



Mercè Casas Miriam M. Wiley (Eds.)

Diagnosis Related Groups in Europe

Uses and Perspectives

With a Foreword by Robert B. Fetter

With 27 Figures

Springer-Verlag

Berlin Heidelberg New York

London Paris Tokyo

Hong Kong Barcelona

Budapest

Dr. med. MERCÈ CASAS
IASIST S. A.
Rambla de Catalunya 1,5°-2

08007 Barcelona
Spain

Dr. MIRIAM M. WILEY
Economic and Social Research Institute
4, Burlington Road

Dublin 4
Ireland

ISBN-13: 978-3-540-57168-1 e-ISBN-13: 978-3-642-78472-9
DOI: 10.1007/978-3-642-78472-9

Library of Congress Cataloging-in-Publication Data. Diagnosis related groups in Europe : uses and perspectives / M. Casas, M.M. Wiley ; with a Foreword by R.B. Fetter. p. cm.

1. Diagnosis related groups-Europe. 2. Hospitals-Europe-Finance. I. Casas, M. (Mercè), 1954-. II. Wiley, Miriam M. [DNLM: 1. Diagnosis-Related Groups-trends-Europe. 2. Diagnosis-Related Groups-utilization-Europe. 3. Economics, Hospital-Europe. WX 157 D5366 1993] RA971.D53 1993 338.4'33621'1094-dc20

This work is subject to copyright. All rights are reserved, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilm or in other way, and storage in data banks. Duplication of this publication or parts thereof is permitted only under the provisions of the German Copyright Law of September 9, 1965, in its current version, and permission for use must always be obtained from Springer-Verlag. Violations are liable for prosecution under the German Copyright Law.

© Springer-Verlag Berlin Heidelberg 1993

The use of general descriptive names, registered names, trademarks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

Product liability: The publishers cannot guarantee the accuracy of any information about dosage and application contained in this book. In every individual case the user must check such information by consulting the relevant literature.

Data conversion by: U. Kunkel, Reichartshausen
19/3130-5 4 3 2 1 0 - Printed on acid-free paper

Foreword

When John Thompson and I first began talking about finding a way to measure and cost the output of hospitals in the 1960s, we really had no concept of the need for this kind of result. In fact, if we had listened to others in the health services research community, we would never have begun or persisted in the task. But it seemed important to us to begin to understand what up until then seemed unexplainable – the rather strange cost behavior of hospitals. We had the benefit of Professor Martin Feldstein's observation that case-mix was certainly an important factor, but we had literally no guidance on how to make some sense out of the very large number of illnesses that beset the human race, and the very large number of different processes that obtain in our hospitals as they attempt to cope with those illnesses. We were fortunate to find a small number of curious and capable graduate students to join us in this effort, for without them we would not have had a chance of success. While many contributed to the ultimate outcome, it is important to single out Ronald E. Mills, Richard F. Averill, Youngsoo Shin, and Jean L. Freeman for their efforts over many years.

The diagnosis-related groups (DRGs) constitute a way of identifying the normal output of hospitals in a consistent and exhaustive manner. They are consistent in that the variables used are reliable and objectively defined regardless of the setting, and exhaustive in that every record finds its way to a DRG. This does not mean that every discharged patient belongs to one of these groups. For the main value of the system lies in allowing one to distinguish in each group the normal members and those that do not fit the pattern. Thus, in the parlance of quality control, one is able to separate that output which conforms to expectations for the class from those that do not – the “defectives”. By setting standards for these non-normal results, a hospital can judge its performance in a reliable, consistent and comparative manner. And this is the major purpose of the “DRG approach”.

The spread of DRGs as a basis, in the main, for the financing of hospitals in many countries is a gratifying development. But those of us who were involved in their development would like to see uses beyond simply financial allocations to hospitals. The major uses should be in cost and quality control with respect to hospital performance. Here we need to develop new approaches not only in accounting for the expenditures of ho-

spitals, but also in monitoring results of patient treatment and using those results to improve the quality of hospital performance.

