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Development and Evaluation of an Instrument for Assessing Rehabilitation Potential in Health Care

Barbara Ann Rosenthal

A Thesis-Equivalent

in

The Department

of

Education

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ABSTRACT

Development and Evaluation of an Instrument for Assessing Rehabilitation Potential in Health Care

Barbara Ann Rosenthal

The purpose of this study was to create and field test an instrument to be used by allied health care professionals, designed to quantitatively measure rehabilitation potential of the geriatric client in the general hospital. Named the IMAGE, it is a multi-dimensional questionnaire whose 25 items focus on factors related to success and failure in treatment. The IMAGE was administered to 30 patients. Inter-rater reliability was tested using two independent raters per patient. The resultant internal consistency was k_w=.70, indicating substantial agreement. Validity was measured comparing IMAGE scores with doctor's rating on a 5 point scale. Using the Spearman correlation, the r_s was .558 (rater 1) and .560 (rater 2); significant at the .01 level. The IMAGE scores were compared with patient outcome following therapy. The highest level of significance was achieved by nurses (.781) who predicted outcome almost as closely as doctors (.865). A screening instrument such as the IMAGE, possessing the advantages of simplicity and rapidity was found reliable and probably valid, (although more research is needed to confirm this). If these attributes are shown by other investigators to be true, then the instrument could be a useful tool to promote geriatric rehabilitation.

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CHAPTER ONE

INTRODUCTION

A project was undertaken at Hôpital Saint-Luc to introduce an evaluation instrument to quantitatively measure the rehabilitation potential of a geriatric patient in a general hospital. The tool had to be rapid and simple enough to be used by allied health care professionals. The project was supported by a grant from the Charles E. Merrill Trust of Ithaca, New York. This thesis-equivalent constitutes the author's participation in the generation of the instrument, and the completion of a validation study.

Rehabilitation in an Aging Population

The older population of North America has shown consistent and sustained growth during this century. In both absolute numbers and percent of the total population, the sixty-five plus segment has increased faster than any other age group. In 1981, there were more than 24 million Canadians, 9.7% of those sixty-five years and over. Increased life-expectancy has combined with a decrease in the birth rate to increase the proportion of aged persons in our society. Table 1 shows the projected increase in the geriatric population in the province of Quebec.

Table 1

Statistics on Quebec's Geriatric Population

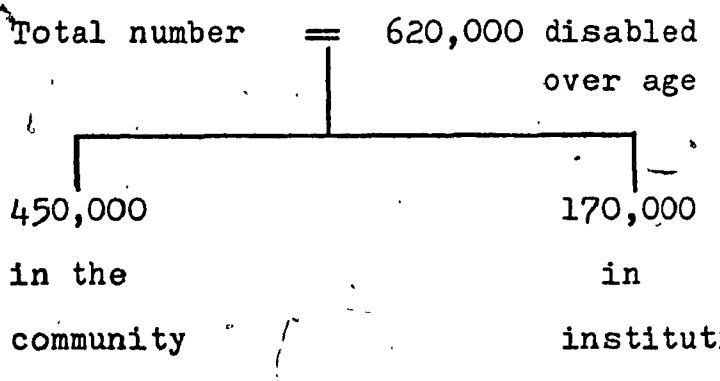
Year	Percentage of Population over 65
1981	8.6
2001	11.4
2031	22.0

Source: Province of Quebec, Department of Social Affairs, 1981.

Of this group, a large number are disabled. Table 2 describes the number of disabled adults sixty-five years and over in Canada in 1980.

Table 2

Statistics on Canada's Disabled Adults over 65



Source: Disabled Persons in Canada, Health and Welfare Canada, Ottawa, 1980

These data emphasize the necessity of focusing attention on the topic of rehabilitation for the geriatric client. A problem of educational technology is to design instruction and to create learning tools useful to this

very important process of rehabilitation.

The fundamental objective applicable to the elderly, regardless of their age, is to maintain them in their milieu at their optimum level of functioning as long as possible (Gryfe,1979). Whether rehabilitation services are needed for this population depends upon the expectations one has for the health and quality of life for this age group. In a general hospital, in order for a client to receive treatment in a Department of Physical Medicine and Rehabilitation, a referral must be made from an authorized source in accordance with the policy of the service. At present, this decision is made by the attending physician and is generally based on one person's subjective findings.

Unfortunately, for most workers in the field, a defeatist attitude and low expectation exist for this population. Thus, the needs of the physically disabled elderly are not always met: these clients, although elderly and sick, are often not referred to rehabilitation. Based on these issues, the medical staff and in particular Dr. B. Talbot (a physiatrist and consultant in geriatric medicine) requested that the Merrill research grant be awarded to an Occupational Therapist/Educator who could develop a system to meet the needs of these clients. It is in this context that a systematic approach was used to develop and test an evaluation method of rehabilitation potential which would be called the IMAGE.

Most gerontology studies to date have led to some general statements about who benefits maximally from rehabilitation and who does not. Studies by Anderson, Baldridge, and Ettinger (1979), Feigenson and McDowell (1980), Gordon, Kohn, and Sloan (1962), Granger, Greer, Liset, Coulombe, and O'Brien (1975), Henriksen (1978), Kaplan and Ford (1975), Lehmann, Delateur, Fowler and Warren (1975), Schuman and Beattie (1980), and Williamson (1971) have shown that:

1. age does not determine outcome
2. certain conditions are prone to more positive results
3. improvement in adaptive social behaviour shows trends similar to physical function
4. rehabilitation is needed for independent living in order to return the elderly client to the community rather than an institution
5. medical diagnoses do not accurately reflect the physical, mental and social capacity of the aged person.

Gordon et al. (1962) and Schuman and Beattie (1980) add that with appropriate techniques, the response to rehabilitation improves the outcome. However, a certain percentage improve regardless of the approach. In just one study was evidence presented that there was no significant benefit from rehabilitation attempts and that potential was practically nil when dealing with physically impaired nursing home residents receiving public assistance (Muller, Tobis and Kellman 1963).

(Note: A glossary of terms is included in this thesis-equivalent (see Appendix A Glossary of Terms) for the purpose of improved understanding of words as they apply to the field of Physical Medicine and Rehabilitation and Occupational Therapy.)

Rationale of this Project

The question of accountability often precedes the use of "objective" measurement instruments, and it has recently become an issue of increased concern in the field of physical medicine. It is felt that decision makers and planners need a quantitative measure for assessment: allied health care professionals (nurses, therapists, social workers) need an instrument that will fulfill these needs. It is in this regard that a systematic effort to design an instrument was made with the emphasis upon learning (treatment) outcomes as the goals of the system and to attempt to bring the systematic knowledge of the learning process to the design of instruction. It is apparent that the "systems approach" to the design of instruction is based on one hand in logical, systematic thinking and planning, making use of all theory and research available, and on the other hand upon empirical test and fact-finding (Gagné and Briggs, 1979).

This combination represents an improvement over earlier ways of planning instruction. This approach makes it possible to verify whether or not the system has achieved its design objective and provides the basis for an accountability system

by means of which educators can report the extent to which design objectives have been obtained (Gagné and Briggs, 1979). This fits in with the meaning of Educational Technology according to Davies and Hartley (1972) whereby they relate it to the process of planning by means of which an instructional system is developed, implemented, controlled and evaluated.

The instructional design process has certain characteristics that need to be discussed in order to follow the development and testing of the IMAGE (Gagné and Briggs, 1979). The first assumption applicable to this process is that instructional planning must be individual and should be oriented toward the individual, in this instance the hospitalized geriatric patient. A second assumption is that systematically designed instruction can greatly affect individual human development. Gagné and Briggs (1979) believe that everyone should have an equal opportunity to use his/her talents to the fullest degree. The last point is that designing instruction must be based upon knowledge of how human beings learn. The instructional design process must therefore take into account the learning conditions that need to be established in order for the desired effects to happen.

Models of instructional design or systems-oriented models require that the procedure consist of carrying out a problem-solving process for a particular purpose. The

creation of the IMAGE followed the system's approach established by Briggs (1977), and Gagné and Briggs (1979). The results were a model which ensured that the components fit with each other. That is, when developing and testing the IMAGE, the author made sure that all components were planned to work together to achieve the goals and objectives of the larger system of instruction. All components were analyzed and developed in a planned sequence. The process was orderly. The procedure was based on research and theory, supplemented by logic, common sense and review.

From this it should be noted that the IMAGE is not a system in itself, but rather feeds into a part of the larger system. This instrument was designed to supply the environment's observed needs and arose in response to changes in the environment whereby these needs were not being met. Figure 1 illustrates how this evaluation method is incorporated into a part of the larger system or environment.

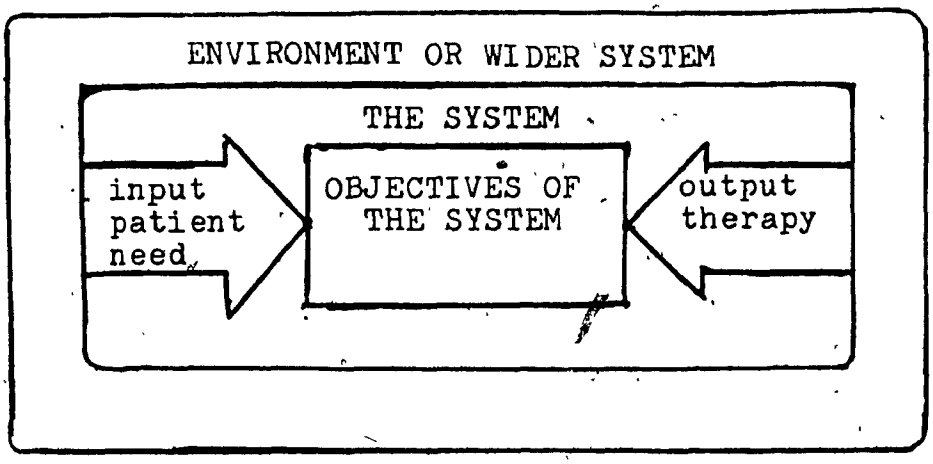


Figure 1: The Instrument within the System

The problem as outlined in this chapter has been defined using the concepts of input/output. The definition of the problem looks at the discrepancy between the current state of the system and the desired state. The IMAGE evaluation is the attempt to quantify the worth of the change which could be accepted as a measure of a possible solution (Romiszowski, 1981).

It appears that an evaluation method such as the IMAGE could benefit from the instructional design process. The major advantage of using the systems appraoch is that it encourages the setting of a design objective and provides a way to know when that objective has been met. Dick and Carey (1978) add that nowhere is there more evidence of an effort to try and serve the needs of students (patients/clients) than in the trend toward systematically designed instruction.

As suggested by its name, the instructional design process implies a series of procedures. For the development and testing of the IMAGE, the steps listed below took place. For the most part, they took place in the order shown. Decisions made in the early phases influenced those made in later stages and insights gained in later stages led to revisions of earlier ideas. This provided a cyclical characteristic to the systems design and added to the strength of the method.

Instructional Design Process

In reality, systems thinking and the application of the system's approach involves different types of activity at all stages throughout the process. The beginning is the analysis, the middle is the design stage and the process ends with an evaluation. The generic steps used in this project are listed below and are derived from Gagné (1962).

1. Analysis and identification of needs: analysing the problem and establishing that the proposed product would contribute to the quality of care for a specific population.
2. Development of objectives: beginning with the results of the needs analysis, describing the goals and objectives for the system of evaluation.
3. Design of the system components: deciding the nature of the materials to be developed and specifying the method of studying the materials; that is, devising a plan and developing a solution.
4. Analysis of the resources: looking at the feasibility of the plan and the method of operation within the system.
5. Development of the materials: designing a blueprint of the materials; content and domain to be covered.
6. Pilot testing: trying out the instrument to gain evidence of the product under typical conditions of use.

7. Revisions and field testing: revising the instrument based on feedback from the pilot testing; actual field testing of the evaluation keeping in mind the time constraints and results of the pilot test.

8. Analysis of the data: providing information regarding the reliability and validity of the instrument; determining the product's effectiveness, useability and feasibility of using it.

Educational technology promotes the use of alternative approaches for facilitating learning and can operate in alternative settings such as a hospital. The practical application in a clinical setting has an impact on the specific process of medical education. In its application, it changes the technique of doing as well as the actual people who design, produce, test and evaluate. By acceptance of this project, it can be seen that hospitals too are turning their attention to educational technology as a means of providing high quality and relatively low cost instruction to suit their needs (Jaffe, Brown and Messier, 1981).

The generation of the instrument based on the systematic design of instruction was accomplished using the models of Dick and Carey (1978), Gagné and Briggs (1979) and Romiszowski (1981). The development and designing of the materials have been systematically created in the

context of solving problems in human learning. Following these principles, this method should improve the efficiency and effectiveness of the procedures followed and the performance of instruction; that is the actual rehabilitation training. The IMAGE was thus designed to assess potential as it related to existing rehabilitation programs.

It was hoped that the IMAGE would assist in decision making, as it is addressed to:

—the participants (patients/clients) who are interested in benefitting from services (treatment/training)

—the program sponsors (hospital and government) who are interested in the use of resources

—the educational board (doctors and administrators) who are interested in the efficiency and effectiveness of the system

—professionals in other hospitals and institutions who are interested in its use in their particular setting.

To accomplish this, the design process went beyond standard approaches to test construction. The content and purpose of the rehabilitation program, along with its role and impact on society, were taken into consideration. While existing instruments were examined during the test development, sociological and psychological factors apparent in the actual training had to be added. In that one of the primary goals of the IMAGE was to promote geriatric rehabilitation, special constraints not normally attended to in test construction

were abided by. Test instruments used to assess and place individuals in training programs must first reflect on those programs if any degree of success in selection accuracy is to be obtained.

In summary, there was a need to develop an evaluation instrument that would quantitatively measure the rehabilitation potential of a geriatric patient in a general hospital. The instrument had to be rapid enough to be practical in the clinical setting and simple enough for use by nurses, therapists and/or social workers. This need occurred as there was no existing instrument to meet these criteria. Using the instructional design process, the author developed and field tested the IMAGE using the geriatric population at Hôpital Saint-Luc, Montreal.

CHAPTER TWO

LITERATURE REVIEW

The present study attempted to objectively describe a patient's potential for rehabilitation through the use of the instrument labelled the IMAGE. In this chapter, the current status of existing instruments in the field of rehabilitation are examined with what I view as a need in the system that has not been addressed. These instruments were reviewed to establish two primary objectives: (1) to assess existing questionnaire formats in terms of categories of content, items, layout and language and (2) to review the procedures by which other evaluations were validated for possible use for the IMAGE. The instructional design process was the method used to develop and test the instrument. The major advantage of this approach is that it encourages the setting of a design objective and provides a way to know when that objective has been met.

Review of 19 Published Evaluations

In order to develop the instrument, it was necessary to review assessments used in the field. This took the form of looking at 19 evaluations published in learned journals from 1957 to 1981 inclusively. In order to consolidate the information, a table (Table 3) was drawn up to allow the reader to see the relationships not readily discernible in

the text (see at end of this chapter). Table 3 is compiled according to the year of publication, starting with the earliest evaluation of PULSES in 1957 and ending with the Functional Assessment Inventory in 1981. In the earliest evaluations, all the data were collected by physicians or specialists in the field. By the mid-sixties, nursing staff and therapists became involved in the assembly of the data and in the seventies, varied health professionals and even ward attendants collected the research data, indicative of the changing role of health care workers.

In looking over Table 3, the instruments divided themselves into four main categories. For the purpose of this review, they have been grouped into evaluations that were designed for:

1. the physically disabled population as a whole and measure activities of daily living - ADL
2. the geriatric patient in a psychiatric setting
3. the geriatric client in a non-hospitalized setting
4. the chronically ill (any age group) and aged population.

