

MAUREEN WRIGHT • ELIZABETH SCOTT
• RHONDA COCKERILL

Surviving the management game: Workload measurement systems in a cost-conscious environment

KEY WORDS

Cost and cost analysis

Occupational therapy
services

Workload measurement

ABSTRACT Using a procedure-based occupational therapy workload measurement system developed at, and applied by, Sunnybrook Health Science Centre, this paper explores the objectives of such a system from the point of view of the occupational therapy manager. It also takes into account the synergistic relationship between the occupational therapist and the administrative/business aspect of health care, paying special attention to past and present trends in health-care accountability.

In this paper it is argued that occupational therapy managers must relate their procedures and overhead costs to actual client care, if they are to be included in programme management and client costing. The process used by occupational therapy to describe its own procedures for the system is outlined. The system was then developed in conjunction with other institutional, financial and management tools for the client cost conversion process. By using a procedure based workload measurement system, occupational therapy is able to accurately describe client costing, thereby articulating our rôle in client care.

RÉSUMÉ A l'aide d'un système de mesure de la charge de travail en ergothérapie à partir de la procédure, mis au point et en application par le Sunnybrook Health Science Centre, cette étude explore les objectifs d'un tel système d'après le point de vue du chef du service d'ergothérapie. L'étude tient compte également de la synergie qui se crée entre l'ergothérapeute et l'aspect administratif et budgétaire des soins de santé, une attention particulière étant apportée aux courants passés et actuels sur l'imputabilité des soins.

L'étude soutient que les chefs de services d'ergothérapie doivent faire le lien entre les procédures retenues et les frais généraux sur les soins accordés aux clients, s'ils veulent qu'on fasse appel à leurs services dans la gestion du programme et le coût d'administration des soins. Le processus retenu par l'ergothérapie pour décrire ses propres procédures est présenté. Le système retenu a ensuite été développé de façon conjointe avec d'autres outils institutionnels, financiers et de gestion pour le processus de conversion du coût-client. En utilisant une procédure fondée sur le système de mesure de la charge de travail, il est possible de déterminer avec exactitude le coût-client et d'articuler ainsi notre rôle dans les soins de santé.

Maureen Wright, M.Ed., O.T.(C) is the Director of Occupational Therapy at Sunnybrook Health Science Centre 2075 Bayview Avenue North York, Ontario M4N 3M5. She is also an Associate Professor in the Division of Occupational Therapy, University of Toronto, Toronto, Ontario

Elizabeth Scott, M.Sc., O.T.(C) is the Director of Occupational Therapy at the Clarke Institute of Psychiatry Toronto, Ontario

Rhonda Cockerill, Ph.D. is an Associate Professor in the Department of Health Administration University of Toronto, Toronto, Ontario

In the late 1980s, and more importantly in the 1990s, Sunnybrook Health Science Centre (SHSC) recognised that the major challenge facing hospitals is the need to control costs while maintaining the quality of client care. Since the contributions of the clinical staff account for one of the largest items in a hospital's budget, no cost-containment strategy can be effective unless it involves an analysis of all clinical and support activities. In response to this challenge, SHSC developed an innovative strategy to control costs, involving concepts novel to the Canadian health-care environment. These ideas include:

- (1) utilization management;
- (2) outcome management; and
- (3) costing based on the make-up of client groups and product line (or procedure) budgeting.

Traditionally, these principles have been used extensively in industry, as pointed out in the literature accompanying the computer programme used to establish this system at SHSC (Transitional Systems Incorporated (TSI), 1987) but they were viewed as inappropriate for the hospital environment. The socio-economic forces of this decade, however, are creating major changes in the funding determination of Canada's health-care system. On a broad-based level, for example, the Ontario Ministry of Health has approved and will base funding levels for programmes on case mix grouping (CMG) forecasts. In other words, it will be necessary for hospitals to project their upcoming client group compositions, basing their estimates on the upcoming fiscal year and the number of diagnoses and procedures they will do.

