Perioperative Psychological Interventions

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Introduction

Surgery is often viewed as a stressful and potentially traumatic emotional experience given the physical impact on the body and the potential for painful recovery and protracted rehabilitation. Even "minor" surgery may conjure fear and other strong emotional reactions [1]. The fear of pain, disfigurement, loss of function, loss of autonomy, and the uncertainty associated with physical recovery contribute to the stress many patients feel throughout the perisurgical period. Indeed, surgical complications when they occur have been found to be a significant and long-term predictor of a patient's postoperative psychosocial adjustment [2]. Despite these concerns, most patients cope reasonably well before and after surgery and require little more than standard supportive care to facilitate physical and emotional recovery. Nevertheless, pre- and postoperative depression, anxiety, pain, and delirium commonly accompany surgery and can have a significant impact on postsurgical outcomes during both the acute and rehabilitative phases of recovery.

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Researchers and clinicians have become increasingly interested in understanding how people cope with and adapt to physical illness and injury. Considerable work has been undertaken to understand the factors which contribute to an individual's risk for unfavorable emotional outcome following surgery. Likewise, considerable attention has been placed on understanding the factors that facilitate favorable outcomes, such as adaptive coping, benefit finding, and personal growth.

For individuals facing the potential trauma of a major surgery, several evidence-based psychotherapeutic approaches exist to treat adverse emotional reactions and to enhance coping and adjustment both before and after surgery. This chapter will focus on common pre- and postsurgical mental health concerns associated with major surgery, dominant conceptual models related to stress and coping, and common evidence-based psychotherapeutic approaches to enhance coping before and after major surgery.

Pre- and Postsurgical Mental Health

The circumstances that led to major surgery often have a significant impact on the way the surgery is anticipated and emotionally experienced. The extent to which an individual can plan, prepare, and view the surgery as helpful generally facilitates the individual's ability to cope with the

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surgical event. Unplanned or emergency surgeries for life-threatening conditions and surgeries that may leave the individual disabled or disfigured have a greater risk for adverse emotional adjustment. Likewise, protective factors such emotional health, resilience, the availability of social supports, adequate finances, and the availability of appropriate ongoing healthcare services can facilitate adaptive recovery.

Several premorbid and presurgical psychosocial factors are associated with postsurgical psychological adjustment. The patient's age, personality, premorbid psychiatric and behavioral health history, the reason for surgery, the availability of social support, and financial/vocational variables are all seen as significant predictors of psychological outcome following surgery. Older age, female gender, a history of anxiety, depression, PTSD, and substance use (smoking and alcohol and drug use) are associated with an increased risk of perisurgical emotional distress and postoperative complications [3]. Likewise, for those who experience chronic postsurgical pain, which occurs in 10–30% of all surgical patients, several factors including preoperative distress, a history of depression and anxiety, and specific health-related cognitions such as catastrophic thinking have been found to predict poorer emotional adjustment and lower quality of life [4].

Depression, traumatic stress, pain, and altered cognitive states, such as delirium, are relatively common and potentially significant complications that can affect surgical outcome and an individual's subsequent adjustment and adaptation after surgery. A brief description of these select perisurgical complications is given here:

Depression

Major depression is present in nearly 7% of all adults in the United States and is defined by a period of either depressed mood or loss of interest or pleasure, with at least four other symptoms that reflect a change in functioning, such as problems with sleep, energy, appetite, concentration, as well as excessive guilt or suicidal ideation for 2 weeks or longer and sufficiently severe enough to impair usual functioning [5]. Despite its incidence, depression remains a difficult topic for many people to discuss, and patients often minimize or underreport their symptoms to healthcare providers. Likewise, most clinicians do not thoroughly assess for symptoms of depression prior to or after surgery even though depression increases the risk of postsurgical infection, and depression is a potential predictor of postsurgical cognitive impairment (i.e., delirium) and postsurgical pain [6]. Indeed, the incidence of postoperative infections following coronary artery bypass graft (CABG) surgery [7], left ventricular assist device (LVAD) placement [8], and total knee replacement [9] is higher among patients with depression.

Depression is also a significant risk factor for morbidity and mortality following surgery. The association between depression and mortality is especially strong in the setting of cardiac and orthopedic surgery. The prevalence of depression following CABG surgery can be as high as 30–40%, and preoperative depression increases the risk of postoperative delirium, rehospitalization, and postoperative cardiac events such as arrhythmia and angina [10, 11]. Similarly, for patients who undergo common orthopedic surgeries such as spinal, rotator cuff repair, joint replacement surgery, sports-related surgery, and hand and upper extremity surgery, presurgical depression and poor emotional health (i.e., low mental health composite score on the Medical Outcome Study Short Form-36 [SF-36]) are associated with poorer functional outcome, lower postoperative quality of life, and reduced patient satisfaction [12].

Stress-Related Symptom Disorder

Circumstances leading up to and including surgery itself may be significant enough to engender post-traumatic stress symptoms (PTSS) in as many as 8–51% of patients depending on the nature of the illness/injury, type of surgery, and individual characteristics of the patient [13]. PTSS is viewed as a partial or subthreshold form

of post-traumatic stress disorder (PTSD), which according to the *Diagnostic and Statistical Manual, Fifth Edition* [5], is characterized by the presence of intrusive symptoms (such as recurrent memories), avoidance, negative alterations in cognition or mood, and alterations in arousal for greater than 1-month duration and to a level that results in impaired daily functioning in response to or following a life-threatening event. Patients with PTSS and PTSD tend to have poorer outcome (greater risk of mortality, more frequent rehospitalizations, poorer health-related quality of life), due in large part to patients' difficulty engaging in good self-care activities and adhering to recommended postsurgical treatments that may exacerbate or trigger PTSD symptoms [14–18].

Specific sociodemographic and illness/trauma-related factors that prompt the need for surgery can have a significant impact on the development of PTSD symptoms [16]. For instance, individual sociodemographic characteristics of the patient such as socioeconomic status [13], female gender [19, 20], younger age [21], previous psychiatric history [13], anxiety sensitivity, and coping style vis-à-vis catastrophic thinking, avoidance coping, and ruminative thinking [22–24] have been found to predict the development of PTSD after surgery.