It must be remembered that evaluation is a critical step in any rehabilitation program. All persons who are involved in physical and/or occupational therapy programs must be initially evaluated following referral for services and reevaluated regularly throughout the program. Evaluation should include initial and formative assessment of self-maintenance, productivity and leisure occupations, plus

the performance components of motor, sensory, cognitive, intrapersonal and interpersonal skills.

The majority of the above instruments are concerned primarily with physical function. Rehabilitation training programs provide service to assist individuals in meeting their human needs through the performance of those occupations (self-maintenance, productivity, leisure) which will lead to attainment of maximum function, a sense of well-being and a personally satisfying level of independence (Taber, 1981). For the geriatric patient, this optimum function is meant in terms of adjustments to the demands of daily living rather than vocation. These evaluations were and are important in the evolution and process of testing. However, one of my concerns was to expand beyond the narrow repertoire of evaluating in just one area of interest.

The physically disabled population. There is one type of measure that exists for the physically disabled, the Activities of Daily Living test, known in the field as ADL. This measure is a necessary part of assessment in hospitals, rehabilitation centers, nursing homes and home care programs. ADL is a measure of daily living skills which people perform habitually and universarily. Originally the emphasis was on self-care but now it includes any activity necessary or desirable for each individual.

This test is an assessment of a patient's functional capacity to care for himself or herself in any number of tasks, the most common ones being feeding, personal hygiene, transfering, mobility and self-care. The indices of independent physical function are the following assessments: (#3) Disability Evaluation (Sokolow, Silson, Taylor, Anderson and Rusk, 1959); (#5a) Barthel Index (Mahoney and Barthel, 1965); (#6) Rating of Patients on Physical Abilities - ADL (Hoff and Mead, 1965); (#10) Kenny Self-Care Evaluation (Schoening, Anderegg, Bergstron, Fonda, Steinke, and Ulrich, 1965); (#15) Model and Measurement to Test Disability (Williams, Johnston, Willis and Bennett, 1976); (#16) Level of Rehabilitation Scale - LORS (Carey and Posavac, 1978); and (#17) Functional Capacity Evaluation (Jette, 1980).

These ADL evaluations are based on physical function and do not include those factors that may influence treatment outcomes such as psychological, cognitive, social or economic issues. One objective of the new instrument, the IMAGE was to include these other factors.

The geriatric patient in a psychiatric setting. There are several instruments applicable to the geriatric psychiatric patient whether they are in a hospital, an institution or community placement. One of these instruments, The Stockton Geriatric Rating Scale - SGRS (#8)

Meer and Baker, 1966), was useful to the author because it was designed as a screening device for large numbers of patients. However, it is used for selecting those patients who had good potential for leaving the hospital. Thus, the format, administration procedures and physical aspects were directly applicable, while the psychiatric factors, which were predominant, were deemed inappropriate for the purposes of this study.

Plutchik, Conte, Lieberman, Bakur, Grossman and Lehrman (1970) devised an instrument based on the Stockton Geriatric Rating Scale. This assessment, the Geriatric Rating Scale - GRS (#12) assesses the level of functioning of psychiatric geriatric patients both socially and physically. The scale uses the rankings of 0, 1, 2, and was judged to be easy to use because the specific criteria for each item made scoring easy. This 0, 1, 2 scoring system was adopted for the method to score the IMAGE. The format of validation of the GRS was also adopted for use with the IMAGE; that is, two independent raters were used to determine interjudge reliability. In the GRS, psychiatrists from the wards were asked to rate, independently, the patients in the study on a 9 point scale in terms of adequacy of function. A rating of 1 represented fairly good functioning and a rating of 9, very poor. Correlations were then run between the psychiatrist's rating and the

the GRS scores for each ward. The overall format of the GRS was used to validate the IMAGE and is explained in detail in the methods section.

The geriatric client in a non-hospitalized setting. There are three instruments designed for the geriatric client in non-hospitalized facilities such as nursing homes, senior centers, and day programs like the CLSC's here in Quebec. The first one (#11) The Physical Self-Maintenance Scale - PSMS - and The Instrumental Activities of Daily Living Scale - IADL - (Lawton and Brody, 1969), and the second one (#14) The Functional Life Scale - FLS - (Sarno, Sarno and Levita, 1973) were both helpful to the author because they covered all parameters relevant to rehabilitation potential even though the focus was in a different direction to the IMAGE. The measured factors tell how the patient's impairments are reflected in day-to-day activities. The authors explain that a hospitalized patient cannot be rated on a life scale. Unfortunately, these scales are too detailed and time consuming for assessment in a general hospital setting as desired here (PSMS and IADL = 60 items, FLS = 44 items), but were useful in terms of the categories of measurement and the items that were included in these assessments.

The third assessment in this category (#19) The Functional Assessment Inventory (Pfeiffer, Johnson and

and Chiofolo, 1981), is a multi-dimensional assessment measuring function in five areas: social, economic, mental health, physical health and self-care capacity. This measure is a pre-requisite for the efficient provision of appropriate types of services. The drawback to this instrument is that the authors state that in order to be consistent, reliable and valid, a two-day training session is required on the part of prospective users in Tampa, Florida. The IMAGE adopted their five groupings, combined them into four sections and eliminated the idea of training on the part of perspective users in order to comply with the objectives of the project.

The chronically ill and aged population. This group has the largest number of evaluations, with the emphasis on maintenance of the patient's function within the institutional setting and not on rehabilitation potential. In Table 3, these evaluations are numbers 1, 2, 3b, 4, 7, 9, ,3 and 18, and are dated from the very earliest publication in 1957 up to 1981.

The earliest published global assessment of functional abilities is (#1) PULSES (Moskowitz and McCann, 1957). PULSES was valuable to look at for its many positive aspects, namely; it is brief - just 6 items; it is quick and easy to use; it appears frequently in the literature; it has been updated and revised (Granger et al.

1975); and it is still widely used in the field of rehabilitation withstanding the passage of time. Its main drawback is that it requires a single rating of function in each area even though many specific abilities are included. For example, the item measuring the sensory components relating to communication, includes speech, hearing and vision. This is inadequate when trying to pick out individual factors related to potential. Each specific item should be rated individually and not lumped into one rating score. This is important for an instrument that is looking at factors related to success and failure in rehabilitation training.

Number 2 surveyed patients in chronic institutions (any age group) to determine rehabilitation potential. The authors, Reynolds, Abramson and Young (1959), did this using the PULSES profile, the patient's diagnosis, consulting psychiatrists and "other" factors. It should be noted that the notion of rehabilitation potential has been investigated as early as 1959, but the method and inexact procedures are not acceptable by today's more scientific standards. The work by Sokolow, Silson, Taylor, Anderson and Rusk (1961) Disability Evaluation (#3b), runs into the same problem as the study (#2) by Reynolds et al. (1959). There were some interesting features in (#4) the Index of ADL (Katz, Ford, Moskowitz, Jackson, and Jaffe,

1963), (#7) ADL Rating Scale of Ability (Dinnerstein, Lowenthal and Dexter, 1965), (#9) Rapid Disability Rating Scale (Linn, 1967), Physical and Mental Impairment Scale - PAMIE (Gurel, Linn and Linn, 1972), and (#18) Activities of Daily Living, Activités de la Vie Quotidienne - AVQ - ADL in french (Lévesque, D'Amour, Lepage and Reidy, 1981). The first thing to notice is that all these assessments used nursing staff, therapists or social workers for the rating in their research. These articles all noted these professionals to be capable for the task, and provided this author with the assurance that similar staff could complete an instrument like the IMAGE. Reliability was based on these professional observers, while validity remained partially with the physician. These evaluations were also looked at in terms of layout, questions asked, scoring procedures and validity methods. It was noted that these instruments were not geared to the individualized needs of the population the author was investigating.

Finally, there were three review articles (not part of Table 3) that highlighted the advantages and disadvantages of several of the above evaluations. These articles were "A Crtical Review of 12 ADL Scales" by Bruett and Overs (1969), "A Unified ADL Form" by Donaldson, Wagner and Gresham (1973) and "ADL in Stroke, A Merit of 3 Standard Indexes" by Gresham, Phillips and Labi (1980).

These authors confirmed my impressions of the advantages and disadvantages of the assessments in question and helped the investigator to reach decisions of ~~length,~~ scoring, raters, items, reliability and validity, all useful when developing and field testing the IMAGE.

In summary, none of the evaluations in existence combine the ease of use, time limitation and content specificity required to be useful within the clinical setting of a large general hospital. They do not specifically address the geriatric hospitalized patient, nor do they quantitatively measure the client's rehabilitation potential. They were, however, helpful in providing the groundwork for the development of the instrument and the methodology for validating the IMAGE.

The Systems Approach Related to the IMAGE

The development of the IMAGE used a variation of the systematic approach to instruction. In this context, this implied both a way of thinking about the problem and a methodology for seeking and developing a solution. The approach to this process was thus problem-solving oriented. Field experience suggested a need in Quebec for nurses, therapists and social workers to be able to objectively evaluate a client's rehabilitation potential, thereby making treatment/therapy available to the widest range of eligible patients. It was therefore determined that a new assessment

had to be created.

Given the need to develop this instrument, the question arose as to what method should be used to accomplish this task? The general model used was that of the systems approach, an outgrowth of over twenty years of research into the learning process (Dick and Carey, 1979). The procedure used in the instructional design process in developing the IMAGE is referred to as a systems approach because it is made up of interacting components, each having its own input and output, which together produce the product. The instructional design model described in this study is considered a systematic approach with a specific input, process and output for each component. The system also collects information which is fed back into the system so that the final product reaches the desired level of effectiveness.

The use of this approach in the design of the IMAGE suggests there would be verification if the need was met; that is, whether the objective has been achieved. The steps of the instructional design were followed in the traditional manner as described in chapter one. The result was an evaluation instrument called the IMAGE. The formative evaluation, an essential component of the design and development procedure, is covered in the following chapters.

In conclusion, my purpose was to develop a system of

evaluation that would provide useful information for decision-making while minimizing disruption and hospital expense. Such a system was to provide documentation of a patient's rehabilitation potential without requiring expensive professional assessment of function, but nevertheless, have a high degree of reliability and valdidity. In order to have a profile of the patient's rehabilitation potential, it is necessary to extend the defined data base more completely beyond history, physical examination and laboratory data. In this way, the IMAGE could be a useful tool for the allied health care professional as a screening instrument to promote rehabilitation of the geriatric patient.

Table 3

SUMMARY OF INFORMATION ABOUT PUBLISHED EVALUATIONS 1957-1981

Investigators Date	Name of Evaluation	Purpose(s) of the Evaluation	N	Population Studied	Data collected by	Measurement
1. Moskowitz & McCann 1957	Pulses	To evaluate and classify functional capacity To depict an anticipated realistic rehabilitation goal, using the profile as baseline	115	aged and chronically ill	physician	rated in each of 6 categories 6/6 best score 24/6 worst score updated by Granger et al. 1975, p. 36
2. Reynolds, Abramson & Young 1959		A survey to determine the rehabilitation potential in patients living in chronic disease institutions using: Pulses Profile medical diagnosis consulting physiatrist "other" factors	1,480	patients in chronic disease institutions	physiatrists	rated as definitive slight, none in terms of rehabilitation potential
3. Sokolow, Silson, Taylor, Anderson & Rusk 1959	Disability Evaluation	To objectively measure disability To develop a uniform system of classifying the physical, emotional, social and vocational capabilities from a functional point of view	124	disabled persons during various stages of rehabilitation	examiner not specified	data forms IBM cards colour coded
...b... et al 1961		To devise a method of evaluating disability considering medical, social and vocational factors	1,000 stats based on 466	disabled persons and chronically ill	not specified	measure 5 factors to give a percentage of disability

4. Katz, Ford, Moskowitz, Jackson & Jaffe 1963	Index of ADL	To study the results of treatments and prognosis To serve as an objective guide to the course of chronic illness. To be used as a tool for studying the aging process. To aid in rehabilitation teaching	1,001 2,000 evaluations	chronically ill and aged persons	medical and nursing staff professional observers trained by the researchers	ranked by a letter grade A -most independent G -most dependent "other" caterogy update on Progress in the Index of ADL Katz et al. 1970
5a Mahoney & Barthel 1965	Barthel Index B I	To evaluate the patients' status of independence (a) before treatment (b) progress in treatment (c) status when he reaches maximum benefit. To note that lack of improvement in the B I after a reasonable period indicates poor potential for rehabilitation.	not available	patients with neuromuscular or musculoskeletal disorders in chronic disease hospitals	nurses and those who work with the patient	0 totally dependent 100 independent in a ranks of 5. Scoring 10 functions items are weighted total score not as significant and the breakdown of items.
5b Granger et al. 1979	B I modified (1973)	To analyse repeated measures of the B I to predict progress in rehabilitation	110	stroke patients in a rehabilitation hospital		
6. Hoff & Mead 1965	Form rating patients on physical abilities ADL	To objectively assess the success of rehabilitation programs for the physically disables. To have a rating scale to measure the degree of physical progress actually achieved in relation to a patients' potential level of achievement.	55	physically disabled in a rehabilitation hospital	physician therapists social workers personnel working with patient	rating 6 categories ADL total score correlated with scores personality inventory tests.

7. Dinnerstein, Lowenthal & Dexter 1965	ADL Rating Scale of Ability	To describe patients as they engage in normal daily institutionalized routine	25	aged and chronically disabled patients in an institution	therapists (O.T's P.T.'s) nurses aides	11 areas of function 66 different behaviors 5 point scale
8. Meer & Baker 1966	The Stockton Geriatric Rating Scale SGRS	To evaluate geriatric patients in a psychiatric setting in addition to the interview. To measure the level of adjustment in a hospital setting based on observations resulting in a "behavioral rating scale"	692 (1963) 489 (1965) 200 (1966)	geriatric patients in a psychiatric setting	nurses psychiatric technicians	0,1,2 0 healthy end 2 unhealthy end 33 items
9. Linn 1967	Rapid Disability Rating Scale SGRS	To measure easily and accurately the degree of disability in self-care independent functioning at any given time. To be used for research purposes.	20 (60 ratings)	chronically ill geriatric patients	nursing personnel medically oriented personnel anyone with first hand knowledge of patient's condition	16 items, 3 point scale, relating to degree of severity, frequency of occurrence. 2 minutes to rate. Score total 16-48
10. Schoening et al. 1965	Kenny Self-Care Evaluation	To measure patterns of improvement in self-care activities To measure progress in function of a patient and an entire disability group.	156	physically disabled patients in a rehabilitation setting	managed by the statistical services department	6 categories, 18 self-care items, rated on a 5 point scale
Schoening & Iversen 1968	Kenny Self-Care Revised	To determine if the rating time relationship approximates the normal learning curve.	72	as above	as above	17 self-care items

11. Lawton & Brody 1969	Physical Self-Maintenance Scale PSMS Instrumental Activities of Daily Living IADL	To measure self-care ability. To top a level of functioning to assess everyday functional competence	500 265	geriatric population serving community residents	social worker	validity against other measures done by M.D. (a) Physical Classification 1964 (b) Mental Status Questionnaire MSQ (c) Behavioral and Adjustment Scales B.A.
12. Plutchick et al. 1970	Geriatric Rating Scale GRS	To measure the level of physical and social functioning. To determine if the scale is valid and reliable. To test instead of lengthy customary interview techniques.	207	geriatric population in a psychiatric hospital	ward attendants (patient need not be present)	31 items, score 0-62 tested geriatric and non-geriatric patients Validated against tests by psychiatrists and psychologists rating 1-9
13. Gurel, Linn & Linn 1972	Physical and Mental Impairment Scale PAMIE	To assess, status and progress during a patient's hospitalization. To use PAMIE as a screening, diagnostic and placement device (individual and group). To determine if patient is a rehabilitation patient or long-term care.	845 all male veterans	chronically ill institutionalized psycho-geriatric patients 47% med/surg 53% psychiatric	nursing personnel who had best knowledge of patient	77 items yes/no format, based on behavior during week preceding rating
Pablo 1976	Evaluation of the PAMIE	A comparative analysis of the PAMIE scale.	190	as above ages 21-98 years	nurses (as above)	

14. Sarno, Sarno & Levita 1973	Functional Life Scale FLS	To measure disability To provide a quantitative measure of a patient's ability to participate in daily activities customary of most people, either before, during or following rehabilitation.	25 (15 male 10 female)	disabled population in home and community settings	11 staff 3 M.D's 3 speech therapists 2 P.T's 1 O.T. 1 psychologist 1 R N.	5 categories 44 items 5 point continuum on scale 1 interview on video each patient rated twice
15. Williams Johnston, Willis & Bennett 1976	Model and measurement to test disability	To test a model and measurement technique ranking disability. To assess individual disadvantage. To predict progress or deterioration in recovery. To evaluate the outcome of treatment regimes.	245 88 male 157 female	post-surgical patients in the community identified as disabled in 1 or more of 4 areas of activity	investigators	Guttman scale of analysis in the areas of self-care domestic activities mobility occupation
16. Carey & Posavac 1978	Level of Rehabilitation Scale LORS	To develop an approach to program evaluation to serve accreditation needs; to be inexpensive to implement. To measure (a) amount of improvement (b) if patient maintains functional level after discharge, (c) if improvement is due to time, recovery or treatment (d) if treatment in a PM & R unit is better than on a medical unit.	53	69 consecutive admissions with CVA 53 tested	interview by non-clinically trained staff who knew patient	6 categories in ADL Total score correlated with score on personality inventory tests. - what patient should be able to perform at discharge with what level was actually achieved.