In order to be on the cutting edge of client costing, SHSC developed a workload management system within its clinical unit, or programme management structure. The system described in this paper outlines the response from SHSC's Occupational Therapy Department as it attempts to be an integral part of the movement towards client costing.

The rationale for the Department's response was due, in a large part, to the social and economic changes of the last decade which have had a significant impact on the environment and culture of occupational therapy practice, particularly at SHSC. Among these changes are the following:

- (1) A rapid increase in technological knowledge and capabilities for acute care, producing in many instances a high demand for rehabilitation as a sequel to modern medical advances.
- (2) The growth of the aging population, producing higher demands for community programmes, more long-term facilities and "wellness" programmes for the older population.
- (3) A major increase in health-care labour expenditures.

- (4) A higher consumer expectation for unlimited services despite the realities of the economic forecast for the future.

The system has been, and is now confronted with a serious inability of health-care dollars to keep pace with the new demands for service, as evidenced by the 1990/91 federal budget decision to reduce the amount of transfer payments to the Provinces for health, social, and educational programmes. For traditional occupational therapy departments to survive and to be vital in this cost-conscious environment, it is essential that they reassess the manner in which they report such elements as caseloads, programmes, and workloads. The Department of Occupational Therapy at SHSC has responded to this challenge by introducing a more sensitive workload management system as a key element of its overall organisation. The system considers procedure-based recording with the capacity to be fully integrated into the financial and clinical unit information systems over time.

Methodology Used to Develop the Workload Measurement System

After two years of studying and implementing workload measurement systems, it was noted that with an investment of departmental time and commitment, a higher level of sophistication and use of such systems could be developed. With the aid of the National Hospital Productivity Improvement Programme (1988), the staff at SHSC used its expertise and experience to reshape the framework of the measurement system in place. The next step was to work in collaboration with the occupational therapy staff and management group at SHSC to develop a list of occupational therapy procedures such as splinting, seating and wheelchair assessment. These were accompanied by definitions that would best describe current clinical practices and support systems. This was the preparatory step towards an interface with client costing systems and case mix groupings defined by the clinical units at SHSC.

Once satisfied with the procedures, the next goal was to develop standards regarding the time required to perform specific occupational therapy procedures. These standards could relate to any form of client costing - be it programme-based, client-based, or procedure-based. This involved three processes:

- (1) A retrospective review of all therapists' workloads through a consideration of procedures for one corporate period (four weeks) to estimate if there was a numerical value upon which a standard time unit could be determined.
- (2) A series of "independent focus groups" were conducted with occupational therapy management and staff. These were specific to acute care, extended care, and psychiatry. The

Figure 1
Direct Care Procedures

Procedure	Standard Time
Activities of Daily Living	60 mins.
Splinting	60 mins.
Neuro Assessment/Intervention	60 mins.
Seating/Wheelchair Assessment	60 mins.
Musculoskeletal Assessment/Intervention	60 mins.
Sensory Evaluation and Re-education	60 mins.
Lifeskills	75 mins.
Community and Home Re-integration	180 mins.
Prevocational/Vocational	75 mins.
Education	45 mins.
Follow-up Clinic	45 mins.
Case Conference	90 mins.
Supportive Intervention	60 mins.

objective was to determine the standard time required to deliver each procedure, that is, all direct and indirect care provided to the client. For the purposes of this system, direct care referred to activities in which occupational therapists interacted directly with clients, such as splinting. Indirect care referred to such activities as writing reports on the clients or attending case conferences and rounds.

- (3) A comparison between the data gathered from the retrospective review and the focus group was done as a basis for forecasting future time requirements.

Considerations for Establishing Standard Time Figures

When establishing standard times for each procedure performed by the staff occupational therapists, the following points were taken into consideration:

- (1) As much as possible, definitions of the procedures would be consistent for clinical practice in all areas of occupational therapy as practised at SHSC.
- (2) Standard times for each procedure would be contingent upon standard times for each programme, if such a measurement existed, as well as mix of clients, consideration for the psychosocial needs, and experience or special expertise of therapists.
- (3) The spectrum of numbers for the standard time would be assigned to each procedure to account for variability in the items identified in point 2, above.
- (4) A range of minutes versus time units for each standard procedure would be assigned.

