

Design and Implementation of the Modern Men's Health Center

A Multidisciplinary Approach

Joseph P. Alukal
Steven Lamm
Thomas J. Walsh
Editors

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Preface

Over the past 2 years, while working on this book, there were numerous advances in medicine and men's health that helped shape our chosen content. But certainly no one event defined our experience in medicine—not just men's health—to a greater degree than the COVID-19 pandemic. Watching the sacrifice of our colleagues in healthcare, the suffering of our patients, the anxiety of the community as a whole—these experiences have shaped us tremendously (in particular given our practices in New York City and Seattle), and in turn have influenced our thinking about this book.

First and foremost, the pandemic made us even more appreciative of the tireless dedication of our authors, our partners, and our support staff in the clinics and hospitals. The willingness of healthcare providers and essential staff to do their best in the face of risk and suffering has been inspirational.

Second, the pandemic brought back to the forefront for both of us the humanism at the heart of medicine. Suffering, fear, illness, and death in patients stricken with COVID-19, quarantined at home, or hospitalized, these patients and their experiences evoke the desire to do everything in one's power to help. Research shows that men are disproportionately burdened by the negative impacts of COVID-19, including higher likelihoods of hospitalization and death due to the disease. It is unclear why this might be the case, and certain comorbidity may be the most important contributing factor, and in that light, this book became even more important. If something in here can make men become more healthy, and thereby impart them some resistance to the disease, then we've made a needed difference.

Third, we felt the pull to help the community we belong to—healthcare providers—in some meaningful way. Hopefully, this book can provide them a toolkit with which they can make their practices and men's health centers work better. If this makes their life any easier, and in turn helps them better navigate the demands of their healthcare system as the pandemic proceeds, we are happy to help. This is a difficult time, and we should all do what we can to help each other however we can, now more than ever.

We are thankful for the support of friends and family who helped us in the completion of this book, tolerating long nights spent reading and writing and shoehorning this additional bit of work into our already full professional and personal lives.

We are as well grateful for the support, patience, and knowhow of the editorial staff at Springer. Without this support, the finished product here would not have become a reality.

We hope within that product you will find a resource that can help you provide up-to-date and state-of-the-art care for your male patients. We hope that it will enable you to build or grow your own men's health center. And in that capacity, we hope you will be able to be the best doctor you can to your patients. Certainly, in this particular moment, no mission or calling is more important.

Best wishes for your own continued health and success.

New York, NY, USA
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Seattle, WA, USA

Joseph P. Alukal
Steven Lamm
Thomas J. Walsh

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Chapter 1

The Multidisciplinary Men's Health Center: A Modern-Day Necessity



Joseph P. Alukal and Thomas J. Walsh

Patient preference has driven a number of trends in the past 100 years of medicine including the rise of concierge practices, telemedicine, and same-day surgery among many other examples. In the end, convenience and access have driven all these trends; patients would like to more easily and completely access their doctor's expertise. They would like to do this without leaving their home or spending too much time in the doctor's waiting room, and given the busy constraints of modern life, this is entirely understandable.

As physicians, the drive to accommodate these demands can sometimes feel burdensome. Doctors feel that pressure to share their time and talent with their patients before you get to requests such as alternate schedules (nighttime and weekend hours), same-day appointments, and necessary phone call follow-ups that can't be billed for: all of these pressures conspire to create frustration, not to minimize it.

At first glance, the men's health center – multiple providers of all specialties but most notably urologists, primary care doctors, and cardiologists under one roof – seems to only cater to this pressure in the extreme. But in our own time spent at our home institutions in these centers, each of the practitioners involved in this book has noticed instead the opposite. The opportunity to work collaboratively with providers outside our specialty, the quality of the tailored care we can provide patients through our centers, and the opportunity to see our patients happy with the care they receive – each of these factors is tremendously rewarding, before you get to the necessity of the actual care and style of care being provided.