17. Jette 1980	Functional Capacity Evaluation	To select an ADL subset of items, reducing the task of assessing functional capacity, but not sacrificing comprehensiveness.	1,089 3 year study	non institutionalized patients with polyarticular disability	physical therapist	1-1½ hours to complete 0-4 point scale 0 independent to 4 cannot perform score for pain.
18. Lévesque, D'Amour, Lepage & Reidy 1981	ADL (AVQ- in French)	To give those working in gerontology a valid instrument in the French language. To measure the degree of functional independence in ADL.	244	geriatric patients in an institution	nurses who knew patient for at least 1 month	rating scale 1-5 5 independent 1 dependent 7 categories
19. Pfeiffer Johnson & Chiofolo 1981	Functional Assessment Inventory	To provide a rapid, valid and reliable assessment of functional status. To provide efficient provision of appropriate type of services.	244	elderly persons in a rural county in nursing homes (63) congregate living facilities (62) day programs (60) senior centers (59)	interviewers	10 items questionnaire SPMSQ short portable mental status questionnaire

CHAPTER THREE

METHODS

Research and Evaluation Design

The evaluation design posed three separate questions each employing a different methodology. The production was evaluated for inter-rater reliability; validity of the IMAGE score was compared to that of doctor's rating; and validity of the IMAGE score was compared to actual patient outcome following treatment in rehabilitation (physical and/or occupational therapy).

Inter-rater reliability. Test-retest reliability (consistency over time) was assessed using two independent raters to evaluate each patient with the IMAGE. That is, rater 1 evaluated subject 1 on day 1; rater 2 evaluated the same patient on day 2, 3, or 4 (see Table 4). Inter-rater reliability was tested and the resultant internal consistency level was measured using the weighted kappa, k_w, the statistic of choice of measurement of observer agreement with ordinal data (Kramer and Feinstein, 1981).

Table 4

Design: Inter-rater Reliability

	Time 1	Time 2
observation	1	2
subject	1	1
rater	1	2
day	1	2,3 or 4

Validity: IMAGE scores and Doctor's rating. Validity was measured comparing the IMAGE scores with that of the doctor's rating of the patient. The doctor rated the patient on a five-point scale using his/her conventional method of interview and examination. The Physician's Rating Scale Form is found in Appendix E. The physician was required to circle the appropriate number; 1 indicative of a low rating of rehabilitation potential to 5, indicative of high rehabilitation potential. Thus, the doctor formed a judgment concerning the rehabilitation for the patient.

Validity: IMAGE scores and patient outcome. Validity was also measured by comparing the IMAGE scores with actual patient outcome following rehabilitation treatment. All patients in the study were referred to Physical and/or Occupational Therapy. This treatment lasted a minimum of two weeks and a maximum of four weeks, at which time the therapist was required to form an assessment as to the

extent of the patient's progress in therapy. Based on clinical knowledge and experience, each therapist was required to rate the patients in the study using the excellent, very good, good, fair or poor scale in terms of how well the patient did in treatment. This is a commonly used rating scale within the profession. (The therapists were not aware of the patient's IMAGE score total). No special form was used for this rating, but rather the therapist added this notation to the patient's chart under "Progress Notes - Research Project".

Subjects

The population consisted of 40 in-patients, males and females at Hôpital Saint-Luc, a large inner-city university affiliated teaching hospital. The patients, aged 65 years or older were selected from four wards: geriatric, orthopaedic, neurological and rheumatology.

In order to be a subject in this study, patients had to meet the following criteria:

1. the medical diagnosis stated and the vital signs stable
2. a minimum hospitalization of three weeks
3. demonstration of the presence of sequela affecting one or more functions
4. the patient was not in chronic care, terminally ill, alcoholic or mentally retarded.

Six of the patients participated in the pilot study, thirty

particpated in the field study (main evaluation), and four were dropped for procedural reasons.

Materials

The instrument, IMAGE, is a 25 item bilingual questionnaire in print form. It is worded simply, is not time consuming, is easy to score and is meant to be used by the allied health care professional within the general hospital setting. It is divided into four sections and assesses the following factors regarding the patient: (1) social and economic, (2) physical motor, (3) sensory, and (4) psychological and cognitive. This multi-dimensional questionnaire focuses on factors related to success and failure in geriatric rehabilitation.

The original name chosen for this evaluation was "GERP" and stood for "Geriatric Evaluation for Rehabilitation Potential" and in french "Gériatrie: Evaluation en Réadaptation du Potential". When the instrument, the research design and the results of the pilot and field testing was presented to the physicians in the Department of Physiatry, they unanimously suggested that the name of the tool be changed. The word "GERP" did not have universal appeal due to its sound. The word IMAGE was selected and was agreeable to all concerned with this project. The word IMAGE is a bilingual term and means "to describe or portray, to create a representation of". This name was

chosen because the instrument describes and portrays in quantitative form the potential for rehabilitation of a geriatric patient in a general hospital. The original version (GERP) is reproduced in Appendix B and the revised version (IMAGE) in Appendix C.

Section A has five questions and deals with social and economic factors or interpersonal components of performance. The items chosen in this section are: environment, family support, financial status, life-style and social skills. These are measures of social activity and are judged to relate to well-being having an effect on treatment.

Section B has ten questions and looks at those issues related to physical function. This component of performance determines if the skeletal systems can perform the basic movement skills to complete the occupational requirements. This measure portrays the degree of severity of the physical handicap. There are twice as many items in this section as these factors are considered to weigh more heavily in terms of outcome of treatment. The items in this section are eight activities of daily living including transfering and mobility, continence and the number of illnesses that would have an impact on physical function.

Section C has five questions that assesses the sensory component of performance to determine how well a patient gains information from the outside world. The items chosen include

those factors that might increase a patient's chance to benefit in therapy. There is assessment of vision, hearing, communication, comprehension and pain.

Section D has five questions and deals with the cognitive and psychological aspects of performance. It looks at the patient's ability to mobilize his physical and psychological resources to cope with the disability. The items chosen are orientation, memory, concentration, mental status and motivation.

The items selected were based on the results of an extensive literature review, plus consultations with physicians and therapists in the hospital. The items finally selected were those judged by professionals working in the field and previous research to be those associated with success and failure in rehabilitation as well as those most pertinent to geriatric medicine.

The various steps in the design of the IMAGE have been listed in chapter one and will be further described in this chapter under procedure. The systems analysis approach used in the construction of the IMAGE was useful as it helped create a basis for establishing priorities among the problems to be tackled by the therapist. This would enable the people involved in training (therapists) to move to the solution of high-priority problems.

Rating. The raters of the IMAGE included nurses, physical therapists, occupational therapists, social workers, nursing assistants and rehabilitation technicians. In all cases, the raters were working with the patient or assigned to the unit. The raters did not receive formal training or instruction. Only a brief explanation was given concerning the IMAGE as part of a research project. The first sheet of the package (see Appendix D) provided the information needed to complete the questionnaire.

Scoring. The scoring (or rating) of each of the 25 items making up the four sections of the IMAGE was completed by selecting a 0, 1, or 2. The highest rating is "0", and indicates independence and apparently normal functioning. The middle score of "1", indicates semi-functional performance, assistance, supervision, instruction or direction needed. The lowest rating is "2", and indicates dependence or dysfunction due to impairment, handicap or disability. Each section is added and the totals written on the front sheet of the IMAGE.

To interpret the scores, the 0 scores are multiplied by 0, the 1 scores by 1 and the 2 scores by 2. This gives a total minimum score of 0 and a maximum score of 50. This system of multiplying the raw score in order to have one final number was chosen as a way of keeping the approach simple, and easy to calculate and examine in terms of the

final derived score for interpretation. Table 5 explains the method of deriving the final IMAGE score and its interpretation using sample numbers.

Table 5

IMAGE: Final Score Derived and Interpretation

Patient: Mrs. B.

	0	1	2
Section A	3	1	1
Section B	6	3	1
Section C	5	0	0
Section D	4	1	0
Total	18	5	2
	18 X 0 = 0		
	5 X 1 = 5		
	2 X 2 = 4		
Derived score	0 + 5 + 4 = 9		

Interpretation of IMAGE derived scores

Scores	Rehabilitation Potential
0 - 7	excellent
8 - 15	good
16 - 50	poor

The method of interpreting the final IMAGE scores was done initially in an arbitrary manner by listing all the scores obtained by the raters. Looking at the list of 60 IMAGE scores, three groupings seemed to emerge with clusters of numbers in the 0 to 7 range, 8 to 15, and lastly in the 16 to 50 range. During further analysis of the data, different combinations were tried. However, the groupings which produced the best predictive results were the same as the above divisions; 0 to 7 meaning excellent, 8 to 15 meaning good and 16 to 50 meaning poor rehabilitation potential.

Procedure

The development and testing of the IMAGE comprised the following steps or series of procedures as outlined in chapter one. Each will be explained separately.

Needs Analysis

The design of this instruction resulted from the perceived need of the medical staff at Hôpital Saint-Luc and fell into the category of a demand to develop an evaluation instrument to quantitatively measure rehabilitation potential of a geriatric patient in a general hospital. There existed a discrepancy between what was being used and what was needed. The present system was that of either the physician on the unit referring the patient to therapy,

or the physician making a referral to a physiatrist who would then make the referral for rehabilitation services. Due to the complexity and time consuming nature of this system, many patients in this population were not being referred for treatment for reasons other than ability to benefit.

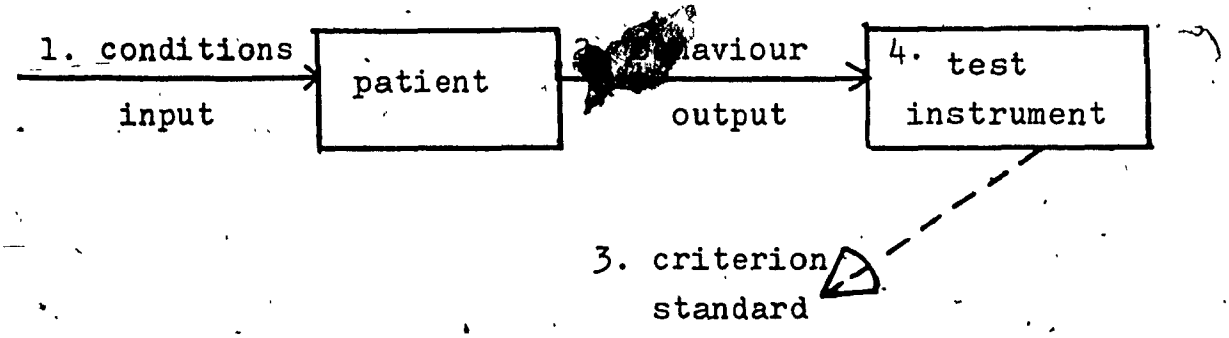
The needs analysis for the instrument was conducted by Dr. B. Talbot (Doctor of Physical Medicine and Rehabilitation and Consultant in Gerontology) and Dr. R. Charbonneau (Chief of Geriatrics) at Hôpital Saint-Luc. They presented this need to the hospital Board of Directors who agreed to use this research grant fulfilling this need.

Definition of the Objective

The terminal objective for the IMAGE was cast into a precise statement. Using Romiszowski's (1981) method, a four-point format was adopted (see Table 6).

Table 6

Romiszowski's Four-point Format - Instructional Objectives



Put into statement format, the objective for the development of this system was: given the conditions found in a general hospital, the rater (allied health care professional) will be able to quantitatively measure the rehabilitation potential of a geriatric patient using the IMAGE evaluation method, that will be rapid and simple to use and score. Table 7 is an objective matrix for the IMAGE.

Table 7

Objective Matrix for the IMAGE

System level	Input conditions	Desired outputs	Criteria standards	Measuring instrument
general hospital	an allied health care worker or rater	quantitative measure of patient's rehab potential	simple use easy to score not time-consuming bi-lingual identify patients re rehab potential	reliability index validity index time measure affective notation

Design of the Components

Certain decisions were made concerning the nature of the components to be designed. The author had to plan the nature of the materials, and for the most part, these decisions resulted from the extensive literature review as well as consultations with many of the professionals in the hospital (physiatrists, therapists, medical specialists and an epidemiologist). Based on these enabling objectives, the opinions of experts, and the groundwork of other authors and researchers, test items were created. The sequence of the items and the structure or layout of the instrument followed. After many drafts were written and rewritten, a 30 item questionnaire emerged which formed the pilot test with a group of 6 patients and 12 raters (see Appendix B). Figure 1 provides the schematic outline of the evaluation including the performance components and the specific items measured.

