patients for opioid abuse include self-reports, questionnaires, state-level databanks, the physical examination, and laboratory testing. However, there are limitations of each of these screening tools. For example, self-reports of medication use and dosages can be unreliable. On the other hand, physical examination and laboratory tests cannot measure the level of pain or pain relief that is experienced by the patient. Databank searches are commonly used in the clinical setting as part of the assessment for opioid dependence or abuse, but there is still low evidence to support its efficacy as a screening tool [2]. More research is needed to establish an evidence-based algorithm to screening for opioid abuse.

Definitions

Clear and distinct definitions need to be established to provide an accurate assessment of the patient's diagnosis. Table 5.1 provides definitions that are important for the clinician to understand when assessing a patient for opioid dependence or abuse [6–11]. A distinction worth mentioning is that opioid tolerance is an expected physiological response for chronic opioid patients but this does not necessarily lead to maladaptive patterns of addiction [7–9]. Moreover, physical dependence and tolerance alone do not equate with addiction [9]. Opioid tolerance, however, can lead to higher opioid dosages, which is associated with opioid dependence.

Table 5.1 Definitions that are important for the clinician to understand when assessing a patient for opioid dependence or abuse

Opioid: A compound or drug that binds to receptors in the brain involved in the control of pain and other functions (e.g., morphine, heroin, hydrocodone, oxycodone)
Polysubstance Abuse: The abuse of two or more drugs at the same time, such as CNS depressants and alcohol
Prescription Drug Abuse: The use of a medication without a prescription in a way other than as prescribed or for the experience or feeling elicited. This term is used interchangeably with "nonmedical" use
Substance Abuse: maladaptive pattern of substance use manifested by recurrent and significant adverse consequences related to the repeated use of substances. There may be repeated failure to fulfill major role obligations, repeated use in situations in which it is physically hazardous, multiple legal problems, and recurrent social and interpersonal problems [4, 6]

(continued)

Table 5.1 (continued)

Substance dependence: a cluster of cognitive, behavioral, and physiological symptoms indicating that a person is continuing to use a substance despite having clinically significant substance-related problems. For substance dependence to be diagnosed, at least three of the following must be present: symptoms of tolerance; symptoms of withdrawal; the use of a substance in larger amounts or for longer periods than intended; persistent desire or unsuccessful attempts to reduce or control use; the spending of considerable time in efforts to obtain the substance; a reduction in important social, occupational, or recreational activities because of drug use; and continued use of a substance despite attendant health, social, or economic problems [5, 7]
Addiction: a psychological and behavioral syndrome characterized by an intense desire for the drug and overwhelming concerns about continued availability; evidence of compulsive drug use (characterized, for example, by unsanctioned dose escalation, continued dosing despite significant side effects, use of the drug to treat symptoms not targeted by therapy, or unapproved use during periods of no symptoms; and evidence of one or more of a group of associated behaviors, including manipulation of the treating physician or medical system for the purposes of obtaining additional drug (altering prescriptions, for example), acquisition of drugs from other medical sources or from a nonmedical source, drug hoarding or sales, or unapproved use of other drugs (particularly alcohol or other sedative/hypotics) [7, 11]
Physical Dependence: An adaptive physiological state that occurs with regular drug use and results in a withdrawal syndrome when drug use is stopped; often occurs with tolerance. Physical dependence can happen with chronic and even appropriate use of many medications, and by itself does not constitute addiction
Tolerance: A condition in which higher doses of a drug are required to produce the same effect achieved during initial use; often associated with physical dependence
Withdrawal: Symptoms that occur after chronic use of a drug is reduced abruptly or stopped
Detoxification: A process in which the body rids itself of a drug or its metabolites. This is often the first step in drug abuse treatment. During this period, withdrawal symptoms can emerge that may require medical treatment

Pathobiochemical Process

There is considerable individual variability and differences in the physiologic make-up of each person. Variation in sensitivity to drug effect, drug metabolism, and adaptation to the effects of chronic exposure to a drug may also contribute to the susceptibility for opioid abuse [2, 8]. Interindividual differences in response to opioid therapy and downregulation in receptor numbers or sensitivity can lead to the need for dose escalation in some patients. The mesolimbic system is involved in modulation of the reward experience through both positive reinforcement (euphoria) and negative reinforcement (avoidance of withdrawal symptoms), and can also present with interindividual variability [8]. Altered behavior of dopaminergic neurons in the ventral tegmental area associated with reward mechanisms can transition from regulated to compulsive drug use [2]. Vulnerability to relapse is thought to be mediated by neuroplasticity in cortical glutaminergic pathways projecting to the nucleus accumbens [2].

