

SUBSTUDY 14

EVALUATION OF THE COST-EFFECTIVENESS OF THE QUICK RESPONSE PROGRAM OF SASKATOON DISTRICT HEALTH

**A Report Prepared for the
Health Transition Fund, Health Canada**

April 2001



**National Evaluation of the Cost-Effectiveness of Home Care
and**



**SASKATOON
DISTRICT
HEALTH**

To obtain additional copies of this report, please contact the National Evaluation of the Cost-Effectiveness of Home Care or the principal author:

National Evaluation of the Cost-Effectiveness of Home Care

308 - 895 Fort Street

Victoria, BC

V8W 1H7

Canada

Tel: (250) 389-0123

Fax: (250) 389-0105

info@homecarestudy.com

www.homecarestudy.com

or

Joanne M. Franko

Research Services Unit

Strategic Health Information & Planning Services

Saskatoon District Health

Royal University Hospital

103 Hospital Drive

Saskatoon, SK

S7N 0W8

Tel: (306) 655-6796

Fax (306) 655-6489

frankoj@sdh.sk.ca

SUBSTUDY 14

EVALUATION OF THE COST-EFFECTIVENESS OF THE QUICK RESPONSE PROGRAM OF SASKATOON DISTRICT HEALTH

**A Report Prepared for the
Health Transition Fund, Health Canada**

by Joanne M. Franko, MSc

April 2001



**National Evaluation of the Cost-Effectiveness of Home Care
and**



**SASKATOON
DISTRICT
HEALTH**

PREFACE

The National Evaluation of the Cost-Effectiveness of Home Care is an integrated program of research with 15 studies being conducted across Canada. There is an overall strategy for the program of research to make it as useful to administrators and decision makers as possible. The program of research is designed to determine whether or not home care is a cost-effective alternative to institutional care, that is, care in long term care facilities and acute care hospitals. However, the program of research is also designed to provide an educational function to inform decision makers and the public about home care, and to provide advice about issues related to implementing new and cost-effective home care initiatives. Thus, the overall strategy has the following components:

- Conduct studies to determine whether or not home care is a cost-effective alternative to institutional care, and if so, under what conditions it is cost-effective.
- Conduct studies to inform decision makers about the nature and scope of home care services across Canada. These studies provide a baseline of information about home care clients, costs, and utilization. This baseline is important because there is currently no national database on home care in Canada.
- Conduct studies to explore opportunities for potential savings in the hospital sector by substituting home care services. At present, there are relatively few areas noted in the literature where home care has been shown to be a cost-effective alternative to hospital care.
- Conduct studies to provide decision makers with information about some of the issues they may face if they try to implement new initiatives to enhance the cost-effectiveness of the health care system.

This study, *Substudy 14, Evaluation of the Cost-Effectiveness of the Quick Response Program of Saskatoon District Health*, examines the costs of a community-based alternative for hospital treatment for elderly patients.

Neena Chappell, PhD
Co-Director
National Evaluation of the
Cost-Effectiveness of Home Care

Marcus Hollander, PhD
Co-Director
National Evaluation of the
Cost-Effectiveness of Home Care

EXECUTIVE SUMMARY

Providing effective health care that is accessible and appropriate is the goal of any health care system. Finding alternate delivery systems that are cost-effective or cost-comparable has become increasingly important with rising health care costs.

Quick Response Programs (QRPs) provide access for individuals to an alternate care option that involves an interdisciplinary and multi-sectoral approach to problem-solving, decision-making, and delivery of appropriate community-based care from a variety of sources. Within Saskatoon District Health (SDH), the QRP is modeled within a well-established, single-entry, case management framework for community-based services, the Coordinated Assessment Unit (CAU).

The overall goal of this study was to determine if the QRP of the CAU in SDH is a cost-effective or lower cost alternative for providing care to individuals who instead would have been admitted to hospital upon presentation at the Emergency Departments (EDs) in Saskatoon.

This study was a retrospective chart review of individuals age 60 and over, who live in SDH in their own home or a private/personal care home who accessed an ED in SDH between September 26 and December 11, 1999. Data on the time spent in providing community-based services were collected for 30 days before and 30 days after the ED visit. Community-based services include: Home Care – Nursing and Home Services; Community Services – Physical Therapy, Occupational Therapy, Social Work; and Meals on Wheels. Data on time spent in providing services by CAU and QRP Coordinators were collected for 30 days after the ED visit. Level of acuity of the individuals admitted to hospital through the ED was assessed using the InterQual® ISD-A tool. The departments who provide community-based services provided values for the unit cost of patient care time (direct and indirect care) and travel time. This was used to calculate the costs of providing community-based services. The cost of substitutable hospital days was calculated for those individuals who could have had their care provided by an alternate level of care.

During the study period, there were 3,074 ED visits made by 2,343 individuals who met the study inclusion criteria. The mean age of this group was 75.3 years, with a range of 60 – 103 years. Each individual who visited the EDs was placed into one of three groups:

- Group 1. These were individuals who were referred to QRP, were seen by QRP, had community-based services initiated by QRP and were sent home. (n=136)
- Group 2. These were individuals who were referred to QRP, were seen by QRP, refused services and were either sent home or admitted to hospital. (n=40)
- Group 3. These were individuals who were not referred to QRP, and were sent home or admitted to hospital. It was hypothesized that a referral to QRP may have prevented the admission or subsequent repeat visits to the ED. (n=2169)

As expected, the type and intensity of community-based services was the greatest for Group 1. Every community-based service accessed by these individuals saw an increase in services and subsequently, associated costs. The increase for nursing services was, however the only statistically significant finding. The average cost of providing community-based services for 1 individual in Group 1, for a total of 30 days after the ED visit, was \$358.05.

There were 521 hospital admissions from the ED that were assessed for level of acuity; 2 were found to be non-acute. The total cost for 12 days of non-acute hospital care for this group was \$3,927.00.

During preliminary data analysis, another group of individuals was revealed – those individuals who repeatedly visited the EDs during the study period. It was decided to add another group for further analysis, which were those individuals who had 4 or more visits to the ED during the study period. This became Group 4, with n=46. The range of the number of repeat visits was 4 – 19, and the mean number of visits was 5.8 per individual. The ED chart records were reviewed by QRP Coordinators, in an attempt to see if any of these repeat visits were preventable. For the individuals whose ED chart records were reviewed, it was determined that 63% of these visits were preventable, but not necessarily by services QRP could have initiated.

QRP provides access to appropriate effective alternate level of care for non-acute individuals as compared to hospital care. The costs to provide community-based services initiated by QRP are cheaper than the cost of providing hospital care. However, to say that QRP decreases health care expenditures is not accurate unless hospital beds are closed when QRP is implemented.

Implementing QRP is an appropriate, client-focused method of providing access to community-based services that costs less than hospital stay. QRP is part of a multi-pronged approach to providing community-based services and care in the community. In SDH, all acute-care, long-term care, community-based care, and public health services are administered by one organization. QRP in SDH is successful because it exists within this integrated health care system that resulted from regionalization.

ACKNOWLEDGEMENTS

The Investigator would like to thank the following individuals for their contribution to this project:

Investigator Committee:

- Cordell O. Neudorf, BSc, MD, MHSc, FRCPC
- Sue Melrose, BA, CHE
- Arleen Nicholls, PT
- Diane M. Treppel, RN, CNN(c)

Data Collectors:

Research Nurses

- Brenda Derdall
- Sadie Heiber
- Pat Lehmann
- Helen Njaa

Graduate Students

- Lisa Clatney
- Thamarai Moorthy
- Deb Woods

QRP and CAU Coordinators

- Hiliary Eldstrom
- Trevor Siemens
- Colette Smith
- Sandra Thompson

Saskatoon District Health:

- Cec Charlebois (Manager, Home Care)
- Carmella Christian (District Health Services Utilization Unit, SHIPS)
- Laurel Duczek (Informatics, SHIPS)
- Barb Frederickson (Home Care)
- Julie Gordon (Community Services)
- Al Hergot (General Manager, Family Health Services)
- Gladys Kallis (Home Care)
- Health Records Managers and Staff
- Home Care Staff
- Kim Maloney (Information Systems)
- Melinda Mann (District Health Services Utilization Unit, SHIPS)
- Lorraine Marquis (Community Services)
- Myra Parcher (Home Care)
- Carla Ratke (Community Services)
- QRP and CAU Coordinators
- Melanie Rathgeber (Hospital and Home Care Study Project Coordinator)
- Ken Unger (Financial Services)
- Corrinne Tan (Meals on Wheels)
- Paddy Woytko (Community Services)

Funding for this study was provided by Health Canada through the Health Transition Fund, as part of the National Evaluation of the Cost-Effectiveness of Home Care. The views expressed herein do not necessarily represent the official policy of Health Canada.