It seems to me that the best way in which to begin this process is as has been done in some countries, through the use of DRGs to standardize the allocation of funds. This at one stroke eliminates case-mix as a factor in differential cost behavior among hospitals. From the standpoint of case-mix, that is, the different kinds of patients which hospitals treat, they are all treated alike. What remains, however, is the important part, the different ways in and different costs by which each hospital treats its patients. Thus, each hospital has available to it information as to the areas in which its performance is different from that of its peers in the hospital community. If it has the will, this information can be used to improve its performance from both a cost and quality point of view. This is the ultimate goal of DRGs in their internal use in managing hospitals.

Of course, DRGs are and will remain an imperfect tool for describing hospital output. But this is true of any human artifact. The question of importance is whether or not they are useful for their intended purpose. As Tom McGuire points out in his description of the evolution of DRGs (the latest revision), the refined DRGs do the best job of explaining differences among hospitals. But they are even better at their real purpose: that of allowing comparative analysis of individual physicians in their practice. The imperfection of DRGs as descriptors of process lie not in the underlying theory on which they are based, but for the most part in the significant differences which exist in our knowledge of various diseases, and the very large differences which exist in the way in which different physicians approach the diagnosis and treatment of patients with the same illness. Their utility, however, can transcend these imperfections if we can learn to use them in a system of true quality management in hospitals.

Total quality management involves not only reducing defective output, although this is certainly important, but in reducing significantly the quality waste which occurs in all our hospitals. Quality waste occurs when resources are employed in ways which do not have value to the patient. We may produce our laboratory procedures with great efficiency and accuracy. But if a procedure is ordered which has little or no value to the patient, it is wasted. A surgeon who consumes twice the surgical theater time as his peers for a given procedure is wasting resources and increasing patient risk. Utilizing a surgical procedure which is inappropriate for the patient constitutes quality waste no matter how efficiently the procedure is performed.

We need to develop techniques for the identification of quality waste similar to those which have been developed for identifying poor quality output. Only physicians have the capability of accomplishing this kind of task. The benefits which would result are too important to ignore.

This book serves the very important function of introducing to a large audience the logic and structure of DRGs, and detailing the uses to which they have been put in Europe. Further, it puts into an appropriate context

the problem of unifying the DRG approach in different countries as a means of enhancing their applicability. It is to be hoped that its publication will set the stage for both expansion of applications and improvements in DRGs themselves. In the US, where they have been used principally as a hospital payment mechanism, improvements have been centered around this issue. As they are used more and more for the management of hospitals, it is to be hoped that even greater improvements will be possible.

Those of us who were involved in their development during the 1970s have looked on the spread of this methodology with enormous pride. It remains to be seen, however, if even greater promise can be realized. It is very gratifying to have so many Europeans involved in the definition and dissemination of this approach. It is our hope that through these significant European applications that the US hospital environment will be able to learn and improve its performance. I believe this book points the way toward this in the future.

Wintergreen, Virginia
March 1992

ROBERT B. FETTER

Preface

The measurement of the health service product has been a long-standing goal for the many constituencies working within the health services, including providers, managers, researchers and public officials. The earlier phase of research towards the achievement of this objective was characterized by the development of conceptual models. This activity has recently resulted in the successful development of operational instruments. It was little more than 10 years ago that the application of hospital case-mix measures became an integral part of the management and financing of hospital services in the United States. This system, known as the Prospective Payment System (PPS), entails the prospective determination of prices based on diagnosis related groups (DRGs) and has been operated by the Medicare programme since 1983.

From the lively debate which surrounded the implementation of the PPS a clear distinction has been drawn between the approach to hospital financing and that adopted for the purpose of patient classification. This distinction has been an important factor underlying the recognition that a patient classification system like the DRGs, which may be used as a standardized measure of the hospital product, may be applied irrespective of the approach adopted for financing hospital services. The application of DRGs for the purpose of internal hospital management also became quickly apparent following the implementation of PPS.

