



Danny Wedding
Margaret L. Stuber
(Editors)

Behavior and Medicine

6th edition

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Behavior and Medicine

Dedicated to

my new grandson, Eli James Harrington Bach, with the hope and expectation that we will address the climate crisis in time for him to live his entire life in a world fit for human habitation.

– DW

Dedicated to

my children Ben and Emma, and my husband Larry, my inspiration and support for work in medical education.

– MS

Cover art:

Sparrow by Robert Pope (1989)

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Robert Pope was a remarkable Nova Scotia artist who died at age 35 in 1992 from complications arising from his treatment for Hodgkin's disease. Reproductions of several of Pope's paintings are sprinkled throughout *Behavior and Medicine*. The following description of the painting *Sparrow* is taken from his book *Illness and Healing*.

The view from the window of spring-time trees in first leaf and blossom, the atmosphere of burgeoning life, contrasts with the patient's sense of confinement and immobility. The world outside becomes a dream-like fantasy the patient longs to be a part of. Robert's sketchbook drawings done in Toronto in 1986 introduced the patient and window theme. The window introduces contrasts of interior/exterior, inactive/active, horizontal/vertical, human/animal. Robert also re-invents a theme that is dear to him: an animal giving voice to inexpressible feelings. The bird song suggests things the patient may not be able to see from his restricted vantage point, but can nonetheless hear. It was important for Robert to try to create images of hope as well as documenting all the struggles and challenges a patient faced. This is one of the artist's most hopeful images, as a result, it is also one of the most popular of the cancer series.

Behavior and Medicine

Sixth edition

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Foreword to the 6th edition

It has been over 40 years since George Engel first proposed the biopsychosocial model of medicine (Engel, 1977). The model sought to expand our thinking to intentionally examine the interplay between biomedical factors with the psychological and socio-environmental. This transformative concept catalyzed a period – still in progress – of cognitive dissonance within medicine, and an ongoing search in medical education for how best to create educational programs that align fully with the biopsychosocial model. Despite much progress, much work remains. Although virtually all medical schools now have robust curricula in patient–physician communication and in core skills in behavioral medicine, these areas of instruction still represent the minority of what’s taught in medical school. Further, within the culture of medical education, barriers to acceptance persist. It remains all too common for faculty to refer to such skills as a set of “soft skills,” a pejorative that seeks to position these skills as inferior in importance to the “hard” knowledge and skills of biomedicine. Students find their attention to behavioral medicine increasingly distracted by the still heavy focus on biomedical content on the infamous Step 1 of the US Medical Licensing Examination (USMLE). The situation worsens in graduate medical education, where with some rare exceptions precious little time is devoted to these topics, whether in the classroom or at the bedside. In one observational study of inpatient rounds in internal medicine and pediatrics, social and behavioral science topics arose with virtually all patients (97%) yet were recognized or addressed only 38% of the time (Satterfield et al., 2014).

In the past decade, there have been some promising advances, including the publication by the National Academy of Medicine of the report, “Improving Medical Education: Enhancing the Behavioral and Social Science Content of Medical School Curricula” (Institute of Medicine US Committee on Behavioral and Social Sciences in Medical School Curricula, Cuff, P. A., & Van-

selow, 2004). This substantive report provides a road map for the integration of behavior and social sciences throughout medical school. Also, the launch of the new Medical Colleges Admissions Test (MCAT) in 2015, with its inclusion of an entirely new section, “Psychological, Social, and Biological Foundations of Behavior,” sent a very powerful message to pre-medical students about the importance of these topics in medicine (Association of American Medical Colleges, 2019). Further, it has stimulated many aspiring medical students to take undergraduate coursework in the behavioral and social sciences, which will almost certainly broaden their perspective as they enter medical careers.

With this context as backdrop, it becomes even more vital to have substantive, rigorous resources such as this book to help provide a sound and evidence-based foundation for teaching and learning in this domain. Now in its sixth edition, *Behavior and Medicine* is a tour de force, with a broad and diverse set of topics, all given rich and scholarly treatment. As such, it does justice to the important intersection between health, behavior, and medical care. As medical schools grapple with building or expanding their current emphasis on social and behavioral sciences, this book represents an ideal textbook and reference resource to support teaching, learning, and assessment. By placing a diverse set of topics in one book, it also reinforces the notion of integration, of how seemingly diverse topics and disciplines can be seen as intertwined. Motivational interviewing, for example, is not just a skill to be acquired and practiced, it’s an essential strategy in working with patients with addiction. Social inequalities most certainly have ethical implications. Psychodynamic approaches are equally relevant and informative in approaching the intersection of stress and illness for patients as it is for understanding the well-being of trainees and practicing physicians, critical to addressing clinician burnout.

The journey to advance the role of the behavioral and social sciences in medicine and medical education most certainly takes another step forward with the publication of this new edition of *Behavior and Medicine*. It will become a vital resource for educators, a portal for learning for students, and an invaluable reference for practicing clinicians.

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Preface

Behavior and Medicine was first published in 1990. Since that time we have taught – and the book has been used by – tens of thousands of medical students. Some of the early users of the book are now physicians approaching their retirement years. Others who used more recent editions are just now launching their careers. We are confident that many of these readers are better doctors in part because of what they learned from our little book.

The two editors share a passion for convincing medical students that understanding human behavior is absolutely critical to their future practice, and we have been happy and congenial collaborators. We're proud that *Behavior and Medicine* has been used to educate medical students in Canada, Great Britain, Australia, New Zealand, South Africa, Thailand, Portugal, Scandinavia, and dozens of other countries as well as the original target group—medical students preparing to take the United States Medical Licensing Examination (USMLE).

Although the book clearly targets medical students, professors in training programs in nursing, dentistry, public health, social work, and psychology have adopted the book and found its content germane to their students.

All of the sample questions at the end of the book, designed to help students prepare for the Behavioral Science questions on the National Boards, have been updated and revised to reflect the current USMLE format. To help students optimize their learning, we have also added a box titled “Tips for the Step” at the end of each chapter in which the main learning targets are briefly highlighted. The student who reads the book and reviews the sample questions should have little trouble with the Behavioral Science section of the USMLE Step 1 examination. In fact, one of our most gratifying personal rewards as editors and medical educators has been the numerous students who have re-

ported that they “aced” the Behavioral Science section of the USMLE after studying *Behavior and Medicine*.

We have highlighted all **key words, names, and phrases** by putting them in bold type, and we have emphasized all the *key concepts* that we think are likely to show up on the USMLE by putting them in italics. Thus, a student who does not have time to read each chapter (and, regrettably, this may include all too many medical students) can still prepare for class examinations and the Behavioral Science portions of the USMLE by reviewing the bold and italicized text.

We have worked hard to make this new edition *clinically relevant*, and almost all chapters include a Case Study illustrating the application of the principles being discussed. Every case draws on the clinical experience of the authors and illustrates how the principles of the chapter can be applied in a clinical setting.

Multiple interlocking themes link each chapter in the sixth edition. One theme is the simultaneous *pignancy and beauty of the transitions of life*. As children we were filled with awe and fascination; later we worked through the turmoil of adolescence; still later we each trembled at the touch of a lover. Some of us will be fortunate enough to grow old with someone we care about deeply. All of us will die. Those students who take time to appreciate the majesty of this unfolding will be better physicians and more effective healers.

A second theme of the book is the *salience of the sense of self*. Every cell in the body changes with age and time, but a continuing awareness of self, a continuity of personal identity, significantly shapes and influences our behavior.

