MANAGING TECHNOLOGY IN HEALTHCARE

MANAGEMENT OF MEDICAL TECHNOLOGY

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MANAGING TECHNOLOGY IN HEALTHCARE

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DEDICATION

To our parents:

Mrs. Chaya Geisler and the late Mordechai Geisler

and

Mrs. Tovi and Dr. Micha Heller

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INTRODUCTION

Eliezer Geisler and Ori Heller

It has become an accepted fact that technology plays a critical role in the management of health care systems, delivery and organizations. There is a growing crop of academic studies and practitioner anecdotal histories on the various attributes and behavior of management of technology in health care. In these times when health care is brought to the fore of the national agenda, it is highly important to systematically collect relevant knowledge in this area. This book is intended to introduce the reader to illustrative reports of studies, explorations, and policy statements in the management of technology in health care.

This book is the product of a unique association between a physician and a behavioral scientist, both with intense interest in managing technology. This book evolved as part of a program devised by the editors to foster the interdisciplinary field of managing technology in health care by promoting a bridge between R&D/technology and health care management scholars and practitioners. The book is an addition to academic publications, special issues, and potentially an independent scholarly journal. The key motivation behind the book was to provide exposure to varied publics of the exciting and innovative explorations that are occurring at the interface between technology management and health care management.

Clearly, no single book is able to satisfactorily expose the growing activity at the said interface. We hope that this will be a leading volume in a future string of such books on this and related topics. Also, we hope that this book will generate interest in the topic and will contribute to the acceleration of academic, as well as practitioner-oriented, studies and publications.

The complexity of the health care environment and the difficulties in managing technology in general (and in health care in particular) make this book a landmark attempt to create in-roads in a hitherto largely uncharted territory. The chapters in this book are merely representatives of the vast horizons that are open for scholarly pursuit in this area.

This book has two main objectives. First, to provide the reader with an overview of the main issues of concern and the topics of study in managing technology in health care. Second, to offer the reader specific knowledge embedded in the eleven chapters of the book, covering a broad range of topics of interest to health care and to R&D/technology scholars and practitioners.

THE AUDIENCES

Since the book addresses the bridge between two disciplines, it may prove useful to several audiences. First, scholars in the area of health care management will benefit from the book as it introduces the role that managing technology plays in their area of interest. Second, scholars and students of R&D/technology management will benefit from the book because it exposes them to a new area of application. Third, scholars who study management of service organizations will find this book useful as it relates to a major area of the service economy.

Practitioners will also find this book of acute interest. A fourth audience is managers of health care organizations, systems, hospitals, medical centers, and teaching hospitals. They will find the chapters in this book an intriguing and exciting addition to their daily struggle with technology and its impacts. Fifth, managers in the medical supply industry, such as equipment, pharmaceuticals, instruments and disposables. These managers and their companies are an integral part of the technological component of the modern health care organization. Finally, this book will appeal to policy makers in the broad area of health care at the municipal, state, and federal levels. These executives will find the book to be a useful tool in sharpening their ideas and in fortifying the concepts and methods of technology management in health care.

THE CONTENTS

This book is structured in three parts. The first part includes three chapters and discusses the role of technology and the management of technology (MOT) in the health care environment.

The first chapter by Geisler and Heller introduces the reader to the concepts and definitions of MOT in health care. The authors present a matrix relating the five categories of technology in health care to the task of technology management. This matrix allows for an initial taxonomy of management of technology in health care.

The second chapter by Ron Lachman examines the effects of long-linked versus intensive forms of technology on the performance of health care clinics. The author concludes that patent involvement (high in the intensive form) is the key factor that explains the differences.

Chapter three by James Goes evaluates the influence of competitive and collective strategies on innovation in hospitals. The conclusion favors collective strategies as enhancers of the hospitals' understanding of environmental trends and

access to external resources. The authors suggests that this study provides "some of the first empirical evidence that collective strategies actually enhance innovation."

The second part includes four chapters and is concerned with organizational and economic evaluations of technology and its management in health care organizations. In chapter four, Birch and Gafni assess the use of cost-effectiveness analysis and cost utility analysis in resources allocation in health care. They conclude that these methods fail to address the technical or allocative efficiency questions. In a seminal approach, they offer other methods which are derived from economic principles.

A different approach is offered by Chris Brown Mahoney in chapter five, where she analyzes the economic implications of different pacemaker technologies. She proposes the inclusion of such economic analysis into the decisions to select and to adopt treatment modes.

In chapter six, Reisman's contribution is in the development of a taxonomy of health care settings with technological components. This is a powerful organizational tool which also includes subfields of the area of management of technology, and operations research methodologies that have been applied in health care environments.

Finally, in this part, Ann Greer reports the results from 25 community hospitals which suggested that "advanced technological profile was essential to hospital survival and that cost saving could not be at the cost of a hospital's technical profile and image." This chapter offers some innovative in-roads into the analysis of the relation between management of technology and strategic changes in the management of hospitals and medical centers.

The third part includes four chapters that describe management practice in the management of technology in the health care sector. Chapter eight by Ahlstrum and Garud explores factors that influence and determine renal treatment practices in the U.S., as an example of the preference given by American physicians to technology-intensive treatments at the expense of other treatment modalities. They expose their powerful arguments in an evocative style and with crisp reasoning.

Chapter nine, by Roth and Johnson, addresses the very relevant and current issue of re-engineering of technological processes in hospitals. They offer an excellent case for recasting the role of technology for strategic capabilities, thus showing in a sample of 65 hospitals that re-engineering in health care has a long way to go before it is adequately practiced. The implications of this chapter for academics and health care managers are far-reaching and very challenging.

John Friar, in chapter ten, uses the analysis of fifty years of development and use of ultrasound diagnostics as a case in point in his claim that new technologies should not be restricted to preapproved uses. This chapter is likely to generate much discussion, in view of the strong arguments Friar advances, and the far-reaching implications for the approval of medical technologies by regulatory agencies.

The final chapter, eleven, is by Stuart Schweitzer and also addresses approval of new pharmaceuticals. He compares approval patterns between the

United States and France, and suggests that the approval process in both countries might be shortened.

The eleven chapters constitute a varied look at managing technology in health care. They address several issues of current concern, such as the economics, organization and re-engineering of technology and technological processes in health care organizations. We have tried to provide in this book a balance between theory and practice, and between normative and descriptive chapters.

As we said above, one volume cannot capture the variety and the complexity of this interdisciplinary field. It is our hope that this book will be a pioneer in a long chain of other forthcoming works on managing technology in health care.

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