The type, severity, and onset of illness/injury can also predict the development of postsurgical PTSD symptoms. Patients with advanced cancer who undergo surgery have a greater risk of developing PTSD symptoms than patients with less advanced cancers [13, 25]. Likewise, surgeries for conditions with sudden/traumatic onset are more likely to be associated with more severe and persistent symptoms of PTSD than are surgeries for chronic conditions. One possible reason for this is that patients who undergo surgery for a less advanced or nonfatal chronic illness have time to prepare and may experience some degree of control and hope for improvement prior to surgery. In contrast, patients who undergo surgery due to a traumatic injury or due to a life-threatening illness such as an advanced cancer either have no time to prepare (as in the case of a traumatic injury) or may be faced with intense feelings of uncertainty and loss associated with a life-threatening diagnosis itself.

Additional factors related to intra- and post-surgical events have also been found to be associated with the risk for developing PTSD-related symptoms. For instance, surgeries where the individual becomes conscious and aware [26, 27] or is administered certain medications such as stress hormones (i.e., norepinephrine) are at increased risk for developing symptoms of PTSD [28]. Likewise, patients who have traumatic memories of postsurgical ICU admissions [20] are at increased risk for developing symptoms of PTSD as well.

Pain

Pain is a common and expected outcome following most types of surgery. Indeed, three out of four adult surgical patients report moderate to severe pain after surgery. Certain types of pain are particularly common such as abdominal cramping, muscle spasms, and nerve pain. In most cases, pain can be well managed and is temporary. However, when pain worsens and becomes more difficult to treat, the risk of adverse emotional reactions increases.

Up to one third of patients undergoing common surgical procedures report persistent or intermittent pain of varying intensity 1 year postoperatively [29]. Persistent pain is difficult to treat and is costly because it is often associated with increased healthcare utilization, reduced quality of life, and decreased economic productivity [4].

Uncontrolled or poorly controlled pain can result in extreme emotional distress, which often results in a worsening of both conditions. In some cases, uncontrolled pain can be traumatic and precipitate states of hopelessness, helplessness, demoralization, and depression. Unremitting pain is associated with an increased risk for suicidal behavior as a means to end one's suffering [30]. Persistent pain may also lead to avoidance behaviors (such as a reluctance to participate in physical activity or physical therapy for fear of exacerbating the pain) or a tendency to

catastrophize thus worsening one's perception of the pain. The link between depression and pain is an important postoperative consideration, as depression prior to surgery has also been found to be significantly associated with postoperative pain measurements and analgesic requirements [31, 32].

Another important consideration involves the link between medical pain management practices and the risk of opioid abuse or dependence. Opioid dependence is a well-recognized potential adverse event that can develop even in opioid-naive patients [33]. Indeed, the overwhelming majority of opioid-dependent patients began their addiction with prescription medication, primarily for chronic pain which can develop in 10–50% of surgical patients [34]. Although they are an important component of postoperative pain management, opioids have become a major topic of debate given the epidemic misuse and abuse of prescription pain medications within the United States. As a consequence, to reduce the risk of opioid misuse, many states as well as the Centers for Disease Control and Prevention have issued opioid prescribing guidelines for chronic pain [35]. Within the postsurgical setting, vigilant monitoring is required to prevent both overdosing and underdosing of pain medication. Undertreatment of pain not only results in unnecessary pain and suffering but is also associated with a number of behaviors such as "clock watching," agitation, anxiety, and depression [33, 36].

Delirium

Delirium is often a highly stressful and confusing event for patients and family members alike. Delirium, defined as an acute and fluctuating disturbance of consciousness secondary to an acute medical condition [5], is a common and often distressing occurrence affecting between 10% and 24% of the general adult medicine population, and many as 37–46% of the general surgical population, with rates climbing to as high as 87% in the postoperative ICU setting [37]. The diagnosis of delirium is associated with poor medical outcome [38, 39] and increased healthcare costs [40], and its timely diagnosis and treatment are crucial to prevent severe and lasting complications [41]. Delirium during hospitalization doubles a patient's risk of post-discharge institutionalization and death and increases the risk of dementia tenfold [39]. Likewise, in-hospital delirium is associated with doubled 1-year medical costs largely due to delirium's association with other postoperative complications such as falls, pressure ulcers, urinary tract infections, and respiratory difficulties [40]. Postoperative delirium is also associated with increased risk for sustained decline of cognitive and functional status 1 year after surgery in the elderly [41–42] .

Accurate assessment and understanding of postoperative delirium is essential prior to initiating any bedside psychological intervention. Likewise, providers of psychological services need to be aware of subtle signs of delirium that may arise, as a consequence of medication, infection, or metabolic factors, during the course of psychological therapy.

Standards for Providing Psychological Interventions Within Medical Settings

Professional guidelines, federal and state laws, standards of accrediting bodies (e.g., Joint Commission), and institutional bylaws govern the rules and regulations by which healthcare providers may practice and engage in services of a psychological nature. A wide range of psychological and behavioral principles are routinely integrated within nursing and medical practice to enhance physical functioning and emotional adjustment, and specific evidence-based psychological interventions have been developed for behavioral health providers (e.g., psychiatrists, psychologists, and clinical social workers) who provide clinical care within medical settings. Professional standards for psychological consultation and intervention are well-established for behavioral health providers within clinical healthcare settings.

The American Psychological Association has published guidelines for psychological practice in

healthcare delivery systems [43] and recognizes clinical health psychology and rehabilitation psychology as two defined specialty areas of psychological practice that require advanced knowledge and skills acquired at the doctoral level. Psychologists trained within these specialties may choose to achieve board-certified status through the American Board of Professional Psychology.

Clinical health psychologists are trained to apply scientific knowledge of the interrelationships among behavioral, emotional, cognitive, social, and biological components in health and disease to the promotion and maintenance of health; the prevention, treatment, and rehabilitation of illness and disability; and the improvement of the healthcare system [44]. Clinical health psychology (also known as behavioral medicine and medical psychology) lies at the juncture of physical and emotional illness, and it deals with understanding and treating psychological conditions in this context [44].

Rehabilitation psychology is the study and application of psychological principles on behalf of persons who have disability due to injury or illness. Rehabilitation psychologists, often within multidisciplinary teams, assess and treat cognitive, emotional, and functional difficulties and help people overcome barriers to participation in life activities. Rehabilitation psychologists are involved in practice, research, and advocacy, with the broad goal of fostering independence and opportunity for people with disabilities [45].