TABLE OF CONTENTS

PREFACE.....	i
EXECUTIVE SUMMARY	ii
ACKNOWLEDGEMENTS.....	iv
TABLE OF CONTENTS.....	v
LIST OF TABLES.....	vii
LIST OF FIGURES	vii
1. INTRODUCTION.....	1
1.1 Purpose	1
1.2 Goal/Objective.....	1
1.3 Relevance.....	1
2. BACKGROUND TO QUICK RESPONSE PROGRAMS.....	2
2.1 Introduction	2
2.2 Quick Response Programs/Quick Response Teams.....	2
2.3 QRP in Saskatoon District Health.....	2
3. METHODOLOGY	4
3.1 Setting.....	4
3.2 Study Design.....	4
3.2.1 Original Study Design.....	4
3.2.2 Change in Study Design.....	4
3.2.3 Final Study Design.....	5
3.3 Approvals	5
3.4 Participants	5
3.4.1 Selection Criteria	5
3.4.2 Study Groups	6
3.5 Sample	7
3.6 Measures.....	7
3.6.1 InterQual® ISD-A Tool.....	7
3.7 Procedures	7
3.7.1 Training and Data Control.	8
3.7.2 Phase 1 Data Collection Procedures	8
3.7.3 Phase 2 Data Collection Procedures	9
3.7.4 Phase 3 Data Collection Procedures	10
3.8 Analysis	10
3.9 Deviations/Limitations.....	11
3.10 Partners.....	12
4. RESULTS.....	13
4.1 Study Sample.....	13
4.2 Group 1.....	14
4.2.1 Community-Based Services	14
4.2.2 Nursing and Home Services.....	16
4.3 Group 2.....	18
4.3.1 Group 2a - Community-Based Services	18
4.3.2 Group 2b.....	19

4.4	Group 3	20
4.5	Substitutable Hospital Days	20
4.5	Group 4	20
4.6.1	Community-Based Services Data	21
4.6.2	Chart Review by QRP Coordinators	22
5.	IMPACT	24
5.1	Evaluation Framework	24
5.1.1	Access to Services/Quality of Care	24
5.1.2	Cost-Effectiveness of Services	24
5.1.3	Transferability	25
5.2	Problems Encountered	25
5.3	What We Would Do Differently?	26
5.4	Implications	26
5.4.1	Implications for Programs and Services	26
5.4.2	Implications for Canadian Health Policy	26
6.	DISSEMINATION PLAN	28
6.1	Primary target audiences	28
6.2	Secondary target audiences	28
6.3	Electronic Distribution	28
6.4	Media Coverage	28
6.5	Academic Publications/Presentations	28
	Bibliography	29

APPENDICES

Appendix A:	Study Design Flow Chart
Appendix B:	Guidelines for InterQual® ISD-A: Alternate Level of Care Guidelines Delayed Discharge Categories
Appendix C:	Data Collection Procedures
Appendix D:	Phase 1 Data Collection Forms
Appendix E:	Data Collection Procedures
Appendix F:	QRP/CAU Workload Measurement Form
Appendix G:	Community-Based Services Data Collection Forms
Appendix H:	Frequent ED Users ED Chart Review Data Collection

LIST OF TABLES

Table 1. Costs Per Unit for Community-Based Services 11

Table 2: Number and Percent of Visits to Each ED Site..... 13

Table 3. Number of Individuals Assigned to Study Groups 14

Table 4. Demographic Data on Groups 1, 2, & 3 14

Table 5. Demographics of Group 4 – Individuals Who Made Frequent ED Visits 14

Table 6. Group 1 – Number of Individuals Who Received Each Type of Community-Based Service..... 15

Table 7. Group 1 – Total Minutes of Community-Based Services 15

Table 8. Group 1- Costs of Community-Based Services 16

Table 9. Group 1 - Range in Amount of Time Nursing and Home Services..... 16

Table 10. Group 2a – Number of Individuals Who Received Each Type of Community-Based Service..... 18

Table 11. Group 2a – Total Minutes of Community-Based Services 19

Table 12. Group 2a - Costs of Community-Based Services..... 19

Table 13. Group 4 – Number of ED Visits by Subgroup..... 20

Table 14. Group 4 – Number of Individuals Who Received Each Type of Community-Based Service 21

Table 15. Group 4 – Total Minutes of Community Based Services 21

Table 16. Group 4 - Costs of Community-Based Services 22

LIST OF FIGURES

Figure 1: Amount of Nursing Services Provided Before and After ED Visit 17

Figure 2: Amount of Home Services Provided Before and After ED Visit 17

Figure 3: Average Number of Days Between ED Visits..... 23

1. INTRODUCTION

1.1 Purpose

The purpose of this study was to analyze the community-based services provided to clients of the Quick Response Program in Saskatoon District Health; to provide data on the associated costs of a Quick Response Program; and to provide data on the potential cost-savings realized by preventing hospital admissions. This study was of a select study population of individuals age 60 and over, who live in SDH in their own home or private/personal care home, and who accessed an Emergency Department of one of the three acute-care facilities in Saskatoon during the study period.

1.2 Goal/Objective

The overall goal of this project was to determine if the Quick Response Program of the Coordinated Assessment Unit in Saskatoon District Health is a cost-effective alternative to hospital care for non-acute individuals who present at Emergency Departments in Saskatoon.

There were two objectives of this study:

1. To determine if the use of a Quick Response Program in the Emergency Departments leads to decreased hospital admissions.
2. To determine if the use of a Quick Response Program in the Emergency Departments reduces costs associated with providing care to individuals, as opposed to the alternative, hospital care for non-acute individuals.

1.3 Relevance

This study is a description of the types and system costs of community-based services provided to individuals who access Emergency Departments but do not require admission to hospital. Quick Response Programs are a less costly method of service delivery, providing community-based care as an alternate to hospital care when it is not required (Brookoff & Minnitti-Hill, 1994, Jones et al, 1999, Weir et al, 1998). As the practice continues of providing non-acute services in acute-care facilities, it becomes even more critical that policy-makers and decision-makers understand the impact of funding Quick Response Programs, both in terms of services to be provided and the systems costs.

2. BACKGROUND TO QUICK RESPONSE PROGRAMS

2.1 Introduction

The province of Saskatchewan currently allocates approximately 40% of its provincial budget expenditures to health care. Pressures to provide the latest technological and pharmacological advances adds stress to an already complex and complicated delivery system of health care. In Saskatoon District Health (SDH), that system encompasses acute care, long-term care, public health, mental health, ambulance services, and community-based care. Access to, and quality health care services are basic expectations Canadians have of their health care system.

Providing efficient, effective health care that is accessible and appropriate is the goal of a health care system provider. Finding alternate delivery systems that are also cost-effective or cost-comparable has become increasingly important with the rising costs of providing health care over the past number of years.

2.2 Quick Response Programs/Quick Response Teams

Quick Response Programs (QRP) or Quick Response Teams (QRT) were introduced in Canada in the late 1980's. These programs were originally developed to prevent unnecessary hospital admissions of frail elderly and handicapped adults by promptly coordinating services in their own homes. This type of care was anticipated to contain hospital costs while avoiding the problem in these groups resulting from hospitalization (Weir et al, 1998).

In 1986, one such program was developed as a pilot project in Victoria, BC. The original pilot project was focused on enhancing home support services and home care nursing services to elderly individuals who reported to the Emergency Departments (ED) in a crisis situation. It was the goal of the QRT to have a quick assessment of these individuals (usually within 2 hours), before they were admitted to hospital. In 1988, the QRT program in Victoria was expanded, to provide enhanced services to individuals in the community who were in a crisis situation, thus hopefully preventing a visit to the ED. It also was expanded to include those individuals who were currently in hospital but could be discharged sooner into the community with enhanced services available to support them at home. The expanded services included rehabilitation services and homemaker services.