A third theme is reflected in the title of *Behavior and Medicine*. Morbidity and mortality are profoundly affected by how we behave; what we eat, drink, and smoke; whom we choose as our sexual partners; how often we exercise; and whether we take medicines as prescribed. Most people are aware of the factors affecting their

health and yet continue to engage in maladaptive and harmful behavior. Only the most naive health-care provider sees his or her job as simply telling patients how they *should* behave.

A final theme of the book is the *brevity of life and the certainty of death*. The art and poems that illustrate every chapter in the book often portray scenes or descriptions of death. We believe awareness and acceptance of death can make life richer, fuller, and more meaningful.

We have spent our entire professional lives as medical educators and practitioners, and we are grateful to have had careers that allowed us to combine clinical practice with research, writing, grant management, and

teaching. However, as we look back on our careers, nothing has been more satisfying than our thousands of interactions with medical students, both in and outside the classroom. We are especially grateful for the many students who have told us that they became better doctors because of the classes we taught and the books we edited.

Resources for teachers, including an instructor's manual, are available via the publisher's website at <https://www.hogrefe.com>

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One of the pleasures in editing a book is the brief opportunity to thank the many people who contribute to it. We especially appreciate the chapter authors who were patient with our frequent queries and multiple revisions of their work. Every contributor is a seasoned medical educator, and all are prominent authorities in their respective fields.

We benefited tremendously from comments made by our colleagues in the Association of Directors of Medical School Education in Psychiatry (ADMSEP), the Association of Psychologists in Academic Health Centers (APAHC), and the former Association for the Behavioral Sciences and Medical Education (ABSAME). Many of these individuals use *Behavior and Medicine* as a text, and a significant number are chapter authors in the current edition. These colleagues made dozens of helpful suggestions that have been incorporated in this new edition.

Danny worked closely with Sue Edwards in preparation of the chapter on medical ethics. Sue is a world-class ethicist, and she collaborates with Danny in teaching medical ethics to students at the American University of the Caribbean in Sint Maarten. She has been a superb mentor and a cherished friend.

We appreciate the congenial support of Doug Pope and the Robert Pope Foundation. The Foundation helped us identify a series of new paintings we have included throughout the book, as well as the painting we selected for the cover. Other artists whose work has been used as covers for earlier editions of *Behavior and Medicine* include Norman Rockwell, Pablo Picasso, Jose Perez, Edvard Munch and Gustav Klimt.

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however, appears to be more closely linked to our emotional limbic areas that register autobiographical memory and receive an integrated map of the body, including input from the heart and intestines. *The right hemisphere has a broad focus of attention and takes in the context of a situation while the left hemisphere has a narrower focus of attention, deeply attending to specific details.* For interpersonal communication and self-awareness, we need each hemisphere's important roles – leave one out and the relational connection and self-understanding may be incomplete.

The Subcortical Brainstem and Limbic Regions

In addition to having two halves of the brain that are separated in the cortex and the limbic areas but are connected via the corpus callosum, we also have other important regions of the brain. If you put your thumb in the middle of your palm and fold your fingers over the top, you'll have a pretty handy model of the brain and a useful way to visualize some major brain regions (see Figure 1.7). Your wrist is the representation of the spinal cord coming up your back and connecting to the brain at the base of the skull. The first of three major areas we'll be examining in this model is the **brain-**

stem, located in the middle of the palm of your hand. The brainstem carries out basic physiological regulation functions, such as heart rhythms and sleep-wake cycles. The brainstem is also responsible for the survival reflexes of fight, flight, freeze, or faint in reaction to threat. The next major region is represented by your thumb and is the **limbic area**. (Ideally, we'd have two thumbs, a left and right limbic area). In this region are the areas of the brain responsible for generating emotion from input of the brainstem and body's organs, motivation, the appraisal of the meaning of experiences, and attachment relationships. Evolved in our mammalian heritage, these limbic areas include the **amygdala**, responsible for the fear response, and the **hippocampus**, which is involved in certain forms of memory.

The Cortex

If you fold your fingers over the limbic thumb area, you'll find the location of the **cortex**, which also developed during our journey into mammalian life. This "outer bark" of the brain is in general responsible for complex representations, such as perception and thinking. In general, the posterior lobes of the cortex carry out perception. The frontal lobes, located from the second-to-last knuckles to your fingertips, represent the

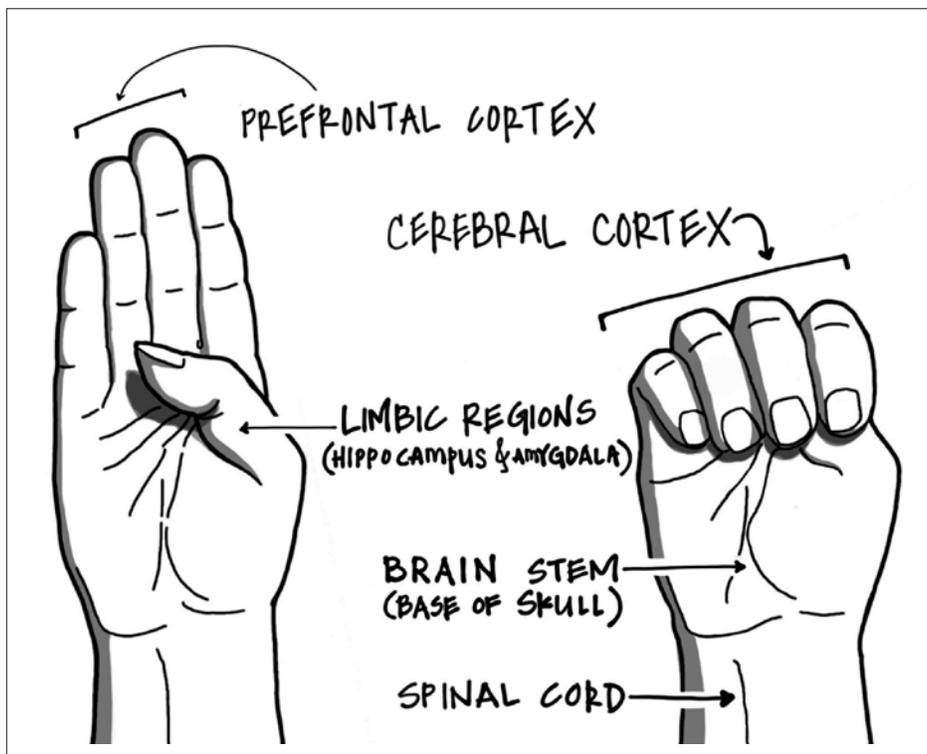


Figure 1.7

Hand model of the brain. Illustration by Madeleine Siegel, © Mind Your Brain, Inc. First published in Siegel (2018).

associated with health care. Chaotic or multiproblem families are less likely to successfully carry out these tasks. As one pediatric nurse noted, *you know a family is in trouble if having a child diagnosed with cancer is not the worst thing that ever happened to the family.*

How Families and Friends Help Patients Cope

Social support has repeatedly been found to be a significant, independent predictor of emotional well-being in adults and children with chronic or acute illness or injury. These studies have looked at a range of illnesses including adolescents with severe burns, children with cancer, and adults with heart disease. The evidence is clear: *People who have extended and available social support networks, consisting of friends and/or family members, are less anxious, and are less likely to become depressed or develop posttraumatic stress disorder.* One very large study of psychiatric symptoms in response to highly stressful events found that individuals with more support from friends had less psychiatric morbidity after death or serious illness in the family at a 3-year follow-up. Another study showed that the emotional outcome of adolescents with significant burns was more significantly correlated with their social support network than with the size or location of the burn.