This book charts the arrival and rapid expansion of the DRG system within European health care systems. European interest in the DRG system was first directed towards the evaluation of the properties of this new territory, and this was followed by analysis of the range of potential applications. Almost all European countries have supported experimentation with DRGs, ranging from pure research to applications for hospital financing and management.

The main international organizations concerned with health services research have contributed to this process of dissemination of DRGs in Europe, each with its own perspective and objectives. The European office of the World Health Organization and the Council of Europe have sponsored meetings of experts and projects to oversee the advancement of opportunities for the application of patient classification systems in Europe. The Organization for Economic Cooperation and Development have already published hospital statistics by DRG. The European Community

has financed a wide range of research and development projects concerned with the development and application of patient classification systems.

The studies presented in this book are among the contributions made to the project "Use of DRGs to Support Hospital Sector management in the European Community-EURODRG", financed by the EC under the aegis of the Health Services Research Program (Direction General XII-COMAC-HSR). In addition to research results, this project has contributed to the strengthening of a network of European experts in this field, with the commensurate exchange of ideas and communication of advances among them.

In this book the aim has been to present a collection of research material from this project, including the most evolved studies, which best present a panoramic view of the development and implementation of DRG systems in Europe. The structure of the text is such that the reader may select among the entries according to their own specific interests. A brief summary of the content follows.

The first part provides an overview of the evolution of efforts to obtain information on hospital production in Europe, from the spread of the Minimum Basic Data Set throughout Europe and the problems of homogenization, reviewed by F.H. Roger France, through the introduction and extension of DRGs, and a review of the results of validation studies, presented by J.-M. Rodrigues. During this developmental period, DRGs have been subjected to a constant monitoring procedure and annual improvement, based on the results of the ongoing research. T.E. McGuire reviews this process and the current picture. H.F. Sanderson presents some of the issues that European countries faced using DRGs in their local hospital databases.

The use of DRGs in European health care systems has engendered, in larger measure than in the U.S., a number of questions concerned with application potential for internal management purposes. Part 2 presents some of the questions raised. The empirical problems of comparability of DRG information among the European nations, together with the results of a EURODRG comparative study incorporating four countries are considered by M. Casas. The use of DRGs in internal hospital management implies a cultural shift, demanding training and awareness among both managers and doctors. This aspect is treated by L. Jenkins. Involving doctors in management, an important aim of case-mix measurement systems, demands attention to the development of qualitative aspects of evaluation. F. Taroni presents one of the more interesting studies of quality and outcome, using an additional case-mix system called Disease Staging.

With the availability of hospital product measurement systems, the development of applications concerned with the estimation of resource requirements assumes a high priority. The third part is dedicated to this question. D.W. Young reviews the objectives and applications of a management accounting system in hospitals. The realization of exercises

in DRG cost estimation and analysis is addressed by the majority of projects active in this field of endeavour in Europe and these efforts are reviewed here by M.M. Wiley. J.C. Vertrees offers a documented review of DRG applications in hospital financing, focusing on the context of European health care systems. Portugal adopted a system of resource distribution among hospitals based on DRGs in 1990. This constituted an advanced application for case-mix based funding for hospitals in the European context and this experience is presented by M. T. Bentes. The final contribution presents the results of a study of hospital classification, including case-mix information, with data from six European countries undertaken by P. Ibern.

Clinical input in the information used for management of health care systems is essential if doctors are to be better informed about the resource implications of clinical decisions. The emergence of patient classification systems, with both clinical and economic dimensions, can provide the vital interface required to achieve this objective. The DRG system constitutes an important advance in this process and can be expected to continue to evolve into an even more powerful and precise instrument for measuring hospital case-mix. While the research potential in this area is extensive, the availability of this case-mix tool now represents an important technical and conceptual advance, the full potential of which remains to be exploited.