2.3 QRP in Saskatoon District Health

In the fall of 1995, a System-Wide Medical Audit was conducted at all three acute-care facilities in Saskatoon: Royal University Hospital (RUH), Saskatoon City Hospital (SCH), and St. Paul's Hospital (SPH). The issues identified from this review included inappropriate utilization of acute-care inpatient medical beds for non-acute patients. The audit found that 33.3% of medical patients admitted to acute care were non-acute both on their admission day and the first subsequent day of stay in hospital. It was also found that medical beds were being utilized by individuals who could have care provided in an alternate setting, of which home-based care was appropriate 20% of the time, on their admission day and first subsequent day in hospital. One of the key recommendations of the audit was to provide an alternate service delivery to non-care medical patients (---, 1996).

A QRP was established in SDH in January 1997. QRP was modeled within a well- established single-entry case management framework for community-based services, the Coordinated Assessment Unit (CAU). QRP provides access for individuals to an alternate care option that involves an interdisciplinary and multi-sectoral approach to problem-solving, negotiation, decision-making, and delivery of appropriate care from a variety of sources. QRP focuses on individuals coming to the EDs, concentrating on the prevention of inappropriate hospital admissions where the individual needs could be met with community-based services such as Home Care, Respite Care, or a variety of other services. QRP staff do not assess individuals who require quick access to mental health or addictions services because of a lack of emergency services available for these specific conditions. Approximately 75% of the individuals seen by QRP are over the age of 60, and the majority of them live in their own homes.

3. METHODOLOGY

3.1 Setting

The setting for this study was SDH and the three EDs of the three hospitals in Saskatoon – RUH, SCH, and SPH. The EDs of RUH and SPH operate 24 hours/day; the ED of SCH operates from 0900 to 2030 daily. QRP provides assessment of individuals who visit EDs within 30 minutes of referral and operates from 0700 to 2300 daily. Referrals made to QRP between 2300 and 0700 are accessed by the QRP Coordinators the next morning. In SDH, QRP is part of the programming provided by the Coordinated Assessment Unit CAU. The CAU is the central entry point for community-based services in SDH that include Home Care, Community Physical Therapy (PT), Occupational Therapy (OT) and Social Work (SW), Meals on Wheels (MOW), Respite Care, Long Term Care, and Community Day Programs.

3.2 Study Design

3.2.1 Original Study Design

The original design was a concurrent, prospective study of individuals who visited any of the three EDs in Saskatoon, from 1200 to 1800, 7 days/week. A nurse data collector would be present in the EDs to assess all individuals who visited the ED during this time to determine if they were eligible for the study and if QRP would be an appropriate program for them. This assessment would be independent from the assessment conducted by ED and QRP staff. It was hoped that this individual assessment by the nurse data collectors would allow for the development of a profile of the characteristics of individuals who are or are not referred to QRP. Individuals admitted to hospital from the ED would be assessed using InterQual® ISD-A to determine level of acuity. This study design required the hiring of 5 – 7 general duty nurses, in order to collect the required data concurrently in all three EDs, 6 hours/day, 7 days/week for 11 weeks. Community-based services would be collected for 30 days before and after the date of the ED visit.

3.2.2 Change in Study Design

Soon after the study proposal was accepted, Saskatchewan was hit with a province-wide nurses' strike, which highlighted the critical shortage of nurses. Soon after the strike was settled, planning began for implementation of the study. After reviewing the current climate in SDH, it was determined that it would be inappropriate to hire general duty nurses for data collection in a research study when acute-care wards had to close beds if one nurse called in sick for a shift. The study was then changed to a retrospective chart review of all ED visit records, for the defined study period. Individuals admitted through the ED would still be assessed for their level of acuity with the InterQual® ISD-A tool and nurses are the preferred individuals to complete this assessment. So nurses participating in return-to-work programs that required duties more suitable to research data collection (such as minimal walking and standing and some flexibility in working hours) were identified and recruited to be nurse data collectors for the revised study design.

3.2.3 Final Study Design

The final design was a retrospective study of the ED charts of all individuals who accessed an ED during the study period. The chart review was conducted during the day from Monday to Friday, in the health record departments of all three hospitals. InterQual® ISD-A was completed on the individuals admitted through the ED within 1 –3 days of admission to hospital or after their discharge. Community-based services data were collected on all individuals for 30 days before and 30 days after the date of the ED visit during the study period. Individuals who visited the ED were not identified as possibly already receiving community-based services before that visit because this information is not routinely captured on the ED visit records. Community-based services data consisted of data from Home Care – Nursing and Home Services; Community Services – PT, OT, SW; MOW; and CAU. This data were then used to calculate the costs to SDH to provide these community-based services.

As data from the ED visits were being collected, the nurse data collectors commented that some individuals appeared to be visiting the EDs on a frequent basis. This was also noted by the data entry clerk inputting the data collection forms into the study database. Early in the data analysis this was confirmed and it was decided to add another group to the study, for further and more detailed analysis of this interesting finding.

3.3 Approvals

Ethical approval for this study was obtained from the University of Saskatchewan Advisory Committee on Ethics in Behavioural Sciences Committee and Operational Approval was obtained from the Research Services Unit in SDH.

3.4 Participants

3.4.1 Selection Criteria

The QRP provides services to all age groups; however in reviewing the demographics of the previous program recipients, 78% of them were over the age of 60. So, for the purposes of this study, it was decided to include only those 60 and over. QRP provides services primarily to individuals who live within SDH, but they will coordinate community services for individuals who live outside SDH. In SDH, individuals who live in private/personal care homes (PCH) do receive some community-based services initiated by either CAU or QRP such as community PT, OT, SW, and basic teaching of some individual care functions for the PCH operators. So, residents of PCHs were included in the sample population.

The study population was all those individuals who accessed an ED during the study time frame and who: were 60 and over; lived in SDH; and lived in either their own home or a PCH.

3.4.2 Study Groups

Each individual who visited the EDs was placed into one of three groups (see Appendix A – Study Flow Sheet):

- Group 1. These were individuals who were referred to QRP, were seen by QRP, had community-based services initiated by QRP and were sent home.
- Group 2. These were individuals who were referred to QRP, were seen by QRP, refused services and were either sent home or admitted to hospital.
- Group 3. These were individuals who were not referred to QRP, and were sent home or admitted to hospital. It was hypothesized that a referral to QRP may have prevented the admission or subsequent repeat visits to the ED.

For data collection and analysis purposes, Group 2 and 3 were further divided, in order to capture the variety of combinations of situations that could occur. Individuals placed into Group 2 could have one of four possible scenarios:

- Group 2a. These were individuals who were referred to QRP, seen by QRP, refused services and went home.
- Group 2b. These were individuals who were referred to QRP, seen by QRP and admitted to hospital.
- Group 2c. These were individuals who were referred to QRP, seen by QRP, refused services, and were admitted to hospital.
- Group 2d. These were individuals who were referred to QRP and were admitted to hospital without being seen by QRP.

Individuals who were placed into Group 3 could have 1 of 2 possible scenarios:

- Group 3a. These were individuals who were not referred to QRP and sent home.
- Group 3b. These were individuals who were not referred to QRP and admitted to hospital.

As mentioned above, another group was revealed during preliminary data analysis – those individuals who repeatedly visited the EDs during the study period. After review of this data, it was decided to examine further those individuals who had 4 or more visits to the ED during the study period. This became Group 4. While individuals were placed exclusively into either Group 1, 2, or 3, Group 4 contained any individual who had 4 or more ED visits. This was done in order to review the reasons for the repeat visits, regardless if the individual was seen by QRP or not or admitted to hospital or sent home.

3.5 Sample

Between the 11 week period from September 26 to December 11, 1999, 4550 ED charts were reviewed of individuals who were 60 years of age or older. From these, 3,074 (67.6%) met all the study criteria (that is, they also lived in SDH and lived in their own home or PCH) and data were collected on these ED visits.

3.6 Measures

3.6.1 InterQual® ISD-A Tool

InterQual® ISD-A is a tool used to assess if individuals require an acute level of care, to identify inappropriate utilization of acute-care beds, and to assist in identifying non-acute individuals who require an Alternate Level of Care to meet their care needs. The tool was applied for the study subject's day of admission, and the first subsequent day of the hospital stay. [Guidelines for InterQual® ISD-A are found in the Appendix B.] The InterQual® ISD-A was used in its pure form with no alterations in the criteria sets. This was done so that in the future, comparisons may be made to findings (prospective, concurrent, or retrospective) from other facilities, studies, or any replication of this study for outcome measurements. The Alternate Levels of Care component of the InterQual® ISD-A tool was enhanced to parallel SDH's current service delivery profile.