GERIATRIC EVALUATION OF REHABILITATION POTENTIAL - IMAGE

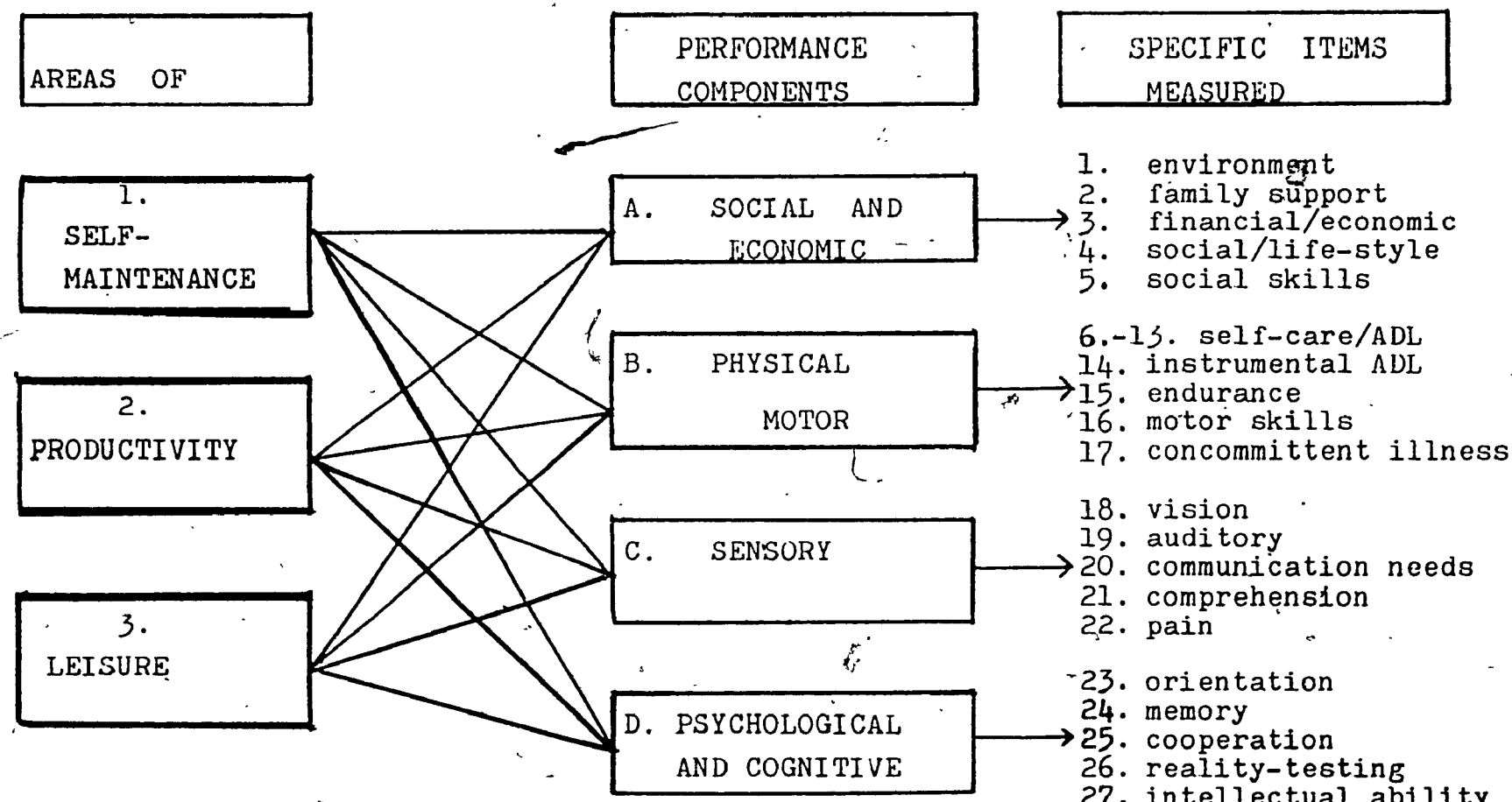


Figure 2: Schematic outline of the IMAGE

Analysis of the Resources

Hôpital Saint-Luc has a large research department where the protocol for the project was presented to the Research and Ethics Committee made up of nine physicians and researchers. Following acceptance of the research protocol, permission was granted to pilot test and field test the instrument within the hospital. Dr. André Viallet, the Chairman of the Research Department, provided me with a letter indicating the acceptance of the research by the committee. This was used each time I met with physicians in the hospital in order to use their patients in the study. All testing was done in the patient's room, and the schedule for testing by the rater was flexible. There was no problem in this regard.

Pilot Test

Following acceptance of the research protocol by the Research and Ethics Committee of Hôpital Saint-Luc, the instrument, Geriatric Evaluation for Rehabilitation Potential (GERP) was translated into french and the materials assembled for the pilot test (see Appendix B). The name, GERP, was later changed to IMAGE, a more acceptable name for the assessment instrument.

For the pilot study, 6 patients were selected from the Geriatric Unit, 3 west. Doctors Charbonneau, Chief of the unit and Talbot, consultant, were the physicians

responsible for getting this project underway by presenting the investigator and her research project to the nurses, therapists and social workers on the floor and encouraging their participation.

There were 12 raters as part of the pilot study, and they were required to rate 1 patient using the IMAGE questionnaire and then to answer the Rater's Questionnaire (see Appendix C) which provided concrete feedback regarding the instrument.

The main purpose of the pilot test was to look at the actual IMAGE evaluation from the point of view of understanding, grammer, layout, easy of use and translation. The scores obtained in the pilot study were not part of the final data analysis.

The revisions that took place were a result of the comments of the 12 raters on their Raters' Questionnaires, and oral feedback from three therapists, one nurse and the two physicians. There were several changes that took place. The number of items was reduced from 30 to 25. The five that were omitted were felt to be redundent or did not add pertinent information. Most of the raters found the layout confusing, and the form was altered to be simpler and clearer to read and score. Some questions were shortened in response to the feedback that they were too detailed and caused confusion. The revised version, based on this feedback is found in Appendix D.

The Field Test

When the revised version of the IMAGE was translated into french and the materials assembled, the actual field testing occurred and the following procedure took place.

It was necessary to meet with the physicians in charge of the various units (orthopaedics, neurology, gerontology and rheumatology) involved in the study to obtain permission to use the evaluation with their patients. The names of the geriatric patients admitted to these four units from which the subjects were selected, were obtained. Each patient's chart was read to see if they met the stated criteria of the project.

If the patient met the criteria, the objectives of the research project were explained and they were requested to give their consent using a standard form (see Appendix F). This consent was a requirement of the Research and Ethics Committee of the hospital. Five clients refused to be subjects.

Two professionals were assigned at random to use the IMAGE with their particular patient. The combination of assigning raters with regard to their professional status was also at random; a nurse, therapist or social worker. In all, there were 10 different nurses, 7 physical therapists, 3 occupational therapists and 2 social workers. The number of questionnaires filled in by each were as follows: nurses rated 15 patients, physical therapists 20, occupational therapists 23 and social workers rated 2

patients, providing the total of 60 IMAGE questionnaires from the sample of 30 patients. Although bilingual, all materials in the pilot test and field test used the french form for all but 2 english speaking patients.

These professionals were approached individually by the author and asked to cooperate in the research project by completing the IMAGE with a specific patient. No formal instruction or training was necessary as the user instruction sheet provided the required information. This also simulated the environment in which the instrument would eventually be used. The only imposed constraint was the necessity of completing the form within a specified time. It should be emphasized that random assignment was applied to all aspects of the ratings, with rater 1 and rater 2 strictly refering to the order of administration. All materials were returned to the nurses station on the unit.

The next spet involved meeting with the physician assigned to the case, and providing an explanation of the study. The doctor was asked to participate in the rrsearch by completing the form asking him to rate the patient on a 5 point scale regarding his expert opinion of the patient's potential (see Appendix E). This judgement was based on his conventional method of assessment. The doctor was required to return the form within one week. In all, 11 docotrs participated in the project. One of these, Dr. B. Talbot rated 10 patients, Dr. J. M. Cloutier, an orthopaedic

surgeon rated 9 patients, Dr. R. Charbonneau, a specialist in gerontology rated 2 patients, and each of the other 8 rated one each. These 8 other physicians were made up of 3 neurologists, 2 physiatrists, 2 orthopaedic surgeons and 1 rheumatologist.

In the field of Physical Medicine and Rehabilitation, a referral for treatment must be made by the physician for a patient to receive treatment. When the physician filled in the rating form for this project, he/she also filled in the referral for services form so that patients could be sent for Physical and/or Occupational Therapy. All patients that were involved in the research and had the IMAGE questionnaire filled in were sent for therapy.

At this time, treatment began. The therapists who were involved with rating their patients, were also responsible for their treatment. Where nurses or social workers rated patients, these patients were assigned to therapists on that particular service. All other patients were treated in the Department by a staff therapist.

The patient remained in treatment for a minimum of two weeks and a maximum of four weeks before the therapist was asked to evaluate the patient's progress; that is their success or failure in treatment. Each therapist was required to rate this progress using the scale of E, VG, G, F or P, a commonly used rating scale in the profession. This

notation appeared in the patient's chart on the sheet denoting "Physical or Occupational Therapy Progress Notes" with a special added title stating "IMAGE - Research Project". An example of this was, "Mrs. B's progess in physical therapy after 3 weeks and 12 treatment sessions is good". Usually qualifying remarks accompanied the rating.

The author gathered all the materials from the nurses station and the patient's charts on the various units. The data collection occurred during a period of three months (1982; May, June and September). This completed the research procedure of the field test.

CHAPTER FOUR

RESULTS

Sociodemographic data

A total of 30 patients were used in this study; 22 females (73.3%) and 8 males (26.7%). The average age for the group was 74.9 years with ages ranging from 65 to 94. The mean age for females was 73.4 and for males it was 71 years.

In the group, 83.3% were born in the province of Quebec; 50% in Montreal and 33% from other parts of the province. The remaining 16.7% were born in other parts of Canada, United States, Poland, Lithuania and Viet-Nam.

The social status of the subjects were as follows: 20.8% were married, 16.7% single, 12.5% divorced, 41.7% widowed, and 8.8% belonged to a religious order.

IMAGE scores

Table 8 lists the subjects (N = 30) and their derived scores on the IMAGE during the field test with rater 1 and rater 2. These two columns of derived scores were obtained by the procedure cited in chapter three. The patient with the lowest rating (excellent rehabilitation potential) received a score of 2, and the highest rating (poorest rehabilitation potential) received a score of 43.

Table 8

Subjects and the Derived Scores on the IMAGE

Subjects	Derived Scores	
	rater 1	rater 2
1	22	15
2	14	5
3	3	6
4	6	9
5	7	7
6	8	12
7	2	6
8	11	10
9	11	14
10	5	6
11	9	9
12	23	13
13	5	7
14	43	44
15	17	21
16	6	6
17	11	11
18	6	11
19	5	5
20	7	5
		8
21	11	8
22	15	17
23	3	4
24	18	12
25	7	5
26	13	6
27	14	17
28	17	20
29	2	5
30	13	12

Both rater 1 and 2 placed 13 patients as excellent, 11 as good and 6 as poor. Of the 30, 22 cases were placed in the same category, while 8 fell into different categories.

Reliability

Having used two independent raters per patient, inter-rater reliability was tested. The internal consistency level was measured and the resultant weighted kappa was $k_w = .70$, indicating substantial agreement. The weighted kappa is the clinical statistic of choice for measuring observer agreement with ordinal data (Kramer and Feinstein, 1981), and indicated a substantial level of agreement. (See Table 9)

Table 9

Guidelines for Value of the weighted kappa

Value of k_w	Strength of agreement
<0	poor
0 - .20	slight
.21 - .40	fair
.41 - .60	moderate
.61 - .80	substantial
.81 - 1.00	almost perfect

To obtain this measure, the IMAGE scores were arbitrarily divided as follows for the agreement matrix: 2 - 7 excellent, 8 - 15 good and 16 - 43 poor (see Table 10). Other divisions of scores were tried, but the best results for inter-rater reliability occurred with the above.

Table 10

Agreement Matrix for Rater 1, Rater 2

		Rater 1			
Rater 2	✱	E 2 - 7	G 8 - 15	P 16 - 43	
	E 2 - 7	11 (5.63) 0	2 (5.2) 1	0 (2.16) 2	13
	G 8 - 15	2 (4.76) 1	7 (4.4) 0	2 (1.83) 1	11
	P 16 - 43	0 (5.6) 2	3 (2.4) 1	3 (1.0) 0	6
		13	12	5	

$$q'c = \frac{wfc}{N} = \frac{29.777}{30} = .790$$

$$q'o = \frac{wfo}{N} = \frac{9}{30} = .3$$

$$k_w = 1 - \frac{q'o}{q'c} = 1 - .3022 = .6978$$

$$k_w = .70$$

Percent of agreement = 70%

Validity

It was necessary to consider the concurrent validity of the IMAGE and the procedure involved a comparison between the test score (IMAGE) and the criterion measure (Doctor's rating), defined in terms of "clinical judgement". This comparison was made through the Spearman rank order correlation coefficient. Both rater 1's scores and rater 2's scores were compared independently and the results were: IMAGE rater 1 with doctor's scores r_s = .558 and with rater 2, r_s = .560. The critical values for r_s (df = 28) are .361 at the .05 level and .463 at the .01 level. Taking the doctor to be the "expert", then these results suggest that the IMAGE was able to identify rather closely patients who actually do have excellent, good or poor rehabilitation potential (see Tables 11 and 12 for actual figures).

Validity was also measured comparing all the raters' IMAGE scores with actual patient outcomes following treatment in Physical and/or Occupational Therapy. A Spearman rank order correlation coefficient was used in this comparison. This set of correlations examined rater 1 and rater 2 separately. In the first comparison between rater 1 and patient outcome, the r_s = .454 and with rater 2 the r_s = .553. The critical values were the same as listed above. This suggests that the IMAGE is

reasonably able to identify those patients as excellent, good or poor in terms of treatment outcome and how they actually did perform during their rehabilitation training, more so with the second sdministration than the first.

The highest level of significance was reached when comparing the doctor's evaluation of the patient's rehabilitation potential with actual patient outcomes. The Spearman correlation in this case was $r_s = .865$. This suggests that the doctor was able to identify actual patient outcomes more closely than the IMAGE evaluation method. Tables 13, 14 and 15 show actual figures of the validity calculations.

Three other comparisons were made using the Spearman rank order correlation:

1. the IMAGE scores as rated by the nurses with patient outcome
2. the IMAGE scores as rated by physical therapists with patient outcome
3. the IMAGE scores as rated by occupational therapists with patient outcome.

The results were: IMAGE rated by nurses with patient outcome $r_s = .781$, physical therapists $r_s = -.541$ and occupational therapists $r_s = -.256$. This suggests that when nurses use the IMAGE, they were able to identify actual patient outcome almost as closely as the doctors.

The therapists, on the other hand, produced poor predictions.

Time Factor

The mean time of administration was 10.5 minutes. One of the objectives of the study was that the instrument should be rapid and thus not be a time consuming device. The slowest time of administration was 45 minutes and the reason was language problems with two patients (one spoke only Polish and the other spoke a French dialect from Viet-Nam). These times were included in the mean time. The fastest recorded time was 8 minutes. It was noticed but not measured, that time decreased with a given rater's familiarity and use of the IMAGE.

