

COSTS AND CASEMIX IN ALL DEPARTMENTS OF GERIATRIC MEDICINE IN STOCKHOLM, SWEDEN – A STUDY USING THE RESOURCE UTILIZATION GROUPS (RUG-III)Gunnar Ljunggren¹, Ulrika Winblad Spångberg²

1. Centre for Health Gerontology and Health Economics/Karolinska Institute, Department of clinical neuroscience, occupational therapy, and elderly care research; 2. Department of public health and caring sciences, The Research Park, Uppsala University

Communications to: Gunnar Ljunggren, Centre for Health Gerontology and Health Economics, Crafoords väg 12, S-113 24 Stockholm, Sweden

Tel: +46 8 690 9750; Fax: +46 8 690 97 59; E-mail: gunnar.ljunggren@neurotec.ki.se

ABSTRACT

One of the most difficult problems in health care policy is adjusting payment to activity. Particularly little is known about how resources are allocated to departments of geriatric care. To investigate whether departments of geriatric medicine in Stockholm, Sweden relate their costs to case-mix, one of the most well-known case-mix systems for geriatric care, the Resource Utilization Groups, version 3, was applied to all departments of geriatric care in the area. The results showed large differences in the costs of the departments. No clear correlation was found between costs, patient turn-over, and case-mix. The implication of the study is that geriatric medicine needs to develop or adopt existing case-mix systems to be incorporated in payment models that more truly than today reflect resource use.

KEYWORDS: Geriatric medicine, RUG-II, Costs, payment systems, Health care policy

BACKGROUND

The health care economies in the western world have been under pressure during the last decades. Many countries have experimented on how to contain their costs. One attempt has been to introduce prospective payment systems. Typical of these prospective payment systems, developed mainly in the US, is that they rely on well-established case-mix systems.

There are several reasons for introducing prospective payment systems.

They are believed to be cost-containing. The previously introduced fee-for-service systems have been criticised for being cost inducing as the care-givers have no incentive to keep costs low. Some care-givers had costs that couldn't be related to the quality or the provision of care. These institutions were thus considered to be run inefficiently. The solution was to implement prospective payment systems in which the care-givers were paid in advance according to their case-mix. A patient with a certain condition would therefore always have a prospective fixed "price" per day or stay. This would prevent the care-givers from carrying out excessively expensive treatments¹.

Prospective payment systems are leading to a "fairer" system. Previously, some states in the US used flat-rate payment systems that allowed the same sum for each patient per day. Those systems had some negative implications, e.g. that the care-givers tended to admit the light-care patients, whose cost of care is lower. The use of case-mix systems was seen as an improvement, since the resources are allocated according to case-mix or actual work-load^{2,3}.

The enactment of prospective payment systems might help to improve quality of care. Introduction of a case-mix system provides the care-givers with a certain amount of information on each patient that can form the base in the quality work. If assessments in one ward show higher levels of mental confusion of the patients than assessments in another ward within the same department, this could indicate differences in quality of care that should be further investigated. Quality assurance within the geriatric care sector

has hitherto been unsatisfactory and the introduction of standardised patient assessment would be an improvement^{2,4}.

The prospective payment systems in the United States were generally developed and used for acute care. One of the first case-mix systems to be used in a prospective payment system was DRGs (Diagnosis Related Groups)⁵. To some extent even geriatric and psychiatric care were reimbursed according to this model. DRGs have been shown to be an inappropriate system for geriatric care⁶. There are at least two reasons for this:

1. DRG are based upon medical diagnosis and procedures performed, since these variables were found to explain the total resources used within each DRG⁵. However, geriatric care has often been excluded from prospective payment systems based on case-mix, used in the US as well as in other countries. This has to do with the difficulty of linking reimbursement to the concept of case-mix in geriatric care, which is not as strongly based on diagnosis as the case-mix methods for acute care. For geriatric patients, functional ability and cognitive status are more important variables than medical diagnosis in explaining resource use^{2,6}.
2. The DRG-system is based on episodes of care, such as a short stay for an operation or treatment. Geriatric patients mostly stay longer. In this situation a case-mix system for geriatric care based on per diem resource use, in its turn based more on ADLs (Activities of Daily Living) and cognition, such as the Resource Utilisation Groups (RUGs), would be a more appropriate instrument to use in a potential payment system for this kind of care.

Resource Utilisation Groups, RUGs, is a case-mix system for patients in long-term care facilities, developed in the US^{7,8}. It is now in its third version⁹. The case-mix indices (CMI's) of RUG-III describe per diem resource use in 44 clinically well-defined groups, based on ADL activities, cognitive performance, certain medical conditions and rehabilitation input. Patients with a higher ADL dependency but also those in higher clinical RUG categories have been shown to have a higher resource utilisation. It has been extensively tested in several countries¹⁰.

OBJECTIVES

It is well known that one of the most difficult problems in health care reimbursement policy is adjusting payment to patient case-mix. Particularly little is known about how resources are allocated to the departments of geriatric care with respect to their present activity.

In a small pilot study in 1991 we found a low correlation between costs and case-mix, measured as RUG-II, an earlier version of RUG-III, in 4 departments of geriatric care in Stockholm.