- (5) Standard times per occupational therapy procedure were developed specifically for the SHSC system. They are not intended to represent professional or national standards. The result was a set of standard times for each direct and indirect client care procedure (see figures 1 and 2).

This process took approximately six months to finalise. This was due to the scheduling factors associated with departmental operations; as well as the difficulty on the part of occupational therapists to define accurately the labour time it took to deliver client care. Additionally, a lack of knowledge of case mix groupings and clinical units, or a misinterpretation of client costing, resulted in a reluctance on the part of some occupational therapists to participate in the study. Once standard time figures were established, it was necessary to consult with SHSC's Finance and Information Services Departments on the software conversion and interface with the Centre's management information system.

Description of the Software Interface

The computer interface purchased by SHSC for its workload system, marketed by Transitional Systems Incorporated (TSI, 1987), is a fully integrated computer software system for hospital cost accounting and product-line management. Described as "a software system that provides hospital managers with the tools to allocate resources, manage costs, improve productivity, manage change and manage strategically in an increasingly competitive and volatile health-care environment," (TSI, 1987) the system uses methodologies based on business principles commonly used in industry. These include responsibility centres, marginal costing, variance analysis, and management control. What this means is that occupational therapy identified its "intermediate products," or the occupational therapy procedures and services provided in the delivery of client care.

The next stage of the conversion process was to group or assign specific departmental activities to the cost definitions described in TSI language. The software cost accounting theory and its corresponding

Figure 2
Indirect Client Care Procedures

Procedure	Standard Time
Therapeutic Adaptation	60 mins.
Treatment and Preparation	45 mins.
Client Related Consultation, Conferences, Clinics	60 mins.
Client Related Reporting and Recording	60 mins.
Off Site Visits: Home or Community	120 mins.

Figure 3
Cost Definitions - Occupational Therapy

1. Direct Costs	O.T. unit producing therapists, salaries, and students who provide direct and indirect client care.
2. Indirect Costs	Set by Finance, SHSC, software system.
3. Variable Costs	Splint and departmental supplies as they increase in proportion to cost per client, increase and decrease in client volume.
4. Fixed Costs	Non-unit producing and support personnel salaries; rent, insurance, administrative costs; fixed +40% non-client related activities as a % of paid hours.
5. Marginal	Incremental costs, revenue, and/or profitability *

* not for first 2 years

definitions have been translated into occupational therapy costs easily understood by the Finance and Information Services Departments (see Figure 3). Once these two processes were complete, the system was prepared to convert data on a client-specific basis generated from the therapists' recording.

The goal in breaking down costs for the workload measurement system was to keep the numbers manageable for the interface with the Finance and Information Services Departments. Furthermore, since occupational therapy procedures were to appear in a variety of reports used by physicians and administrators, it was considered important to use understandable terminology that best described client intervention. After the completion of the interface, reports were received that reflected occupational therapy as being fully integrated into the financial and clinical systems at SHSC. The system generated useful reports and proved advantageous for the compilation of meaningful information related to client-specific costing through the case mix of a clinical unit. This was accomplished by describing occupational therapy costs for each client diagnosis, programme, or diagnostic case mix groupings (see Figures 4 and 5).

Observations

The Workload Measurement System (Department of National Health and Welfare, 1988), designed by occupational therapists, has become an accepted way of calculating statistics and was further developed to monitor costs at SHSC. The following observations are offered:

(1) The system will enable occupational therapy procedures to be calculated for a diagnostic CMG

using retrospective data gathered over several years. A standard cost and estimated volume for occupational therapy per client or CMG can then be established (i.e. three years of data suggests ten sessions for CMG 007: carpal tunnel syndrome within the clinical unit of surgery).