- Admission Screening – The tool is based on clinical criteria that have been developed with physician coordination. On the patient's admission, the criteria are applied based on body systems, not diagnosis. If the patient meets the criteria for Severity of Illness (SI) and Intensity of Service (IS) or treatments/therapies for the body system, the patient is noted as being acute. If the criteria are not met, the patient is non-acute, and an Alternate Level of Care is assigned.
- Subsequent Day Screening – On the second day of stay, the individual is assessed using only the criteria for Intensity of Service (IS) as the SI is only assessed on the admission day. If the IS is not met, then Discharge Screens are applied to determine if the patient is ready for discharge. If the Discharge Screens are met, the individual is non-acute and an Alternate Level of Care is assigned.

For individuals who were admitted to hospital from the ED, InterQual® ISD-A was done on their admission day and subsequent day to determine level of acuity. If the individuals were found to be non-acute on either the admission or subsequent day, an Alternate Level of Care determination was assigned, to determine if that individual could have been managed in the community. This allowed for the identification of preventable hospital admissions, or substitutable hospital days.

3.7 Procedures

There were three phases of data collection, each of which were carried out by a different group of individuals. Phase 1 involved the collection of data from the charts of individuals who visited the ED from September 26 to December 11, 1999. Phase 2 involved the collection of community-based services

data. Phase 3 involved a review the ED records of individuals who had 4 or more visits to an ED during the study period.

3.7.1 Training and Data Control.

Phase 1 data collection was completed by 4 nurse data collectors. For Phase 2, 3 graduate students were hired to collect the community-services data while Phase 3 data were collected by QRP Coordinators. Each group of data collectors was oriented to the study procedures and trained for their specific data collection process. Regular and frequent contact with the data collectors allowed for quick solutions as small problems arose. Using a small number of data collectors ensured consistency in the way the data were collected.

The nurse data collectors were trained to use InterQual® ISD-A and inter-rater reliability testing was completed on their use of this tool. Results indicated one nurse data collector had a KAPPA Score in the 'Poor' range (< 0.4). The remaining nurse data collectors had KAPPA Scores in the 'Exceptional' range (= 0.75). The InterQual® ISD-A data for the nurse data collector with the 'Poor' KAPPA Score were recollected by one nurse data collector with an 'Exceptional' KAPPA Score.

Data entry was conducted by two individuals and only the investigator and her colleague had access to the study data base for data analysis.

3.7.2 Phase 1 Data Collection Procedures

The Health Record Departments of each hospital provided the nurse data collectors with a copy of the admission list for inpatients and emergency patients, and the Emergency Visit List, for each day of the study period. Details on the daily procedures for collecting the data are in Appendix C. Data collection forms are found in Appendix D.

If an individual was admitted to hospital from the ED, then the nurse data collector reviewed the in-hospital chart to determine if InterQual® ISD-A would be completed. Previous studies conducted in SDH using InterQual® ISD-A have found that individuals admitted to the Intensive Care Unit and the Coronary Care Unit consistently required an acute level or more often a critical level of care. As well, these studies also found that individuals who had surgery within their first 24 hours of admission to hospital have consistently been shown to require an acute level of care (---,1997, ---, 1998, ---, 1999). Individuals admitted to these nursing units were excluded from a level of acuity assessment. Palliative Care, Geriatric Assessment Unit, and Rehabilitation are Alternate Levels of Care in SDH and therefore assessment for acuity is inappropriate so individuals admitted to these units were excluded from this assessment as well. The procedures and decision-tree for collecting the InterQual® ISD-A data are in Appendix E. Study ID numbers assigned by the nurse data collectors were confirmed during data cleaning.

In order to capture the workload of the QRP/CAU coordinators for individuals seen by QRP, the QRP/CAU Coordinators completed a workload measurement tool (Appendix F) on every QRP client seen in the ED during the study period. QRP and CAU Coordinators provide case management, which is divided into 8 areas: case finding, assessment, identification & exploration, designing a care plan,

communication, monitoring, facilitating, and linking. QRP Coordinators follow their clients for 5 days after assessment in the ED; the care plan is then transferred to a community CAU Coordinator for continued case management services, as needed. During the study period, QRP Coordinators passed the workload measurement tool to the CAU Coordinator as they passed on the care plan, so workload measurement data were collected for 30 days after the ED visit.

For all community-based services included in this study, data was collected to measure the intensity of service provided 30 days before and 30 days after the ED visit. In order to collect data on the intensity of service provided by QRP/CAU Coordinators before the ED visit, the QRP/CAU Coordinators would have been required to collect workload measurement data on all the individuals on their caseload because they could not anticipate who would visit the ED and who would not. There are approximately 4,250 individuals who access community-based services through CAU or QRP on a monthly basis. It would have been quite time consuming for each QRP/CAU Coordinator to record the time they spent with each individual on their caseload for the purposes of this study. So data were only collected by QRP/CAU Coordinators after the individual visited the ED. This was a conscious decision made for practical reasons.

3.7.3 Phase 2 Data Collection Procedures

Data collection of community-based services for individuals in Group 1, 2, 3 or 4 was completed in Phase 2. In this study, community-based services data included Home Care (Nursing and Home Services), MOW, and Community Services (PT, OT, and SW). With the exception of Group 4, data were collected for 30 days before and after the date of the recorded ED visit (data collection forms are in Appendix G). If there was more than 1 visit by the same individual during the study period, community-based services data were collected for 30 days before and 30 days after each ED visit.

During community-based services data collection, the data were coded as occurring 'before' the ED visit or 'after' the ED visit. A separate code was not created for services received on the same day of the ED visit. After careful review of the data and consideration of the options, it was decided to code any services received on the same day as the ED visit as occurring 'after' the ED visit. For those individuals who had received no community-based services before the ED visit, it was presumed that the ED visit triggered the community-based services provided to that individual. For those individuals who received services both and after the ED visit, community-based services received on the same day as the ED visit could either be triggered by the ED visit, or the visit to the ED could have been triggered by an earlier visit in the same day to that individual by the service provider. So the services could have been received either 'before' or 'after' the ED visit. However, because a code was not created to capture services being provided on the same day as the ED visit, and to remain consistent in data coding, those individuals who received had any services on the same day as the ED visit were coded as occurring 'after the ED visit'.

Community-based services data were not available for some of the individuals in Group 4. For individuals in Group 4 who had community-based services available, it was decided to collect community-based services data starting 30 days before the first ED visit, ending 30 days after the last ED visit, and for the period between the first and last ED visit of the study period. This would allow for analysis of community-based services provided during these three time points for each individual in this group.

Data were collected in units of service, as captured by each community-based service provider. For Home Care (Nursing and Home Services), data were collected in quarter hour blocks of time which was then converted to minutes of service. For Community Services (PT, OT, SW), and CAU or QRP Coordinators, data were collected in 5 minute units and converted into minutes of service. This was done in order to have a common unit of service for comparisons, that being minutes of service provided. For Meals on Wheels, one unit of service is one meal.

3.7.4 Phase 3 Data Collection Procedures

As mentioned previously, an interesting finding of this study was the frequency with which some individuals visited the EDs during the 11week study period. While the number of repeat visits per individual ranged from 2 to 14, a decision was made to focus only on those who had 4 or more ED visits during the study period. Phase 3 involved a detailed review of all of the ED visit records during the study period for each individual in this group. This review was conducted by QRP Coordinators in the Health Records Departments of the hospitals in SDH. ED chart records are stored at each site and some individuals visited more than 1 ED during the study period. Special arrangements were made so that the QRP Coordinators reviewed all of the ED records (for the study period) for each individual at one site, regardless of which ED was visited. Each ED visit was assessed to determine what, if anything could have been done by QRP to prevent any of the ED visits in the study period (data collection forms are found in Appendix H). This review was completed only on the individuals in this group for whom community-based services data were available.

3.8 Analysis

As already mentioned in the previous sections, there were some individuals who visited the ED more than once during the study period. One purpose of this study was to analyze the change in intensity of community-based services provided to an individual before and after the date of the ED visit. If an individual had 2 ED visits less than 60 days apart during the study period, there was a cross-over of community-based services data 'before' and 'after' for the two ED visits. The 'after' data from the first visit would become part of the 'before' data for the second visit. This cross-over would not allow for an accurate comparison of change in intensity of service if the data were counted twice, once as 'after' and once as 'before'. In order to control for this, only those ED visits by an individual that were greater than 60 days apart were included in the analysis. There were 11 individuals in Group 1 and 2 who had two visits during the study period but none of these visits was greater than 60 days apart so the data from the second ED visit of individuals in Group 1 or 2a were not included in the detailed analysis presented in the Results.