The aim of this study was to investigate if the costs of every department of geriatric care in Stockholm, Sweden, related to their case-mix. For this purpose, all departments of geriatric care were analysed. Our hypothesis was that the costs of the departments were positively correlated to their actual case-mix, measured according to one of the few scientifically validated CMI systems for geriatric care in existence today.

METHODS

The budget system of geriatric care in Sweden has been quite stationary for many years. Payment systems based on case-mix are not used. In this study we used data from 1994, from which year we also collected RUG-III data. All departments of geriatric care in Stockholm County participated in the study. The data needed for RUG-III were collected cross-sectionally (on a certain date) once from each patient in each ward.

The patient turn-over rate was calculated as number of discharged patients in relation to the established number of hospital beds in 1994.

The costs of each department were collected the year after the investigation, i.e., in 1995, as part of the Stockholm County Council routines of follow-up of the budget. We used the average cost of a bed in each of the departments, excluding the over-head costs, such as rents, cleaning, and maintenance. For staff resources we chose to use only figures that could be considered as being as close to the patient care as possible and not influenced by capital costs, etc.

The costs presented were however only the average costs per bed, not taking into consideration different resource use of the patients, although this is a very imprecise measure connected with serious flaws. Nevertheless, these problems are mostly associated with costs such as cleaning and maintenance, less with direct patient costs. Therefore, we chose to include costs associated with the staff in each department, since these costs were clearly shown in the accounting and account for a large part of total costs, around 70 percent.

RESULTS

Large cost differences per bed and day were found among the departments of geriatric care in Stockholm. See table 1. The average cost per bed/day/department varied between 960 SEK and 1822 SEK. Thus, a difference of 862 SEK was found between the cheapest and the most expensive department.

The RUG-III case-mix indexes are also shown in table 1. The department with the highest CMI (1.56) had a 33 percent higher RUG case-mix index than the department with the lowest CMI (1.17).

Table 1. Costs, case-mix and patient turn-over in the 14 departments of geriatric care in Stockholm 1994-95. (1 USD approx. 8 SEK)

Hospital	Cost/bed/day SEK	RUG-III Case-mix index	Patient turn-over No. of patients/bed/year
A	960	1,22	1583
B	972	1,52	2398
C	1234	1,56	1776
D	1348	1,5	1231
E	1477	1,3	1217
F	1494	1,23	1389
G	1497	1,17	2265
H	1506	1,23	886
I	1513	1,37	1382
J	1557	1,29	271
K	1627	1,48	178
L	1747	1,28	1193
M	1795	1,42	1407
N	1822	1,39	1492

The patient turn-over rate per year and bed varied between 8.86 and 23.98, i.e. almost 3 times. There was no obvious correlation between the turn-over rate and the RUG-III case-mix index.

What was not available to us in our analysis were the occupancy rates. However, with the known long waiting lists to geriatric care, the occupancy rates in all the departments are known to be high. There is seldom an empty bed in these departments.

Figure 1 shows the relationship between the costs of each departments and their RUG case-mix index. This figure shows that the resources were *not* allocated according to the case-mix of the departments. As discussed below, no standard rules exist on which resources are distributed but historical ones.

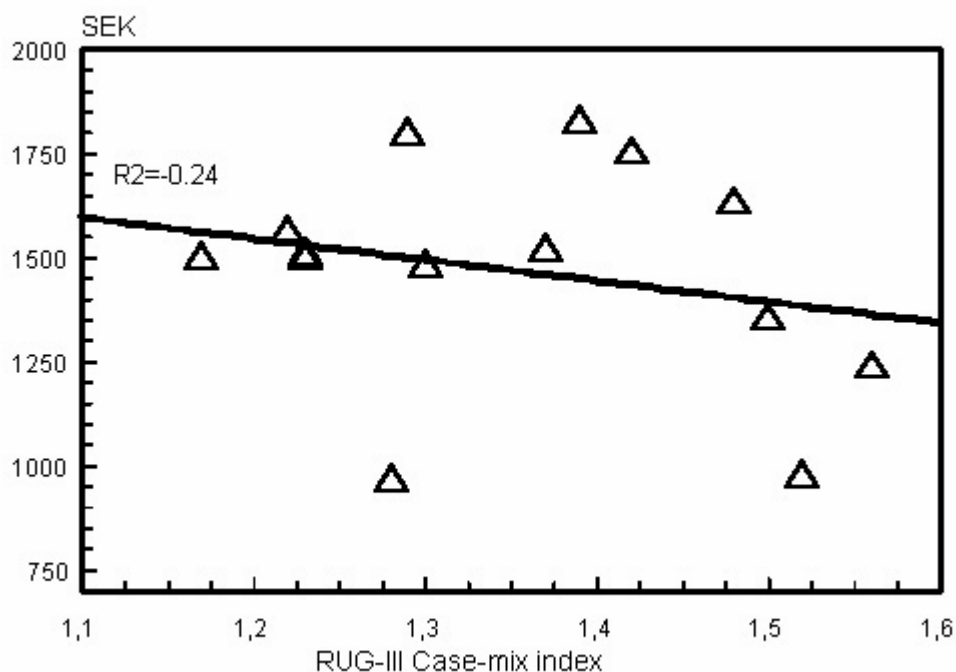
In summary, no correlations were found between our 3 main variables of analysis.