Table 11

Spearman Rank Order Correlation Coefficient: Rater 1 & Doctor

Subjects	Rater 1	Doctor	Rank of X, R_x	Rank of Y, R_y	D = $R_x - R_y$	D^2
1	22	3	28.0	24.0	4.0	16.00
2	14	5	22.5	5.5	17.0	289.00
3	3	4	3.5	15.5	-12.0	144.00
4	6	5	9.0	5.5	3.5	12.25
5	7	4	12.0	15 5	- 3.5	12.25
6	8	3	14.0	24.0	-10.0	100.00
7	2	4	1.5	15.5	-14.0	196.00
8	11	4	17.5	15.5	2.0	4.00
9	11	5	17.5	5.5	12.0	144.00
10	5	4	6.0	15.5	- 9.5	90.25
11	9	5	15.0	5.5	9.5	90.25
12	23	4	29.0	15.5	13.5	182.25
13	5	5	6.0	5.5	0.5	0.25
14	43	1	30.0	30.0	0.0	0.00
15	17	3	25.5	24.0	1.5	2.25
16	6	5	9.0	5.5	3.5	12.25
17	11	4	17.5	15.5	2.0	4.00
18	6	4	9.0	15.5	- 6.5	42.25
19	5	4	6.0	15.5	- 9.5	90.25
20	7	5	12.0	5.5	6.5	42.25
21	11	3	17.5	24.0	- 6.5	42.25
22	15	5	24.0	5.5	18.5	342.25
23	3	5	3.5	5.5	- 2.0	4.00
24	18	3	27.0	24.0	3.0	9.00
25	7	4	12.0	15.5	- 3.5	12.25
26	13	3	20.5	24.0	- 3.5	12.25
27	14	3	22.5	24.0	- 1.5	2.25
28	17	2	25.5	28.5	- 3.0	9.00
29	2	5	1.5	5.5	- 4.0	16.00
30	13	2	20.5	28.5	- 8.0	64.00
n = 30						$\Sigma D^2 = 1987$

$$r_s = 1 - \frac{6 \Sigma D^2}{n(n^2-1)} = 1 - \frac{6(1987)}{30(30^2-1)}$$

$$r_s = .558$$

Table 12

Spearman Rank Order Correlation Coefficient: Rater 2 & Doctor

Subjects	Rater 2	Doctor	Rank of X, R_x	Rank of Y, R_y	D= R_x-R_y	D^2
1	15	3	25.0	24.0	1.0	1.00
2	5	5	4.0	5.5	- 1.5	2.25
3	6	4	9.0	15.5	- 6.5	42.25
4	9	5	15.5	5.5	10.0	100.00
5	7	4	12.5	15.5	- 3.0	9.00
6	12	3	21.0	24.0	- 3.0	9.00
7	6	4	9.0	15.5	- 6.5	42.25
8	10	4	17.0	15.5	1.5	2.25
9	14	5	24.0	5.5	18.5	342.25
10	6	4	9.0	15.5	- 6.5	42.25
11	9	5	15.5	5.5	10.0	100.00
12	13	4	23.0	15.5	7.5	56.25
13	7	5	12.5	5.5	7.0	49.00
14	44	1	30.0	30.0	0.0	0.00
15	21	3	29.0	24.0	5.0	25.00
16	6	5	9.0	5.5	3.5	12.25
17	11	4	18.5	15.5	3.0	9.00
18	11	4	18.5	15.5	3.0	9.00
19	5	4	4.0	15.5	-11.5	132.25
20	5	5	4.0	5.5	- 1.5	2.25
21	8	3	14.0	24.0	-10.0	100.00
22	17	5	26.5	5.5	21.0	441.00
23	4	5	1.0	5.5	- 4.5	20.25
24	12	3	21.0	24.0	- 3.0	9.00
25	5	4	4.0	15.5	-11.5	132.25
26	6	3	9.0	24.0	-15.0	225.00
27	17	3	26.5	24.0	2.5	6.25
28	20	2	28.0	28.5	- 0.5	0.25
29	5	5	4.0	5.5	- 1.5	2.25
30	12	2	21.0	28.5	- 7.5	56.25
n = 30						ΣD^2=1980

$$r_s = 1 - \frac{\Sigma 6\ D^2}{n(n^2-1)} = 1 - \frac{6(1980)}{30\ (30^2-1)}$$

$$= \underline{.560}$$

Table 13

Spearman Rank Order Correlation: Rater 1 & Patient Outcome

Subjects	Rater 1	Patient Outcome	R_x	R_y	$D = R_x - R_y$	D^2
1	22	2	28.0	26.5	1.5	2.25
2	14	5	22.5	5.0	17.5	306.25
3	3	3	3.5	18.0	-14.5	210.25
4	6	5	9.0	5.0	4.0	16.00
5	7	5	12.0	5.0	7.0	49.00
6	8	2	14.0	26.5	-12.5	156.25
7	2	3	1.5	18.0	-16.5	272.25
8	11	3	17.5	18.0	- 0.5	0.25
9	11	5	17.5	5.0	12.5	156.25
10	5	3	6.0	18.0	-12.0	144.00
11	9	5	15.0	5.0	10.0	100.00
12	23	3	29.0	18.0	11.0	121.00
13	5	5	6.0	5.0	1.0	1.00
14	43	1	30.0	30.0	0.0	0.00
15	17	3	25.5	18.0	7.5	56.25
16	6	4	9.0	11.0	- 2.0	4.00
17	11	3	17.5	18.0	- 0.5	0.25
18	6	2	9.0	26.5	-17.5	306.25
19	5	3	6.0	18.0	-12.0	144.00
20	7	4	12.0	11.0	1.0	1.00
21	11	3	17.5	18.0	- 0.5	0.25
22	15	5	24.0	5.0	19.0	361.25
23	3	5	3.5	5.0	- 1.5	2.25
24	18	2	27.0	26.5	0.5	0.25
25	7	4	12.0	11.0	1.0	1.00
26	13	3	20.5	18.0	2.5	6.25
27	14	2	22.5	26.5	- 4.0	16.00
28	17	2	25.5	26.5	- 1.0	1.00
29	2	5	1.5	5.0	- 3.5	12.25
30	13	3	20.5	18.0	2.5	6.25
n = 30						$\Sigma D^2 = 2453$

$$r_s = 1 - \frac{6\Sigma D^2}{n(n^2-1)} = 1 - \frac{6\,(2453)}{30(30^2-1)}$$

$$= .454$$

Table 14

Spearman Rank Order Correlation: Rater 2 & Patient Outcome

Subjects	R_x	R_y	D= R_x-R_y	D^2
1	25.0	26.5	- 1.5	2.25
2	4.0	5.0	- 1.0	1.00
3	9.0	18.0	- 9.0	81.00
4	15.5	5.0	10.5	110.25
5	12.5	5.0	7.5	56.25
6	21.0	26.5	- 5.5	30.25
7	9.0	18.0	- 9.0	81.00
8	17.0	18.0	- 1.0	1.00
9	24.0	5.0	19.0	361.00
10	9.0	18.0	- 9.0	81.00
11	15.5	5.0	10.5	110.25
12	23.0	18.0	5.0	25.00
13	12.5	5.0	7.5	56.25
14	30.0	30.0	0.0	0.00
15	29.0	18.0	11.0	121.00
16	9.0	11.0	- 2.0	4.00
17	18.5	18.0	0.5	0.25
18	8.5	26.5	- 8.0	64.00
19	4.0	18.0	-14.0	196.00
20	4.0	11.0	- 7.0	49.00
21	14.0	18.0	- 4.0	16.00
22	26.5	5.0	21.5	462.25
23	1.0	5.0	- 4.0	16.00
24	21.0	26.5	- 5.5	30.25
25	4.0	11.0	- 7.0	49.00
26	9.0	18.0	- 9.0	81.00
27	26.5	26.5	0.0	0.00
28	28.0	26.5	- 1.5	2.25
29	4.0	5.0	1.0	1.00
30	21.0	18.0	3.0	9.00
n = 30				ΣD^2=2097.5

$$r_s = 1 - \frac{6\Sigma D^2}{n(n^2-1)} = 1 - \frac{6(2097.5)}{30(30^2-1)}$$

$$= .553$$

Table 15

Spearman Rank Order Correlation: Doctor's Score and Outcome

Subjects	R_x	R_y	$D = R_x - R_y$	D^2
1	24.0	26.5	2.5	6.25
2	5.5	5.0	0.5	0.25
3	15.5	18.0	- 2.5	6.25
4	5.5	5.0	0.5	0.25
5	15.5	5.0	10.5	110.25
6	24.0	26.5	- 2.5	6.25
7	15.5	18.0	- 2.5	6.25
8	15.5	18.0	- 2.5	6.25
9	5.5	5.0	0.5	0.25
10	15.5	18.0	- 2.5	6.25
11	5.5	5.0	0.5	0.25
12	15.5	18.0	- 2.5	6.25
13	5.5	5.0	0.5	0.25
14	30.0	30.0	0.0	0.00
15	24.0	18.0	6.0	36.00
16	5.5	11.0	- 5.5	30.25
17	15.5	18.0	- 2.5	6.25
18	15.5	26.5	-11.0	121.00
19	15.5	18.0	- 2.5	6.25
20	5.5	11.0	- 5.5	30.25
21	24.0	18.0	6.0	36.00
22	5.5	5.0	0.5	0.25
23	5.5	5.0	0.5	0.25
24	24.0	26.5	- 2.5	6.25
25	5.5	11.0	4.5	20.25
26	24.0	18.0	6.0	36.00
27	24.0	26.5	- 2.5	6.25
28	28.5	26.5	2.0	4.00
29	5.5	5.0	0.5	0.25
30	28.5	18.0	10.5	110.25
n = 30				$\Sigma D^2 = 605$

$$r_s = 1 - \frac{6 \Sigma D^2}{n (n^2 - 1)} = 1 - \frac{6(605)}{30(30^2-1)}$$

$$= .865$$

CHAPTER FIVE

DISCUSSION AND SUMMARY

An evaluation instrument called the IMAGE was developed by the author and field tested with the population at Hôpital Saint-Luc in Montreal. Its main objective was to provide allied health care professionals with a quantitative measure of the rehabilitation potential of the geriatric patient in a general hospital. This instrument, the IMAGE, had to be quick and easy to use, reliable and valid as a prerequisite for use in the referral of rehabilitation services (physical and/or occupational therapy).

The results of the evaluation provided data suggesting that the IMAGE can in fact perform the function desired at the onset of the study. First discussed is the reliability and validity tests and their impact on the IMAGE's usefulness. Then, the general interpretation of the scores followed by how and when the IMAGE can be used are discussed along with its relative strengths and weaknesses applied to diagnosis and subsequent training.

Reliability

Using two independent raters, reliability was tested with the weighted kappa and showed substantial agreement. The obtained measure of internal consistency was clearly at an acceptable level, allowing the conclusion that broad use would be justified under conditions tested (particularly noteworthy due to the intentional lack of prior formal training in the instrument's use). Despite this relative success, several factors were noted which may have artificially depressed the score.

It is possible that the clients supplying the information to the raters were not consistent in their responses. This could be based on timing with the patients; for example, rater 1 might have seen the patient first thing in the morning when well rested and alert, whereas rater 2 might have seen the same patient late in the afternoon just after he/she had medication and/or tests, or vice versa. Differences could also have occurred due to the patient's fatigue or actual "wellness" at the moment. On the raters part, they could also have been fatigued or rushed due to other committments on the unit. While a rater would be advised to avoid these circumstances whenever possible, these conditions will always prevail in a standard hospital environment.

The only problematic aspect of the reliability measures was the somewhat improved scoring of rater 2. The position of questioning was reasoned to account for the differences. Patients would certainly respond somewhat differently when asked the same question again. While hospital routine often includes the repetition of questions, patients may have been more "honest" the second time around. The small number of subjects however precluded the possibility of drawing firm conclusions regarding the specific items, sections, or the order of presentation. Further research might go into alternative forms and methods of presentation in order to improve the IMAGE's effectiveness.

The above results imply that one rater alone, who is acquainted with a patient, may reliably assess the status of that patient. It also suggests that this can be done in a brief period of time and without specific training. One could use the IMAGE as part of the elderly patient's record because the form could be filled in by any member of a particular group of professionals working with the patient. By routinely doing so, each patient is more likely to be considered a candidate for rehabilitation services, the overall objective of the project. The methodology of this study insured a totally realistic assessment of the instrument, and it fared well (especially with the nurses as discussed below).

Validity

There were two comparisons taken in demonstrating the validity of the IMAGE. The IMAGE scores were compared to the doctor's rating of the patient. Experienced doctors assessed patients on the basis of their clinical examination. It should be noted that the "expert" clinician remained completely naive with regard to the scores of the IMAGE to avoid possibility of bias. Comparison between clinical judgements and the IMAGE scores produced a correlation of .56. If the doctor's opinion was used as the criterion, it would appear that the IMAGE met with only moderate success. There are evidently other factors which doctors take note of. The results nevertheless show that individuals not normally called upon to make such decisions can do so with reasonable accuracy when provided with the proper tool.

The more important comparison was of course the IMAGE score with actual patient outcome following treatment. The predictive validity of the IMAGE was again moderate (.454 for rater 1, .553 for rater 2). The doctors, on the other hand, showed a very good rating of .865. The overall IMAGE scores would again be discouraging from the standpoint of comparing an "objective" tool with a "subjective" individual. It was thus necessary to further examine the IMAGE results to identify possible causes for the acceptable but inferior predictions. When IMAGE scores were separately

assessed for nurses, physical therapists and occupational therapists to patient outcome, the nurses obtained the highest level correlation (.781), while the physical therapists produced -0.541 and occupational therapists -0.256. Under these circumstances, a much more functional role emerges for the IMAGE.

It was originally hoped that the IMAGE could be used by any of a group of allied health care professionals. However, these results have suggested otherwise. While doctors clearly produced the best predictive validity scores, the nurses yielded an equally respectable .781 (versus .865 for the doctors). The physical therapists and occupational therapists both generated negative correlations, the former group at a statistically significant level. For reasons perhaps to be determined in future research, therapists seemed uniquely incapable of judging a patient on factors relating to success and failure in rehabilitation potential. The nurses were able to rate patients in the best all around way as compared to these other professionals and it appears that nurses know the patients in the most unbiased way.

The differences in the nurses and therapists may be due to their different focus, background and orientation as to the understanding of "independence and function, assistance and supervision, and lastly dependence and

dysfunction", the actual rating criteria on the IMAGE. Perhaps therapists are too critical of the patient's ability to function and see the patient in a more handicapped way. Therapists recognize and treat patients with the objective of regaining independence and reducing disability, and thus pay less attention to what they want them to do rather than what they cannot presently do. Nurses, especially busy nurses in a large general hospital, tend simply to serve their patients and not wait for the patient who might be slow or awkward at the task. In other words, they concentrate on their disability. Nevertheless, these nurses appear to have been able to better judge patient's potential.

While these results appear to counter what one might intuitively expect, these preliminary data indicate that the role of placement is different from, and possibly negatively correlated with teaching function. Thus, those closest to the actual training process appear least capable of judging who will succeed under their tutelage. Clearly, replication is necessary to verify this effect. Both the effectiveness of the IMAGE and the reasons for its success would constitute viable future research.

Interpretation of the scores

The profile that is present with the IMAGE can be used to depict a patient's rehabilitation potential and with this overview, perhaps a more realistic anticipated rehabilitation goal. It should be noted that the IMAGE is not intended to supercede careful medical diagnostic evaluation, rather, it is meant as a screening tool to promote rehabilitation for this population.

Looking at the meaning of the scores is important for users of the IMAGE. The derived IMAGE scores are divided into three for the purpose of classification of excellent, good and poor rehabilitation potential. These three distinct ranges have definite meaning and the following discussion should explain to the reader their interpretation so as to better understand the implication for its use.

IMAGE scores of 0 to 7. Those patients who received scores of 0 to 7 and are deemed to have excellent rehabilitation potential should be referred for training because these clients are the ones who should benefit the most from treatment, in terms of attainment of goals within a reasonsable length of time.

An example is seen with subject 13, a 79 year old female whose diagnosis was a hip fracture and who was treated with an open reduction. Her scores with rater 1 was 5 and with rater 2 was 7, indicative of possessing the factors associated with success in therapy. She had

excellent results in therapy and her time spent in hospital was reduced as she was transfered to a rehabilitation center after two weeks in treatment. Another interesting patient in this category was subject 16, a 75 year old male who was admitted following a stroke with residual paralysis. He had other complicating factors; Parkinson's disease, arteriosclerosis and diabetis. His scores were 6 on the IMAGE with raters 1 and 2. Following 12 treatments, he was independent in terms of mobility and self-care with improvement noted in all spheres. He was discharged to his home and was to return as an out-patient for added training in balance and equilibrium.

The IMAGE in these cases, could indicate to the therapists, that these patients possessed the factors related to success and that it was only the physical dysfunction that was interfering with their independence.

IMAGE scores of 8 to 15. Patients who recieved the scores of 8 to 15 are those who have potential for success but inhibiting factors are present that might impede the rehabilitation process. These are the cases where examining the four sections of the IMAGE could be useful to therapists as indicators of some of the problem areas.

An example of a patient in this category was subject 6, an 80 year old male admitted with a diagnosis of poly-neuritis following a spinal tumour and its removal two years previously. Looking at the results, he received scores of 8 and 12 respectively from raters 1 and 2 (a

ranking of 3 from the doctor). His physical motor section was good, but the area that seemed to interfere most with progress was the sensory section, C. He scored poorly in terms of hearing, comprehension and pain. These three factors were enough whereby the patient did not make any gains in therapy. The rehabilitation goal could have been more realistically drawn up and in a faster way had the IMAGE results been available to the therapist when this patient was referred.