But there's another kind of hole, and that is the wound that divides family. Sometimes this wound occurs at the moment of birth, sometimes it happens later. We are all fixing what is broken. It is the task of a lifetime. We'll leave much unfinished for the next generation.

ABRAHAM VERGHESE
Cutting for Stone

How Families and Friends Help Patients Recover From Illness

A famous study of women with metastatic breast cancer was a model for a series of investigations into the utility of social support in decreasing both psychiatric and medical morbidity and mortality. This Stanford study found that *women who participated in a structured support group lived longer than matched comparisons.* Replications have sought to explain the mechanism and identify the “active ingredient” of the intervention; however, these studies have produced mixed results. One explanation for the effect of group therapy on longevity is that the groups reduced isolation and helplessness, which in turn reduced the physical stress response, which facilitated healing and/or immune response.



Food (1990) Robert Pope. Reproduced courtesy of the Robert Pope Foundation. In the Art Gallery of Nova Scotia collection. *Family support can be a critical part of the healing process.*

seeks a relationship with the opposite sex parent and has aggressive urges to get rid of the same sex parent. In boys, this leads to **castration anxiety**, in which the fear of father cutting off his penis leads to repression of sexual interest in mother. Children can become very possessive of the opposite sex parent with hostility toward the same sex parent during this time. This conflict is played out through fantasies and dreams, ultimately leading to resolution of the oedipal complex. This resolution permits the child to develop a healthy relationship with the same sex parent.

School-Age (5 years to 12 Years)

Increases in height and weight during the school-age years are gradual and steady compared with the earlier years and adolescence. Between the ages of 6 and 12, the average child will grow 2–2.5 inches and gain 3–6 pounds per year. The average 6-year-old child is approximately 3.5 feet tall and weighs about 40 pounds. By 12 years of age, the average child is almost 5 feet tall and weighs approximately 80 pounds. *Growth rates in boys and girls are equal until about age 9, when girls begin to grow more rapidly.*

By five or 6 years of age, children are less likely to employ magical thinking and are better able to separate fantasy from reality. They are able to apply rules, to understand alternate points of view, and to sustain attention over 45 minutes for class. They can tolerate the increased demand from school as they begin the first grade. Children develop self-esteem and they can gauge their performance in class. They look for positive praise from adults outside of the home (e.g., school teachers and coaches) and focus on accomplishment. The irrational fears of the preschool child are replaced with more realistic concerns about everyday life, such as school failure and peer rejection. Children may cope with these fears by identifying with superheroes that are seen as invincible.

The beginning of school brings Erikson's stage of **Industry vs. Inferiority** (6 years to 12 years) to the forefront as the child seeks mastery at school. The level of success at school will affect self-esteem as the child looks for praise beyond that received from the child's parents. If the child feels competent in academic and social interactions, he or she will develop a sense of industry or confidence. If the child is unsuccessful in these areas he or she will develop a sense of inferiority.

Case example: A child with ADHD

Tommy was a 5-year-old boy who was referred by his pediatrician for psychiatric evaluation of "severe behavioral disturbance." Tommy had recently entered kindergarten, and was on the verge of being expelled for obstreperous behavior. His mother related that at a recent school conference, the teacher stated that Tommy "never sat still" and was constantly in motion throughout the day. In addition, she reported that Tommy talked incessantly and frequently blurted out answers to questions before hearing the entire question. He had difficulty waiting for his turn in classroom activities, and was disliked by the other children because of his inability to play cooperatively. The teacher also reported that Tommy was unable to sustain attention on anything for more than a few minutes, was easily distracted, and never listened to anything she said. Mother reported that the teacher called her almost every day because Tommy wouldn't follow simple routines and had difficulty playing with peers. He was sent to the "time-out corner" almost daily.

The mother described similar behaviors at home. She reported that Tommy had always been a very active and curious child who was constantly "on the go." Recently Tommy had started referring to himself as a "bad boy," and his mother worried that all of the negative interactions at school were affecting his self-esteem. He had no prior history of medical or psychiatric problems, and there was no family history of medical or psychiatric disorders. Tommy was on no medications. A complete medical workup to rule out a physical cause for his behavioral problems had recently been performed and was negative.

On evaluation, Tommy was a well-developed, well-nourished boy who appeared his stated age. He initially sat quietly in a chair next to his mother for several minutes; however, he soon had difficulty sitting still and began to fidget. He walked to the toy chest and began to take out all of toys and place them on the floor without playing with any of them. He threw a ball across the room and nearly hit the window. For the remainder of the examination, Tommy displayed hyperactive and impulsive behavior.

On the basis of Tommy's history as well as medical and psychiatric evaluations, the diagnosis of Attention Deficit Hyperactivity Disorder, combined type, was made. A comprehensive treatment plan was developed which included behavioral therapy, social skills training, family therapy, school consultation, and parent training. The physician decided to avoid or at least postpone a trial of stimulant medication. Tommy responded well to this treatment regimen, with significant reduction in symptoms of hyperactivity and impulsivity, and improved relationships with parents, peers, and teacher.

It should be noted that for many, being single is a matter of choice, a preferred state. However, the common perception of America as a country of couples forces single adults into a second-class status that is more likely to affect women than men. *As a result of disparate death rates favoring women and customary marriage of older men to younger women, the number of single men of the same age or older who are available for marriage is not sufficient and decreases with each decade of life.* The likelihood of marriage or remarriage drops drastically as a woman ages.

Today I asked my body what she needed,
Which is a big deal
Considering my journey of
Not Really Asking That Much.

I thought she might need more water.
Or protein.
Or greens.
Or yoga.
Or supplements.
Or movement.

But as I stood in the shower
Reflecting on her stretch marks,
Her roundness where I would like flatness,
Her softness where I would like firmness,
All those conditioned wishes
That form a bundle of
Never-Quite-Right-Ness,
She whispered very gently:

Could you just love me like this?

HOLLIE HOLDEN

Clearly a number of issues and challenges face the single middle-aged adult, particularly the woman. Some women postpone marriage to complete their education and advance their careers and, when entering their thirties, hear the ticking of the biological clock only to discover that “all the good men are already taken.” Dreams of eventual marriage and children may be shattered. Other obvious victims of recent social changes are the men and women in their forties and fifties who entered marriages years ago with a clear understanding of what was expected of them, only to find

later that they must make serious adjustments. Most tragic, perhaps, is the displaced homemaker who cultivated only the skills of wife and mother and then was suddenly made vulnerable by divorce or widowhood and found herself unprepared to provide for her income. Blumstein and Schwartz (1983) summarized displaced homemakers:

They actually have fewer resources and less confidence than they did twenty years before. Not only must they enter a new and inhospitable world of work, with few of the necessary qualifications, they must also face a romantic or sexual marketplace for which they are unprepared.