No demographic utilizes healthcare resources less than men between the ages of 18 and 45; this statistic is often cited, but it truly illuminates the crux of what we are

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up against when we try to take care of men. Men simply do not want to go to the doctor. Whatever the predominant reason for this might be time constraints and busy professional lives (and yet somehow professional women find time to see their physicians) and sociologic programming asserting that men are tough and therefore shouldn't need help while ignoring the obvious observation that all men (all people, of course) get sick; whatever it may be, no matter what the reason, men benefit from seeing their doctor more than they currently do: for preventive care (smoking cessation, other cardiac prevention, screening for urologic and other cancers, suicide prevention, diet, exercise, and weight loss), for care of chronic issues (urinary issues, coronary artery disease, diabetes, hypertension, irritable bowel syndrome), and for acute care (orthopedic injury, post-even care for heart attack or stroke) – the list is almost endless. All of these topics have been covered by experts in this book. But most importantly, putting access to these types of care for patients in one setting ultimately makes it more likely that the patient will avail themselves of this resource and thereby stay healthier. The quality of the care and patient and physician satisfaction – yes all these things benefit in the multidisciplinary model, but you could be running the best multidisciplinary center in the world with high-quality care and an engaged and happy professional staff, and if you don't have any patients, your center isn't doing anybody any actual benefit.

Multidisciplinary care offers patients the opportunity to easily access their doctors through coordination of care, same-day add-on visits when needed, and streamlining of office logistics (easy sharing of charts, reports, results, etc.). This appeals to all patients, not just the busy professional. This appeal gets patients through the door. Of course, the quality of the care they receive is what will keep these patients coming back.

In this book, you will find expert opinion on cardiology, endocrinology, gastroenterology, dermatology, orthopedics, and urology. These expert authors can help you take steps toward the development of your own men's health center with a basis in the published data in terms of what conditions you can expect to treat and how best to treat them. Discussion of the role of the primary care provider as well as the nurse practitioner and physician assistant is found here as well. Algorithms for mental healthcare provided by the psychologist, psychiatrist, and other counselors are outlined. Finally, a discussion of the future of medicine and multidisciplinary care can be found within.

We hope this resource can help you in your men's health center to achieve the goal of providing the best care to your patients. It is through this effort that we aim to meet the public health challenge of making half of the population on the face of the earth live longer and healthier (in part by taking better care of themselves). We know you find this goal to be a valuable one as well; if you didn't, you wouldn't have picked up this book. Good luck! It is a worthy endeavor, and we are happy to help however we can.

Chapter 2

Urologic Disease in the Aging Male: A Look Across the Lifespan



Hunter Wessells

Introduction

Extending the longevity and quality of life of men is a primary function of a modern man's health center (MHC), through patient care, education, research, and outreach. While the most significant urological burden to a man's health comes in the years beyond 45, the importance of identifying health risks, and engaging men in their own health promotion, should begin decades earlier. The transition from parentally guided care under the supervision of a pediatrician to self-care poses an important initial point of exposure during adolescence and young adulthood. Others occur at predictable intervals based on the incidence and time to onset of a variety of conditions such as diabetes, obesity, heart disease, and various cancers. MHCs can be designed primarily to address *urological* problems or to provide men with broader services of health screening and/or health maintenance. Regardless of model, modern MHC's serve as platforms for *risk management* for men who, on their own, may manage risk poorly or well based on genetic, ethnic, racial, psychosocial, and environmental factors. Along with health risks, men's priorities evolve over the course of decades. The MHC can help men and their partner or families reduce the risks that men take in order to achieve better personal health outcomes.

It is instructional to review the CDC's Report ([1]; see Tables 2.1 and 2.2) outlining the leading causes of death across the age span. In younger patients, unintentional injuries and suicide predominate, whereas in older individuals other conditions come to the fore. Presenting urological symptoms of younger patients likely are not mechanistically linked to the most prevalent causes of death and disability. Thus, healthcare providers must actively engage younger men in an understanding of the

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Table 2.1 Leading causes of death in males, 2015. A: Ages 10–44

Top five causes of death in males ages 10–44					
Rank	Age 10–14	Age 15–19	Age 20–24	Age 25–34	Age 35–44
1	Unintentional injuries 28.0%	Unintentional injuries 38.1%	Unintentional injuries 42.3%	Unintentional injuries 41.0%	Unintentional injuries 27.5%
2	Suicide 14.1%	Suicide 21.4%	Suicide 18.6%	Suicide 15.4%	Heart disease 15.5%
3	Cancer 12.8%	Homicide 19.1%	Homicide 18.2%	Homicide 11.5%	Suicide 11.4%
4	Homicide 6.1%	Cancer 4.8%	Cancer 3.5%	Heart disease 6.4%	Cancer 10.2%
5	Birth defects 5.0%	Heart disease 2.8%	Heart disease 3.1%	Cancer 5.1%	Homicide 5.1%