Data on community-based services data are reported in total minutes of service for all individuals who received each type of community-based service. An average of the minutes of services received per individual was calculated for each community-based service, both for services received before and after the ED visit. The formula shows the calculations for the average minutes of service per individual before the ED visit. This was calculated as follows:

total # of minutes of service provided before the ED visit = average minutes of service per

individuals who received that service

individual before the ED visit

Statistical analysis was conducted on the time spent by community-based service providers in providing care to individuals in Group 1 and 2a in the period for 30 days before and 30 days after the ED visit. This was done using t tests, to determine if significant differences existed between the amount of community-based services provided to individuals in these 2 groups before and after the ED visits.

The departments of Home Care, Food & Nutrition Services, PT, OT, SW, and CAU in SDH provided a cost for each unit of service. When this study was planned, the investigator and her colleagues were under the impression that each department or service provider within SDH used a consistent method to collect, calculate, and report their costs. As the study progressed, it was soon evident that there was wide variation in how costs were collected, calculated, and reported. *In order to provide consistent data on the costs of providing the various community-based services, it was decided to use the costs for direct and indirect patient care time and travel costs.* Some of the data provided by a few departments were modified to reflect this decision. The costs per unit of service for community-based services are presented in Table 1. None of these costs include building, capital or district support costs. MOW costs include raw food cost, labor cost, and packaging/container cost and this value was used to calculate MOW costs.

To calculate the costs of a non-acute hospital day, a value was used that was derived from a recently completed study in SDH that looked at Hospital and Home Care in the Elderly. The estimated cost of 1 non-acute hospital day was determined to be \$327.25/day (Shepperd, 1996).

Because this study was a retrospective study of ED chart records, the only costs included are the costs to SDH for providing community-based services. Data were not collected on costs to the individual and/or their caregiver(s) for out-of-pocket expenses associated with that individual remaining in the community.

Table 1. Costs Per Unit for Community-Based Services

COMMUNITY-BASED SERVICE	Cost * per unit of service	Calculated cost * per unit of service/hour
Home Care Nursing Unit (1 unit=1 hour)	\$42.43	\$42.43
Home Care Home Making Services Unit (1 unit=1 hour)	\$24.65	\$24.65
Community Services Physical Therapy (1 unit=1 minute)	\$ 1.19	\$71.40
Community Services Occupational Therapy (1 unit=1 minute)	\$ 1.31	\$78.60
Community Services Social Work (1 unit=1 minute)	\$ 1.18	\$70.80
Quick Response Program/Coordinated Assessment Unit (1unit=1hour)	\$28.08	\$28.08
	Cost per unit	
Meals on Wheels (1unit=1meal)		\$ 6.34

* Cost per unit of service includes direct and indirect patient care time and travel costs.

3.9 Deviations/Limitations

As mentioned in Section 3.2.2, Changes to Study Design, the most significant deviation in this study was the change in design methodology. Data on characteristics of QRP clients and potential QRP

clients were not collected, therefore no profile could be developed that would assist ED staff in referring individuals to QRP. However, as will be shown in the results, there were only two individuals who had preventable hospital admissions, where community-based services could have been provided as an appropriate Alternate Level of Care. While the study change did not allow for the development of a client profile, this finding supports the ability of QRP to prevent non-acute hospital admissions, for which there is appropriate community-based services available.

Data on time spent by QRP/CAU Coordinators providing service to individuals in this study were only collected for the period after an individual accessed services initiated by QRP in the ED. As explained in Section 3.7.2, Phase 1 Data Collection Procedures, there was no way to study the change in intensity of service provided by QRP/CAU Coordinators that resulted from the ED visit.

Deciding to code all community-based services as occurring ‘after’ the ED visit biased the findings against showing an effect of QRP. This potentially could have minimized the affect of QRP on the individuals being studied.

There was a group of individuals in Group 4 whose community-based services were not available and their ED visit records were not reviewed by QRP Coordinators. In comparing the demographics of these groups, it appears they may have been representative of each other.

3.10 Partners

Partners in this study included researchers, decision-makers, managers, supervisors, and front-line staff. This study could not have been completed without their valuable suggestions, support, assistance, and advice. These include individuals from Health Records, Home Care, CAU, Community Services, and Strategic Health Information & Planning Services.

4. RESULTS

4.1 Study Sample

During the 11 week study period from September 27 to December 11, 1999, there were 3,074 ED visits made by 2,343 individual SDH residents, age 60 & over, who live in their own home or PCH. Of these, 950 (41%) were male and 1393 (59%) were female. The mean age was 75.3 years and the range was 60 – 103 years. There were 731 individuals who visited the EDs more than once during the study period.

Of the 3,074 total visits, information on which ED site was visited was available on 3,045 visits. As the ED data collection forms were submitted by the nurse data collectors for data entry, they were coded by ED site. For 29 of these visits, site data were not recorded. Table 2 presents the results for the number of visits to each ED site, by number and percent of all ED visits for the study. This is compared to SDH data, represented by the percent of all ED visits by site for the fiscal year of April 1, 1998 to March 31, 1999. SDH data do not separate out those individuals who live in their own home or PCH from those who live in a nursing home.

Table 2: Number and Percent of Visits to Each ED Site

Site of ED visit	Study Data	SDH Data – April 1, 1998 to March 31, 1999
RUH	910 (30%)	26%
SCH	889 (29%)	25%
SPH	1246 (41%)	49%
Total	3,045 (100%)	100%

From the 3,074 ED visits, there were 647 admissions to hospital. From the 2,343 eligible individuals who visited the ED during the study period, there were 495 admissions to hospital. InterQual® ISD-A ® was completed on 521 charts of individuals admitted from the ED to hospital during the study period (some individuals were admitted more than once from the ED).

All 2,343 individuals who visited the ED during the study period were assigned into either Group 1, 2, or 3. To review:

- ◆ Group 1 were those individuals referred to QRP, seen by QRP, had community-based services initiated by QRP, and were sent home.
- ◆ Group 2 were those individuals referred to QRP, refused services and were either sent home or admitted to hospital.
- ◆ Group 3 were those individuals who were not referred to QRP, and were sent home or admitted to hospital.
- ◆ Group 4, added early in the data analysis, were those individuals from either Group 1, 2, or 3 who visited the ED 4 or more times during the study period.

The detailed description of the subgroups for Group 2 and 3 is found in Section 3.4.2, Study Groups. The total number of individuals assigned to each group is found in Table 3. Demographic data on Study Groups 1, 2, and 3 is presented in Table 4.

Table 3. Number of Individuals Assigned to Study Groups

	Group 1	Group 2				Group 3		Total Group 1, 2, & 3	Group 4
		2a	2b	2c	2d	3a	3b		
Number of individuals assigned to each subgroup	136	35	5	0	0	2,166	3	2,343	46

Table 4. Demographic Data on Groups 1, 2, & 3

	Group 1	Group 2a	Group 2b	Group 2c	Group 2d	Group 3a	Group 3b
N	136	35	5	0	0	2,166	3
Male	46 (34%)	13 (37%)	1			884 (41%)	2
Female	90 (66%)	22 (63%)	4			1280 (59%)	1
Age – mean	81.6	79.8	79			74.8	73
Median	83.5	81				75	
Mode	85 & 86	78				78	
Range	61 – 98	60 – 91	64 – 89			60-103	60 – 78

There were 46 individuals who visited EDs 4 times or more during the study period and community-based services data were collected on 26 of these individuals. Demographic data for Group 4 is presented in Table 5.

Table 5. Demographics of Group 4 – Individuals Who Made Frequent ED Visits

	All individuals (n = 46)	Individuals with community-based service data (n = 26)	Individuals without community-based service data (n = 20)
Male	21 (46%)	10 (38%)	11 (55%)
Female	25 (54%)	16 (62%)	9 (45%)
Age – mean	70.8	70.5	71.3
Median	70.5	71	69.5
Mode	63	63 & 64 & 72	63 & 77
Range	60 - 90	60 - 85	60 - 90

4.2 Group 1

Group 1 were those individuals referred to QRP, seen by QRP, had community-based services initiated by QRP, and were sent home. There were 136 individuals assigned to Group 1.