Work

Work cannot be considered effectively in isolation; if so, we could refer simply to the various stages of career, namely, the preparatory stage involving education and training, the point at which the individual is committed to a particular line of work, and so forth. However, career development is intimately intertwined with the individual’s development as a person. Work interacts with identity. Work determines how we live, compels us to select different traits for further development, determines and maintains status, and undergirds our values. Levinson (1978) has described the typical person in his or her twenties as poor in self-reflection but fairly skilled when it comes to performing tasks, careful at following rules, anxious for promotion, and willing to accept “the system.” The typical 25-year-old is determined to “make the grade” and, by contrast, not particularly concerned with psychological conflicts about success. The individual must identify an occupational “dream” and set goals to achieve that dream. This process may be marked by conflict and uncertainty, which can be inhibited or suppressed; if so, such feelings may appear full-blown later on in life. Mentor relationships are also forged

The great majority of us are required to live a life of constant, systematic duplicity. Your health is bound to be affected if, day after day, you say the opposite of what you feel, if you grovel before what you dislike and rejoice at what brings you nothing but misfortune

BORIS PASTERNAK

Dr. Zhivago

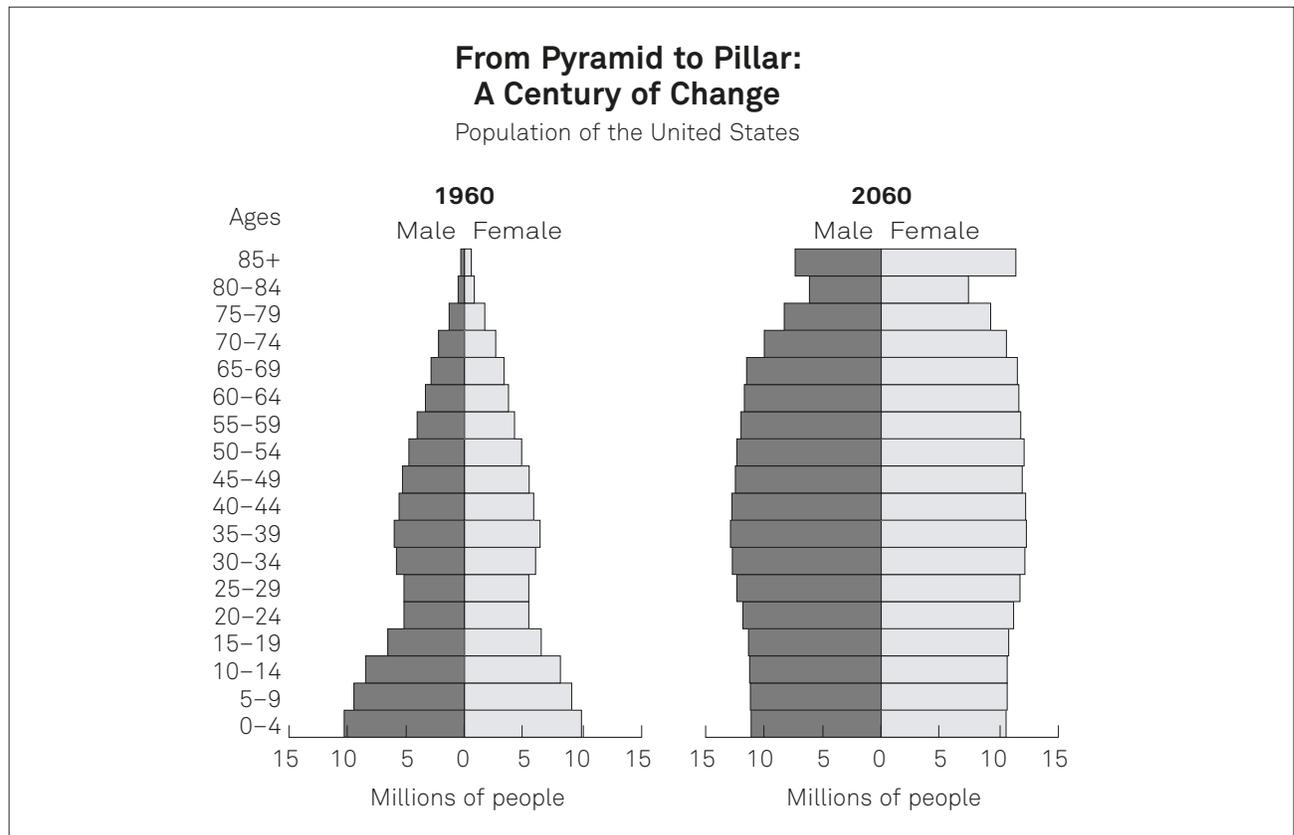


Figure 6.1 The US Census Bureau projects a dramatic increase in the number of elderly citizens by 2060. Many of these individuals will be your patients. Source: National Population Projections, 2017. Available at <https://www.census.gov/library/visualizations/2018/comm/century-of-change.html>

When are physicians too old to practice medicine? In 1905, at the age of 55 years, Sir William Osler publicly spoke of the “comparative uselessness” of men older than 40 years of age. He contended that men should retire after age 60 and jokingly suggested that at 60 years of age, men be allowed a year of contemplation before being offered a peaceful departure by chloroform. These comments provoked a storm of controversy, but Osler maintained his stance that men of intellect should retire at 60 years of age. While his beliefs might have been influenced by social and cultural factors of the time, the controversy of age-related forced retirement continues in professions such as medicine, in which public safety could be at risk.

LINDA LEE
Canadian Family Physician (2012)

First, we will examine normal physiological and psychological changes in older adults that affect their health, functioning, quality of life, and the safety of prescribing medications. Then, we will review common psychiatric disorders that the geriatric health care provider encounters. Third, we will explore a variety of treatments for older adults with mental health care needs, including pharmacotherapy, psychotherapy, and electroconvulsive therapy (ECT). Finally, we will discuss some special topics that arise in working with older persons, such as the need to make an assessment for decisional capacity in older adults with cognitive impairment and end-of-life issues.

Normal Changes With Aging

Physiological Changes

Inherent *physiological changes* occur with aging. These changes may affect the geriatric health care provider’s

patients' health care costs are incurred over years of living with an expensive chronic condition.

Medicare and private insurance coverage of hospice benefits have led to decreased health care costs for patients who utilize this service at the end of life. Hospice utilization, however, requires certification from a medical provider that the patient is expected to live 6 months or less. The challenges of prognostication, coupled with the reality that most people live with serious illness and disability for months (if not years), prevent millions of Americans from availing themselves of hospice benefits until the very end of their lives. *Earlier referral to hospice services would contribute to even greater cost savings, but hospice referrals are usually made late in the dying process, when medical providers can more reliably predict that the patient is likely to die soon.*

The physician's duty is not to stave off death or return patients to their old lives, but to take into our arms a patient and family whose lives have disintegrated and work until they can stand back up and face, and make sense of, their own existence.

