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THE APPLICATION OF DIAGNOSIS-RELATED GROUPS (DRGs) FOR HOSPITAL BUDGETING AND PERFORMANCE MEASUREMENT

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Management of planning and resource allocation

Before 1990, Member States should have managerial processes for health development geared to the attainment of health for all, actively involving communities and all sectors relevant to health and, accordingly, ensuring preferential allocation of resources to health development priorities.

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DIAGNOSTIC RELATED GROUPS
FINANCIAL MANAGEMENT, HOSPITAL
BUDGETS
PATIENTS - classification
ECONOMICS, HOSPITAL

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Introduction

The objective of the Welsh diagnosis-related group (DRG) project is to test and evaluate the potential of a DRG-based management information and budgeting system in one health district in Wales. The project consists of the following stages.

- I Prefeasibility: completed
- II Feasibility: approaching completion
- III Implementation: about to commence
- IV Evaluation: a continuous task

The key issues covered include: information technology, DRG applications, coding systems, medical records, organization development and resource management

Overview of experience arising from the Welsh experiment

1. The project is directed at resource management in the widest sense, and is therefore much broader than an information technology exercise.
2. The staff, personnel and resource commitment required by the project is substantial and was originally underestimated in costing the project. The ownership of the system belongs more to physicians than to top administrators.
3. The input of clinicians is important to ensure ongoing commitment to the project.
4. Acceptance of the project among consultants seems to be associated with age, to some extent, with more recently appointed consultants more interested in becoming directly involved in the exercise.
5. The project is being undertaken on a district-wide basis (covering three hospitals). This continues to be preferable to the option of locating the project in a single hospital.
6. The project is proving to be challenging to the existing organization of service provision and practice.
7. The generation of more and better data should result in greater use of the data bases developed. Training in data collection and data analysis will be required.
8. The cost of the project is about equivalent to the amount of money allocated to information technology, so far, in the whole Region (estimated at a level of approximately 1.5% of the total health care budget).
9. The political dimension of resource management should not be underestimated.
10. The general conclusion from the Welsh presentation was that Wales could not have afforded not to have undertaken this project.

Utilization of DRGs for hospital budgeting

Data requirements and availability

Hospital activity data

Important areas of concern which must be addressed here include the collection of data elements, data coding and data quality. The availability of the required data elements is obviously problematic for those countries which do not have national discharge abstract collection systems. For these countries, any attempt at case-mix analysis has to be prefaced by the development of the underlying information system.

Substantial variation in the coding schemes used in Europe to code diagnoses and procedures has important implications for the transferability of case-mix measurement systems. It was suggested that the continued use of code mapping schemes to facilitate system transferability should be subject to reliability and validity checks in the form of control studies of the mapping procedures used. The more widespread use of encoding for diagnoses and procedures may also be expected to contribute to greater validity and reliability in the use of the coding schemes covered.

The quality of the underlying data base has implications for the appropriateness of DRG assignment. Even where errors in the data base have been found, however, an empirical analysis has provided support for the robustness of the DRG system. Data quality may be affected by the underreporting of some data elements such as the number of diagnoses. This, in turn, may result in some DRG cells remaining empty due to lack of information or system-specific coding practices. To the extent that case mix is used for financing purposes and resource allocation, the impact of data quality problems should also be checked for the consequent financial problems resulting, for example, from misclassification. Incentives towards the improvement in the standards of data quality may be built into the data collection system. The computerization of data collection may facilitate the desired improvement in data quality standards.

Hospital cost data

Countries which have historically funded hospitals on a global rather than a per-patient basis do not tend to routinely produce cost data in a disaggregated format to the patient level. To estimate costs on a case-mix basis, it is preferable if cost data can be made available to the cost centre level. The comparability of costing techniques may be limited because of the absence of an internationally established standardization framework for the definition of hospital cost centres.

Approaches to the estimation of DRG costs

The approach adopted for the estimation of DRG costs will of necessity be specific to the health care context, data availability and objectives adopted for the exercise. A number of discrete steps may be identified as follows:

1. At a minimum, cost centres will need to be differentiated into medical, non-medical and support cost centres.

2. The costs within the support cost centres must be apportioned to the (final) medical and non-medical cost centres.

3. Depending on the availability and accuracy of information for the estimation of appropriate allocation statistics, final cost centre costs may be disaggregated to the DRG level.

The sequential transition through each stage will require basic information on relative resource use between different cost centres and departments. If this type of information is not directly available locally, it may be a first step to use substitutes such as relative value unit scales from other health systems. In this case, however, the comparability of the systems involved has to be checked.

Intersystem transferability of cost weights for ancillary services and nursing resources

Within globally funded hospital systems, the two areas where the disaggregation of costs tends to cause greatest difficulty is within the nursing area and between the ancillary services (including radiology, pathology and pharmacy). Where detailed cost data are not available, the question arises as to the validity of using relative value units (RVU) developed within a different system as a substitute for locally developed allocation statistics.

The intersystem transferability of RVUs within these areas becomes more or less important depending on whether the ultimate interest in the costing exercise is the estimation of absolute costs or an assessment of relative resource use. The estimation of absolute costs for, for example, the institution of a pricing exercise would ideally require detailed and precise estimates of costs at the department and cost centre level. The importation of externally developed RVUs would therefore have to be considered very cautiously in this context.

Where the estimation of relative resource use is the objective, however, externally developed RVUs may provide a very useful input for this exercise. The fact that both nursing and ancillary services account for such a large proportion of all hospital resources would suggest that a reasonable, long-term objective may be the development of system-specific relative value units for these areas. As the tendency towards the provision of more routine investigative and care services outside the inpatient setting becomes more generally accepted, consideration regarding the importation of externally developed resource weights will increasingly have to be taken against the complete health care background.