Risk Factors

Consideration of risk factors is essential when assessing for problems with opioid dependence or abuse. Having a personal history of prior substance abuse or mental health disorder increases a patient's risk of opioid abuse [7]. In addition, younger age, smoking, and having certain genetic subtypes can also predispose to increased risk for opioid abuse [5, 8, 12]. Interestingly, patients with a close relative such as a parent, sibling, or a spouse with a history of substance abuse are also at higher risk for opioid abuse [3, 7, 13].

Undertreatment of Pain

An important topic that is often overlooked is the undertreatment of pain. Patients who have pain that is not adequately treated can develop "pseudoaddiction" [2, 7]. This term refers to behaviors that may be described as drug seeking, e.g. taking larger amounts of medications than prescribed, running out of medications prematurely, anger and escalating demands for increased pain medication. However, the cause of the problem is the gross undertreatment of pain and when adequate pain relief is given, the symptoms are eliminated [10].

Screening Tools

Questionnaires [2, 14, 15]

Beck Depression Inventory (BDI-II)

This is a 21-item multiple-choice self-report inventory. It was originally developed to provide a quantitative assessment of the intensity of depression. The questionnaire is composed of items related to symptoms of depression such as hopelessness, anhedonia, inability to concentrate, guilt, lack of appetite, and fatigue. Since then, the BDI has been revised and is now known as the BDI-II. The cutoffs used for the BDI-II differ from the original. Each question is still graded on a scale from 0 to 3 and the scoring is as follows: 0–13: minimal depression; 14–19: mild depression; 20–28: moderate depression; and 29–63: severe depression. Higher total scores indicate more severe depressive symptoms. This scale can be useful for monitoring treatment response.

CAGE

An acronym representing the four questions commonly used to assess for substance abuse and dependence. The questions are not sensitive for detecting the full spectrum of unhealthy drug use but two affirmative responses have shown in some studies to have high sensitivity and specificity for alcohol abuse and dependence. The four questions that are asked to patients are: (1) Have you ever felt you needed to **C**ut down on your drinking? (2) Have people **A**nnoyed you by criticizing your drinking? (3) Have you ever felt **G**uilty about drinking? (4) Have you ever felt you needed a drink first thing in the morning (**E**ye-opener) to steady your nerves or to get rid of a hangover?

Visual Pain Analogue (VPA)

This scale measures pain on a level from 0 to 10. Patients are asked to make an "X" mark on a 10-cm horizontal line, hashed at two-point intervals with higher numbers reflecting greater pain. A pain score is determined by rounding up to the next whole number subsequent to the marking made by the patient.

Oswestry Pain Disability Questionnaire (OSW)

This is a self-rating scale that evaluates the degree of functional impairment caused by pain in activities of daily living such as in personal care, mobility, employment, and social life.

Patient Health Questionnaire (PHQ-9)

This is a self-administered questionnaire comprising of nine questions that incorporates the DSM-IV criteria for major depression and an additional item that assesses for psychosocial impairment. Each item is scored on a four-point Likert scale from "0" (not at all) to "3" (nearly every day) and total scores range from 0 to 27, with 0 to 4 indicates no depression; 5 to 9 mild depression; 10 to 14 moderate depression; 15 to 19 moderately severe depression; and 20 to 27 indicates severe depression.

Pain Medication Questionnaire (PMQ)

This 26-item self-report inventory prompts patients to select the description that best matches their experiences, thoughts, and needs related to their pain medication. Grading is on a five-point Likert scale from 0 (disagree) to 4 (agree) and is used to assess risk of opioid medication misuse specifically in chronic pain patients and to measure progress in those patients already taking opioids. High PMQ scores are associated with history of substance abuse, higher levels of psychosocial distress, and poorer functioning.

Patient Information Form

This is a clinic-specific form that elicits pertinent information such as patient demographics, level of education, employment status, details and date of prior injuries, involvement in worker's compensation or other litigation, medication and dosages, history of substance abuse or mental health disorder, prior surgeries, and chronic health problems.

The Dallas Pain Questionnaire

This is 16-item self-report questionnaire containing items related to pain and disability as it affects activities of daily living, mood, work, interpersonal relationships, and social life. Patients mark an "X" along a 0 to 100 % scale anchored with descriptors. Higher total scores represent greater levels of disability with (0–39) mildly-disabling pain; (40–84) moderately disabling pain; and (85+) severely disability pain.

Opioid Risk Tool (ORT)

This brief, simple-scoring inventory contains five items that screen for deviant behaviors associated with substance abuse in pain patients. The five items that contribute to increased risk for substance abuse are as follows: personal or family history of substance abuse with a separate check box for alcohol, illegal drugs, and prescription drugs; age (between 16 and 45); history of preadolescent sexual abuse, and psychological disease and/or depression. There is a distinction between males and females for each item scored with total score (0–3) low risk; (4–7) moderate risk; and (>8) high risk.