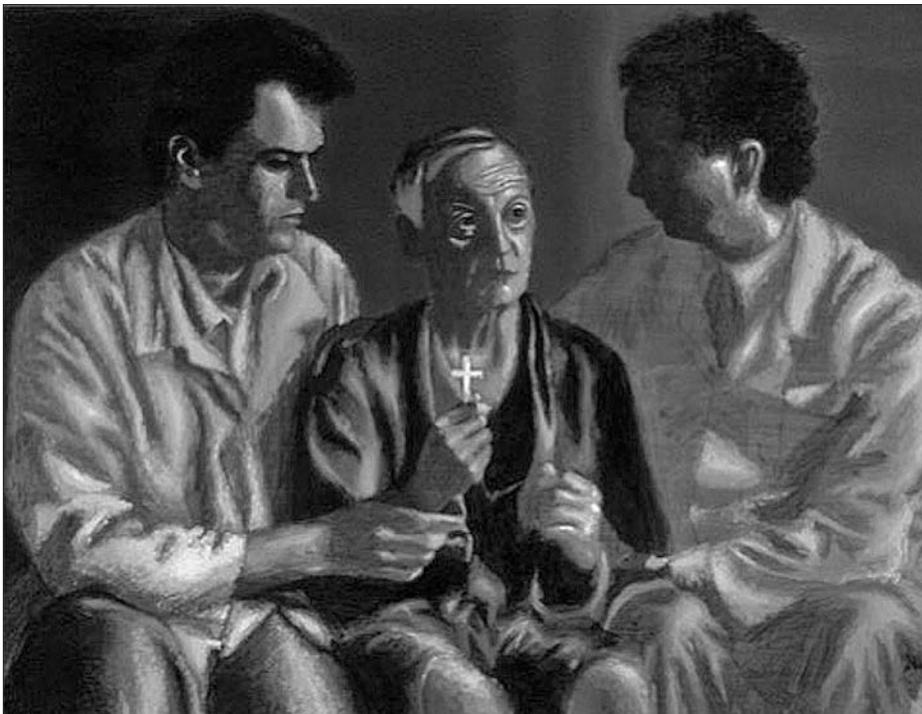
PAUL KALANITHI
When Breath Becomes Air

Place of Death

The intensity of care available for acute and emergent health events can result in aggressive interventions at or near the end of life. Patients are often hospitalized within six months of death, many of them multiple times as their decline leads to worsening functional status and complications such as falls, infections and injuries. Many individuals also spend considerable time in intensive care units and nursing homes near the end of their life. The aggressiveness of care actually *accelerates* in the few days before death, resulting in many patients dying in a hospital. In acute care settings, the “ideology of rescue” can lead to increasingly complex levels of care without a systematic process for assessing whether this care is aligned with the patient's goals or preferences (Institute of Medicine, 2014). *The inconsistency between care provided and care desired is especially critical in light of robust evidence that most patients who have thought ahead of time about how and where they want to die generally do not want to die in hospitals or nursing homes.*

Palliative Care

As more Americans live longer with the burden of chronic disease, health care providers will need to partner with their patients to address the question of *how*



Mr. S. is told he will die (1989)
Robert Pope. Reproduced courtesy of the Robert Pope Foundation. *The cross symbolizes religion, and the doctors' white coats symbolize science. Sadly, the patient realizes that neither will save him.*

Spinal facet joint injections and local anesthetic medial branch nerve blocks that innervate those joints are indicated for pain from facet arthropathy, i.e., osteoarthritis of the spinal facet joints. Local anesthetic or steroid injections may help to corroborate the clinical diagnosis of facet arthropathy as the cause of pain, or to provide temporary pain relief to facilitate physical therapy.

Radiofrequency ablation of medial branch nerves can provide longer periods of pain relief, but also can cause denervation of the multifidus muscle, an important paraspinal muscle that provides core stabilization.

Implanted spinal cord stimulators and **peripheral nerve stimulators** are occasionally used for control of moderate to moderately-severe neuropathic pain that has not responded to analgesics. With spinal cord stimulation, electrodes are positioned in the spinal canal, posterior to the spinal cord, so that electrical current through the device produces paresthesias in the areas affected by chronic pain. Spinal cord stimulators are most commonly indicated for complex regional pain syndrome and post-laminectomy pain. Peripheral nerve stimulators are also implanted medical devices, with the stimulating electrodes implanted next to a peripheral nerve supplying the nerve input to the area of pain. Most patients perceive the stimulation paresthesias created by the stimulator as a tingling, warm, and soothing sensation that decreases pain intensity.

Intrathecal infusion pumps for spinal analgesia are typically used for advanced cancer pain, but can also be used for noncancer pain. Spinal administration of medication, such as opioids, local anesthetic, or other appropriate medication can provide consistent dosing and more effective analgesia with reduced risks of diversion or opioid misuse. Ziconotide is a newer medication that acts at the level of the spinal cord and is only effective through intrathecal infusion. The cost, complexity, and risks of intrathecal infusion of analgesics generally limit use to cases of truly intractable, incapacitating pain.

Summary

The treatment of patients with chronic pain can be a challenging yet also rewarding process. *Patients often come in tired, angry, deconditioned, demoralized, and apathetic, having lost much of what was of value in their lives.* Across disciplines, there are a variety of treatment approaches that can help patients manage their pain. Even with comprehensive, multidisciplinary treatment, what

we can at best offer is a reduction of symptoms and an improvement in functioning. It can be difficult for both patients and health-care professionals to accept a less than totally satisfying solution to a problem. Progress must be measured by small successes and can be achieved by helping patients refocus on valued areas in their lives. *Patients may conceptualize pain management as the “end of the road,” but with patience and understanding, management of pain can be, instead, the start of a new journey.*

It is not true that suffering ennobles the character; happiness does that sometimes, but suffering, for the most part, makes men petty and vindictive.

W. SOMERSET MAUGHAM
The Moon and Sixpence

Case Study

Mr. J. is a 52-year-old, married, White male who developed back pain after a fall at work. Further workup showed vertebral disk pathology. He underwent lumbar spine surgery but continues to experience aching and grinding pain in his low back with burning pain radiating into his right leg. He has been unable to return to work as a construction worker, and he is receiving Social Security disability. He has tried numerous medications for management of his pain and is currently prescribed a hydrocodone-acetaminophen combination (5/325 mg), 2 tablets per day, and gabapentin 300 mg 3 times a day. He believes these medications “help a little bit” when he sits in his recliner. Mr. J. stated that he has taken extra hydrocodone-acetaminophen when on vacation with his family. He ran out of an opioid prescription early, and he reports that his family physician will no longer prescribe his pain medications because of his excessive use of opioid analgesics. He has had no injection therapies but has attended physical therapy, consisting primarily of passive modalities, and he believes they provided only modest relief. Exercise increased his pain and he has no home exercise plan. He rates his pain as between a 6/10 and a 9/10, increasing when he is more active and decreasing with rest.

Mr. J. spends his days watching TV and “puttering” in the garage where he used to enjoy working on cars as a hobby. His wife returned to work because of their financial problems since his unemployment. Mrs. J.

projection areas and then the increasingly high-level association cortex. Information from all external sensory modalities as well as the viscera is directed to the parahippocampal gyrus. Here, this information becomes accessible to the hippocampus and the amygdala. The hippocampus allows this input to form new declarative memories and also to aid in the retrieval of declarative memories. The amygdala is usually described as an emotion-related structure, which is necessary for forming classically conditioned associations (see Box 9.2).

During an environmental encounter with a known threat – or with a novel event of uncertain outcome – the amygdala becomes activated through its innate and classically conditioned responses to threat. The

amygdala then signals the bed nuclei of the stria terminalis, the nucleus accumbens, the anterior cingulate gyrus, and the paraventricular nucleus of the hypothalamus. In addition, the amygdala's inputs to the prefrontal cortex provide essential signals that reach the level of consciousness and play a crucial role in the development of appraisals that underlie psychological stress responses. In a reciprocal fashion, the orbital prefrontal cortex provides feedback to the amygdala and bed nuclei and to the hypothalamus. These descending inputs to the amygdala can help regulate the response to psychological stressors. During periods of stress, the net effect of this reciprocal interaction determines autonomic outputs at the level of the pons and medulla, stress endocrine outputs