4.2.1 Community-Based Services

The number of individuals in Group 1 who received the different community-based services is

presented in Table 6. Some individuals received services only before the ED visit, some received services only after the ED visit, and some received services both times, so data on the number of individuals who received services were separated into these three categories.

Table 6. Group 1 – Number of Individuals Who Received Each Type of Community-Based Service

	Services received only before ED visit	Services received only after the ED visit	Services received both before and after ED visit	Total number of individuals receiving these services (n)
PT	3	9	3	15
OT	2	11	0	13
SW	1	5	3	9
Nursing	3	15	8	26
Home Services	5	25	43	73
Meals on Wheels	0	6	3	9
Total	14	71	65	150 *

* Individuals may have received more than 1 service

QRP/CAU Coordinators provided services to 113 individuals after their ED visit.

The total minutes of services received by individuals before and after the ED is shown in Table 7. Refer to Section 3.8, Analysis, for a description of the formula used to calculate the average minutes of service per individual.

Table 7. Group 1 – Total Minutes of Community-Based Services

	Before ED Visit		After ED Visit		Difference
	Total # minutes of service	Average per individual	Total # minutes of service	Average per individual	Total # minutes of service
PT	295	49	1,015	84.6	+ 720
OT	125	62.5	765	69.5	+ 640
SW	1,425	356.25	1,650	206.25	+ 225
Nursing	2,340	212.7	8,265	359.3	+ 5,925
Home Services	46,875	976.6	65,730	966.6	+ 18,855
Total	51,060		77,425		+ 26,365
	Total # meals received	Average per individual	Total # meals received	Average per individual	Total # meals received
Meals on Wheels	77	25.7	194	21.6	+ 87
CAU			22,755	201.4	

T tests, using repeated measures group differences test were done, to look for statistical differences between minutes of service provided before and after ED visit. These tests were conducted using minutes of service. Because the total minutes of service for PT, OT, and SW were relatively small,

they were combined together for this test. **There was a statistically significant increase in nursing services, before and after ED, $t = 3.30(137)$, $p = .001$.**

The data on total minutes of community-based services was used, along with the cost values for each service, to calculate the costs of community-based services provided to individuals in Group 1. This is presented in Table 8.

Table 8. Group 1- Costs of Community-Based Services

	Before ED Visit	After ED Visit	Difference
PT	\$ 351.05	\$ 1,207.85	+ \$ 856.8
OT	\$163.75	\$1,002.15	+ \$ 838.40
SW	\$ 1,681.50	\$ 1,947.00	+ \$ 265.50
Nursing	\$ 1,654.77	\$ 5,844.73	+ \$ 4,189.96
Home Services	\$ 19,257.81	\$ 27,004.08	+ \$ 7,746.27
Meals on Wheels	\$ 488.18	\$ 1,039.76	+ \$ 551.58
Total Costs	\$ 23,597.06	\$ 38,045.57	+ \$ 14,448.51
CAU		\$ 10,649.34	

The average cost to provide community-based services including CAU costs, per individual in Group 1, for a total time period of 30 days after they visit the ED, is \$358.05.

4.2.2 Nursing and Home Services

Nursing and Home Services were further analyzed to look at patterns of service provision to clients. There was great variability in the amount of time for nursing and home services received by individuals in Group 1. Table 9 presents the minimum and maximum time received by any one individual during the study period for Nursing and Home Services. That is, at least 1 individual received a minimum of 30 minutes (0.5 hours) of Nursing services before the ED visit, and at least 1 individual received a maximum of 615 minutes (10.25 hours) of Nursing services before the ED visit.

Table 9. Group 1 - Range in Amount of Time Nursing and Home Services

	Before ED Visit		After ED Visit	
	Minimum (minutes/hours)	Maximum (minutes/hours)	Minimum (minutes/hours)	Maximum (minutes/hours)
Nursing	30/0.5	615/10.25	45/0.75	1020/17
Home Services	45/0.75	6015/100.25	30/0.5	5595/93.25

Because of the wide range in the amount of time for Nursing and Home Services received by individuals both before and after the ED visit, data for Nursing and Home Services were divided into smaller time ranges for further analysis. Figure 1 presents data for Nursing and Figure 2 presents data for Home Services. So, there were 2 individuals who received 60 minutes or less of Nursing services before the ED visit, and 1 individual who received 60 minutes or less of Nursing services after the ED visit. For both Nursing and Home Services, the time range for services received that had the most number of individuals in it before the ED visit was the same range that had the most number of individuals in it after the ED visit.

Figure 1. Amount of Nursing Services Provided Before and After ED Visit

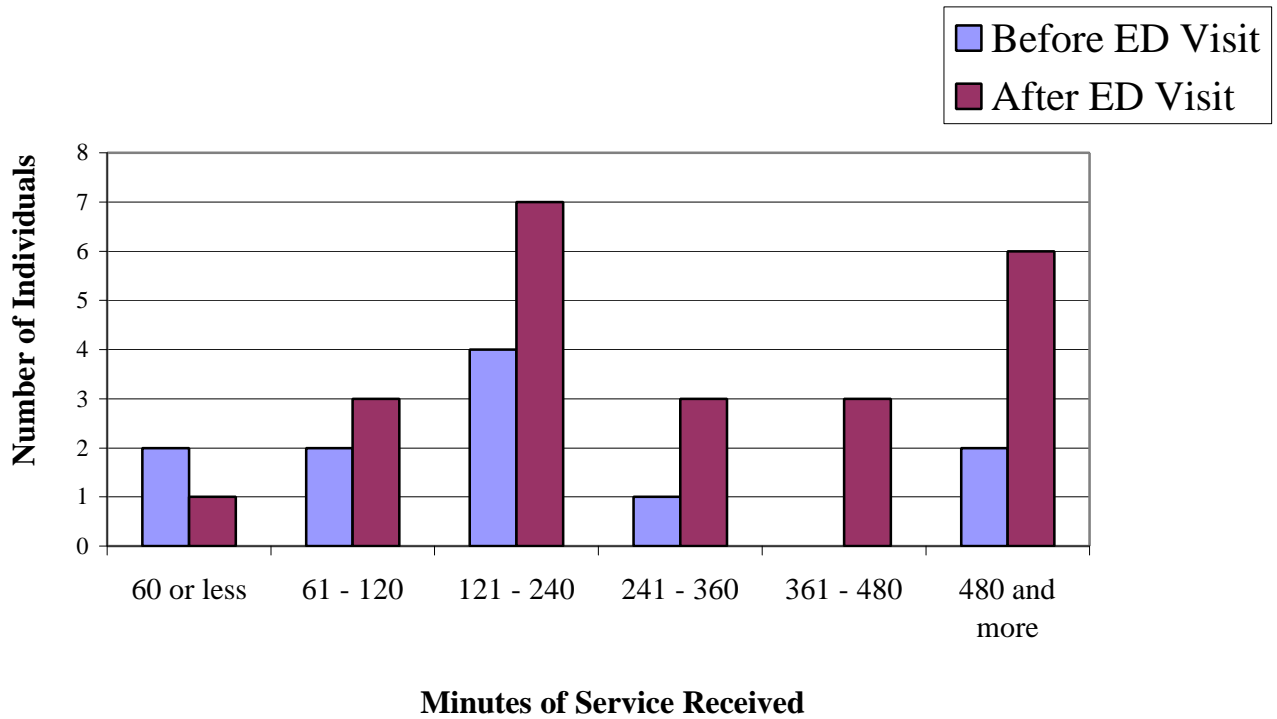
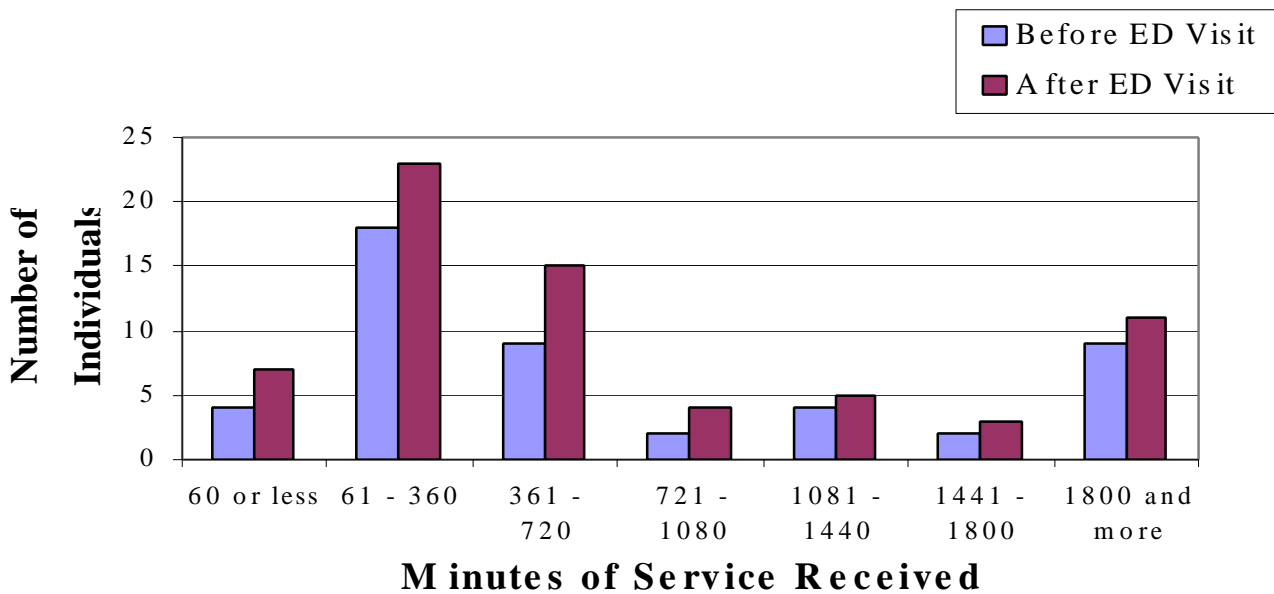