The National Association of Social Workers has published standards for social worker practice in healthcare settings [46]. Professional social workers provide services to individuals and families throughout the lifespan, addressing the full range of biopsychosocial–spiritual and environmental issues that affect well-being. Clinical social workers who are employed or contracted to provide mental or behavioral health services should use evidence-based treatment interventions with clients. These interventions may include cognitive–behavioral therapy, motivational interviewing, chronic disease self-management, psychoeducational services, brief intervention/brief therapy, and trauma-informed care, among others.

Within the postoperative setting, psychiatrists, clinical health psychologists, rehabilitation psychologists, and clinical social workers may be employed within psychiatric consultation–liaison services or as part of multidisciplinary specialty surgical teams to evaluate and treat patients before and after surgical intervention. Common reasons for psychological consultation and intervention include the evaluation and treatment of health-related depression, anxiety/panic, suicidal ideation, acute stress reactions to trauma, behavioral changes, psychosis, delirium, cognitive impairment, substance abuse, and decisional capacity.

Models of Psychological Adaptation Pertinent to Illness, Stress, and Coping

Models of psychological adaptation to illness, stress, and coping enable clinicians and researchers conceptualize the interrelated processes and dynamics of physical and emotional functioning. They provide clinicians a framework for engaging and educating patients and families about illness and effective adaptation, and they provide researchers a conceptual basis to develop and test novel treatments. Two leading models for conceptualizing health and coping are the biopsychosocial model [47] and the transactional model of stress and coping [48].

The biopsychosocial model, when first described by Engel at the University of Rochester [47], was a novel holistic approach toward understanding the relationship between the person, their physical and social environment, and their health. Unlike the traditional biomedical model, which attributed disease to biological factors alone, the biopsychosocial approach systematically considered the interaction between biological, psychological, and social factors to understand health, illness, and healthcare delivery. The model considered the interactive effects of disease, psychosocial stress, as well as personal and environmental factors that account for varying degrees of adaptation [49]. In this model, psychological factors can greatly affect chronic health conditions (such as persistent pain

and depression), and psychosocial factors can predispose patients to medical illnesses (e.g., physical inactivity and poor diet can lead to obesity and hypertension in a person genetically predisposed to heart disease). The biopsychosocial approach has become the dominant model for understanding and conceptualizing physical and emotional health and well-being.

Perhaps one of the most widely referenced and researched models of coping is a cognitive model of stress and coping proposed by Lazarus and Folkman [48, 50]. This transactional model is based on an understanding of two basic processes: appraisal and coping. According to Folkman and Greer [51], *appraisal* describes an individual's evaluation of the personal significance of a given event and the adequacy of their resources for coping. *Coping* refers to the thoughts and behaviors a person uses to regulate distress (emotion-focused coping), manage the problems causing distress (problem-focused coping), and maintain positive well-being (meaning-based coping). *Appraisal* influences emotion and subsequent coping, while *coping* influences the outcome of the situation and the individual's subsequent appraisal of it.

In Folkman's model, the processes of *appraisal* and *coping* are influenced by characteristics of the person and the environment. Personal characteristics (such as an individual's temperament and personality) and environmental factors (such as noise and crowding within the individual's surroundings) influence (a) the appraisal of any given stressor, (b) the extent to which the situation can be controlled or changed, (c) the choice of appropriate coping strategy, and (d) the ability to use it effectively [51]. For example, psychoeducation about an involved surgical procedure may help with the appraisal of the procedure and thus decrease anxiety and provide the patient with a sense of control over certain aspects of the procedure. Likewise, psychotherapy can help with the development of effective emotion-focused coping strategies to manage the uncontrollable aspects of the stressor.

Lazarus and Folkman's model of stress, coping, and appraisal is consistent with tenets of cognitive behavioral therapy [52] and the view that thoughts, feelings, and behavior are all interconnected such that changes in one area result in changes in the others. Together, Engel's biopsychosocial model and Lazarus and Folkman's transactional model of stress and coping provide clinicians a functional approach to conceptualizing the complex interactions between the person, their environment, and their subsequent physical health and psychological well-being.

Evidence-Based Psychological Interventions Pertinent to Perisurgical Psychiatry

Several psychological interventions may help patients cope and adapt to the stresses of the perioperative setting. Specifically, there is a strong evidence base for psychological interventions to treat common issues that postsurgical patients face including pain, stress, depression, anxiety, and family conflict [53–56]. This section will highlight evidence-based interventions relevant to postsurgical patients and will be followed by a discussion of their application to common symptoms and problems encountered in the perisurgical setting.

Presurgical Screening and Preparation

Screening for mental health conditions, including substance abuse, and preparation for common postsurgical issues prior to surgery can identify concerns that should be addressed before the operation as well as improve postoperative outcomes. Researchers have found that presurgical levels of depression and anxiety predict postsurgical depression and anxiety [57–59]. Treatment of these disorders and symptoms prior to surgery could improve symptoms post-surgery and provide patients with needed skills to cope with stress post-surgery. Working with patients before surgery to ensure they have a realistic expectation of surgical recovery and to plan accordingly for their postsurgical

psychological needs can improve coping in the perioperative setting [60]. This preparation may also include planning to rally social support to promote effective coping after surgery, with a focus on emotional and psychological support in addition to logistical and financial support.

Psychoeducation

Pre- and postsurgical patients routinely receive education about the surgery and recovery process. Despite this, patients may still have additional questions about what to expect with their recovery [60]. Psychoeducation focuses on providing education to patients about the impact of surgery on psychological issues such as anxiety, depression, and stress and how these psychological issues may interact with physical illness. Fully assessing for questions throughout the recovery process and addressing patients' concerns may help patients feel in control, reduce anxiety, and help patients anticipate the type of support they will need [61].

Stress Management

Stress management interventions encompass a wide range of approaches to help patients manage the psychological, emotional, and physical manifestations of stress [61]. Recovering from surgery, unexpected or planned, has many stressful components. Stress is often increased during the hospitalization and rehabilitation process due to interrupted sleep, unpredictable schedule, and acute physical symptoms. An individual's appraisal of these events and the choice of coping strategies they use will impact their subsequent physical and emotional response to the stressful events.