Source: CDC. <https://www.cdc.gov/healthequity/lcod/men/2015/all-males/index.htm>

Table 2.2 Leading causes of death in males, 2015. B: Ages 45–84

Top five causes of death in males, ages 45 and older					
Rank	Age 45–54	Age 55–64	Age 65+	Age 65–74	Age 75–84
1	Heart disease 22.6%	Cancer 29.5%	Heart disease 26.7%	Cancer 32.0%	Cancer 25.2%
2	Cancer 20.1%	Heart disease 24.4%	Cancer 23.8%	Heart disease 24.2%	Heart disease 25.2%
3	Unintentional injuries 13.6%	Unintentional injuries 6.2%	Chronic lower respiratory diseases 6.5%	Chronic lower respiratory diseases 6.8%	Chronic lower respiratory diseases 7.3%
4	Suicide 6.1%	Chronic liver disease 4.2%	Stroke 5.1%	Diabetes 4.0%	Stroke 5.2%
5	Chronic liver disease 5.5%	Chronic lower respiratory diseases 4.1%	Alzheimer's disease 3.6%	Stroke 3.9%	Alzheimer's disease 3.4%

Source: CDC. <https://www.cdc.gov/healthequity/lcod/men/2015/all-males/index.htm>

relationship between presenting symptoms and overall health, and their role in self-care. *Per contra*, in older patients, presenting urological symptoms often are directly linked to the most prevalent health conditions, such as genitourinary cancers and urological complications of diabetes, obesity, and cardiovascular disease.

Constellations of symptoms, signs, and related health maintenance and health screening can thus be stratified by age, and these strata guided construction of the American Urological Association *Men's Health Checklist* [2]. The broad age categories chosen reflect peak incidences of common urological diseases. The AUA Checklist can serve as a framework for designing services, referral guidelines, and capabilities of an MHC; thus, in this chapter we organized an evidence-based overview of men's health priorities by the same age categories.

General Considerations

Men’s health centers provide urologic specific access and expertise in the care of urinary, sexual, and general medical conditions. Figure 2.1 represents graphically the range of problems that require urological expertise. Moving across the age spectrum, it is clear that medical knowledge and surgical expertise in congenitalism, reconstruction, andrology/infertility, urological oncology, and geriatric urology all contribute to optimal care of the aging male. At points along the lifespan, other determinants of health, including socioeconomic and biological factors, need to be considered. These may require specific infrastructure and resources, decisions on accessibility of care, advocacy for healthcare coverage for specific disorders such as ED and infertility, as well as depending on state and federal funding for the underserved which vary regionally within the United States.

Whether an MHC offers access to other specialists and resources within the center or accessed through other parts of a health system is beyond the scope of this chapter, and relates to financial models, space, collaborative environment, and other factors. Of paramount importance is that discoveries made in the MHC, whether they relate to congenital disorders, risk taking behavior, mental health, cancer, or