DRG-based budgeting: applications at the internal hospital level and beyond

The development of DRG-based applications for hospital budgeting will direct attention to a number of areas of concern, including:

- the estimation of hospital activity projections adjusted for case mix;
- the estimation of hospital cost projections adjusted for inflation, wage increases, etc.;

- the designation of special adjustments considered appropriate within the health care system of interest; and
- appropriate adjustments for capital costs.

In addition to providing hospitals with incentives for improving efficiency in resource management, budgeting applications may also stimulate organizations to ask important questions regarding the designation of centres of responsibility for resource deployment, the identification of appropriate channels for the generation and dissemination of information and the interpretation of the appropriate statistical indicators in a management context. Further evaluation of the potential outcomes of using DRGs as an element in the budgeting and/or financing process is worthy of serious consideration.

DRG applications for performance measurement

As the use of performance indicators becomes more commonplace across health care systems, the importance of ensuring that performance measurement is adjusted for hospital case mix becomes a priority. Performance indicators can fall into different categories, including admission/discharge, clinical and outcome/quality measures.

Within the admission/discharge group, frequently used performance indicators include medical and "delay" (pre-op) days, readmission rate, and source of referral. Clinical indicators will include the infection/cross-infection rate, complications, symptom relief, etc. Measures such as mortality rate are being increasingly used in an effort to develop a measure of outcome which can be more generally applied.

While the measures falling within each of these groups has significant potential, their usefulness is substantially curtailed by the uni-dimensional basis of applications. As a multivariate measure, DRGs constitute a more sophisticated approach to measuring hospital activity. The use of DRGs as a case-mix control can therefore greatly enhance the power of these types of performance measures. Length-of-stay-based measures (e.g. medical/non-medical days) are significantly more meaningful for intrahospital and interhospital comparisons when standardized for case mix. Estimates of infection rates by DRG can assist medical staff in tracking problems to source. The publication of mortality rates by DRG has been undertaken in some systems, though it is generally recognized that more advanced techniques for outcome measurement need to be developed.

While it is accepted that the currently available performance measures are useful, it must be recognized that great scope exists for further development in this area. Future investigative work might usefully explore the possibility of using DRGs to disaggregate hospital activity on the basis of such variables as patient age, hospital size and medical specialty. This type of information might also be useful in developing standards for identifying and controlling unnecessary hospital admissions.

Quality control and outcome measurement are becoming increasingly identified as priority areas for performance measurement and monitoring. While a small number of countries seem to have made significant advances in instituting more advanced measures of quality and outcome in hospitals, the majority of countries have only begun to investigate the options for pursuing these objectives.

Management and medical expertise are important inputs for the development of appropriate performance indicators. The correct use of such indicators may require additional training for those personnel who use these tools, so possible administrators, doctors and nurses as well.

Development and application of patient classification systems for outpatient care and long-term care

The general aims of patient classification systems may be classified as follows:

- support the achievement of optimum efficiency in each health care sector;
- provide incentives to ensure that the site of care provision is the most appropriate;
- ensure the provision of high quality care.

The specific characteristics of other health care sectors must be taken into account when the transfer of classification technologies is under consideration. In particular, the ambulatory care setting may be differentiated as potentially having a greater number of providers, treatment visits and treatment styles. The ambulatory care share of the total budget, together with the associated discretionary element, will also differ considerably from other sectors.

The development and application of appropriate classification systems for the ambulatory care sector now faces many of the same problems arising when this area of investigation gained momentum for inpatient care. These problems include those arising because of less well developed data bases and limited advancement in the exploration of the relevant methodological questions and case-mix issues. The cost-effectiveness of the development of the relevant classification technology must be fully explored when the application to additional sites of care is being considered.

The noted expansion in activity in ambulatory care cannot be entirely attributed to improvements in economic efficiency and quality of care, but must also be recognized as being influenced by such factors as the medicalization of social problems, the overuse of drug therapy, and limitations in the coordination of inpatient and ambulatory care. Comparisons using case-mix standardization must also take into account the above factors.

Ambulatory surgery has been identified as one area which may be specifically suited to the development and application of the patient classification technology.

Conclusions and recommendations

1. A mechanism for the dissemination of information should be put in place which will ensure that advancements in the development of case-mix measures and the experience generated in the application of the patient classification technology are made available to other interested parties.

2. Considering the important input which relative value units and resource weights for both nursing and ancillary services provide for the estimation of DRG costs, it may be worth considering the development of a project to estimate a European series of RVUs for these specific areas.
3. Continuing study of the potential and use of DRGs for hospital budgeting and planning is supported and should be considered in the context of developing greater standardization in approaches to service costing on a DRG basis.
4. The application of currently available case mix classification technology to non-inpatient care sites is not generally very advanced in the European Region. An experimental project investigating the potential of systems applicable to ambulatory care and long-term care would be worthy of support.
5. Support for the further development of DRG-based performance indicators should be provided with a view to undertaking a study of international comparisons of the results emerging from the application of the measures developed.
6. Greater support and effort needs to be devoted to the development of appropriate and applicable measures of quality of care and health outcome associated with service provision.
7. Training will be required to assist health care professionals in the use, presentation and interpretation of case-mix measures and applications in the health care field.
8. The technological background of DRG applications in hospitals and in health systems, including hardware, software and communication concepts, should also be investigated and discussed thoroughly.

Annex 1

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