Relaxation Training

One important common component to stress management is relaxation training. The goal of relaxation training is to teach patients to become aware of their physical and mental tension and learn how to decrease their level of arousal and sympathetic nervous system activity. Relaxation training may include teaching *diaphragmatic breathing*, *progressive muscle relaxation*, and *guided imagery*. These skills can be taught in various settings and practiced with patients to enhance their effectiveness. There are also many websites and smartphone applications that include guided exercises to help patients practice diaphragmatic breathing and progressive muscle relaxation on their own. Some popular apps include Insight Timer, Calm, and Headspace (Boxes 7.1 and 7.2).

Consideration of the patient's physical status is important prior to teaching relaxation exercises. For example, care should be taken with these exercises with patients who have difficulty breathing as these patients may initially become more anxious when using diaphragmatic breathing as it further focuses their attention on their

Box 7.1 Stress management techniques

Relaxation training
- Diaphragmatic breathing
- Progressive muscle relaxation
- Guided imagery
- Autogenic training

Mindfulness
Hypnosis
Biofeedback

Box 7.2 A sampling of available smartphone apps and website

10% Happier
Breathe2Relax
Buddhify
Calm
CBT-I Coach
HeadSpace
Health Journeys
Insight Timer
Mindfulness Coach
Simply Being
The Mindfulness App
Virtual Hope Box
WebMD Pain Coach

breathing. Additionally, progressive muscle relaxation typically involves first tightening muscles prior to relaxing them and becoming more mentally aware of the difference between states of muscle tension and relaxation. It is often recommended that progressive muscle relaxation be avoided with patients who are experiencing pain. An alternative form of muscle relaxation is *autogenic training*, which involves mentally focusing on particular muscle groups and simply noticing the tension and learning to relax the muscles at will.

Guided imagery is stress management technique that involves focusing attention and imagining in detail a specific, usually relaxing, scene with a focus on the physical sensation of being in a different place. Participants are encouraged to visualize the details of a pleasant scene, usually while focusing on each of the five senses (i.e., imagining the sights, sounds, smells, tastes, and feel) associated with the scene while breathing regularly and allowing one's muscles to relax completely. Guided imagery has been found to increase comfort for cancer patients [62].

Mindfulness

Mindfulness has been described as "paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally" [63]. Some common aspects of mindfulness exercises are self-regulation of attention on a particular present focus such as breathing or a specific thought. Another common aspect of mindfulness is the development of a nonjudgmental standpoint with respect to own thoughts and experiences. This involves the ability to be aware of one's thoughts and accept them as they are, while gently letting them pass rather than becoming engaged or fixated on them. Mindfulness and meditation have been studied in several medical populations and found to have a moderate effect in reducing symptoms of anxiety, as well as a smaller effect in reducing symptoms of depression, pain, stress, and distress [60].

Several ways to teach mindfulness meditation have been described. They range from formal training programs that require weekly classes over months to brief, guided exercises that patients can practice on their own (e.g., free online resources and smartphones applications) (Box 7.2). *Mindfulness-based stress reduction* (MBSR) is a formal program through the Center for Mindfulness in Medicine, Health Care, and Society at the University of Massachusetts Medical School. The program consists of an 8-week course, with weekly classes and homework that takes place in a group setting. MBSR has been extensively researched in a number of medical populations and specifically has been found to be effective for patients with chronic pain [53], cancer [64], and hypertension [65]. The practice of mindfulness has been incorporated into other evidence-based treatments such as dialectical behavioral therapy [66], cognitive behavioral therapy [52], and acceptance and commitment therapy [67], which will be discussed later in this chapter.

Hypnosis

Hypnosis, including hypnotherapy and self-hypnosis, is a technique that has often been used in medical patients to help manage stress, increase feelings of relaxation, manage pain and nausea, and prepare for a stressful procedure [68, 69]. Hypnosis induces a state of focused concentration with suspension of some peripheral awareness. A hypnotic state includes controlled focus of an individual's attention, dissociation (i.e., the ability to compartmentalize aspects of an individual's experience), and suggestibility or heightened responsiveness to instructions [70]. Hypnosis is an intervention that is conducted by a clinician with specialized training in hypnosis, but patients can be taught to self-induce a hypnotic state to manage pain or to help tolerate a procedure. Hypnosis does not require specific equipment and is therefore easily used with patients in a medical clinic, acute hospital, or rehabilitation hospital. Hypnosis has been found to be effective in treating anxiety and stress, including anxiety related to surgery and medical procedures [71]. In a revealing study using fMRI, those who underwent hypnosis had less pain, and it was believed that this was due to pain-related sensory input not reaching higher cortical structures responsible for pain perception [72].

Biofeedback

Biofeedback is an intervention that helps individuals learn to control involuntary physiologic processes by providing information on these processes back to the individual in the form of a visual or auditory signal [73]. By monitoring physiological processes such as respiration, heart rate or pulse, peripheral skin temperature, and muscle tension, individuals can receive real-time feedback about how these physiological states respond to strategies to reduce pain or distress [74]. This approach requires some equipment to monitor physical symptoms and a computer system to help the patient practice the skill as well as clinician that has specialized training in this technique. Clinicians can seek additional training in biofeedback through programs that are approved by the Biofeedback Certification International Association. Surface electromyography (EMG) biofeedback, which is used to target and reduce muscle tension, has been found to have a moderate effect on pain for patients with various medical issues [74, 75].

Cognitive Behavioral Therapy

Cognitive behavioral therapy (CBT) [52] is perhaps the most studied psychological intervention used to treat a variety of psychological issues such as depression and anxiety and has been shown to be efficacious in reducing chronic pain, insomnia, anxiety, and depression in numerous medical populations. CBT is a widely used intervention with an extensive research base, including research on treatment of patients perioperatively [52, 58]. CBT is not a single approach; rather, it is a combination of cognitive and behavioral approaches that are often tailored based on the presenting issue, medical morbidity, and personal factors. There are specific manualized CBT interventions that have been adapted for patients coping with a variety of medical issues including chronic pain [76], spinal cord injuries [77], HIV disease [78], and chronic cardiopulmonary disease [79].

CBT assumes that thoughts, emotions, and behaviors are all connected and impact each other. CBT is consistent with Lazarus and Folkman's [48] transactional model of stress and typically focuses on helping the patient identify automatic appraisals of events, their feelings, and their behavioral response to those events. CBT helps patients evaluate their appraisal as helpful or unhelpful and to substitute unhelpful appraisals with more accurate, helpful ones. CBT interventions aim to create cognitive and behavioral change that promote more effective coping with negative events and improve functioning and well-being.