Figure 2. Amount of Home Services Provided Before and After ED Visit



4.3 Group 2

Group 2 were those individuals who were referred to QRP, seen by QRP, and were either sent home or admitted to hospital. There were 4 subgroups in Group 2, of which only 2 had individuals assigned to them: Group 2a – individuals who were referred to QRP, seen by QRP, refused services and were sent home; and Group 2b – individuals who were referred to QRP, seen by QRP, and admitted to hospital. Data from Group 2a will be presented first, followed by data from Group 2b.

4.3.1 Group 2a - Community-Based Services

There were 35 individuals assigned to Group 2a. The number of individuals in Group 2a who received the different community-based services is presented in Table 10. Some individuals received services only before the ED visit, some received services only after the ED visit, and some received services both times, so data on the number of individuals who received services were separated into these three categories.

Table 10. Group 2a – Number of Individuals Who Received Each Type of Community-Based Service

	Services received only before ED visit	Services received only after the ED visit	Services received both before and after ED visit	Total number of individuals receiving these services (n)
PT	0	3	0	3
OT	0	1	0	1
SW	0	0	0	0
Nursing	0	1	0	1
Home Services	0	3	2	5
Meals on Wheels	0	1	0	1
Total	0	9	2	11 *

* Individuals may receive more than 1 service.

QRP/CAU Coordinators provided services to 22 individuals after their ED visit.

The total minutes of community-based services received by individuals in Group 2a before and after the ED is presented in Table 11. Refer to Section 3.8, Analysis, for a description of the formula used to calculate the average minutes of service per individual.

Table 11. Group 2a – Total Minutes of Community-Based Services

	Before ED Visit		After ED Visit		Difference
	Total # minutes of service	Average per individual	Total # minutes of service	Average per individual	Total # minutes of service
PT	0	0	340	113.3	+ 340
OT	0	0	30	30	+ 30
SW	0	0	0	0	0
Nursing	0	0	120	120	+ 120
Home Services	555	277.5	4,425	885	+ 3,870
Total	555		4,915		+ 4,360
Meals on Wheels	0	0	4	4	+ 4
CAU			1,680	76.4	

T tests, using repeat measures group difference tests were conducted, to look for statistical differences between the minutes of service provided before and after the ED visits. As with Group 1, the minutes of service provided by PT, OT, and SW were combined together. **There was no statistically significant differences in the minutes of services provided for Group 2a.**

Table 12 presents the data on the costs of community-based services provided to individuals in Group 2a. This was calculated using total minutes of community-based services and the cost values for each service.

Table 12. Group 2a - Costs of Community-Based Services

	Before ED Visit	After ED Visit	Difference
PT	0	\$ 404.60	+ \$ 404.60
OT	0	\$ 39.30	+ \$ 39.30
SW	0	0	0
Nursing	0	\$ 84.86	+ \$ 84.86
Home Services	\$ 228.01	\$ 1,817.94	+ \$ 1,589.93
Meals on Wheels	0	\$ 25.36	+ \$ 25.36
Total Costs	\$ 228.01	\$ 2,372.06	+ \$ 12,144.05
CAU		\$ 786.34	

4.3.2 Group 2b

There were 5 individuals who were referred to QRP, seen by QRP, and admitted to hospital. Of these 5 hospital admissions, 1 was determined to be substitutable. This individual remained in hospital for 4 days, and was non-acute for each of these hospital days. Home Care was the assigned Alternate Level of Care for each day. Using the value of \$327.25 for the cost of 1 non-acute hospital day, the total hospital costs for this individual were \$ 1,309.00

4.4 Group 3

Group 3 were those individuals who were not referred to QRP, and were sent home or admitted to hospital. There were 2,166 individuals who were not referred to QRP and sent home (Group 3a) and 3 individuals who were not referred to QRP and admitted to hospital (Group 3b). Of the 3 individuals assigned to Group 3b, 1 of these admissions was substitutable. This individual remained in hospital for 8 days, and was non-acute for each of these days. The Alternate Level of Care for each day was Outpatient Services. The total cost of the non-acute stay for this individual was \$2,618.00.

4.5 Substitutable Hospital Days

The total number of substitutable hospital admissions was extremely low – 2 out of 647 admissions to hospital, of which 521 individuals were assessed for level of acuity using the InterQual® ISD-A tool. Given this low number, it is doubtful that a longer study period may have identified a greater proportionate number of individuals who were non-acute on admission to hospital, and who could have received appropriate community-based services instead.

Prior to this study, no data were available in SDH on the acuity of individuals admitted to hospital from the EDs, after QRP was implemented. The purpose of QRP is to prevent non-acute hospital admissions by facilitating appropriate community-based services in a timely fashion for individuals who present at an ED. So, the discovery of only 2 substitutable hospital admissions during the 11 week study period was not unexpected. This data supports the purpose of QRP and would appear to be effective in preventing non-acute hospital admissions.

4.6 Group 4

Group 4 were those individuals from Group 1, 2, or 3 who visited the ED 4 or more times during the study period. There were 46 individuals in this group, accounting for a total of 267 ED visits, with a mean of 5.8 visits per individual. Community-based services data were available on 26 of the 46 individuals in this group. Table 13 presents the total number of ED visits for this group, and the number of ED visits for those individuals where community-based services data were available and were not available. The remaining results presented in Tables 13 to 16 are for those individuals on whom community-based services data were available.

Table 13. Group 4 – Number of ED Visits by Subgroup

	All individuals (n = 46)	Individuals with community-based services data available (n = 26)	Individuals with no community-based services data available (n = 20)
Total Number of ED Visits	267	178	89
Average number of visits per individual	5.8	6.9	4.45
Range of number of visits	4 - 19	4 - 19	4 - 6

4.6.1 Community-Based Services Data

Community-based services data were analyzed for three time periods – for 30 days before the first ED visit, for 30 days after the last ED visit, and for the time period between these two. Table 14 presents the number of individuals who received community-based services in these time periods.

Table 14. Group 4 – Number of Individuals Who Received Each Type of Community-Based Service

	Services received only before the first ED visit	Services received only after the last ED visit	Services received between the first and last ED visit	Total number of individuals receiving these services (n)
PT	0	0	0	0
OT	0	0	0	0
SW	0	1	2	2
Nursing	0	1	2	2
Home Services	1	1	1	2
Meals on Wheels	0	0	1	1
Total	1	3	6	7 *

* Individuals may receive more than 1 service.

Total minutes of community-based services received by individuals in this group were calculated for these three time intervals and is presented in Table 15.