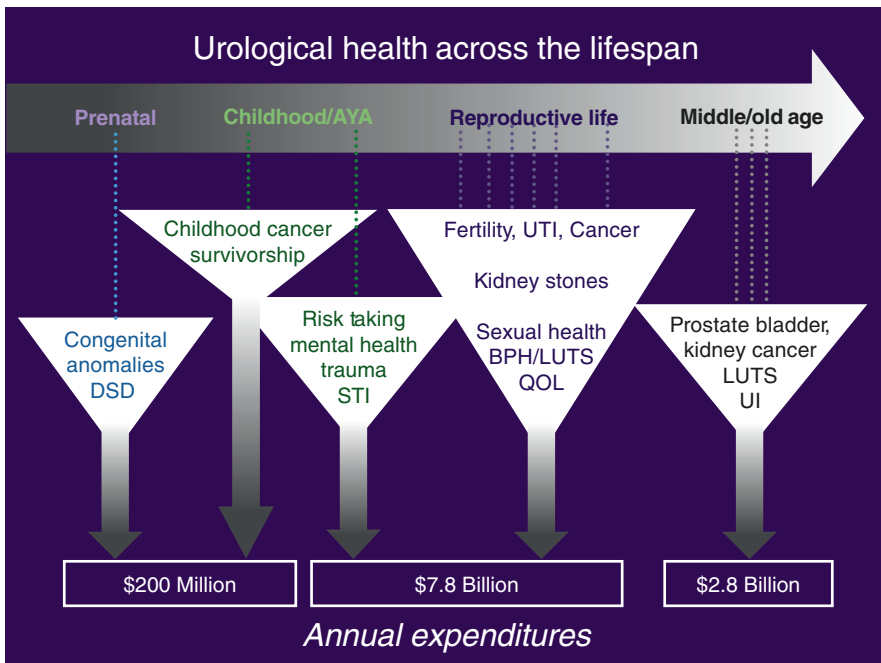


Fig. 2.1 Burden of urological diseases in men across the lifespan. (Adapted from data contained in NIH News Release May 1, 2007 <https://www.nih.gov/news-events/news-releases/urologic-diseases-cost-americans-11-billion-year>)

cardiovascular disease, are given thoughtful interface with other disciplines. The central role of a primary care provider for the patient cannot be overemphasized. Whether the men's health center will become a "medical home" or remain the domain of specialists will depend on many factors including the structure of health-care delivery and payment.

Adolescence and Young Adulthood (18–39 Years)

Urological disease management in younger men (18–39 years) has as an emphasis on the burden of inherited and congenital disorders; sexually transmitted infection; counseling regarding contraception; unintentional injury and its consequences; and urological disorders with peak incidence in young men (e.g., testis cancer). Drivers of unhealthy behaviors in this cohort include lack of health seeking behavior layered on top of poor decision making related to motor vehicle use, sexuality, sports, and recreational activities. Young men will typically use a MHC to seek care for a specific urological symptom or condition, which often stands in the way of goals related to relationships, family, and work. An example might be a man who presents with penile chordee or hypospadias as he considers marriage or starting a family. Any such visit should be leveraged to assess behaviors with long-term health consequences such as untreated mental health disorders; tobacco alcohol and substance use; and poor control of weight, diet, or exercise; and the resultant metabolic syndrome and obesity.

Injuries are the leading cause of death and disability in all men from adolescence through age 45. While rarely fatal, genitourinary trauma affects men twice as often as women and frequently represents a first interface with the healthcare system. The management of urotrauma has been codified in an AUA Guideline [3]. These individuals usually do not receive treatment in an MHC; nevertheless, several points bear noting. First, urologists can use these interactions as an opportunity to counsel about risk mitigation in motor vehicle driving (e.g., seatbelt and helmet use), extreme sports, and sexual activity which may result in a variety of injuries ranging from renal lacerations, bladder and urethral rupture, and penile fracture. Second, clinicians should anticipate the need for ancillary psychological, interpersonal, and/or reproductive counseling and therapy for patients with genital trauma when loss of sexual, urinary, and/or reproductive function is anticipated [4].

Sexually transmitted infections similarly provide an opportunity to assess associated bio-psychosocial determinants of the high-risk behavior. For specific literature on this topic, see Dariotis 2008 and Reidy 2008 [5, 6]. Symptoms leading to presentation with sexually transmitted infection (STI) include lower urinary tract symptoms, hematuria, urinary tract infection, dysuria, urethral discharge, decrease force of stream, scrotal swelling, and the like.

Reproductive health concerns drive care-seeking behavior for a number of complaints, including male factor infertility, androgen deficiency, undescended testis, testis mass, scrotal disorders, phimosis, congenital chordee, Peyronie's disease,

premature ejaculation, sexual dysfunction, and concerns about contraception, HIV infection, and sexually transmitted infection. Organic erectile dysfunction in this age range is rare, although increasingly it may be a consequence of obesity and metabolic disturbances. An emerging area of care improvement is the intersection of reproductive health and transgender care. Transgender patients seeking gender-affirming surgery from male to female and female to male each have specific needs including preservation of gametes, hormonal replacement, and gender-affirming surgery. An important resource is the World Professional Association for Transgender Health *Standards of Care for the Health of Transsexual, Transgender, and Gender Nonconforming People* [7].