Cognitive Therapy

Cognitive therapy represents the "cognitive" aspect of CBT, and one of the most commonly used cognitive approaches is based on Beck's seminal work, which focuses on how people think about and interpret their experiences [52]. A primary aim of cognitive therapy is on teaching a patient to identify distorted or unhelpful thoughts and identifying more accurate or helpful thoughts to replace them. Even some thoughts that are accurate may not be helpful to a person trying to cope with a difficult situation or enjoy their life. Cognitive therapy is most often paired with behavioral therapy for a combined approach.

Behavioral Therapy

The second component of CBT includes various types of behavioral therapy [80]. Behavioral interventions are based on an underlying assumption that our behaviors or actions can impact our mood and thoughts. Behavioral therapy is based on principles of behaviorism [81] including operant learning and classical conditioning. The behavioral theory of depression relies on underlying principles of operant conditioning, a method of learning that occurs through rewards and punishments. For example, an individual may stop doing things she enjoys like seeing her friends because she feels down, and therefore seeing her friends is less rewarding. She then feels more sad because she does not have as many opportunities to do things she enjoys. This may lead her to isolate herself further, which may eventually result in a depressed mood.

In the behavioral treatment of depression, the focus is on behavioral activation and scheduling

pleasurable activities like planning to try something the person enjoys at least once a day. The behavioral theory of anxiety focuses on operant conditioning and how avoidance of specific behaviors or activities, like medical appointments, further reinforce avoidance and therefore increase feelings of anxiety when they are faced with the avoided experience. These concepts are particularly applicable to postsurgical patients as they are likely not able to return to activities they enjoy immediately, and this may worsen their mood. After surgery, patients also may begin to associate different experiences with pain or nausea leading to fear and avoidance. Behavioral therapy can be used to decrease avoidance of medical visits or procedures, improve medication adherence, improve diet adherence, and reduce smoking.

Acceptance and Commitment Therapy

Acceptance and commitment therapy (ACT) [68] is a third-wave cognitive therapy where the focus is on identifying values and living a life consistent with those values. It assumes that whereas emotions can be difficult, suffering is often caused by trying to control, suppress, or deny those emotions. In this approach, individuals practice accepting their emotions as they are and planning on how to live the type of life that fits with their values instead of being guided by fear or depression. This approach incorporates mindfulness techniques as a primary way of learning to accept emotions.

Dialectical Behavioral Therapy

Dialectical behavioral therapy (DBT) [66] is a therapy originally designed to treat individuals with chronic suicidality, who often have borderline personality disorder and underlying difficulties with affect regulation and interpersonal difficulties. A full DBT program is intensive and may include multiple groups per week, individual sessions, and daily homework. While a full DBT program is not indicated for most postsurgical candidates and may be difficult for them to attend given medical issues, one component of DBT called DBT skills training may be helpful for many postsurgical patients [82, 83].

DBT skills fall into four categories: mindfulness, interpersonal effectiveness, emotion regulation, and distress tolerance. Mindfulness is similar to the mindfulness approach discussed previously. Interpersonal effectiveness skills teach patients how to prioritize their goals for interpersonal interactions and how to interact with others in an assertive and appropriate way that matches their priorities. Emotion regulation skills incorporate aspects of cognitive therapy and teach ways to moderate the intensity of emotions. Distress tolerance skills help individuals tolerate intense feelings or particularly distressing experiences without making impulsive decisions until that experience passes. These skills can be helpful to patients dealing with acute pain, a range of intense emotions following surgery, or interpersonal difficulties with family, friends, or providers that may be exacerbated by the stress of surgery.

Family Systems Interventions

Family systems interventions include several different family therapy approaches including structural [84], strategic [85], and expanded family life cycle therapy [86]. Family therapy approaches all include a focus on a system, family, or group of people instead of on an individual. These approaches focus on how systems operate and typically involve specific strategies to foster change within a family or system. These approaches typically focus on patterns of communication and relating that happen within the system and how to help the system function in a flexible manner to respond to new challenges and adapt to transitions, both expected and unexpected.

Medical family therapy is a specialized family therapy that was developed to help address medical, psychological, and family issues for medical patients. Medical family therapy is based on a biopsychosocial perspective and focuses on helping patients and medical teams to intervene at a system level (i.e., family system or medical team system) to change the dynamics that impact health and medical issues [87]. These approaches can be

Table 7.1 Psychological interventions for addressing common presenting concerns among perisurgical patients

Interventions	Type of presenting concern	Notes on implementation
Stress management skills: Diaphragmatic breathing, muscle relaxation, mindfulness, hypnosis, guided imagery, distraction	Coping with physical issue Emotional distress General adaptation after surgery Challenge to autonomy/dignity	These skills are most effective if the patient has an opportunity to practice before in acute symptoms. If this is not possible, it is best if a clinician can lead the patient through the skill and family can also learn to help patient practice
Cognitive skills: cognitive restructuring of fears or negative expectations	Coping with physical issue Emotional distress General adaptation after surgery	Focus is on challenging and restructuring unhelpful thoughts, even if they may be accurate
Behavioral techniques: distraction, engaging in pleasurable activities	Coping with physical issue Emotional distress General adaptation after surgery Challenge to autonomy/dignity	Finding distractions or pleasurable activities can be challenging in a hospital or if the patient is physically limited. Look for small things like looking out the window or looking at pictures of family that may be enjoyable or distracting
DBT skills: distress tolerance skills (self-soothing, reality acceptance skills)	Coping with physical issue Emotional distress General adaptation after surgery	Help patients identify specific ways they can incorporate these techniques
Acceptance and commitment therapy	General adaptation after surgery Challenge to autonomy/dignity	Help patients accept changes that may be difficult with a focus on how to live their lives according to their values
Family systems intervention	General adaptation after surgery Challenge to autonomy/dignity	Working with the patient and family can help improve family support to the patient, decrease conflict, and help the patient adapt to changes

helpful to medical teams and patients as they attempt to manage the common challenges and conflicts that can occur in the context of illness and surgery. Psychologists and social workers can utilize a systems focus to help both the patient and medical team navigate conflicts and patterns that may be stressful for all involved. Medical teams can help encourage communication between family members to clarify expectations for recovery and family support that may be needed (Table 7.1).