Screener and Opioid Assessment for Patients with Pain (SOAPP-R)

This self-administered 24-item questionnaire, administered to pain patients and contains items that inquire about prior experience with pain medication, changes in interpersonal relationships, mood, and past history of substance abuse. It is used to predict possible opioid abuse in chronic pain patients.

Minnesota Multiphasic Personality Inventory (MMPI-2)

This 567-item self-report questionnaire comprises of true or false statements related to psychiatric symptoms and personality organizations. It is a widely used test and has numerous uses in counseling, therapy, employment in high-risk public-safety positions, and to assist clinicians with the diagnosis of mental disorders and design of effective treatment strategies, including in chronic pain management.

The Cold Pressor Test

The apparatus is a temperature-controlled water bath of 1.0 degree Celsius that is continuously stirred by a pump. Patients are asked to place their nondominant hand in the cold pressor test bath with fingers wide apart and asked to maintain their hand in the cold water for as long as they could tolerate. They are then asked to report the exact point in time when the cold sensation begins to elicit pain. Immediately after hand withdrawal, patients are asked to mark their maximal pain intensity on a visual analogue scale (VAS) from 0 to 100 with 100 representing "the worst pain one can imagine" [16]. The time until the pain was first perceived is defined as the latency to pain onset. Some studies have shown that this latency is expected to be shorter for patients prone to opioid addiction compared to control group [16].

Urine Drug Screening

Urine toxicology testing is one of the most commonly used screening tools and sometimes thought of as the "gold standard" for deducing a problem with substance abuse [2]. There are two main types of UDS available, which are the immunoassay drug testing and the laboratory-based specific drug identification.

The immunoassay drug testing offers rapid results, is relatively inexpensive, and can be used readily in the outpatient setting. The test is based on the principle of competitive binding; antibodies bind to antigens when exposed to a drug or its metabolite. The ability of the immunoassay to detect a drug or its metabolite is based on a predetermined cut off concentration, depends on the concentration of the substance in the urine, and results are usually reported as positive or negative. Drawbacks include both false-positive and false-negative results, which can represent significant pitfalls for clinicians.

Liquid or gas chromatography combined with mass spectrometry can determine the presence and quantity of drugs present in a urine sample. These can serve as a confirmatory tool following initial immunoassay testing. The advantages of these laboratory-based drug identification processes include identification of specific drugs and their metabolites and quantitative measures of each drug compound.

Many pain clinics utilize the UDS before initiation of treatment with chronic opioids and often randomly throughout the course of treatment. However, there are cases of false-positive testing due to production of drug metabolites that show up on the urine toxicology testing from certain medications, so results must be interpreted with caution. For example, hydromorphone is a metabolite of hydrocodone and both can show up positive on the UDS. Morphine sulfate can test positive on a UDS in a patient taking codeine. Also an initial true positive UDS may not necessarily predict future aberrant behaviors after initiation of treatment [2]. Conversely, an initial negative screening does not definitely exclude the possibility of future misuse of opioids or aberrant drug behaviors [2].

Random Pill Counts

Some clinicians ask patients to participate in random pill counts during scheduled office visits in order to verify that the patient is taking their opioids as prescribed and not self-titrating dosages or selling them to others.

Opioid Withdrawal Challenge

Evidence to support opioid dependence can be obtained with a naloxone hydrochloride (Narcan) challenge test to induce symptoms of withdrawal [3]. However, this is not as commonly done due to concern for patient safety and ethical principles of benevolence to avoid inducing more harm to the patient.

Database Check

Statewide databases can aid in verifying medication dosages and dates of refills. They are also used to identify the providers who are prescribing opioid medications for the patient, encourage the patient to have one provider manage these medications, and to avoid obtaining opioid prescriptions from multiple sources which increases risk for opioid abuse. There is still unclear evidence as to whether these databases are effective in reducing opioid abuse [2]. Still, they are widely used by clinicians and often combined with an opioid agreement between the provider and the patient that documents in writing the expectations for adherence, goals, and treatment plan for the patient.

Conclusion

Opioid abuse is a growing problem and continues to be a threat to healthcare. Availability of effective screening tools to help clinicians identify problems with opioid abuse is an essential part of the equation. But perhaps more urgently needed is an evidence-based algorithm to guide clinicians with the following goals: identifying risk factors and high-risk populations; implementing appropriate screening tools; recognizing the signs and symptoms of aberrant drug behaviors related to opioid abuse; and addressing the issue of opioid abuse with the patient if it arises. The screening tools that presently exist to detect opioid abuse still have limited sensitivities. Therefore, these limitations underscore the fact that we still need to rely largely on clinicians' instincts to help identify patients who are at risk for opioid abuse.

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