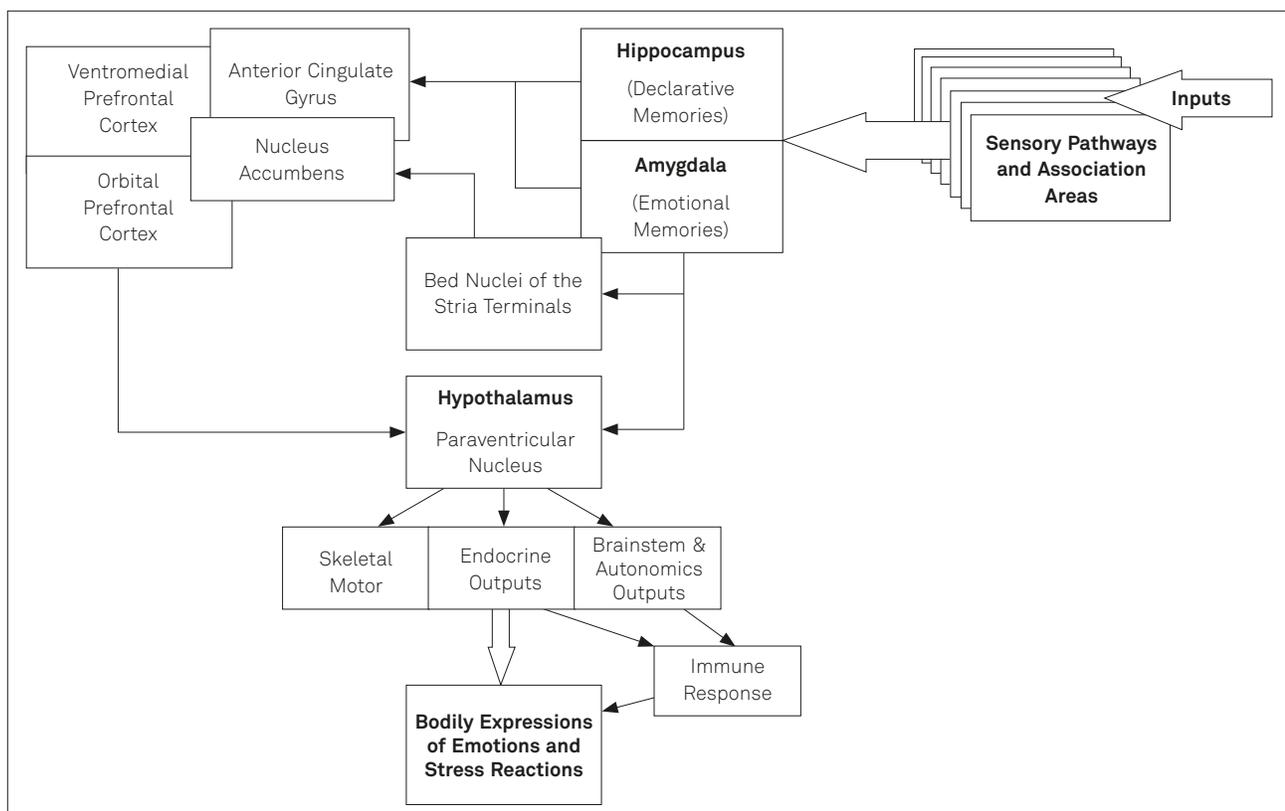


Figure 9.1 Psychological stress responses. This diagram shows major pathways from sensory inputs to emotion formation, stress responses, and bodily outputs. External events are processed through sensory pathways in the brain, beginning with primary input areas and increasingly elaborate areas of association cortex. All sensory pathways feed into the temporal lobe, which contains the hippocampus and amygdala. These two structures form memories of past events and help to define responses to events based on that experience. In doing so, both structures interact with subcortical structures (including the bed nuclei of the stria terminalis [BNST], closely associated with the activities of the amygdala, and the nucleus accumbens). The BNST and nucleus accumbens interact extensively with several areas of the prefrontal cortex. The outcome of these subcortical-prefrontal interactions form the basis for outputs to the hypothalamus and brainstem. Endocrine and autonomic outputs (e.g., cortisol, norepinephrine) alter activity and function of immune cells. These changes are sometimes in conjunction with conscious processes and sometimes are out of consciousness. The resulting skeletal motor patterns, autonomic responses, endocrine responses, and immune responses determine the impact of emotions and stress reactions on the body.

have focused primarily on ED, with illnesses such as diabetes, obesity, and urinary tract diseases identified as risk factors. Chronic diseases such as Parkinson's disease and multiple sclerosis have been identified as being associated with male sexual dysfunction beyond ED, including diminished sexual desire, difficulty reaching orgasm, and overall reduced sexual quality of life.

In addition, many individuals in the United States, regardless of gender and sexual orientation identities, engage in nontraditional sexual behaviors, such as polyamory and bondage, domination and submission, and sadomasochism (BDSM). **Polyamory** refers to consensual relational and sexual practices in which there may be multiple concurrent partners and varying structures of relationships. Although prevalence statistics are limited, an estimated 5% of US adults may be engaged in consensual nonmonogamous relationships. **BDSM** stands specifically for consensual use of bondage, domination and submission, and sadomasochism within sexual practice; the term emerged from the field of psychiatry. **LKink** refers to the same behaviors, but it is a more colloquial term. Although kink or BDSM and polyamory have been historically pathologized within mainstream US culture, awareness of such sexual practices is growing; therefore, it is important for providers to have a basic understanding of these sexual behaviors.

Specific Patient Population Issues

To adequately assess and treat sexual health-related issues, health care providers benefit from understanding the social context and sexual health risks and challenges facing various subgroups. This section provides a brief overview of pertinent sexual health information for specific marginalized populations, all of whom are less likely to seek or gain access to health care in comparison with the mainstream population, in part due to stigma.

Older Adults

Sexual interest remains fairly constant throughout the lifespan. However, the frequency of sexual activity in older age typically declines due to issues such as the loss of a partner or changes in physical health (e.g., onset of illness).

Older adults do confront specific sexual health risks. The Centers for Disease Control and Prevention (CDC)



Hug (1990) Robert Pope. Reproduced courtesy of the Robert Pope Foundation. In the W. K. Kellogg Health Sciences Library collection at Dalhousie University. *Illness, whether chronic or acute, can have a profound impact on sexual functioning.*

has indicated a rise in reported **sexually transmitted infections** (STIs) for people of all ages. However, there have been specific significant increases for middle-aged and older adults. Older adults may be less informed about safe sex practices (e.g., condom use), thereby contributing to higher rates of STIs. Older populations also may not have paid attention to public health messages about safe sex practices, particularly if those messages were aimed at young people or were considered irrelevant based on relationship status. For older women, providers should be aware that postmenopausal changes in women, such as thinning of the vaginal walls or the mons and labia, may make them more vulnerable to infections.

In considering issues of sexual health for older adults, providers should be cognizant of biases against this population. Providers may assume that sexual health issues are not relevant for the older adult population or shy away from discussion of these issues. In turn, *patients may not bring up such issues due to fear or embarrassment, lack of information, or differences in age, gender, sexual orientation, or religion between themselves and their medical provider.* Encouraging patients to

of intervention for sexual problems developed by Annon (1976) is commonly referred to for guidance on how to respond to a patient's sexual health concerns (see Table 13.2).

Case Study

A 46-year-old transgender female-to-male Latino patient identifies strain in his relationship and concerns about loss of intimacy with his long-term cisgender female partner. The patient's medical history includes high blood pressure, chronic low back pain, and depression. He is the primary caregiver for his partner who recently underwent treatment for breast cancer. He is adamant that the relationship with his partner has been good, but his role as a caregiver has been stressful. Upon further questioning, the patient reveals his partner was unfaithful several years ago, but he remains hesitant to reflect on this during the appointment.

Discussion Questions

1. Explore your own reactions to this patient (e.g., are you comfortable with the patient's identities? Background? Presenting concerns?). How might your reactions to this patient influence the care you provide?
2. How will you approach sexual health assessment with this patient?
3. What additional information do you need in order to make appropriate recommendations to promote the sexual health and well-being of this patient?

Tips for the Step

Masters and Johnson described the stages of human sexuality as excitement, plateau, orgasm, and resolution.