Application of Evidence-Based Therapeutic Approaches

Many of the interventions discussed in the preceding section require that patients engage in therapy over 12–16 sessions with frequent practicing of skills between sessions. Learning skills in a lower stress setting may be helpful for patients at risk for developing depression or anxiety post-surgery because it can be difficult to learn new skills and apply them in a short period of time when also coping with many issues from surgery. Presurgical evaluation is often recommended to identify patients that could benefit from preoperative interventions and to ensure that they have adequate plans for psychological and social support post-surgery. Understandably, many patients will be unable to receive a presurgical intervention due to an unexpected surgery or unexpected preoperative complications.

However, as described in the previous section, many evidence-based psychotherapies are relevant and effective for treating the kinds of psychological issues and behavioral problems encountered within the perisurgical setting. Hospital-based practice is often fraught with many real and vexing challenges. Limitations abound with respect to patient access, space, privacy, interruptions, visitors, as well as challenges related to the patient's physical condition, mental status, and the potential sedating effects of medications. A best-practice approach to psychotherapy in any setting involves the utilization of

evidence-based medicine, considering clinical experience and patient values [88]. Within the perisurgical setting, flexibility and creativity are often required of clinicians as they adapt and modify therapies to meet the individual needs, preferences, and circumstances of each patient. In the following section, we review common postsurgical factors that impact the delivery of psychotherapeutic interventions.

Physical Symptoms

Patients may experience severe, unpleasant physical symptoms following surgery including pain, nausea, and torpor. Typically, these symptoms are managed medically. However, in addition to medication management, non-pharmacological psychological interventions can be helpful for coping with the distress of physical symptoms, by decreasing the hyperfocus on symptoms (appraisal) and teaching strategies (coping) to reduce fear and anxiety around physical symptoms [76].

For acute pain and nausea, stress management techniques can be helpful such as diaphragmatic breathing, muscle relaxation, mindfulness, hypnosis, and guided imagery. Stress management techniques help calm the autonomic nervous system, which can subsequently decrease the perception of pain [89]. Even just the perception of increased relaxation may be effective in moderating experiences of pain [89]. Biofeedback may be most helpful for acute pain if learned prior to surgery so that patients are able to apply the skills learned post-surgery. These approaches can be helpful for nausea, as anxiety and stress may also worsen gastrointestinal problems [89]. Likewise, patients can be taught to identify those aspects of their situation that are within their ability to control and those aspects that are beyond their ability to control. Using Lazarus and Folkman's [48] transactional model, patients would be encouraged to use problem-focused coping strategies (e.g., seeking information, active planning, decision making, and problem-solving) to help manage and cope with problems within their control. In contrast, emotion-focused strategies (e.g., seeking support, diaphragmatic breathing, meditation, acceptance) are most helpful for managing the emotions that go along with coping with problems outside of one's control.

Behavioral strategies may also be employed for coping with acute symptoms post-surgery. Distraction techniques (such as diaphragmatic breathing, guided imagery, engaging in pleasurable activities) can be helpful to reduce the amount of attention given to physically distressing symptoms. As patients may be on pain medications that make concentration difficult, it can be helpful to think of simple activities such as coloring, talking with friends or family, watching TV, and listening to music. DBT distress tolerance skills can also be helpful with acute symptoms including distracting skills, self-soothing skills, and reality acceptance skills.

Ongoing and chronic symptoms would likely benefit from a combination of cognitive and behavioral strategies that focus on coping over time. Researchers have developed specific CBT protocols for chronic pain [76] and other physical symptoms such as nausea [90]. These protocols include typical aspects of CBT such as psychoeducation about the CBT approach, scheduling pleasurable activities, and challenging maladaptive, ruminative, or catastrophizing thought processes and replacing them with more adaptive and helpful thoughts to manage physical distress. CBT also adds some unique behavioral components specifically for coping with chronic pain such as activity pacing, which is planning for a similar level of activity each day as patients with pain tend to avoid physical activity some days and then may overexert themselves when in less pain thus setting up a cycle that interferes with functioning.

Patients with co-occurring substance use disorders may require additional help managing cravings that may get elicited when receiving opioid pain medications. Multimodal and integrative therapy options should be considered. Within the postoperative setting, this may include multimodal pharmacotherapy, psychological/psychiatric support, coping skills training, spiritual support, 12-step materials, family support, physical/occupational therapy, and complementary/alternative therapies such as massage, reiki, and relaxation therapies.

Psychological Symptoms

A range of emotional reactions may occur post-surgery as patients are experiencing pain, difficulty sleeping, may be in a hospital or medical inpatient environment, and adjusting to physical changes based on surgery. While a range of emotional reactions may be normal and understandable, patients may still benefit from help moderating their emotions at this stage. Intense, difficult emotions may be overwhelming and interfere with behaviors needed for recovery including resuming activity, medication adherence, and following medical recommendations. Behavioral health clinicians may utilize motivational interviewing techniques to engage patients around addressing specific problematic behaviors. Identifying the reasons to change, potential barriers, and goals for change can occur at the bedside.

Techniques from various psychological approaches can be employed to teach patients to moderate and manage emotional distress. Many stress management techniques can be helpful to manage high-intensity emotions such as diaphragmatic breathing, progressive muscle relaxation, mindfulness, grounding skills, biofeedback, and guided imagery.

Behavioral techniques such as increasing pleasurable activities can be helpful in managing negative emotions and increase positive emotions. This can be challenging when patients have limited ability to engage in activities they enjoy due to physical limitations from surgery or because they may have difficulty concentrating on reading or games due to pain medications. Despite these challenges, even finding small things they enjoy such as talking to family or friends, listening to music, playing card games, or looking at pictures can be helpful.

Cognitive strategies can also be helpful for patients to manage emotional distress. Related to emotional distress such as sadness, anger and hopelessness are likely distorted or unhelpful thoughts. Psychologists can help patients identify these thoughts, such as "I can't do this," or "I will always be miserable," and help patients create more helpful thoughts. Part of identifying new thoughts may be to consider evidence for and against current, unhelpful thoughts. Based on this analysis, patients can work to create more adaptive thoughts that are accurate but lead to less intense negative emotions and more positive emotions. For example, a patient may assume they will never lead a fulfilling life after an amputation. Working with the patient to identify their underlying assumption and evidence for that assumption can help them create a more helpful thought such as "this may be difficult, but I can still achieve many things (Table 7.2)."

