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EDITORIAL

CRC Screening, Past, Present, and Future: A Tribute to Emmet Keeffe

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Editors' Introduction

The stunning improvements in cancer survival over the past few decades represent triumphs of modern medicine. Colorectal cancer (CRC), which is included in the top three most prevalent cancers worldwide, is no exception, with declining incidence and improved survival extending from before the 1970s in economically developed countries, most pronounced in the USA [1]. The exciting and unique story with CRC for our profession is that much of these declines can be attributed to the interventions conducted by gastroenterologists and related specialists particularly since the 1990s, when screening colonoscopy first gained traction. The widespread adoption of this screening modality represents a victory for preventative medicine and a boon for our profession. This, of course comes at a price, since colonoscopy, at least the way it is practiced in the USA, is a costly, time-consuming, and—at least in its preparation—uncomfortable. Therefore, the search for new stool- and blood-based CRC screening tests is intense, as is desire to understand CRC pathophysiology, as described later in the Special Issue.

As Editor-in-Chief (J.D.K.), it is my distinct pleasure to introduce this Special Issue of *Digestive Diseases and Sciences*, edited by two consummate, world-renowned experts in the field, Dennis Ahnen and Bob Bresalier. I believe this issue is a high point in the CRC screening literature, representing the most comprehensive and detailed coverage of the topic ever compiled. It is a tribute to the editors that the quality and expertise of each review is in the first rank, due to the considerable expertise, knowledge, and experience of the contributing authors. As such, this Special Issue will serve as a longstanding reference for any scholar desirous of the most accurate and detailed information regarding any aspect of CRC screening, for epidemiology, molecular pathogenesis, treatment of special screening populations and modalities, and many more topics.

I would like to close by adding to the chorus of well wishers to acknowledge the overriding inspiration of Emmet Keeffe, whose influence still pervades the journal, partly by the skilled assistance of our Managing Editor Meghan Keeffe, and also in our Associate Editors and Editorial Board, many of whom he invited to these positions. According to Dennis and Bob, it was Emmet's lingering influence that convinced so many prospective authors to accept their invitations to contribute to the Special Issue. Although I am sorry that I did not get to know Emmet better, since our acquaintance was relatively brief, I was deeply touched by his beneficence, wit, intellect, and sterling character. I owe him an eternal debt of

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gratitude by inviting me to join the DDS family. I urge our readers to remember Emmet and his many accomplishments while reading our Special Issue.

As Guest Editors (D.J.A., R.S.B.), it is our treat to be able to present this Special Issue of *Digestive Diseases and Sciences* devoted to CRC screening in conjunction with March Colon Cancer Awareness month. The motivation for this effort was multifaceted: the importance of the topic, the large amount of new information relevant to CRC screening strategies and a desire to pay a tribute to a dear friend and colleague Emmet Keefe who was the editor of *Digestive Diseases and Sciences* at the time of his unexpected death.

The approach to putting together this Special Issue was guided by a desire to do more than merely review the literature. We wanted not only to cover the basics of CRC screening but to look back at how we got to where we are today, to discuss the latest advances in the numerous screening options, to consider screening in the context of special populations and in light of recent advances in the pathology, molecular biology and epidemiology of the disease and the evolving healthcare funding structure. We recruited authors who are not only experts in their fields but active investigators and in many cases strong advocates for their field of research. We hoped that this approach would enable the reader to understand the breadth of the opportunities as well as the controversies surrounding CRC screening.

We cannot offer adequate thanks to the authors who have contributed to this issue. This group of investigators collectively has been involved in almost all of the major advances in CRC screening strategies over the last 50 years, and they have provided their individual insights into the past, present, and future of CRC screening. Emmet Keeffe's memory was a decisive factor in the authors' willingness to join this effort. Many of the authors knew Emmet as a colleague, a friend, a scholar, and/or an admired leader of our profession. As so eloquently described in David Lieberman's tribute [2], Emmet Keeffe contributed greatly to our profession and to our education throughout his career and this Special Issue, and indeed the journal itself is part of his ongoing legacy.

We are confident Emmet would be pleased with this Special Issue and would likely have asked… where do we go from here or what are the immediate and long-term challenges? As such we have asked Bernard Levin, another internationally renowned expert in this field to address this question.

The Immediate Challenge: Disparities in the USA and Around the World

One of the main features of the Special Issue is addressing screening methods and outcomes in special populations. As an investigator who has devoted my career to CRC screening and prevention (B.L.), it is gratifying that the specific considerations associated with these special populations can be consolidated into numerous scholarly reviews presented in one volume. Of particular concern are the issues associated with differential screening rates and outcomes between affluent and economically challenged populations, as occurs in the USA. Furthermore, the rapidly increasing CRC incidence in the developing world places an enormous stress on often-underfunded healthcare systems.

Disparities in CRC screening are widespread in the USA. In a recent study, Jemal et al. [3] observed that compared with those with the most education, those with the least education (as a measure of socioeconomic status) had significantly higher death rates from CRC in almost all states for each racial/ethnic group. In 2010, the CRC screening rate among uninsured Americans was 19 % compared with 62 % for those with private insurance coverage. Uninsured patients were twice as likely to present with stage III or IV disease compared with those with private insurance. A reduced likelihood of a physician recommendation for screening, poor availability of screening services, and lack of compliance with physician recommendation all contributed to low screening rates in underserved populations. Overall, half the premature deaths from CRC would have been avoided if everyone had experienced the lowest death rates of the most educated whites. After controlling for education, blacks did worse; the age-adjusted death rate for whites with $\leq$12 years of education was 11.3 per 100,000, compared with 16.7 per 100,000 for blacks [4]. The impact of these disparities was especially notable in southern states in the USA.

Even in advance of the likely beneficial impact of the Affordable Care Act on the availability of CRC screening, New York City and Delaware have eliminated racial/ethnic disparities in screening through highly coordinated public outreach programs, open colonoscopy (NYC), and patient navigators. The National Colorectal Cancer Roundtable (a partnership of the American Cancer Society and the CDC with a membership of over 80 organizations) has set the goal of an 80 % screening rate for CRC in the USA by 2018. To achieve this goal, it will be necessary to combine the resources of public, private, and voluntary organizations to provide medical and nursing personnel, community health centers, and health systems with the ability to deliver coordinated, high-quality colon cancer screening and follow up care to all populations.

This Special Issue has focused on screening in highly developed, high-resource countries. But, almost half of the 1.4 million CRCs that occur in the world occur in underdeveloped, low-resource countries [4], where development of CRC screening programs is particularly difficult

for at least two main reasons: (1) The incidence of CRC is generally lower in low-resource countries so other health issues may be more pressing than CRC prevention and (2) there is often limited endoscopic availability and healthcare resources to devote to CRC screening. The World Gastroenterology Organization has proposed a cascade of CRC screening options based on the availability of resources around the world [5] and is actively engaged in many countries to promote affordable screening options and provide training in endoscopic skills in low-resource countries. Furthermore, as will be outlined in several of the reviews, emerging low-cost screening methods offer much promise to counter the rise of CRC in much of the world.

Addressing such disparities locally and worldwide is an effort Emmet would have surely endorsed along with us.

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