Gender identity is defined as an individual's innate, internal sense of being male, female, neither of those, both, or another gender.

A diagnosis of sexual dysfunction requires the presence of clinically significant distress in the presenting individual.

Sexual orientation refers to one's tendency to seek sexual partners of a certain gender, and is rooted in genetic, biological, and social and environmental factors.

The P-LI-SS-IT model is commonly used for intervention for sexual problems.

Suggested Readings

Basson, R. (2015). Human sexual response. *Handbook of clinical neurology*, 130, 11-18. <https://doi.org/10.1016/B978-0-444-63247-0.00002-X>

Provides an overview of a contemporary model of human sexual response.

Chang, S. C., Singh, A. A., & Rossman, K. (2017). Gender and sexual orientation diversity within the TGNC community. In A. Singh & I. M. Dickey (Eds.), *Perspectives on sexual orientation and diversity. Affirmative counseling and psychological practice with transgender and gender nonconforming clients* (pp. 19-40). Washington, DC: American Psychological Association. <https://doi.org/10.1037/14957-002>

Describes gender and sexual orientation diversity in greater detail within TGNC communities.

Maragh-Bass, A. C., Torain, M., Adler, R., Schneider, E., Ranjit, A., Kodadek, L. M., . . . Haider, A. (2017). Risks, benefits, and importance of collecting sexual orientation and gender identity data in healthcare settings: A multi-method analysis of patient and provider perspectives. *LGBT Health*, 4, 141-152. <https://doi.org/10.1089/lgbt.2016.0107>

Describes the importance of collecting gender identity and sexual orientation information during primary care or other medical visits.

Roen, K. (2019). Intersex or diverse sex development: Critical review of psychosocial health care research and indications for practice. *Journal of Sex Research*, 56, 511-528. <https://doi.org/10.1080/00224499.2019.1578331>

Provides additional background information regarding intersex individuals.

Sandfort, T. G. M., & Ehrhardt, A. A. (2004). Sexual health: A useful public health paradigm or a moral imperative? *Archives of Sexual Behavior*, 33, 181-187. <https://doi.org/10.1023/B:ASEB.0000026618.16408.e0>

A review of the use of the concept of sexual health and its evolving conceptualization.

The Gender Unicorn. (n.d.) *Trans student educational resources*. Retrieved from http://www.transstudent.org/GENDER/Infographic_educating_individuals_about_gender_and_sexual_diversity. It applies to all individuals regardless of sexual orientation and gender identity.

World Association for Sexual Health. (2014). *Declaration of sexual rights*. Retrieved from https://worldsexualhealth.net/wp-content/uploads/2013/08/declaration_of_sexual_rights_sep03_2014.pdf

A list of universal sexual rights.

Acknowledgments

The authors appreciate the contribution of Janet Pregler, who reviewed this chapter and made multiple helpful suggestions before it was finalized.

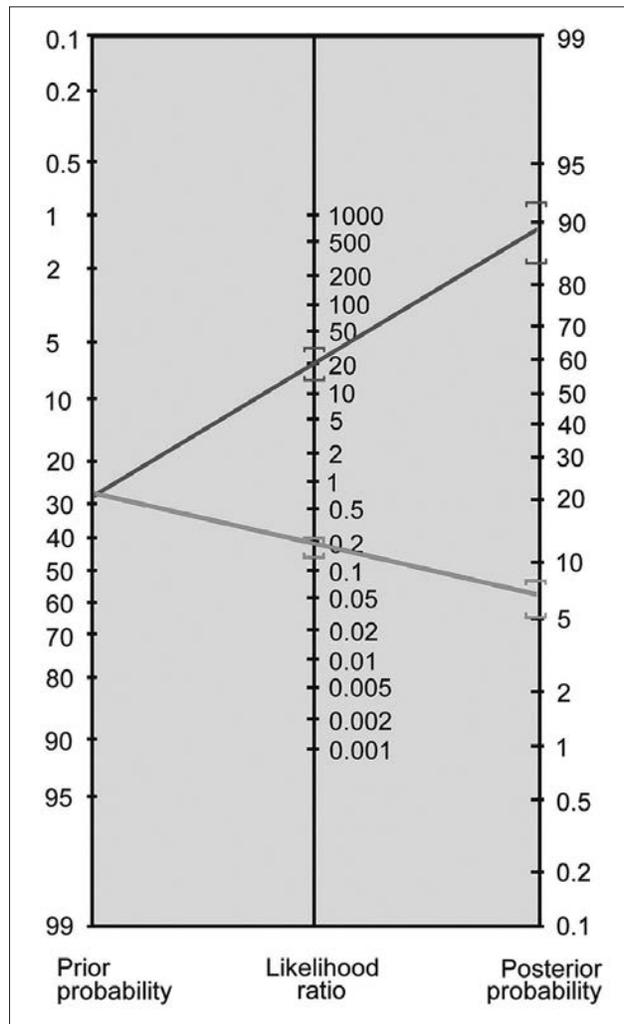


Figure 17.1 Fagan nomogram.

Fortunately, some shortcuts exist to help clinicians judge the likelihood of a disease using a test result and the sensitivity and specificity. The method most commonly used relies on using simple arithmetic to combine sensitivity and specificity into likelihood ratios, defined as follows: **Positive likelihood ratio** = sensitivity / (1-specificity) = $[a / (a + c)] / [b / (b + d)]$ for the example table.

Negative likelihood ratio = (1-sensitivity) / specificity = $[c / (a + c)] / [d / (b + d)]$ for the example table. Knowing the likelihood ratio, the clinician can use test results to carry out the central task of diagnostic reasoning: resetting or “updating” her initial estimate of the probability that her patient has a particular disorder – the “pretest probability” – to a new “posttest probability.” Figure 17.1 (Fagan Nomogram) shows how the likelihood ratios help translate pretest to posttest probability of disease. An example will help illustrate how this would work in a real-world clinical encounter.

Imagine that you have volunteered to work in an urban clinic providing care to an underserved population. It is important to recognize patients with substance abuse disorders, as this may complicate their other medical problems, but the visits are brief and you need an efficient way to screen patients for alcohol dependency. You find and read a recent study that tested the usefulness of a single screening question for the detection of unhealthy alcohol use in an urban adult population. In this study, conducted in a primary care clinic in an inner-city neighborhood, 286 adult patients were asked a single screening question: “How many times in the past year have you had 5 or more drinks in a day (4 for women)?” The test was considered positive if the patient reported one or more days of consuming 5 or more drinks. After recording the answer to this question, all patients completed an independent “gold standard” evaluation for unhealthy alcohol use based on answers to validated questionnaires. The results are presented below in a 2×2 table (see Table 17.2).