Table 7.2 Common stress-induced cognitive distortions

Cognitive distortion	Explanation	Example of distortion	Example of helpful thought
All-or-nothing thinking	Something is all bad if it is not perfect	"My life is terrible if I am in pain."	I can still enjoy spending time with my family when I am in pain
Catastrophizing	Focusing on the worst-case scenario	"My pain is the worst it could ever be and it will never go away or be controlled."	My pain is not always the same. I have confidence that my medical team and I can control my pain so I can tolerate it
Jumping to conclusions	Anticipating a poor outcome or event when it is still unclear what will happen	"Physical therapy won't help me walk again. Nothing ever helps me."	"Physical therapy might help me walk again. I will try my best."
Should statements	Any thoughts that include "should," "ought," and "must"	"I shouldn't be sick."	"I wish I wasn't sick and I will work on improving my health."
Personalization and blame	Believing that they are the cause for some unrelated poor outcome	"I am sick because I am a bad person."	"Anyone can get sick, it is not a reflection of the type of person I am."

Burns DD. Feeling good: the new mood therapy. New York: Penguin Books; 1981.

Strategies from ACT can also be helpful in managing distressing emotions. The underlying assumption of ACT is that attempts to avoid painful emotions cause suffering; therefore, accepting even painful emotions can help free people to focus on living their life according to their values [67]. This strategy may be especially helpful for patients whose emotional distress following surgery is related to limitations in physical functioning or ongoing medical issues. ACT heavily incorporates mindfulness strategies while also helping patients identify values and helps them align their life choices with their values. For patients post-surgery, re-focusing on their values and goals may make emotional distress easier to tolerate.

Strategies from DBT can also be helpful for postsurgical patients with emotional distress. Distress tolerance skills focus on straightforward skills to learn to tolerate emotional distress until it passes. Some techniques are mindfulness, self-soothing strategies, and radical acceptance. Strategies from emotion regulation skills can also be helpful in managing emotional distress including opposite action skills and building mastery.

General Adaptation After Surgery

An initial issue post-surgery for many patients is adjusting and adapting to change in physical functioning. For some patients, this may have been expected prior to surgery but nevertheless can be difficult when faced with the reality of the changes in functioning. For others, recovery post-surgery may be more difficult than they expected. Some patients may have had an emergent or unexpected surgery requiring them to adjust abruptly to the idea of surgery and recovery, as well as potentially significant long-term changes.

After surgery, patients may have beliefs about their likely recovery and future limitations that may or may not be inaccurate. A cognitive approach may be helpful to assist patients in identifying underlying beliefs about possible limitations and in challenging beliefs that are inaccurate or not helpful. For example, some people after surgery may believe that they will not be able to enjoy their life if they have physical limitations. Based on their specific situation, cognitive therapy could focus on changing expectations about recovery. For those with likely lifetime limitations, cognitive therapy could focus on beliefs that they will not be able to enjoy their life. Much research has shown that people without physical disabilities overestimate the suffering of people with disabilities and underestimate the quality of life of those with disabilities. Challenging these assumptions can help patients adjust to their new functioning and help them re-engage in activities they enjoy.

ACT may also be a helpful approach as it focuses on accepting difficult emotions and circumstances while also helping the patient focus on their values and priorities in life. This approach may be particularly helpful for those who have had an unexpected surgery or face unexpected limitations after surgery. Patients may find themselves focusing on "what if" scenarios of how their life may have been different. This type of response likely distracts them from their recovery as well as what they are able to do. By working on accepting the current situation and their emotional reaction, even if negative or unpleasant, patients are enabled to shift their focus toward goals that are meaningful to them based on their values.

Mindfulness principles, with their focus on attending to the here and now of the present moment, can also be helpful for coping with the uncertainties associated with serious illness, high-risk surgeries, and complications that may follow surgery.

Autonomy, Dignity, and Meaning

Patients recovering post-surgery may experience challenges that impact their sense of autonomy, dignity, and meaning in their life. Prior to surgery, many patients were in charge of their own schedule and accustomed to making choices about their daily activities. While recovering from surgery, patients may feel less autonomous as they are on the schedule of their medical providers and dependent on others for care. Recovering from surgery may impede patient's ability to fulfill roles that give them meaning. Patients that had previously

had successful careers may find it difficult to shift to the role of patient. These types of changes post-surgery can challenge a patient's sense of autonomy, dignity, and meaning in their lives.

Addressing factors in the patient's environment can be a helpful first step in addressing issues around autonomy and dignity. Identifying the patient's specific concerns and determining if the patient can have more control in their environment or treatment plan can be helpful to address these issues. Taking time to make sure the patient's questions are addressed so they feel like they are a part of the treatment planning process can help them feel like they are actively participating in their recovery.

Behavioral strategies mentioned previously can improve a patient's sense of autonomy and dignity. Behavioral activation which is a behavioral approach that focuses on individuals planning pleasurable activities and trying to engage in pleasurable activities even when they feel down. Patients recovering from surgery are commonly limited in what they can do, but identifying even small things they may enjoy such as performing daily hygiene, ambulating (when possible), reading magazines, completing word puzzles, or talking with others can help patients feel a sense of control over their environment and buoy their sense of well-being. This can increase a patient's sense of autonomy, dignity, and the value in living.

Family systems interventions can be helpful for patients whose role in their family is changing due to recovery post-surgery. Transitions can be difficult for all involved and may cause stress not only to the patient but also to the entire family. Helping families adapt to these changes and the patient feel like they still have a meaningful role and purpose within their family can help minimize the strain to all [86].

Treatments focusing on dignity and meaning can be helpful for patients who feel a loss of meaning in their lives or a loss of dignity. Existential and humanistic therapies have a specific focus on developing meaning in one's life [91, 92]. ACT is a more recently developed therapy, which incorporates specific strategies to help individuals focus on their values and goals so they can make decisions that align with them [67]. This can be helpful for patients who are unsure how to move forward in a way that aligns with their values. Other treatments, such as dignity therapy [93] and meaning-centered psychotherapy [94], help patients nearing the end of life identify their final wishes, enhance dignity, identify sources of personal meaning, and affirm the legacy they want to leave behind.