Thus, this group of patients require therapists to scrutinize the IMAGE to pick up on those areas where the patient is drawing lower scores. This might mean a longer period of time in therapy with slower gains made. If the problems are from section A, perhaps it is the social worker who might be helpful in finding solutions. Basically, looking at the individual sections of the IMAGE should be helpful to therapists when treatment planning.

IMAGE scores of 16 to 50. Patients receiving the poor rating of 16 to 50 require the attending team to look at the IMAGE in terms of what sections have given the patient such a low score. An example of this case is subject 28, a 78 year old female who was admitted to the geriatric unit after a fall in her home. Her scores were 17 with rater 1 and 20 with rater 2 (the doctor rated her as a 2). Looking at the four sections of the IMAGE, the patient rated just fair in sections A, B and C but extremely

poor in section D. As it turned out, the therapist treating her felt her progress was very poor due to her mental state, lack of motivation and inability to concentrate. This implies that due to inherent problems, the overall goals and expectations should have been looked at and perhaps have been altered had therapists known the results of the IMAGE before beginning treatment. It might also be shown that a particular patient is unsuitable for rehabilitation training in terms of either improvement or maintenance and that this service is unwarranted at this particular time.

The subject with the highest score and therefore the lowest potential was subject 14, a 74 year old female with multiple sclerosis admitted from a chronic care hospital with severe remission in the disease process. Her IMAGE scores was 43 and 44 respectively. It is interesting to see that this patient scored poorly in all four sections of the IMAGE, not only in section B, physical motor. In this extreme case, the IMAGE could be of added insight to those treating this patient by presenting factors, other than physical dysfucntion, that interfered with the patient's progress.

Use of the IMAGE

In response to the needs expressed in this thesis-equivalent in chapter one, the IMAGE was developed and field tested. It lends itself to several applications and

uses, some of which have been tested and others remain to be explored.

Based on the data results and the issues raised in this discussion, the IMAGE appears to be a screening instrument that would improve the quality of care for this age group by increasing the numbers referred for treatment. It would also improve the kinds of referrals and data base presented to the therapists. It would be a valuable aid to the team as it looks at each patient's needs in order to determine the appropriate course of action. The IMAGE reviews the factors associated with potential and therefore provides a basis for preliminary judgement and direction to the therapy required. This planning should result in a treatment program that would enhance the patient's capabilities.

It is recommended that all geriatric patients who have evidence of the presence of dysfunction be screened for the possibility of referral for rehabilitation services using the IMAGE (once further refined and tested). This would make the method of referral standard in the hospital, rather than relying on one doctor's decision or physiatrist's consultation and recommendation. By making this part of the admission requirements, each patient is more likely to be considered for the rehabilitation program.

The appropriateness of treatment in terms of when to begin and if it should begin must be initiated at the onset of the disability. The elderly person looses his or her independence faster than the younger patient and requires training to regain or maintain this functional independence.

This process begins with an evaluation and should start immediately after disability strikes in the hospital where the patient is in a setting appropriate to the treatment process.

It is noteworthy to look back to 1968 at the Castonguay Commission on Health and Welfare and the Committee on Aging (Committee on Aging, 1968). A discussion took place relevant to general hospitals and in particular this project.

> ...."Lacking are the essential rehabilitative measures which can assist patients to some measure of self-help. Programs and services in rehabilitation have not developed as rapidly as they should have in a general hospital. There must be more emphasis on the techniques of rehabilitation. Unless steps are taken early in rehabilitation of patients, the number of handicapped and disabled will continue to grow".

Literature has shown that rehabilitation is needed for the elderly to return to the community rather than become part of these chronic care numbers in the general hospital or be sent to a long term facility or institution. The

literature also demonstrates a relatively high success rate in geriatric rehabilitation and this strongly suggests that this population can benefit and should not be excluded from these services.

At this time, decisions to refer patients to Physical Medicine are made based solely on age and medical diagnosis. These aspects do not adequately reflect their physical, social, mental capacity; being old and impaired does not have to mean being useless and dependent. Despite the assaults of old age, many hospitalized elderly patients retain their strengths and capacities, if they are given the opportunity.

The problems of an adequate system for communicating the status of a client's rehabilitation potential and the elderly's comprehensive needs and concerns for rehabilitation has been a perplexing one. The need for improved measures of potential has been evident to those who are concerned with the increasing problems of age and disability. Investigators and those who care for patients need a way to evaluate which patients might benefit from these services. Therapists need referrals with data to provide a base line of information regarding all aspects of the client that will affect their treatment. Administrators could use measures that would be cost effective and provide a quality of assurance.

As a tool in the practice of medicine, nursing and

rehabilitation, the IMAGE offers a measure of desired objectivity which is relevant to the patient's problems. The IMAGE focuses attention on the deficits and assets major importance to the patient which will be relevant to the success and/or failure in treatment. Using this system enhances the patient's record by providing feedback which can be given to the clinicians serving the patient.

Thus, if the geriatric patient is screened using the IMAGE, an actual set of quantitative measures will be available to assist in the decision-making process. This is a change from the previous method of referral (a written consultation or no referral at all). Hopefully, this new measure will be a more reliable way to refer patients to treatment. Using a form such as the IMAGE, should remove some of the haphazard methods now being used. For example, the general hospital environment includes all the following:

1. the physician is not focused or directed to rehabilitation in terms of his or her orientation
2. the physician does not feel the patient should have therapy now because he/she will be receiving it when transfered to the "other unit" or "institution".
3. the role of the therapist is unclear, especially the role of the occupational therapist
4. the patient may be uncooperative on the unit and therefore is not referred for "other reasons".

The IMAGE would provide therapists with information pertinent to their actual training (physical motor) but also associated factors that would have a bearing on the patient's success and/or failure in therapy (social, economic, sensory, psychological and cognitive). This added information should be a valuable aid in determining more realistic rehabilitation goals. It is generally felt that unless these goals are mutually understood by the therapist and the patient on some level, they probably cannot be achieved. In this way, the IMAGE could serve as an easily interpretable indicator and reinforcer to the patient and to those working with him.

This multi-dimensional evaluation should make staff members more sensitive and aware of the patients overall health condition. An added benefit of this study was that it was noticed (but not measured) that staff members did become more involved with the patients they rated, particularly in terms of rehabilitation progress as well as the role of the occupational therapist.

The IMAGE could perhaps serve as a teaching device, sensitizing others to the special problems of the elderly and the differences they present as compared to the younger population.

The end result of a coordinated team approach is effective discharge planning. Because the IMAGE focuses on different areas of the patient's problems, the team

might better assist the discharge. The patient can see the importamce of therapy for more realistic discharge rather than a program which has no relationship to his or her problems. It should be noted that the IMAGE was tested in french for all but 2 subjects; that is, french speaking staff filled in the french side of the form. The results should not be generalized at this point to include the IMAGE in its bilingual format, but rather further field testing to an english speaking and a bilingual population is indicated.

Implementation Problems

There exists an important difficulty with regard to the use of the instrument. Large hospitals are run by a Board of Directors and Committees at each level of the decision-making process. As a result, when a new form might be introduced into a patient's chart, it must pass through many levels before this sort of change can take place. Even then, changes are difficult to enact when they are not the decisions of the "chief" or another physicain who is well regarded in the institution. In the case of the IMAGE and Hôpital Saint-Luc, it has met with approval for the geriatric service and it is presently awaiting the other committees and the Board to examine its actual use in the geriatric unit.

As a result of presenting this study at other conferences during 1983, the IMAGE is being tried out in about 15 hosptials in Canada, but mainly through the Occupational Therapy Departments. It is easier to adopt a new form or

evaluation method within a single department for use with their patients and it is very difficult, if not impossible to do so within an entire hospital.

These preliminary data suggest a solution might be that nurses fill in the IMAGE, but therapists interpret its meaning and use the information for decision-making and therapeutic planning. As well, the IMAGE needs further work to change its research design to actual usable format. Information must be added regarding the method of deriving the final IMAGE score and its meaning and interpretation.

In summary, the IMAGE appears to be a reasonable tool to provide a measure of an elderly patient's rehabilitation potential in a general hospital. Because cost is in everyone's interest, the IMAGE should be useful as a time-saving device. This should be possible due to an imporved method of referral to rehabilitation based on these objective findings. These concerns are of interest to physicians, specialists, therapists, nurses, administrators, the patient and the patient's family. Thus, the IMAGE could be a useful screening device that will serve the hospital/institution and the client/consumer, to promote the rehabilitation of the geriatric patient. Although more research is needed to confirm these findings, the utilization of this or a similar instruement in promoting training for the elderly has clearly enjoyed initial support.

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APPENDIX A

GLOSSARY OF TERMS

GLOSSARY OF TERMS

For the purpose of improved understanding of this thesis-equivalent, I include the following definitions of terms as they apply to the field of Physical Medicine and Rehabilitation and Occupational Therapy.

ACTIVITY — A specific action, function or sphere of action that involves learning or doing by direct experience (Reed and Sanderson, 1980).

ACTIVITIES OF DAILY LIVING — The tasks which a person should be able to perform in order to care for the self independently including self-care, communication and mobility (Reed and Sanderson, 1980).

ASSESSMENT — The process of collecting, analyzing and interpreting information obtained through observation, interview, record review and testing (Canadian Association of Occupational Therapists -CAOT-1983).

CLIENT — The recipient of rehabilitation services.

CLINICAL — Founded on actual observation and treatment of patients as distinguished from data or facts obtained by experiment or pathology (CAOT, 1983).

DISABILITIES — Reflecting the consequences of impairment in terms of functional performance and activity by the individual. Any restriction or lack of ability to perform an activity in the manner or within the range considered normal for a person (World Health Organization - WHO - 1980).

DYSFUNCTION Inability to perform and interact effectively with the environment; impairment of normal function of a body part or organ (WHO, 1980).

EFFECTIVENESS The average benefit of a procedure when used by the average provider in the average community (Rosenthal, 1977).

EFFICACY The benefit (or lack of it) of a procedure or treatment when performed under ideal circumstances (Rosenthal, 1977).

EVALUATION A testing procedure.

FUNCTIONAL ASSESSMENT An evaluation of the integration of mental, physical, sociocultural and spiritual states and their interaction in order to perform purposeful acts (CAOT, 1983).

FUNCTIONAL ABILITY The skill to perform activities in a normal or accepted manner (CAOT, 1983).

HANDICAP Concerned with the disadvantages experienced by the individual as a result of impairments and disabilities, that limits or prevents the fulfillment of a role that is normal for that person (WHO, 1980).

IMPAIRMENT Any loss or abnormality of physiological, psychological or anatomical structure or function resulting from any cause (WHO, 1980).

OCCUPATIONAL PERFORMANCE Activities carried out by the client in the areas of self-care, productivity and leisure influenced by environmental and societal factors (Reed and Sanderson, 1980).

OCCUPATIONAL THERAPY The art and science which utilizes the analysis and application of activities specifically related to occupational performance. Through assessment, interpretation and intervention, therapists address problems impeding function in persons impaired by illness, injury, emotional disorder, developmental disorder, social disadvantage or the aging process. The purpose is to prevent disability, and to promote, maintain or restore occupational health, performance and well-being. These services can be directed through health, educational and social services systems (CAOT, 1983).

QUALITY ASSURANCE Involves both measuring the level of care provided and when necessary improving it (Rosenthal, 1977).

REHABILITATION POTENTIAL The client's capacity to enter the process of treatment and education that will lead the individual to attainment of maximum function, a sense of well-being and a personally satisfying level of independence (Taber, 1981).

REFERRAL — A request to a therapist for advice or decision regarding client services (CAOT, 1983).

SELF-CARE — Those activities which are done routinely to maintain the person's health and well-being in the environment (Reed and Sanderson, 1983).

SENSORY — The appreciation of sensation caused by stimulation of a sense organ (Taber, 1981).

TASK — A specific activity or job which is to be performed. The function that a working person is expected to fill (Reed and Sanderson, 1980).

APPENDIX B

PILOT TEST OF THE INSTRUMENT - GERP -

GERIATRIC EVALUATION OF REHABILITATION POTENTIAL

GERIATRIE: EVALUATION DU READAPTATION DU POTENTIAL

HOPITAL SAINT-LUC, MONTREAL

GERIATRIC EVALUATION REHABILITATION POTENTIAL - GERP -

Patient's name _____ Ward: _____

Admission date: _____

Medical diagnosis: _____

_____

GERP: Date of Evaluation: _____

Interviewer's name: _____

Position (title): _____

Score: Total number of

Section A: Interpersonal
5 items

Section B: Physical Motor
12 items

Section C: Sensory
5 items

Section D: Intrapersonal
8 items

	0's	1's	2's
Total			

GERIATRIC EVALUATION REHABILITATION POTENTIAL

HOPITAL SAINT-LUC

Introduce yourself to the patient. My name is _____ and as you know I work on this ward as a _____. I will be asking you some questions today about your health, your family situation ans a few other topics. These questions are the ones you agreed to answer when you signed the consent form to participate in this research project. Now to begin, with a few preliminary questions.

(i) When were you born ? _____
month day year

(ii) Where were you born ? _____
city country

(iii) How far did you go with regard to schooling ?

- ☐ no schooling
- ☐ elementary
- ☐ high school
- ☐ business or trade
- ☐ college or university

(iv) What is your present civil status ?

Are you

- ☐ now married
- ☐ widowed
- ☐ divorced
- ☐ separated
- ☐ never married
- ☐ living with companion
- ☐ priest or nun

(v) Are you presently retired or are you employed ?

- ☐ retired
- ☐ employed full-time
- ☐ employed part-time
- ☐ not employed but looking

(vi) What kind of work have you done most of your life ?

- ☐ never employed
- ☐ housewife
- ☐ other (give details)

(vii) Sex of the patient _____ male _____ female

(viii) Weight status:

- ☐ normal
- ☐ underweight
- ☐ slightly to moderately overweight
- ☐ significantly overweight

Section A: Interpersonal: Social & Economic Resources

Now I'd like to ask you some questions about your home, income and family situation.

1. Environment: What are your present living quarters like ? Do you feel that you will be able to return to this location ?

The patient's living quarters are:			
adequate, no major architectural barriers	0		
inadequate, some barriers due to present disability		1	
totally inadequate, cannot return to previous place			2

2. Family Support: Who lives with you ? _____ (name relationship) Is this person able to give you any help or take care of you; for example take you to the doctor or fix you lunch ?

The patient has someone who is:			
mentally & physically able to provide competent support	0		
can only provide minor support		1	
unable to provide any support, no family or outside assistance available, patient is alone			2

3. Financial/Economic Status: Are you able to manage with your present income ? Do you have any reserves to buy those little "extras" from time to time ?

The patient's financial situation appears to be:			
good, can absorb costs, perform customary tasks and fulfill role	0		
fair, dependent upon assistance from an agency		1	
poor, dependent, incapable of handling finances, requires maximum assistance			2

4. Life-style: Social Interaction: Before coming to this hospital, which of the following social activities did you participate in ? I will read them one at a time, answer yes or no.

	YES	NO
(a) home social activities: visits, friends, family		
(b) outside activities: movies, eat out, visits, etc.		
(c) group activities: church, clubs, senior citizens		
(d) physical &/or mental activity: walks, cards, bingo, handicrafts, sports, hobbies		

The patient's social contacts & life-style appears:			
regular and dependable, maintains a balance	0		
restrictive, only a minor amount of contacts		1	
almost non-existent, few if any social contacts			2

5. Social skills: Rate the following, based on your knowledge of the patient

	YES	NO
(a) perceives others in a normal way		
(b) relates well to others		
(c) responds to others when addressed by name		
(d) initiates conversation with others		

The patient's social skills appear to be:			
normal, for the situation	0		
adequate, some minor deviations		1	
inadequate, interpersonal relations are distorted			2

Score for Section A: Total number of

0's	1's	2's

Section B: Physical Motor:

Now, I will ask you some questions about your daily physical activities and how you managed before you came into the hospital and how you are able to perform these activities now.