Testicular cancer represents a unique diagnosis for which the modern MHC may serve as the best first point of contact. In addition to ready access to laboratory and radiology services needed prior to inguinal exploration, close association with a male fertility laboratory hard-wires timely assessment of semen quality, cryopreservation of sperm when indicated, and subsequent treatment of male factor infertility. Disparities in access to care across the United States reflect geographical, cultural, and fiscal barriers [8]. The services of an MHC thus align with the initial evaluation and management of testis mass as well as cancer survivorship needs, but may not be sufficient to address all the needs of complex cancer patients. A key responsibility of an MHC is to ensure availability of important downstream services, including urological, radiation, and medical oncology referral.

Middle Age (40–49 Years; 50–69 Years)

As men reach their 40s, the burden of disease related to unintentional injury and congenital conditions gives way to the impact of metabolic and cardiovascular disease and the rising prevalence of cancers. For an MHC-specific urological cancer detection and initial evaluation are added onto the cumulatively increasing rates of urolithiasis, infertility, organic erectile dysfunction, LUTS, and hypogonadism, which in this age range arise out of earlier periods of poor self-care, genetic predisposition, and concurrent diseases. Taken together, the greatest impact of a modern MHC may be in providing men the “No wrong door” point of entry into a healthcare system. In contrast to “Men’s Clinics” focused on Testosterone Replacement Therapy [9] and costly ED treatments, the MHC committed to health equity and a wholistic approach to improving health for men will make sure that the underlying disorders driving urological disease and symptoms are addressed. In the critical 40–49 age range, secondary prevention and intervention strategies still have a chance to mitigate some of the risk of the many “benign” urological conditions listed above. In contrast, when these conditions present in older individuals, treatment of symptoms is.

Appropriate cancer screening, based on specialty society guidelines and US Public Health Task Force recommendations synthesize the best available evidence to inform high value decisions about healthcare. Table 2.3 links existing guidelines

Table 2.3 High-priority urological conditions affecting men and relevant American Urological Association Guidelines

Priority condition ^a	AUA guideline (date of guideline/update)
Developmental anomalies	Cryptorchidism 2014
Reproductive health and infertility	Testosterone Deficiency 2018; Vasectomy 2012/2015; Evaluation of the Infertile Male (BPS); Management of the Azoospermic Male (BPS)
Nephrolithiasis	Medical 2014; Surgical 2016
Urinary symptoms	BPH/LUTS 2018; Urethral Stricture 2016
Sexual dysfunction	Erectile dysfunction 2018; Peyronie's Disease 2015; Priapism 2003/2010; Premature Ejaculation 2004/2010
Renal cell cancer	Renal Mass and Localized RC 2017
CPPS/IC PBS	IC/PBS 2011/2014
Prostate cancer	Early Detection 2013/2018; Clinically Localized 2017
Bladder cancer	Asymptomatic Microhematuria 2012/2016

BPS best practice statement, *CPPS* chronic pelvic pain syndrome, *IC PBS* interstitial cystitis/painful bladder syndrome

^aPriority areas as defined by the National Urology Research Agenda [15, 16]

created by the AUA to some high-priority men's urological conditions across the age spectrum. Interestingly, the subspecialization of urology into oncology-only surgical practices means that in integrated health systems and academic centers, counseling regarding PSA testing, evaluation of elevated PSA, and work-up of microhematuria will fall to urologists outside of cancer centers; the properly resourced MHC can easily incorporate these diagnoses into its workflow and use the opportunity to assess all aspects of a man's urological health.

MHCs contribute to improving outcomes for male urological cancer patients through the alleviation of side effects of treatment. Traditionally, urologists have managed the side effects of radiation therapy and radical pelvic surgery including urinary obstruction (e.g., stricture), ED, and urinary incontinence. An expanded role for the MHC can be to create pathways that include an initial visit prior to cancer treatment along with standardized intervention schedules early after.

Diabetes and the metabolic syndrome have long been linked to sexual and voiding dysfunctions. The identification of modifiable risk factors associated with ED and LUTS in men, such as glycemic control, blood pressure, smoking, diet, and exercise, represent the "tip of the iceberg" in terms of intervention opportunities. Another emerging area of overlap between the metabolic syndrome and urologic disease relates to urinary stone disease. Growing evidence supports the relationship between cardiovascular risk factors including body mass index, blood pressure, and overt cardiovascular disease with the risk of urolithiasis. For the time being, however, high-level evidence to support specific strategies is still lacking.