The aim of all those who have been working in this field is to contribute to an improvement in effectiveness and efficiency in the use of limited health care resources, by placing in the hands of doctors and managers appropriate tools to achieve these objectives. The efforts of all those who have contributed to this book may therefore be best appreciated in this context.

July 1993

MERCÈ CASAS
MIRIAM M. WILEY

Acknowledgments

The editors M. Casas and M.M. Wiley would like to thank all the people who, in many ways, have contributed to the EURODRG project and to this book. There are so many that it would be impossible to mention them all, and we hope that they will accept this collective acknowledgement.

Special recognition is due the Barcelona City Council, the Department of Health in Ireland, and The Minister of Health of Spain, for hosting the project workshops where the most important exchanges among European teams were made. All the speakers at these workshops deserve particular thanks for their contributions.

Experts from the United States and Australia have made important contributions, allowing us to broaden the scope. We have received continuous assistance from the team that devised the DRG; R.B. Fetter and J. Freeman have been especially helpful throughout the process. From Australia the project has received important input from B. Reid and G. Palmer, and from D. Hindle many ideas for the initial definition of the project. The 3M HSI has smoothly aided the work by making software tools available for the research.

None of this work would have been possible without the financial support of the European Communities and the assistance of their officers in the Medical Research Division of DG XII.

July 1993

MERCÈ CASAS
MIRIAM M. WILEY

Contents

Part 1 Targeting Hospital Products

Hospital Information Systems in Europe: Trends Towards Uniformity in Patient Record Summaries FRANCIS H. ROGER FRANCE	3
DRGs: Origin and Dissemination Throughout Europe JEAN-MARIE RODRIGUES	17
DRG Evolution THOMAS E. MCGUIRE	30
DRGs: How Well Do They Define Hospital Products in Europe? HUGH F. SANDERSON	46

Part 2 Using Case-Mix Measures in Europe

Producing DRG Statistics at the European Level: Lessons from the EURODRG Project MERCÈ CASAS and ROSA TOMÀS	63
Training and Awareness: The Key to Successful Use of DRGs LINDA JENKINS	81
Outcomes Management: The Italian Case-Mix Project FRANCESCO TARONI, DANIEL Z. LOUIS, and ELAINE J. YUEN	97

Part 3 Hospital Accounting and Resource Allocation

Management Accounting in Hospitals: Lessons from Manufacturing DAVID W. YOUNG and LESLIE K. PEARLMAN	111
Costing Hospital Case-Mix: The European Experience MIRIAM M. WILEY	138

Using Case-Mix for Resource Allocation
JAMES C. VERTREES and KENNETH G. MANTON 155

Using DRGs to Fund Hospitals in Portugal:
An Evaluation of the Experience
MARGARIDA E. BENTES, JOAO A. URBANO,
MARIA DO CARMO CARVALHO, and MARIA S. TRANQUADA 173

Hospital Groups and Case-Mix Measurement
for Resource Allocation and Payment
PERE IBERN, JAMES C. VERTREES, KENNETH G. MANTON,
and MAX A. WOODBURY 193

The materials included in this book are part of the research and contributions carried out in the concerted action *Use of Diagnosis Related Groups to Support Hospital Sector Management in the European Community-EURODRG* funded by the Commission of the European Communities (COMAC-Health Services Research) under the contract MR4*-0119-E.