- (2) The system will estimate a flexible budget for the forthcoming year. The occupational therapy manager's reports can predict manpower based on calculations of procedures needed for each client (i.e. two splints, one musculoskeletal assessment, one discharge planning, and so on).
- (3) The system will assist in developing a workload measurement system database which will contribute to cost and resource allocation specifically for occupational therapy procedures at SHSC. More importantly, it will extend this information to the broader community of other hospitals and the profession as a whole. It will also facilitate outcome research which will attempt to match results with treatments.

Lessons Learned: Strengths

The workload measurement system produces a great volume of data which can be used selectively by various areas of the hospital - finance, information services, physicians, senior management, and the like.

Figure 4
Actual Utilization

CMG 007 - CARPAL TUNNEL SYNDROME

Physician:

Account No.:

Client Name:

Department:

PRODUCT/PROCEDURE	UTILIZATION	COST (\$)
Days on Nursing Unit	5.2	
Nursing Hours	66	\$12,207
Nutrition Visits	6	262
Physiotherapy Hours	3	92
Occupational Therapy Hours	10	507
Radiology Exams	21	1,681
Pharmacy/Medications	150.1	3,219
Laboratory Exams	32.6	439
		\$18,407

* Specifically, for occupational therapy, CMG 007 is further divided into:

- specific procedures used for occupational therapy (i.e. musculoskeletal assessment, splint, etc.)
- supplies per procedure
- overhead, fixed labour, and administration costs
- budget per CMG, actual and variance.

Figure 5
Procedure Cost: Occupational Therapy

Procedure	Variable Costs Per Unit			Fixed Costs Per Unit				Total Unit			
	Labour	Supply	Total	Labour	Equip	Other	Indir	Total	Cost	VBL%	Fix%
ADL	1.08	.03	1.11	.38	.01	.02	1.10	\$1.51	\$2.62	42.28	57.72
Splinting	1.08	.03	1.11	.38	.01	.02	1.10	1.51	2.62	42.28	57.72
Neuro Assessment Intervention	1.08	.03	1.11	.38	.01	.02	1.10	1.51	2.62	42.28	57.72
Seating/W/C Assessment	1.08	.03	1.11	.38	.01	.02	1.10	1.51	2.62	42.28	57.72
Musculo- skeletal	1.08	.03	1.11	.38	.01	.02	1.10	1.51	2.62	42.28	57.72
Sensory Evaluation	1.08	.03	1.11	.38	.01	.02	1.10	1.51	2.62	42.28	57.72
Lifeskills	1.35	.04	1.39	.38	.01	.02	1.31	1.71	3.10	44.69	55.31
Community/ Home Supports	3.24	.09	3.33	.38	.01	.02	2.72	3.13	6.45	51.54	48.46
Prevoc/Voc. Education	1.35	.04	1.39	.38	.01	.02	1.31	1.71	3.10	44.69	55.31
Follow-up Clinic	.81	.02	.83	.38	.01	.02	.90	1.31	2.14	38.80	61.20
Rounds	1.62	.04	1.66	.38	.01	.02	1.51	1.92	3.58	46.45	53.55
Supportive Intervention	1.08	.03	1.11	.38	.01	.02	1.10	1.51	2.62	42.28	57.72
Therapeutic Adaptation	1.08	.03	1.11	.38	.01	.02	1.10	1.51	2.62	42.28	57.72
Treatment Preparation	.81	.02	.83	.38	.01	.02	.90	1.31	2.14	38.80	61.20
Consultation	1.08	.03	1.11	.38	.01	.02	1.10	1.51	2.62	42.28	57.72
Reporting	1.08	.03	1.11	.38	.01	.02	1.10	1.51	2.62	42.28	57.72
Off Site Visits	2.16	.06	2.22	.38	.01	.02	1.91	2.32	4.54	48.86	51.14

TOTAL UNIT COST = \$ PER MINUTE FOR O.T. PROCEDURE
 (I.E. ADL ACCORDING TO STANDARD @ \$157.20)

The occupational therapy manager has the resources to justify any overages or underestimates in budgeting on a client-by-client basis because the management system is based on client-specific information (see Figure 6). For example, if 20 more individuals required renal transplants than were originally anticipated, the

occupational therapy fixed and variable rates would increase by \$5,000. If, on the other hand, there was a decline in the number of clients requiring such treatment, the system could account for a corresponding decline in the number of service hours logged by occupational therapists.