6 - 13 For the following 8 items, ask the same question:
Before you came to the hospital, were you able to _____ (fill in word) e.g. 6- is eating.

- independently, able to accomplish activity with near normal speed and efficiency, required no assistance, score 0
- assistance, supervision, physical help, direction, instruction score 1
- dependent, received much assistance, supervision in all aspects of activity, or totally dependent score 2

After you asked these questions (6 - 13) ask again, "Now that you are in hospital, how are you able to manage with regards to _____". (fill in word) e.g. 6- is eating.

	before admission	after admission	Circle record final score here present status		
6. feeding, eating cutlery & drinking utensils			0	1	2
7. bathing, washing tub, shower or sponge bath			0	1	2
8. dressing including shoes			0	1	2
9. personal hygiene grooming, hair, shave, etc.			0	1	2
10. toileting on & off toilet, flush, etc.			0	1	2
11. mobility: if assisted how ☐ cane ☐ walker ☐ wheelchair ☐ other person ambulation, walking stairs outdoors			0	1	2
12. transfering in & out of bed, chair, etc. (score 2 if bedridden more than half the time)			0	1	2
13. continence bladder and bowel			0	1	2

14. Before entering the hospital; how did you perform the following activities ? (Ask the same questions regarding independance as the previous question). Where it does not apply, leave blank. Based on the items a - h, rate the patient on this item.

Score 0, 1 or 2	Score
a. ability to use the telephone dial & look up numbers	
b. shopping ability to take care of daily needs	
c. food preparation plans, prepares and serves meals	
d. housekeeping manages household daily tasks	
e. laundry ability to handle personal things	
f. responsibility for medications correct dosage at correct time	
g. ability to handle finances writes checks, budgets, pays rent etc.	

In everyday tasks, the patient was:	0	1	2
independent	0		
needed assistance		1	
dependent			2

15. Endurance: Before you came into the hospital, were you able to do the activities we have been talking about without too much fatigue ? In other words, do you or did you not have much energy ?

The patient's physical tolerance to effort was:	0	1	2
adequate	0		
limited, activities took a fairly long time		1	
inadequate, often incomplete due to fatigue, energy level extremely low			2

16. Motor skills: Is the motion in the following body parts sufficient to perform your daily activities, such as eating, washing or walking ?

	right		left	
	yes	no	yes	no
hand				
arm				
leg				
back /trunk				

Answer yes or no to the following problems; do you have

	yes	no
weakness		
weakness due to inactivity		
paralysis, limpness		
contractures		
spasticity, spasms		
sensory loss		

The patient's present motor skill ability is:	0	1	2
adequate, should be able to perform most tasks	0		
sufficient, to do some but not all activities		1	
inadequate, dependent as a result			2

17. Concomittent illness(es) Do you have any other illness(es) other than the one you are being treated for that you feel affects your well-being ? If so, what are they ?

_____

_____ (list them)

The patient has:
no other serious illness(es) (cardiac, respiratory),
only 1 other serious illness, does not incapacitate in any major way
more than 1 serious illness, that incapacitates chronic conditions

Score for Section B: Total number of

0's	1's	2's

Section C: Sensory:

Now, I'd like to ask you questions about your eyesight, hearing and other senses. I would like to know if they are adequate for your daily needs.

18. Vision: How is your eyesight, with or without glasses; excellent, good, fair or poor ?

The patient's vision is:			
apparently normal, with or without glasses	0		
somewhat impaired, (can read but with great effort)		1	
extremely poor, so impaired as to be considered blind or partially blind			2

19. Hearing: How is your hearing, with or without a hearing aid; excellent, good, fair or poor ?

The patient's hearing is:			
apparently normal, with or without a hearing aid	0		
somewhat impaired, but hears with an aid or when spoken to loudly		1	
extremely poor, so impaired as to be deaf for all practical purposes			2

20. Communication: convey needs: How well are you able to explain your needs to others ? Do people understand you ? (speaking, gesturing or writing).

The patient is able to convey his needs; verbally or non-verbally:			
well enough, is easily understood, almost always	0		
sometimes, and with some difficulty		1	
rarely or never understood for whatever reasons			2

21. Communication: understanding: Based on the patient's responses to this point, rate the patient for his understanding of what you communicate to him (through speech, or gesturing)

The patient is able to understand verbally (or nonverbally)			
well enough, easily understands, almost always	0		
sometimes, and with some difficulty		1	
rarely or never understands for whatever reasons			2

22. Pain: Do you have any pain ? If yes: Is it mild, moderate or severe, and does it interfere with your daily activity or sleep ?

The patient has:			
little or no pain, it does not interfere with daily activity or sleep	0		
mild to moderate pain, interferes somewhat with daily activity and sleep		1	
severe pain, so severe that it curtails almost all independent activities and interferes with sleep			2

Score for Section C: Total number of

0's	1's	2's

Section D: Intrapersonal: Psychological & Cognitive

Now, I'd like to ask you some questions about how you feel about life and about yourself.

23. Orientation: What day of the week is it ? What is the name of this place ? What month is it ? What is the date today ? What time of the day is this ?

The patient's orientation to date, time and place is:			
normal, patient is not confused	0		
slightly disoriented, oriented about half the time		1	
extremely confused, has no idea as to date, time or place			2

24. Memory, retention: (recent & remote) What is your telephone number ? What was your Mother's maiden (family) name ? Please repeat this number sequence 10,8,6,4,2,0.

The patient's memory appears to be			
intact	0		
small problems with recent & remote memory		1	
loss of memory, less than 10 minutes, none of the past			2

25. Cooperation: attitude: Based on your knowledge of the patient and this interview

The patient is willing to do things suggested or asked of him:			
most often goes along, has a fairly positive attitude	0		
sometimes, can be uncooperative		1	
almost never goes along, attitude is negative			2

26. Reality-testing: Based on your knowledge of the patient, and the answers given in this interview so far, is the patient able to judge reality and direct his actions accordingly ?

The patient's ability to judge reality and direct his action is:			
good, appears normal	0		
sometimes impaired, only in a minor way		1	
poor, severe impairment			2

27. Intellectual ability: In terms of your present illness, do you think it will present any particular problems or limitations for you ? Could you explain.

The patient's intellectual ability (comprehend meaning, use judgment and have general insight) is:			
adequate for everyday problem-solving	0		
mildly impaired, cannot handle major problems		1	
severely impaired, interfere with routine judgment and decision making			2

28. Concentration: attention: Do you have difficulty concentrating on a task long enough to perform it or learn it ?

The patient's ability to concentrate and attend is:			
adequate for most activities	0		
adequate, but often supervision is required		1	
inadequate for all but the simplest activities			2

29. Motivation: What are your interests, aims and goals (Do you feel the patient is able and willing to mobilize his physical and psychological resources to cope with his disability ?)

The patient's motivation is:			
high, much self-initiative, ability to pursue the interest and activity	0		
moderate interest		1	
no interest, self-initiation			2

30. Mental state, emotional health: How satisfied are you with the things you do everyday (your life, work). Tell me on a scale of 1 to 10; 1 meaning you are not satisfied and 10 meaning that you are completely satisfied. How do you feel about yourself on that same scale of 1 to 10; 1 being that you dislike yourself very much, and 10 being that you like yourself very much.

no deviations considering the patient's age, handling problems in life satisfactorily	0		
minor deviations in mood, temperament and personality, not impairing environmental adjustment		1	
moderately, severe variations, supervision required			2

Score for Section D: Total number of:

0's	1's	2's

Concluding statement: I have one last question to ask you. What are your personal wishes, needs or desires, worries, problems when you leave this hospital, in terms of your health, well-being or purpose ?

This is the end fo the interview. Thank you very much for your cooperation. Good-bye for now.

Leave the patient, open curtains and leave the room. Please turn to the last page and answer the last 8 questions now.

Thank you.

APPENDIX C

INTERVIEWER'S QUESTIONNAIRE

(English and French)

INTERVIEWER'S QUESTIONNAIRE

Answer the following questions immediately after completing the evaluation questionnaire. Do so out of the patient's room.

1. Lenght of the interview _____ minutes

2. Questions obtained from the patient are:

	Factual questions	Objective questions
completely reliable		
reliable on most items		
reliable on only a few items		
completely unreliable		

3. During the GERP did the patient's behaviour strike you as:
Circle yes or no for each of the following

yes no mentally alert and stimulating
yes no pleasant and cooperative
yes no depressed and or tearful
yes no withdrawn and lethargic
yes no fearful, anxious or tense
yes no suspicious, more than reasonable
yes no bizarre or inappropriate in thought or action
yes no excessively talkative or overly jovial
yes no full of unrealistic complaints
yes no patient was comfortable with the questionnaire.

4. Was the GERP easy to understand in terms of the language ? yes / no

If no, please comment _____

5. Was the GERP easy to score ? yes / no

If no, please comment _____

6. Were the instructions clear ? yes / no

If no, please comment _____

7. Did you think the order of the questions followed a logical sequence ? yes / no

If no, please comment _____

8. Do you feel that the GERP presents a true picture of the patient? yes / no

If no, please explain _____

Thank you

QUESTIONNAIRE DE L'INTERVIEWER

Répondez immédiatement aux questions suivantes après avoir complété l'évaluation. Faites-le hors de la chambre du patient.

1. Durée de l'entrevue _____ minutes

2. Pensez-vous que les réponses obtenues du patient sont:

réponses →	directes		objectives	
	oui	non	oui	non
complètement fiables				
fiables pour la plupart des items				
fiables pour quelques uns des items				
complètement inexactes				

3. Au cours du "GERP", le comportement du patient vous a-t-il frappé comme étant: cochez oui ou non

oui	non	
		mentalement alerte et stimulé
		plaisant et coopératif
		déprimé et/ou larmoyant
		renfermé et léthargique
		craintif, anxieux ou tendu
		soupçonneux, plus que ce serait raisonnable de l'être
		bizarre ou inopportun en pensée ou action
		excessivement volubile ou jovial à l'excès
		kyrielle de plaintes peu réalistes
		le patient se sentait à l'aise avec le questionnaire.

4. Le "GERP" était-il facile à comprendre en termes de langage ? oui ☐ non ☐

Dans la négative, veuillez commenter _____

5. Le "GERP" était-il facile à scorer ? oui ☐ non ☐

Dans la négative, veuillez commenter _____

6. Les instructions étaient-elles claires ? oui ☐ non ☐

Dans la négative, veuillez commenter _____

7. Trouvez-vous que l'ordre des questions suivent une séquence logique ? oui ☐ non ☐

Dans la négative, veuillez commenter _____

8. Trouvez-vous que le "GERP" donne un vrai portrait du patient ? oui ☐ non ☐

Dans la négative, veuillez commenter _____

M E R C I

APPENDIX D

FIELD TEST OF THE INSTRUMENT

IMAGE

(English and French)

HOPITAL SAINT-LUC
MONTREAL 1982

Gerontology Research Project: Supported by a grant by the Charles E. Merrill Trust

Notes to the Investigators of the Project _____ date

Dear Investigator:

Thank you for agreeing to participate to the gerontology research project at Hôpital Saint-Luc.

Your are requested to use the attached questionnaire with the following patient:

_____ on _____
Patient's name room number bed date

Please read the following instructions carefully:

(a) Introduce yourself to the patient and explain that you are there to ask them some questions as they had agreed to when they signed the consent form. (attached to this sheet).

(b) Pull curtains around the patient's bed, to be free of distractions and to protect the patient's privacy. Sit down beside the patient.

(c) Use a pencil or pen to fill in the questionnaire. It is important to ask the questions with an attitude of objectivity and emotional neutrality. Do not allow personal feelings or values to interfere with scoring or reporting facts.

(d) Read the questions as they are written.

(e) Scoring: circle the appropriate response: 0, 1, or 2. At the end of each section, add up the total number of 0'S, 1's and 2's. After the questionnaire is completed, enter these numbers on the front sheet of the evaluation and then add these totals.

(f) When you have completed the patient's questionnaire, leave the patient. Then answer the questions on the last page titled, "Raters Questionnaire". Do so immediately upon leaving the patient.

(g) Please leave all sheets at the nurses station, where I will pick them up.

Thank you very much for your cooperation in this project.

_____
Barbara Rosenthal, Occupational Therapist

HOPITAL SAINT-LUC MONTREAL 1982

GERIATRIC EVALUATION REHABILITATION POTENTIAL

Patient's name _____ Ward _____

Medical diagnosis _____ Age

Admission date _____ Sex | | M | | F |

Disability _____

GERP: Evaluation date _____

Interviewer's name _____

Profession ___ RN ___ PT ___ OT ___ other ___

SCORE

		0	1	2
Section A:	Social & Economic 5 items			
Section B:	Physical Motor 10 items			
Section C:	Sensory 5 items			
Section D:	Psychological 5 items			
	Total			

Section A: Social & Economic Resources

Questions	1	2	3	4	5
Score 0	satisfactory	capable support	good	3, 4 or 5 yes	3 yes, 1 no
1	some barriers	minor support	fair	2 yes, 3 no	2 yes, 2 no
2	inadequate	no support	poor	1 yes, 4, 5 no	3, 4 no

To begin, I will ask you some questions about your home, income and family situation.

	SCORE		
1. ENVIRONMENT: With your physical condition, is your present house satisfactory to return to in terms of architectural barriers ?	0	1	2
2. FAMILY SUPPORT: Do you have someone who is able to give you capable help and support, only minor support or none at all ?	0	1	2
3. FINANCIAL STATUS: Is your present income good, fair or poor in terms of managing with it and buying those little "extras" from time to time ?	0	1	2
4. LIFE-STYLE: Which of the following activities did you participate in before coming into this hospital ?			

Activities: answer yes or no	yes	no
- home social: visits, family, friends..		
- outside: eat out, visits, friends..		
- group: church, clubs, senior citizens..		
- physical: walks, sports, bowling..		
- mental: cards, bingo, handicrafts..		

Evaluate: the patient's life-style and social contacts	0	1	2

5. SOCIAL SKILLS: Does the patient

	yes	no
- perceive others in a normal way ?		
- relate well to others ?		
- respond when spoken to ?		
- initiate conversation with others ?		

Evaluate: the patient's social skills in terms of the present hospital situation	0	1	2
Total			

Section B: Physical Motor

Questions	6 to 12		13	14	15
Score 0	independent:	no assistance, near normal speed and efficiency	yes: 5 or more	accidents: rarely if ever	none
1	assistance:	supervision, physical help, instruction, direction	yes: 1 to 4	occasional accidents	one other
2	dependent:	maximum assistance, supervision in all aspects of activity	no 5 or more	often no control	2 or more

Now, I will ask you some questions about your daily activities.

ACTIVITIES OF DAILY LIVING

Before coming into this hospital, how did you manage in the following activities; were you able to do the task by yourself, with help or were you dependent upon someone to do it for you ?

		SCORE		
6.	EATING: using cutlery & drinking utensils	0	1	2
7.	BATHING: washing: tub, shower or sponge bath	0	1	2
8.	DRESSING: including shoes, overcoat, etc.	0	1	2
9.	PERSONAL HYGIENE: grooming, shave, hair, etc.	0	1	2
10.	TOILETING: on & off toilet, flush, etc.	0	1	2
11.	TRANSFERING: in & out of bed, chair, etc.	0	1	2
12.	MOBILITY: walking, stairs and outside if aided how ? ___cane ___walker ___wheelchair ___other person	0	1	2

13. Answer yes or no: Were you able to

	check	yes	no
- use the telephone ?	1		
- shop for your daily needs ?	2		
- plan, prepare and serve the meals ?	3		
- do daily housekeeping ?	4		
- do your laundry ?	5		
- be responsible for your medication ?	6		
- handle finances, pay rent, write checks?	7		

Evaluate:	0	1	2
14. CONTINENCE: Do you have bladder and bowel control, occasional accidents or no control ?	0	1	2
15. OTHER ILLNESSES: Do you have any other conditions other than the one you are being treated for now, that affects your well-being ? (e.g. heart or lung)	0	1	2
Total			

Section C: Sensory

Questions	16 - 17	18 - 19	20
Score 0	apparently normal	satisfactory	little or none
1	somewhat impaired	some difficulty	mild to moderate
2	impaired	poorly	severe

Now, I'd like to ask you some questions about your eyesight, hearing and other senses.