Special Considerations

It is important to recognize that most evidence-based psychotherapies are developed under standardized conditions, using well-trained clinicians and tested on relatively homogeneous samples of patients who meet criteria for study inclusion. Although many of the therapies discussed in this chapter have been shown to be effective with diverse samples of medically ill patients, few if any have been systematically studied within the postsurgical setting and with the range of diverse patient presentations that one would expect to encounter within most surgical centers. A host of complexities related to setting, to each patient, and to unique surgery-related variables should be considered when providing psychotherapy within the postsurgical setting.

Bedside psychotherapy within hospital settings is fraught with real-world challenges, many of them related to the space and physical characteristics of the setting. Interruptions are to be expected due to noise, the limited privacy available, and exigencies of medical care. The sound of machinery, pumps, televisions, roommates, and hospital personnel may be distracting to patient and provider alike. Likewise, nurses, doctors, and other hospital personnel may require access to a patient, thus limiting the time that can be spent with a patient and nature of the psychotherapeutic work that can be accomplished. Coordination and communication with hospital personnel may help limit interruptions and enhance privacy. Likewise, it is important for behavioral health clinicians to be flexible in their therapeutic approach. Conveying empathy and meeting patients where they are (emotionally and physically), while choosing brief interventions

that target the most acute and pressing issues for the patient can facilitate rapid engagement and can have the greatest therapeutic impact.

In addition, patients may be sedated, in pain, nauseous, or experiencing some other acute symptom that interferes with attention, concentration, hearing, or speech. Other patient-related considerations include sociodemographic variables, such as age, gender, gender-identity, race, ethnicity, and socioeconomic status. Each patient and patient encounter is unique. The ways in which sociodemographic variables intersect within any given individual will likely influence the individual's needs, preferences, and expectations for both surgery and postsurgical psychological intervention. For instance, postsurgical pain following a hysterectomy and oophorectomy in the setting of ovarian cancer is likely to be experienced quite differently in a childless 30-year-old woman compared to that of a 65-year-old postmenopausal woman with three adult children. Valid feelings of loss (real and symbolic) may occur within the postoperative recovery period rendering the patient vulnerable to depression, anxiety, or even a feeling of traumatization. Factoring in an awareness of other important variables such as race and ethnicity, health-literacy, social support, and prior psychiatric history will enhance a clinician's ability to accurately conceptualize the patient's needs and the ways that evidence-based therapies may need to be modified and/or individualized.

Patients with co-occurring addictions also require special consideration. The potential for abuse/misuse of addictive opiate pain medications and/or antianxiety agents should be closely assessed, and patients should be provided with appropriate effective medical alternatives to opiates or benzodiazepines. Likewise, aftercare planning is often an important component of the inpatient stay, giving careful attention to the patient's need for community-based mental health and/or addiction services. Within the pre- and postsurgical setting, behavioral health clinicians can engage patients around their mental health and addiction issues and begin appropriate relapse prevention measures to reduce risk and to build resilience.

Surgical specialties such as cardiac, organ transplant, bariatric, orthopedic, and neurosurgery often involve extensive presurgical evaluations to determine a patient's candidacy for surgery. Presurgical evaluations include the assessment of a patient's psychosocial and psychiatric history. Patient's assessed to be at-risk for stress-related postsurgical complications based on their psychosocial or psychiatric history should be provided with presurgical counseling to address the patient's expectations around the surgery while also allowing time to learn adaptive coping strategies that can be used after surgery. It is also important to identify the postsurgical physical and emotional support needs of the patient. Behavioral health clinicians may play an important role in soliciting support from family members, which is often essential to postsurgical physical and emotional recovery. Presurgical evaluations, when they can occur, benefit the patient, family, and provider by allowing time for accurate assessment of patient needs and time for proactive planning to support the recovery needs of the patient.

Summary and Conclusions

An appreciation for the mind-body connection is especially relevant within the surgical context. Surgery can be a stressful and potentially dangerous event that cannot only engender a fear of pain, disfigurement, and loss of function in many patients but also result in actual pain, disfigurement, and loss of function. In keeping with Lazarus and Folkman's [45] transactional model of stress and appraisal, one's expectations of surgery and the circumstances that led up to it can contribute significantly to the degree to which surgery is perceived as stressful. Although most patients cope reasonably well, many patients do struggle emotionally before and after surgery, particularly when the surgery is unexpected, when there is advanced illness, and when the outcome is uncertain. Patients with a history of anxiety and depression are perhaps the most at-risk for having adjustment difficulties before and after surgery. Postsurgical

complications such as depression, PTSD, protracted pain, and delirium portend poorer medical and psychosocial outcomes in many realms such as postsurgical infection, rehospitalization, patient satisfaction, quality of life, and mortality.

Unfortunately, symptoms of depression and anxiety are not always reported by patients, and clinicians may not thoroughly assess for them despite clear evidence that they can negatively impact medical and surgical outcomes. Behavioral health clinicians such as psychiatrists, clinical health psychologists, rehabilitation psychologists, and social workers who practice within surgical settings and within psychiatric consultation–liaison services are in a unique position to assess and treat symptoms of stress- and health-related anxiety and depression in hopes of positively influencing a patient's postsurgical course and outcome.

Although postsurgical settings are notoriously busy with constraints on space, privacy, and patient access, important opportunities still exist for behavioral health clinicians to intervene effectively to reduce patient distress and to enhance coping and adjustment. Based on patient needs and circumstances, behavioral health clinicians can flexibly draw from a range of evidence-based psychotherapies. Effective bedside therapies within the postsurgical setting should incorporate elements of psychoeducation, cognitive therapy, behavior therapy (behavioral activation, pacing, pleasant event scheduling, DBT distress tolerance), stress management (such as MBSR), values-based therapies (ACT), and, when indicated, relapse prevention and existential/meaning-oriented therapies.

Take-Home Points

1. Depression, PTSD, substance use, and a lack of social support predict poorer postsurgical adjustment.
2. Presurgical assessments, when feasible, will help identify at-risk patients.
3. Presurgical psychoeducation, stress management and relaxation training, and skill-building psychotherapy should be provided to at-risk patients.
4. Effective postsurgical psychotherapies flexibly integrate elements of psychoeducation, relaxation training, cognitive behavioral therapy, and acceptance-based and meaning-based therapies to facilitate adaptive coping and recovery.
5. Integrated behavioral health within the perisurgical setting requires active communication and collaboration with medical personnel to coordinate care and improve patient outcomes.

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