Lessons Learned: Weaknesses

The workload measurement system is unable to describe professional or ethical issues associated with client care. In addition, it is neither sensitive enough to consider the experience level or expertise of the therapist, nor the psycho-social aspects of care. It assumes budget adjustments for volume decreases, irrespective of mitigating circumstances.

Recommendations for the Occupational Therapy Manager

In devising the best approach to the organization of occupational therapy workload measurement system for client costing, clinical unit accountability, and the direction of a procedure-based workload measurement system, the occupational therapy manager is encouraged to consider the following suggestions:

- Study the construction and applicability of a workload measurement system to the individual occupational therapy department. Consider as well the interrelationships between the department, the rest of the hospital, and the community service sector.
- Make sure that the technical details of the system are understandable.
- Invest sufficient energy and time to ensure that professional standards are met when developing standard times for procedures. For example, be aware of the variability and factors associated with occupational therapy procedures in psychiatry versus extended care, and fixed and variable labour categories.
- Analyse the reports generated over an extensive period and compare them with other sources of data.
- Work with clinical programme administrators, financial staff, and information services to ensure that the interpretation of the actual data is consistent with the clinical experience and therapist expertise for each client group.
- Make sure that the time individual occupational therapists spend on this type of project does not exceed their previous experience or interfere with their work habits. The project director at SHSC established that about 10 to 12 minutes per day was the average time required for staff occupational therapists to complete the data entry. Hand-held computers would be advantageous to minimize the amount of time occupational therapists need to record the data. They would also make it possible to enter data immediately after seeing a client. The key to success for this type of project is to make sure that occupational therapists' workloads do not become overloaded, thus forcing them to record data inaccurately or resist the project altogether.

This system has enabled occupational therapists to articulate objectively what they do in treating the diversity of psychosocial clients - the increasing number of clients requiring occupational therapy, the aging population, and the rehabilitative and the acute care clients. As well, it will allow for the development over time of budgets based on the most strategic and realistic assumptions concerning each subsequent year's client group for each clinical unit. The system also permits experimentation within the parameters of a number of scenarios to arrive at approximate costs both for occupational therapy revenues and client activity over subsequent years.

Conclusions

In order for occupational therapy units to operate within the budgetary restraints determined by provincial and federal health-care guidelines, there must be a reasonably straightforward way to estimate and monitor expenses and costs. The system developed by SHSC strives to meet that goal through the work of its Department of Occupational Therapy.

At the same time, it must be noted that the system has not yet been perfected and cannot capture every aspect of client care. The workload measurement system in place can provide costing information to track aspects of occupational therapy client care and department operations, but a philosophy of quality assurance and risk management is essential to ensure that the emphasis on resource utilization does not compromise the quality of client care. It is hoped that the system developed by SHSC will achieve, maintain, and improve the quality of occupational therapy services while contributing to the broader issues of costing via procedures for client care within the clinical unit structure.

REFERENCES

- Department of National Health and Welfare. (1988). *National hospital productivity improvement programme: Workload Measurement System - Occupational Therapy* (H30-11/3-3E), Ottawa, ON: Department of National Health and Welfare.
- Transitional Systems, Incorporated. (1987) [computer programme]. *Transition I: A functional overview*, Boston, MA: Transitional Systems, Inc.

ACKNOWLEDGEMENTS

The authors wish to thank SHSC staff members, Tak Pang (Computer Consultant for Occupational Therapy, Health Data Resources Department) and Mary Campling (Patient Costing, Finance Department), for their assistance in developing the occupational therapy workload measurement system.

Reproduced with permission of copyright owner. Further reproduction prohibited without permission.