

Preface

We are entering a remarkable time in medicine. In the USA and other countries, preventive medicine and public health efforts have successfully increased life expectancy substantially; concurrently, the demographics of the post-World War II population tells us that the over-50 population will dramatically increase over the next two decades. As prostate cancer is distinctly age-related, we can anticipate a tsunami-like increase in the numbers of patients with this disease. How will we respond to this challenge over the next two decades?

Between the early 1900s and the mid-1980s, about the only strategy against this disease was a digital rectal examination (DRE) with the goal of early detection and treatment; if the disease was detected late, hormonal therapy was the mainstay of therapy. Unfortunately, systematic analyses of DRE as a screening tool found that the majority of cases detected were incurable by the time the tumor was palpable. In the case of hormonal therapy for advanced disease, 60 years after its discovery, average survival remains only about 2–3 years.

With the discovery of PSA, a remarkable marker of prostate cancer risk, and with a national enthusiastic embrace of this test, the entire approach to this disease changed. The number of diagnosed prostate cancers more than doubled and the majority of tumors detected were organ-confined and probably cured. A man's lifetime risk of prostate cancer diagnosis more than doubled from 8% in the early 1980s to almost 18% today.

When PSA first began to be used for screening in the early to mid-1980s, screening was a simple matter for the patient and doctor: If his PSA was above 4.0 ng/mL, it was *abnormal* and a biopsy was recommended. If it was below 4.0 ng/mL, it was *normal* and he was reassured that all was well.

We now know that this concept is not correct and that evaluating a man's risk of prostate cancer is considerably more complex. PSA is not *abnormal* or *normal* but reflects a range of risk with each increase in level associated with an increased level of risk. We know that a PSA value in one person with few other risk factors of prostate cancer means something completely different than the same PSA value in another man who has other risk factors that increase his risk of cancer. Clinicians can no longer say "your PSA is normal" but instead must understand how to integrate other measures of risk as well as understand when to request other screening tests. They must also understand how to explain these risks to their patients who have been accustomed to 20 years of normal/abnormal readings on their PSA slips.

Concurrent with our understanding of this has been the explosion of new biomarkers and biomeasures of prostate cancer. We discriminate between the two terms, understanding that a "biomarker" may be the measured value of a substance in a bodily fluid or other biologic sample while a "biomeasure" could include body mass index, number of affected male relatives with prostate cancer, or other observed and quantifiable values. Biomarker and biomeasure discovery has rapidly emerged as one of the primary focus areas in prostate cancer screening, with the hope of significantly improving benefits of

screening through more accurate diagnosis. The translational endeavors, however, bring significant technologic, statistical methodologic, and clinical challenges.

This book incorporates a series of thoughtful and cutting-edge works from the world's experts in prostate cancer screening, ranging from the current status quo of prostate cancer screening across the globe, consensus on optimal utilization of the traditional PSA and DRE tests, cutting-edge research in new biomarkers, biomeasures and extended risk algorithms for prostate cancer, and last but not least, coverage of large ongoing international prevention and screening trials that aim to reduce prostate cancer mortality. The information will be helpful not only to the clinician who is faced with explaining risk to the patient but also to the researcher who is developing new biomarkers, to the public health and policy decision-maker who is determining how screening should be implemented, as well as to current and future members of the biomarker industry who seek methods to better develop and support markers and measures of prostate cancer.

We are indebted to our colleagues around the world who have contributed their time to this wonderful text. These are the scientists who have made and will continue to make discoveries that will impact the lives of hundreds of millions of men worldwide as they face the most common cancer in men – cancer of the prostate.



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