List of Contributors

- BENTES, MARGARIDA E., M.P.H.,
Assistant Director, Secretaria Estado Administração Saúde,
Ministerio de Saúde, Direção General dos Hospitais,
Av. República, 61, 2nd Floor, 1000 Lisboa, Portugal
- CARVALHO, MARIA DO CARMO, Graduate in Finance,
Ministerio de Saúde, Direção General dos Hospitais,
Av. República, 34, 1000 Lisboa, Portugal
- CASAS, MERCÈ, M.D., Ph.D. in Medicine,
Coordinator EURODRG Project; General Manager, IASIST S.A.,
Rambla de Catalunya 1,5°-2, 08007 Barcelona, Spain
- IBERN, PERE, M.B.A.,
Director, Consorci Sanitari de Mataró, C/ Lepanto, 13-21,
08301 Mataró, Spain
- JENKINS, LINDA, Graduate in Statistics, Information Analyst,
SE Thames Regional Health Authority, Collington Avenue,
Bexhill-on-Sea, Sussex, United Kingdom
- LOUIS, DANIEL Z., M.S., Assistant Professor,
Center for Research in Medical Education and Health Care,
Jefferson Medical College, PA, U.S.A.
- MANTON, KENNETH G.,
Professor and Research Director, Center for Demographic Studies;
Professor, Department of Community and Family Medicine,
Duke University, 22117 Campus Drive, Durham, NC, U.S.A.
- MCGUIRE, THOMAS E., Ph.D.,
University of New South Wales,
School of Health Services Management, P.O. Box 1,
Kensington, NSW 2033, Australia
- PEARLMANN, LESLIE K., M.B.A.,
Instructor in Accounting and Health Care Management,
School of Management, Boston University,
685 Commonwealth Av., Boston, MA, U.S.A.
- RODRIGUES, JEAN-MARIE, M.D., M.D. in Biomathematics and Biostatistics, Ph.D. in Health Economics, Professor of Public Health,
Saint Etienne Medical School, University of Saint Etienne,
Rue Ambroise Paré, 15, 42650 St. Jean Bonnefonds, France

- ROGER FRANCE, FRANCIS H., M.D., M.S., Ph.D.,
Professor, Faculty of Medicine, University of Louvain;
Head, Medical Record Department,
St. Luc Hospital, 1200 Brussels, Belgium
- SANDERSON, HUGH F., M.Sc.,
Director, National Case-mix Office,
Information Management Group (G) of the NHS Management
Executive, Winchester SO22 5DH, United Kingdom
- TARONI, FRANCESCO, M.D.,
Director of Research, Istituto Superiore di Sanità,
Laboratorio Epidemologia e Bio-Estadistica,
Viale Regina Elena, 299, 00161 Roma, Italy
- TOMÀS, ROSA, M.D., Ph.D. in Medicine,
Director of Research and Development, IASIST S.A.,
Rambla de Catalunya 15° 2ª, 08007 Barcelona, Spain
- TRANQUADA, MARIA S., Graduate in Finance,
Ministerio de Saude, Direção General dos Hospitais,
Av. República, 34, 1000 Lisboa, Portugal
- URBANO, JOAO A., M.P.H.,
Ministerio de Saude, Direção General dos Hospitais,
Av. República, 34, 1000 Lisboa, Portugal
- VERTREES, JAMES C., Ph.D.,
President, Solon Consulting Group, Ltd.,
12501 Prosperity Dr. Suite 150, Silver Spring, MD 20904 U.S.A.;
Senior Fellow, Center for Demographic Studies, Duke University,
Durham, NC, U.S.A.
- WILEY, MIRIAM M., M.Sc., Ph.D.,
Head of the Health Policy Research Center
and Senior Research Officer,
Economic and Social Research Institute,
4, Burlington Road, Dublin 4, Ireland
- WOODBURY, MAX A., Professor Emeritus of Biomathematics,
and Computer Science; Senior Research Fellow,
Center for Ageing and Human Development
and the Center for Demographic Studies, Duke University,
22117 Campus Drive, Durham, NC, U.S.A.
- YUEN, ELAINE J., M.B.A.,
Center for Research in Medical Education and Health Care,
Jefferson Medical College, PA, U.S.A.
- YOUNG, DAVID W., M.A., D.B.A.,
Professor of Accounting and Control
Director, Health Care Management Program,
School of Management, Boston University,
685 Commonwealth Av., Boston, MA, U.S.A.