Another condition that crosses these age ranges is genitourinary pain syndromes including chronic prostatitis, chronic pelvic pain syndrome, and less commonly painful bladder syndrome/interstitial cystitis. The potential overlap and interplay of

these chronic conditions with BPH/LUTS on the one hand, and other health conditions such as varicocele, hernia, and spermatocele make the MHC an appropriate environment for coordination of care and maximizing effectiveness of treatments for each symptom complex.

The relationship between urologic conditions such as infertility, erectile dysfunction, and hypogonadism with other significant health conditions including cardiovascular disease, urologic and other cancers, diabetes, and the metabolic syndrome point to the value in having a matrixed approach to men's health.

Older Age (70 Years and Over)

The accumulating burden of urological diseases seen as men exceed 70 years of age is significant: (ED 77%; LUTS 80%; prostate cancer 50%) and poses a challenge to the MHC [10–13]. Living with chronic diseases and mitigating bother and impact may take a front seat to definitive treatment or “cure” of symptoms accompany shifts of patient priorities and goals of health care. MHC can play an important role in maintaining quality of life, and physical functioning, in the face of cancer treatment, highly prevalent urological conditions, and the complications of diabetes and heart disease.

Individualized approach based on patient goals are critical to properly prioritize expectations around sexual function, urinary symptomatology, continued increasing burden of cancer diagnosis, and competing medical conditions. The benefits of screening against the side effects and cost of treatment must be balanced; for example, routine screening for androgen deficiency is no longer needed and may lead to unnecessary use of testosterone, similarly, the use of PSA screening for prostate cancer beyond age 70 must be balanced against life expectancy. Extensive evaluation of sexual dysfunction for reversible causes is no longer be relevant; goal-oriented approaches should be predominant for many of the men's health conditions including BPH, genital urinary pain, sexual dysfunction, and the like.

Infrastructure

A number of factors will determine the setting, equipment, and staffing needs of Men's Health Centers including target population, diagnoses, financial resources, and healthcare providers available to serve patients. The broad age spectrum defined in Fig. 2.1 and the AUA Checklist offers a model in which a MHC can serve as a resource to a larger more diverse male population in an integrated system, but will require significant investment in equipment and services to optimally serve patients, although these need not all be housed in the MHC.

Minimum necessary resources to assess common men's health conditions include a range of patient-reported measures of lower urinary tract and sexual symptoms;

clinical laboratory facilities for urinalysis and urine testing for STI; assays of total testosterone that meet CDC Hormone Standardization criteria [14]; semen analysis; and PSA testing. Equipment and facilities required to address cancer detection and diagnosis, care of male patients undergoing cytotoxic chemotherapy, and complex in-office assisted reproductive technology include high-resolution ultrasonography and relevant probes; prostate needle biopsy devices; flexible and/or rigid cystoscopes; surgical instruments and procedure rooms suitable (covered extensively in other chapters). Equally important is the range of staff to address a range of issues including but not limited to: sexual therapists and other psychological counseling services to support men and couples; sperm cryopreservation facilities; genetic counseling for infertility and cancer risk assessment; and last but not least financial counselors to help patients navigate insurance coverage and planning for uncovered diagnoses.

Conclusions

The burden of disease from genitourinary disease changes significantly across the lifespan, and men's health care providers and MHC's need to develop a patient-oriented and personalized approach across all ages. Adolescent and young adults have different priorities and manage risk very differently. Often, the first point of contact is when the risk has already been taken, the problem already exists, and the opportunity is one to treat symptoms, educate, and mitigate risk. As men age, the risks and priorities change such that they are more likely to engage actively in health maintenance and health screening. This is the "sweet spot" for the modern Men's Health Center in terms of contributing to prevention, early detection and interventions to address a long list of highly prevalent conditions. At the end of the lifespan, there must be another transition away from expectations of cure and completely normal function. Instead, symptom improvement and maintenance of quality of life must be primarily sought.