Sensitivity = $a / a + c = 72 / 88 = 0.82$, or 82% **Specificity** = $d / b + d = 156 / 198 = 0.79$, 79%

Positive likelihood ratio = sensitivity / (1-specificity) = $[a / (a + c)] / [b / (b + d)] = 0.82 / 0.21 = 3.9$

Negative likelihood ratio = (1-sensitivity) / specificity = $[c / (a + c)] / [d / (b + d)] = 0.18 / 0.79 = 0.23$

Now using the calculated values for the likelihood ratios, imagine that you estimate your patient’s pretest probability of unhealthy alcohol use at around 30%, based simply on estimates of the prevalence of alcohol

Table 17.2 2×2 Contingency table for a single question screening test for unhealthy alcohol use

Result of single question screen	Unhealthy alcohol use confirmed by gold standard questionnaires	Unhealthy alcohol use excluded by gold standard questionnaire	
Positive (≥ 5 drinks on ≥ 1 day)	72	42	
Negative (≥ 5 drinks on 0 days)	16	156	
Total	88	198	286

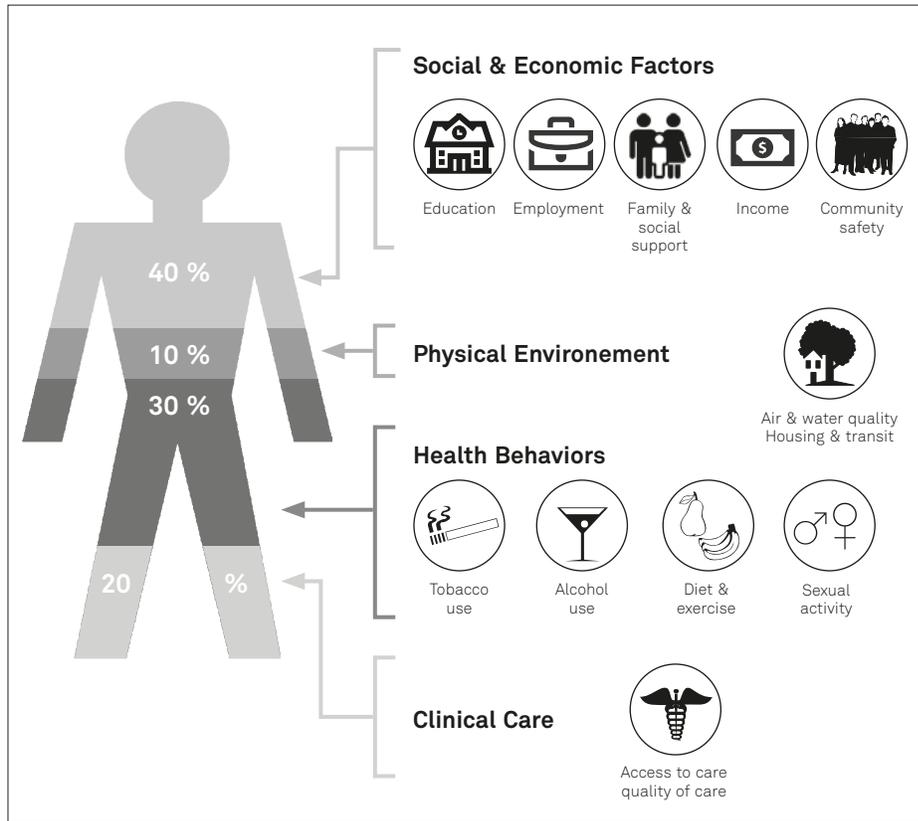


Figure 23.2

Socioeconomic factors and health behavior are the predominate determinants of a patient's health status. Based on the University of Wisconsin Population Health Institute, *Country Health Rankings Key Findings 2018*, <https://www.county-healthrankings.org/reports/2018-county-health-rankings-key-findings-report>

Limited English Proficiency

The US Census Bureau reports there are more than 350 languages spoken throughout the United States. Many of those who speak another language also speak English fluently or “very well.” However, approximately 25 million people have limited English proficiency (LEP). By definition, LEP refers to anyone above the age of five who reports speaking English less than “very well,” as classified by the US Census Bureau. Between 1990 and 2013, the LEP population grew by 80% and now makes up an estimated 9% of the US population.

LEP adults experience higher rates of poverty and are much more likely to have less than a high school diploma than English-proficient adults. They are also significantly more likely to lack insurance coverage and often face multiple barriers to accessing coverage and care. Likewise, LEP adults report a greater number of negative health care encounters.

Title VI of the Civil Rights Act of 1964 prohibits discrimination on the basis of national origin. In 2000, President Bill Clinton signed Executive Order 13166, titled “Improving Access to Services for Persons with Limited English Proficiency.” It required all recipients of federal financial assistance to provide meaningful access to LEP persons.

With the civil rights provision of the Affordable Care Act of 2010, Section 1557 prohibited discrimination on the grounds of race, color, national origin, sex, age, or disability in certain health programs and activities. The Section 1557 final rule applies to any health program or activity, any part of which receives funding from the Department of Health and Human Services (HHS). This includes entities that accept Medicare or Medicaid payments, the Health Insurance Marketplaces, and any health program that HHS administers. For LEP individuals, it means that *covered entities must take reasonable steps toward providing meaningful access for anyone eligible for services or likely to engage in health programs and activities*. It also prohibits using low-quality video remote interpreting services or relying on unqualified staff translators when providing language assistance services.

The inability to communicate in the primary language of a patient limits the ability to form an empathic and therapeutic connection. It also increases opportunities for adverse medical events to occur. In rural areas, additional challenges may arise due to lack of awareness about barriers to accessing care and limited support resources.

Recently, management of migrant detention centers at the southern border of the US and the policy of separating children from families have led to additional

USMLE-Type Questions

Chapter 1: Brain, Mind, and Behavior

1. A 12-year-old boy on a bicycle is hit by a car and thrown onto concrete. He sustains significant head injuries. One of the parts of his brain which is most damaged is the corpus callosum. Which of the following best describes the function of the corpus callosum?
 - (A) Controls behavioral response to emotions such as fear
 - (B) Connects the right and left hemispheres, allowing integration
 - (C) Controls homeostasis in the nervous system
 - (D) Holds long-term memory
 - (E) Controls executive functions
2. A 48-year-old woman has recently left a long-term abusive relationship. She has developed hypertension, hyperglycemia, and hypercholesterolemia. Which of the following is the best term to describe the result of her accumulated stressors on her ability to maintain homeostasis?
 - (A) Posttraumatic stress disorder
 - (B) Neuroplasticity
 - (C) Allostatic load
 - (D) Temperament
 - (E) Hyperactivity
3. Two healthy, full-term newborns of the same age and weight, and without birth trauma, are noted to behave very differently to changes in light or sounds in the nursery. One startles, and quickly soothes after sucking his thumb. The other screams and is obviously physiologically distressed for several minutes. Which of the following is the best term for this in-born difference in the way their nervous systems perceive and respond to stimulation?
 - (A) Allostatic load
 - (B) Acute stress reaction
 - (C) Neuroplasticity
 - (D) Homeostasis
 - (E) Temperament

Chapter 2: Memory, Emotion, and Mirror Neurons

1. A 34-year-old woman has just been told that there is a mass in one of her breasts that may be malignant. She was just married 2 months ago. Her mother died of breast cancer at age 45. Which of the following brain processes is most likely to be impaired as this young woman listens to the explanation given by the physician?
 - (A) Implicit memory
 - (B) Encoding and storage of memory
 - (C) Retrieval of memory
 - (D) Short-term memory
 - (E) Long-term memory
2. Mirror neurons have been attracting significant research attention as a potential factor in some aspects of human behavior and disability. Which of the following is the best description of what mirror neurons in the brain enable people to do?
 - (A) Conceptualize spatial images as they would be in reverse
 - (B) Create empathy by feeling what another person is feeling
 - (C) Make maps of the internal intentional state of another person's mind
 - (D) Reflect back to someone else how they appear to others
 - (E) Connect across the two hemispheres of the brain
3. An 80-year-old man is brought to the doctor by his daughter, who is concerned about his memory. Neuropsychological testing shows deficits in several aspects of his memory. However, implicit memory appears intact. Which of the following is true about implicit memory?
 - (A) It does not require conscious, focused attention to be encoded
 - (B) It requires the hippocampus to be activated
 - (C) It includes autobiographical memory
 - (D) It becomes available in the second year of life
 - (E) It is remembered in narrative form