16. VISION: How is your eyesight, with or without glasses ?
(score 2 if blind or partially blind)

17. HEARING: How is your hearing, with or without a hearing aid ?
(score 2 if deaf for all practical purposes)

18. COMMUNICATION: How well are you able to explain your needs to others ?

19. COMPREHENSION: Rate the patient for his understanding of what you communicate to him.

20. PAIN: Do you have any pain that interferes with your daily activity or sleep ?
If yes, is it mild, moderate or severe ?

	SCORE		
	0	1	2
	0	1	2
	0	1	2
	0	1	2
	0	1	2
Total			

Section D: Psychological & Cognitive

Questions	21-22	23	24	25
Score 0	good	no difficulty	small changes	high
1	fair	some	medium	medium
2	poor	much	large	low

Now, I will ask you a few general questions.

	SCORE		
21. ORIENTATION: (to date, time and place) What is the name of this place ? What month is this ? day of the week ? year ?	0	1	2
22. MEMORY: (recent and remote) What is your telephone number ? What was your mother's maiden name ? Repeat this number sequence 8 3 4 7 1	0	1	2
23. CONCENTRATION: (attention span) Do you have any difficulty concentrating on a task long enough to perform it or learn it ?	0	1	2
24. MENTAL HEALTH: Do you have large, moderate or small changes in your mood, temperament and personality that affect your everyday functioning ?	0	1	2
25. MOTIVATION: (self-initiation) Is your motivation high, medium or low concerning your ability to cope with your disability ?	0	1	2
Total			

I have one last question to ask you. Concerning your health and well-being, what are your personal wishes, needs or worries when you leave this hospital ?

This is the end of the interview. Thank you very much for your cooperation. Good-bye for now.

HÔPITAL SAINT-LUC
MONTRÉAL 1982

RECHERCHE EN GÉRIATRIE

Subventionnée par
Fondation Charles E. Merrill

Note aux investigateurs

_____
date

Cher investigateur,

Merci de bien vouloir consentir à participer à cette recherche en gériatrie à l'Hôpital Saint-Luc.

Vous êtes prié d'utiliser le questionnaire ci-joint pour le patient suivant:

_____ le _____
nom du patient numéro de chambre lit date

Veuillez lire attentivement les instructions suivantes:

(a) Identifiez-vous auprès du patient, et expliquez-lui que vous êtes là pour lui poser quelques questions auxquelles il a consenti à répondre au moment de la signature du formulaire de consentement (annexé à cette feuille).

(b) Tirez les rideaux autour du lit du patient, afin d'éviter toute distraction et protéger l'intimité du patient. Prenez place à côté du patient.

(c) Utilisez un crayon ou stylo à bille pour remplir le questionnaire. Il est important de poser les questions en adoptant une attitude objective et neutre. Ne laissez pas vos sentiments personnels ou vos valeurs intervenir dans le score attribué ou les faits rapportés.

(d) Lisez les questions telles qu'écrites.

(e) Score: encerclez la réponse appropriée: 0,1 ou 2. A la fin de chaque section, additionnez le nombre total de 0, 1 et 2. Quand le questionnaire est complété, indiquez ces chiffres sur la première page de la feuille d'évaluation et, ensuite, additionnez ces totaux.

(f) Après avoir complété le questionnaire du patient, quittez le patient. Ensuite, répondez aux questions de la dernière page intitulée "Questionnaire de l'évaluateur". Faites-le immédiatement après avoir quitté le patient.

(g) Veuillez laisser toutes les feuilles au poste des infirmières où j'irai les chercher.

Merci beaucoup de votre collaboration dans cette recherche.

BARBARA ROSENTHAL, ERGOTHÉRAPEUTE

HÔPITAL SAINT-LUC MONTRÉAL 1982

GÉRIATRIE: ÉVALUATION EN RÉADAPTATION DU POTENTIEL

Nom du patient _____ Unité _____

Diagnostic médical _____ Age _____

Date d'admission _____ Sexe du patient _____

L'incapacité _____

GERP: Date de l'évaluation _____

Nom de l'interviewer _____

Profession _____

SCORE		0	1	2
Section A:	Sociale et Economique 5 items			
Section B:	Fonction motrice 10 items			
Section C:	Sens 5 items			
Section D:	Psychologie 5 items			
	Total			

Section A: Ressources sociales et économiques

Questions	1	2	3	4	5
Score 0	satisfaisant	compétent	bon	3,4, ou 5 oui	3 oui; 1 non
1	quelques obstacles	support mineur	passable	2 oui; 3 non	2 oui; 2 non
2	inadéquat	aucun	médiocre	1 oui; 4,5 non	3, 4 non

Pour commencer, je voudrais vous poser quelques questions sur votre domicile, revenus et situation familiale.

		SCORE		
1.	ENVIRONNEMENT: Avec votre condition physique, est-ce que votre domicile est satisfaisant pour vous permettre d'y retourner en termes d'obstacles architecturaux (comme trop d'escaliers).	0	1	2
2.	SUPPORT FAMILIAL: Avez-vous quelqu'un qui est capable de vous donner assistance compétente, support mineur, ou pas du tout ?	0	1	2
3.	REVENUS: Est-ce que vos revenus sont bons, passables, ou médiocres au point de vue de vous débrouiller et d'acheter quelques"extras" de temps en temps ?	0	1	2
4.	STYLE DE VIE: A laquelle des activités suivantes avez-vous participé avant de venir à l'hôpital ?			

Activités: répondez oui ou non	oui	non
- sociales à la maison; visites, amis, etc..		
- extérieures: cinéma, aller au restaurant, famille...		
- de groupe: église, clubs, personnes âgées..		
- physiques: marche, sports, bowling....		
- mentales: cartes, bingo, artisanat....		

Evaluez:
le style de vie sociale et de contacts sociaux. 0 1 2

5.	COMPORTEMENT SOCIAL: Est-ce que le patient	oui	non	
	- perçoit les autres d'une manière normale ?			
	- a de bons rapports avec les autres ?			
	- répond aux autres quand on lui parle ?			
	- commence la conversation avec les autres ?			
	Evaluez: le patient pour son comportement social dans le contexte hospitalier.	0	1	2
	TOTAL			

Section B: Fonction Motrice

Questions	6 à 12	13	14	15
Score 0	indépendent: aucune assistance rythme presque normal et efficace	oui: 5 ou plus	accidents rarement si jamais	aucune
1	assistance: supervision, aide physique, direction instruction	oui: 1 à 4	accidents à l'occasion	une autre
2	dépendent: assistance maximum supervision à tous les aspects d'activités	non: 5 ou plus	souvent ou pas de contrôle	plus d'une

Maintenant, je vais vous poser quelques questions concernant vos activités de la vie quotidienne.

ACTIVITÉS DE LA VIE QUOTIDIENNE:

Avant de venir à l'hôpital, comment faisiez-vous les activités suivantes: étiez-vous capable de faire l'activité indépendamment, avec assistance ou étiez-vous dépendent ?

		SCORE		
6.	MANGER, se nourrir, utilisation d'ustensiles	0	1	2
7.	BAIN, se laver, lavabo, douche, ou s'éponger	0	1	2
8.	S'HABILLER, y compris les souliers, manteau, etc	0	1	2
9.	HYGIÈNE PERSONNELLE: cheveux, se raser, maquillage, etc.	0	1	2
10.	ALLER A LA TOILETTE: s'asseoir, se lever, tirer la chasse	0	1	2
11.	TRANSFERTS: monter et descendre du lit, chaise, etc.	0	1	2
12.	MOBILITÉ: marcher, escaliers, dehors, si assisté comment ? ___ autre personne ___ canne, ___ marchette, ___ fauteuil roulant	0	1	2

13. Répondez oui ou non: Etiez-vous capable

cochez	oui	non
1		
2		
3		
4		
5		
6		
7		

- d'utiliser le téléphone ?
- de magasiner pour vos besoins quotidiens ?
- de planifier, préparer et servir les repas ?
- de faire le ménage ?
- de faire le lavage ?
- d'être responsable de prendre vos médicaments ?
- de prendre soin de vos finances, payer le loyer, signer des chèques, etc.

Evaluez:	0	1	2
14. CONTINENCE: Avez-vous contrôle de vessie et selle, accidents à l'occasion ou pas de contrôle ?	0	1	2
15. AUTRES MALADIES: Avez-vous d'autres maladies que celle pour laquelle vous êtes traité actuellement, qui affectent votre bien-être ? (cardiaque, respiratoire ?)	0	1	2
TOTAL			

Section C: Sens

Questions	16 - 17	18 - 19	20
Score 0	apparemment normale	satisfaisante	faible
1	quelque peu affaiblie	moyenne	modérée
2	extrêmement faible	médiocre	vive

Maintenant, je voudrais vous poser quelques questions au sujet de votre vue, ouïe, et autres organes des sens.

		SCORE		
16.	VISION: Comment est votre vision avec ou sans lunettes ? (score 2 si, aveugle ou partiellement aveugle)	0	1	2
17.	OUIE: Comment est votre ouïe, avec ou sans appareil auditif ? (score 2 si, sourd à toutes fins pratiques).	0	1	2
18.	COMMUNICATION: De quelle façon parvenez-vous à expliquer vos besoins aux autres ?	0	1	2
19.	COMPRÉHENSION: Evaluez le patient pour sa compréhension sur ce que vous lui communiquez.	0	1	2
20.	DOULEUR: Ressentez-vous de la douleur qui entrave vos activités quotidiennes ou votre sommeil ? Si oui, est-elle faible, modérée, vive ?	0	1	2
	TOTAL			

Section D: Psychologie et cognitive

Questions	21 - 22	23	24	25
Score 0	bonne	aucune difficulté	petits changements	grande
1	passable	certaine difficulté	médium	modérée
2	médiocre	beaucoup de difficulté	grands	basse

Maintenant, je voudrais vous poser quelques questions en général

		SCORE		
21.	ORIENTATION: (aux date, temps et place) Quel est le nom de cette place ? A quel mois sommes-nous ? jour de la semaine, année ?	0	1	2
22.	MÉMOIRE: (récente ou passée) Quel est votre numéro de téléphone ? Quel était le nom de votre mère ? Répétez cette séquence de chiffres 8 3 4 7 1	0	1	2
23.	CONCENTRATION: (attention, durée) A quel degré êtes-vous capable de vous concentrer sur une activité pour l'accomplir ou l'apprendre ?	0	1	2
24.	SANTÉ MENTALE: Voyez-vous des grands, moyens ou petits changements dans votre humeur, tempérament et personnalité influer sur votre fonctionnement ?	0	1	2
25.	MOTIVATION: (auto-initiation). Est-ce que votre motivation est grande, modérée ou basse concernant votre capacité de vous mesurer à votre incapacité ?	0	1	2
	TOTAL			

J'ai une dernière question à vous poser. Concernant votre bien-être et santé, quels sont vos souhaits personnels, besoins, ou inquiétudes quand vous quitterez cet hôpital ?

Ceci est la fin de l'entrevue. Merci infiniment de votre collaboration. A bientôt.

APPENDIX E

PHYSICIAN'S RATING SCALE FORM

(English and French)

HOPITAL SAINT-LUC
MONTREAL 1982

Gerontology Research Project: Supported by a grant by the Charles E. Merrill Trust

Notes to Physician

_____
date

Dear Doctor;

Thank you for agreeing to participate in the gerontology research project at Hôpital Saint-Luc.

You are requested to see _____
Patient's name

_____
ward room number bed number

within the next 7 days. Use your conventinal methods of investigation in order to make a judgment of wheter or not this patient has rehabilitation potential.

Please fill in the questions below and return this paper to the nurses station.

Thank you for your cooperation in this project.

_____
Barbara Rosenthal, Occupational Therapist

---

1. State the time taken for your examination of the patient

_____
time in minutes

2. Using the following scales, circle the number that best shows your evaluation of the patient's rehabilitation potential.

1 2 3 4 5

(1, lowest score) poor or no rehabilitation potential.

(5, highest score) Patient has definite rehabilitation potential, should benefit.

HÔPITAL SAINT-LUC
MONTRÉAL 1982

RECHERCHE EN GÉRIATRIE

Subventionnée par la
Fondation Cherles E. Merrill

Cher docteur,

Merci de consentir à participer à la recherche en gériatrie à l'Hôpital Saint-Luc.

Vous êtes prié de voir:

_____
nom du patient numéro de chambre lit

d'ici les sept (7) prochains jours, veuillez utiliser vos méthodes conventionnelles de recherche afin de pouvoir juger si oui ou non ce patient possède un potentiel de réadaptation.

Veuillez avoir l'obligeance de remplir les deux questions ci-dessous et retourner cette formule au poste des infirmières.

Merci de votre collaboration dans ce projet de recherche.

_____
BARBARA ROSENTHAL, ERGOTHÉRAPEUTE

---

1. En utilisant l'échelle suivante, encerclez le chiffre qui correspond le mieux, d'après vous, à l'évaluation du potentiel de réadaptation du patient.

1 2 3 4 5

(1 = score le plus bas)
aucun potentiel de réadaptation.

(5 = score le plus élevé)
définitivement un potentiel, devrait profiter des traitements.

2. Combien de temps a-t-il fallu pour arriver à cette décision ?

_____
temps en minutes

APPENDIX F

PATIENT'S CONSENT FORM

(English and French)

HSL HÔPITAL SAINT-LUC
1058, rue Saint-Denis, Montreal, Quebec. H2X 3J4 Tel 285-1525

CONSENT FORM

A research project is being undertaken at Hôpital Saint-Luc supported by a grant from the Charles E. Merrill Trust. The objective of this study is to evaluate elderly people in the hospital to see if they have potential for rehabilitation services. This will be done through a questionnaire given by professionals working in the hospital. In this way, patients needing this referral will be given the opportunity to receive treatment.

The success of the project depens upon your participation. This is why I am asking your permission to be part of this research. You can be assured that the information obtained will be kept confidential. Your name will not appear. The information will be used for program planning, clinical education and further research.

Thank you for your help in this study.

Barbara Rosenthal, Occupational Therapist

I am willing to participate in this study.

name _____ date _____

HSL HÔPITAL SAINT-LUC
1058 rue Saint-Denis Montreal Quebec H2X 3J4 Tel 285-1525

FORMULAIRE DE CONSENTEMENT

Un projet de recherche est entrepris par l'Hôpital Saint-Luc grâce à une subvention de la Fondation Charles E. Merrill. Le but principal de cette étude est d'évaluer le potentiel des personnes âgées pour les services de réadaptation de cet hôpital. Cette recherche se fera au moyen d'un questionnaire remis par des professionnels de la santé travaillant à l'hôpital. De cette façon, les patients ayant besoin de cette recommandation auront la possibilité de recevoir des traitements.

La réussite d'un tel projet repose essentiellement sur l'apport de votre collaboration. C'est la raison pour laquelle je demande votre permission de faire partie de cette recherche. Vous pouvez être assuré que les informations obtenues seront tenues sous le sceau de la confidentialité. Votre nom n'apparaîtra nulle part. Les informations recueillies ne seront utilisées que pour des fins de planification de programmes, éducation clinique, et recherche future.

Merci de votre collaboration.

BARBARA ROSENTHAL, ERGOTHÉRAPEUTE

J'accepte volontiers de participer à cette étude.

NOM

DATE