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Chapter 3

Approach to Primary Care of the Male Patient



Steven Lamm and Kenneth Brill

Traditionally, primary care has been charged with several core tasks. These include the prevention, early diagnosis, and management of a wide variety of conditions. In the following chapter, a number of different topics will be covered. Each of these will be discussed in greater detail elsewhere in this book, but the focus of this chapter will be on prevention and screening from the primary care perspective. Over the years, the methods by which this has been accomplished has changed dramatically, but the tasks have not. The goal of these duties, together, is to improve our patients' quality of life, wellness, and longevity. It has long been thought that wellness was the absence of disease, but recently this attitude has been shifting. More considerations are being made for patients' quality of life and their personal, individualized goals as they progress through different stages of their life. In recent years, the field of primary care has undergone some of its most stark changes, bringing about a new area of primary care. Challenges that face the field today include engaging patients in shared decision-making processes. In the past, the physician would make recommendations to all of their patients with less regard for the individual situations, but now the attention has been turned to a patient-centered approach. Gone are the days of a "one size fits all" approach to medicine, and this landscape is set to change even more dramatically in the future.

A growing area of medicine is the role of genomics and big data. Our ability to collect and analyze a large amount of genetic data for our patients has expanded exponentially since the laborious days of the Human Genome Project, and now patients are even able to acquire their own genetic information through at-home kits

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such as 23andMe and Ancestry. With the advent of these advanced genomic technologies, medicine will be thrust toward a focus on personalized medicine. Each patient will be able to have their specific genetic information analyzed and have prevention, screening, and treatment protocols designed specifically to suit them. As this ability expands, primary care physicians will be expected to keep up with the demands of their patients and will have to adapt to the rapidly changing landscape. Adding to the complexity of this new approach, medical management of patients will have to be personalized to consider more than a person's genes. Already there are some considerations being made with respect to a patient's socioeconomic status, but the relevance of this will be amplified as our ability to personalize our approach expands. Also, taking a patient's educational level into account and designing a management plan suited to them may help improve patient understanding, compliance, and satisfaction with their care, thus making the achievement of the goals of primary care that much simpler.

A common concern people have is how long they can expect to live and how long they can expect to live in good health. In fact, tremendous amounts of time, money, and effort are poured into attempting to answer these questions. Measures of the progress made in medicine are related as improvements in life expectancy, and that statistic is used as the water mark for how well or poorly a nation is doing at providing for their citizen's health. In recent news, the gaps between life expectancy in the United States and other developed nations have been reported as efforts to expand access in the United States gain popular support. Additionally, the disparity in life expectancy between the United States and other countries is being co-opted as proof of the effectiveness of socialized medical care. The longevity gap between people of different races and socioeconomic status within the United States has also received attention in the debate about improving healthcare in this country, with a large number of studies being conducted to attempt to explain these differences.

A longevity gap of another kind, however, has not received as much mainstream coverage as the previously mentioned disparities: life expectancy at birth between men and women. It is common knowledge that men tend to live shorter lives than women, though very little public attention has been aimed at questioning or understanding this gap in longevity. According to the National Vital Statistics Systems compiled by the National Center for Health Statistics in 2016, the average life expectancy at birth in 2016 was 78.6 years across all races, genders, and ethnicities [1]. However, when this is broken down by gender, the average life expectancy for men of all races and ethnicities is 76.1 years and 81.1 years for women, a difference of 5 years. If the life expectancy at 65 is considered, men still fall short of women: the same study reports a life expectancy of 18.0 years for men at age 65 and 20.6 years for women, more than 2 years sooner [1]. Clearly, this demonstrates that not only are there differences in the expected longevity of men and women but that at least some of these mortality risks persist throughout a man's life.

A review published in the *International Journal of Clinical Practice* in 2010 summarized many of the differences in disease prevalence and outcome in men and women. For the top 15 leading causes of death in 2010, men had a higher mortality rate in 12 out of 15, with five of these having a mortality risk more than twice as

high for men. The largest gap in mortality was suicide, with men being four times as more likely to die by suicide than women [2]. When considering the prevalence of coronary heart disease, men have higher rates of disease than women at all ages over 60 and are significantly more likely to be diagnosed with a myocardial infarction for all ages before 75 [2]. Type 2 diabetes mellitus has become an increasingly important and common disease in recent years, with the rate of disease rising steadily since the early 1990s. However, the rates of disease among men have been rising more quickly than women, resulting in an ever-widening gap in the rates of DM2 between the genders [2]. Stepping away from cardiovascular health and risk factors, differences in mortality have been observed for cancer as well. Men have higher rates of lung cancer than women, which somewhat explains the differences in all cancer mortality. However, men have higher mortality rates for some of the most common causes of cancer death, including pancreatic cancer, leukemia, non-Hodgkin lymphoma, and liver and intrahepatic bile duct cancers [2].