DISCUSSION

Among all the departments of geriatric care in Stockholm, the costs per bed and day varied remarkably in 1994. Contrary to the hypothesis, the RUG case-mix index, as a reflection of the geriatric activity, was not positively correlated to the costs of the departments.

These results could be the effect of deficiencies in the RUG-III case-mix index or in the accounting analyses.

Figure 1. Plot of the costs in SEK (1 USD approx. 8 SEK) per bedday in 1995 in 14 departments of geriatric care in Stockholm vs. their case-mix index, measured as RUG-III.



Regarding case-mix

Differing RUG case-mix indexes could be due to insufficient measurement methods. It's important to motivate and instruct the staff to make the assessments as reliable as possible. This ought not to be a problem in this study, since well-trained instructors were available in the wards and standardised forms was used for RUG-III information. Furthermore, the RUG system had earlier been tested for validity and reliability⁶.

Case-mix can vary over time, but previous RUG assessments have shown that the variation over time is quite small. It's still important in a prospective payment system to make measurements regularly (but not necessarily on every patient) since care needs change over time, mirrored in the case-mix.

Regarding accounting analyses

Another explanation could be that flawed cost accounting systems don't accurately show how resources are used. In reality the wards might have received relevant amounts of resources in accordance with their real case-mix index, although this is not shown in the bookkeeping. A second explanation of the cost differences could be that some individuals in the staff in some of the wards had worked longer and therefore get a higher salary – a usual Swedish wage policy. The departments may also have different staff mix and levels of staffing, which is shown in the costs but not necessarily in the case-mix. However, these data were not analysed in this project.

However, we believe these explanations are among the minor ones. Instead we believe that the traditional budget system in Sweden, in which the costs are automatically discounted each year without much consideration of changed working patterns, is still more or less in use. No one has ever tried to relate the costs per bed and day to the case-mix (due to the earlier lack of existing case-mix systems) or to the outcome of geriatric care.

CASE-MIX IN A POTENTIAL PAYMENT SYSTEM FOR GERIATRIC CARE

What was observed in this study was that the same type of patients (i.e. wards with equivalent case-mix indexes) obtained different amounts of resources in the departments of geriatric medicine in Stockholm. This fact could be considered as unfair in a system where the goal is equal health care to everyone. Even if the intention of the Swedish health care system is to correlate the budget to the activity (case-mix) of the departments, there have been no appropriate methods of measurement to determine if this is the case. Although the study took place in late 1994, there is still no reliable case-mix system, like the DRGs in acute care, to analyze geriatric care. We believe that the introduction of a prospective payment system based on a case-mix system would be an advantage.

There are, however, certain other things that must be considered when developing a prospective payment system for geriatric care, based on a case-mix index. The most important one is that resources allocated to the departments should also be related to actual outcome, including quality of care. Other parameters than case-mix that could be included in a prospective payment system are occupancy rate and turn-over rate. High occupancy rate and turn-over rate indicate high activity and should be rewarded, as long as quality of care could be maintained. Departments must also be rewarded for using resources to prevent patient readmissions, for example outpatient clinics or collaborative teams from primary health care, social services, and the department of geriatric medicine.

Concerns with a case-mix system in a prospective payment system in geriatric care

Prospective payment systems based on case-mix always raise concerns. One problem is that little empirical evaluation is available from experiments with case-mix based payment systems in Sweden. However, some attempts have been made, particularly with DRGs¹¹. Another important issue in Sweden, with a long tradition of fixed budgets, is how the geriatric departments will behave when implementing such a payment system, based on case-mix. Due to the prospective nature of the system, it's likely that the departments will try to keep costs down in relation to the reimbursement level. This can happen in two ways: either through increasing the productivity or reducing the staff costs. The latter could be dangerous for the quality of care. Minimum standards for staffing levels could avoid this problem. Even though more market-like incentives have been introduced in the Swedish health care sector during the last years, it is still far too early to judge what will happen to staff behaviour.

The economic situation within the health care sector in Sweden has not been the same since 1994, when the data of this study were collected. A separation between purchasers and providers has been seen in many counties in Sweden, but still, there is no case-mix system for geriatric care in use. Nevertheless,

there seems to be a need for such a system for geriatric patients. There are nowadays in Sweden several providers of geriatric care and they should be reimbursed in the same way. Shorter length of stay in geriatric care has also focussed on the admission or care episodes as a production parameter, quite similar to ordinary acute care. However, as stressed above, such a case-mix system can only be marginally based on the medical diagnosis and has to involve other patient data, such as physical functionality and cognitive performance. It would be useful to find a common case-mix system where it does not matter to which department the patient is admitted, whether it is in acute or geriatric care or in private or public institutions.

In the coming years, US Medicare short-term nursing home care will be based on RUG-III (B Fries, pers. comm.). Maybe this could be a start to a case-mix discussion in geriatric care also in other countries.

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