This longevity gap, often, is taken for granted as a fact of life. It is likely that very few people would be surprised to know that men have a shorter life expectancy than women, but it is unlikely that most people understand how little is sure about the cause of this. The exact reasons for this gap are quite controversial. Arguments have been made that it is the Y chromosome itself that poses a threat to male mortality. Others have done experiments demonstrating negative physiologic effects of testosterone and numerous protective effects of estrogen, most notably with relation to cardiovascular health. Some studies have suggested that behavioral, environmental, and risk-taking differences between men and women account for a large portion of this decreased longevity. References to some such investigations can be found at the end of this chapter [3–7]. What is clear, however, is that being male makes a person inherently different and that whatever these differences are puts men at a high risk for early mortality. It could be argued that these increased risks together mark men as an endangered species, and attention must be turned to providing high-quality primary care to this enormous segment of the population.

From the above discussion, it is clear that the longevity gap between men and women is multifaceted, and no single factor can explain the difference between the sexes. In addition, more work must be done to fully understand the modifiable and unmodifiable factors that affect life expectancy and the sex difference in mortality. More attention should be turned to explaining and addressing this longevity gap between men and women, and primary care focused on issues related to men's health is a growing area of importance. As personalized and precision medicine rises to the forefront of healthcare, these issues will become more pressing as we search for ways to help male patients live longer, healthier lives. Wellness and primary prevention are also becoming more of a focus for primary care, and an increased understanding of the factors affecting men's health will be essential in providing care for male patients. Until personalized medicine becomes more robust, we have rigorously established guidelines for the prevention, screening, and diagnosis of some of our most common diseases, including cardiovascular disease and cancer (Table 3.1). In addition, more attention in recent years has been aimed at understanding and managing mental health in men, as well as sexually transmitted

Table 3.1 Screening recommendations by decade of life

Decade	Strong recommendations	Risk-based recommendations	Controversial recommendations	Discontinue screening
20–29	Blood lipids – <i>every 5 years, 3 years for abnormal</i> Blood pressure – <i>annually</i> Depression – <i>every visit</i> Alcohol/tobacco use – <i>every visit</i> HIV – <i>once, annually for high risk</i>			
30–39	Blood lipids – <i>every 5 years, 3 years for abnormal</i> Blood pressure – <i>annually</i> Depression – <i>every visit</i> Alcohol/tobacco use – <i>every visit</i> HIV – <i>once, annually for high risk</i>			
40–49	Blood lipids – <i>every 5 years, 3 years for abnormal</i> Blood pressure – <i>annually</i> Depression – <i>every visit</i> Alcohol/tobacco use – <i>every visit</i> HIV – <i>once, annually for high risk</i>	CAC score Colon cancer – <i>every 10 years</i>		
50–59	Blood lipids – <i>every 5 years, 3 years for abnormal</i> Blood pressure – <i>annually</i> Depression – <i>every visit</i> Alcohol/tobacco use – <i>every visit</i> HIV – <i>once, annually for high risk</i> Colon cancer – <i>every 10 years</i>	CAC score Lung cancer – <i>annually</i>	PSA – <i>every 2–4 years, at age 55</i>	
60–69	Blood lipids – <i>every 5 years, 3 years for abnormal</i> Blood pressure – <i>annually</i> Depression – <i>every visit</i> Alcohol/tobacco use – <i>every visit</i> HIV – <i>once, annually for high risk</i> Colon cancer – <i>every 10 years</i>	Lung cancer – <i>annually</i>	PSA – <i>every 2–4 years</i>	CAC score
70–79	Blood pressure – <i>annually</i> Depression – <i>every visit</i> Alcohol/tobacco use – <i>every visit</i> Colon cancer – <i>every 10 years</i>	Lung cancer – <i>annually</i>		Blood lipids, HIV (age 75), PSA
80–89	Blood pressure – <i>annually</i> Depression – <i>every visit</i> Alcohol/tobacco use – <i>every visit</i>			Colon cancer (age 85)