Table 15. Group 4 – Total Minutes of Community Based Services

	Before the first ED Visit		Between the first and last ED Visit		After the last ED Visit	
	Minutes of Service	Average	Minutes of Service	Average	Minutes of Service	Average
SW	0	0	1,875	937.5	120	120
Nursing	0	0	195	97.5	360	360
Home Services	30	30	60	60	420	420
Total	30		2,130		900	
Meals on Wheels	0	0	0	0	14	14

The data on total minutes of community-based services was used, along with the cost values for each service, to calculate the costs of community-based services provided to individuals in this group and is presented in Table 16.

Table 16. Group 4 - Costs of Community-Based Services

	Before the first ED Visit	Between the first and last ED Visit	After the last ED Visit
SW	0	\$ 2,212.50	\$ 141.60
Nursing	0	\$ 137.90	\$ 254.58
Home Services	\$ 12.33	\$ 24.65	\$ 172.55
Meals on Wheels	0	0	\$ 88.76
Total Costs	\$ 12.33	\$ 2,375.05	\$ 657.49

There was a wide range in the number of repeat ED visits made by individuals in this group and in the total number of days the range of these visits covered. An average number of days between ED visits was calculated for all 46 individuals. For each individual, this was achieved by determining the total number of days between the first and last ED visit and dividing this by the total number of ED visits during that time interval. This is presented in Figure 3. So, there were 12 individuals who had an average of 0 – 2.9 days between ED visits.

4.6.2 Chart Review by QRP Coordinators

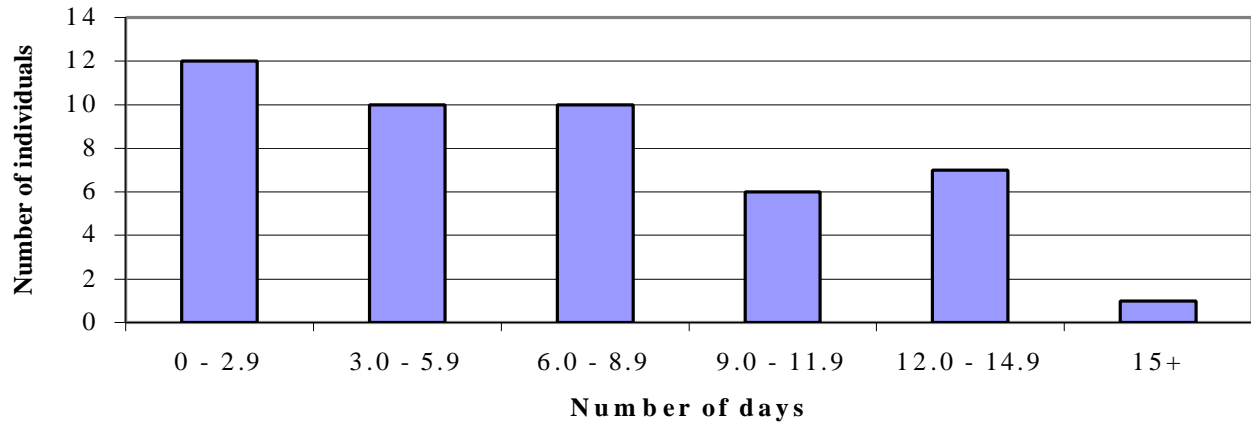
QRP Coordinators conducted the review of all ED visit records for each of the 26 individuals on whom community-based services data were available. These 26 individuals had a total of 178 ED visits, but when the QRP Coordinators reviewed the charts, they found records of an additional 10 visits, which was included in the analysis. Of these 188 ED visits, the QRP Coordinators identified 119 (63%) of them as being preventable, but not necessarily by services QRP could have provided. The QRP Coordinators were asked to identify what alternate services could potentially have been provided to the individual in the community that could have prevented each ED visit. Alternate services were identified as the following:

Alternate Service	Number of times *
Nursing	71
Social Work	9
Case Management	14
Physician/Mediclinic	90
Outpatient services/Ambulatory Care	27

* more than 1 service could be chosen

Some of the QRP Coordinators also provided information as to the underlying reason for the repeat visits, not the clinical diagnosis that was recorded on the ED record. For 14 individuals, they identified that 8 of them had repeat visits for symptom management, 1 had repeat visits for wound management, 1 had repeat visits for pain management, 2 had repeat visits for addictions/alcohol use, and 2 had repeat visits for medication administration.

Figure 3. Average Number of Days Between ED Visits



5. IMPACT

5.1 Evaluation Framework

5.1.1 Access to Services/Quality of Care

This study showed that there was great variability in the types and amounts of community-based services accessed by individuals who presented at an ED during the study period. As expected, those individuals who were assessed by QRP and were sent home with community-based services initiated by QRP used more services than those who refused these services. Also expected was the increase in intensity of services after the ED visit, especially with nursing services. Presumably, these individuals were in need of some medical attention when they presented at the ED, and the increase in nursing services was shown to be statistically significant. Other services saw an increase as well, but this was not statistically significant.

This study did not look at any outcomes of the community-based services provided to these individuals nor did it look at the issues of access from the perspective of the individual receiving the service.

More community-based services does not equate with quality of care and this study was not able to provide any data in this area. In a visual inspection of data from individuals in Group 1, while there was a total overall increase in services, in some instances the amount of service actually declined. Causes for this are pure speculation, but one explanation could be that some individuals may have already been receiving community-based services for an extended period of time and intervention by QRP provided an opportunity to reassess the types and level of service being provided to that individual. Other possible explanations for this change in service could be that the goal of community-based services was met, the individual refused further interventions, the family dynamics changed, the living situation changed, or alternate care arrangements were made.

This study also found that there are still individuals who continue to frequent the ED on a regular basis. While there have been various initiatives undertaken in SDH over the years to address this issue, it continues to persist. While this data from the study is subjective, it once again points to the need to find alternate ways to manage the care of these individuals.

5.1.2 Cost-Effectiveness of Services

This study identified 2 substitutable hospital admissions that resulted from an individual visiting an ED, out of 3,074 ED visits over an 11 week period. The hospital costs were determined to be \$3,927.00 for these 2 admissions, which accounted for 12 days of non-acute hospital care. The average cost to provide community-based services, including QRP/CAU costs, to 1 individual for 30 days after an ED visit is \$358.05.

QRP is an appropriate, effective alternate level of care for non-acute individuals, as compared to hospital care. The costs of providing community-based services initiated by QRP are cheaper than the cost of providing non-acute care in hospital. Because QRP is well-integrated in SDH, supported by

finding only 2 substitutable hospital admissions, this study is not able to make any conclusions on the total number of hospital admissions that were prevented, but it did show that the costs of providing these services are cheaper than hospital care.

To say that QRP will decrease health care expenditures is not an accurate statement unless hospital beds are closed when QRP is implemented. QRP is an additional service – it is an alternate service-access program that facilitates appropriate care being provided that meets the needs of the individual, and that costs less to the health care system to provide. At the same time, QRP alleviates pressure on hospital beds by providing access to these services in the community.

5.1.3 Transferability

These findings will be of interest to health care administrators in SDH as well as to those in health districts/regional health authorities in Saskatchewan and across Canada. Data collected in this study provides information on the costs of QRP providing access to community-based services to individuals age 60 and over in an integrated health care delivery system.

5.2 **Problems Encountered**

Community-based services data were not available on 20 of the 46 individuals who visited the ED 4 or more times during the study period. Having data from this group would have strengthened the analysis of data from this group.

All community-based services data were collected manually; Home Care data were not available electronically until the very end of the data analysis.

It was difficult to achieve consistency in the costs provided by departments or service providers in SDH for use in this study. There is wide variation in how each department calculates and reports their costs; for the purposes of this study, the cost figures used included patient care time (direct and indirect) and travel costs.

Reviewing ED charts in an attempt to anticipate services that could prevent further repeat ED visits was quite subjective. Notes on the ED chart may not always capture the essence of the reason for the visit. However, the QRP Coordinators were able to review all the ED records for each individual in a chronological fashion, in an attempt to get a sense of the overall pattern of visits, and the underlying reasons for these visits.

Not all ED charts records may have been available for review by the nurse data collectors, as evident by the small number of additional ED records discovered during the review by QRP Coordinators. The nurse data collectors were provided with the complete list of all ED visits, and while they made every attempt to collect data on each visit recorded on this list, it is apparent that not all the records were available while they were conducting their review.

5.3 What We Would Do Differently?

With the change in study design, we were not able to gather any information that would allow for the development of a profile of a typical QRP client. It was anticipated that such a tool could be used by ED staff to assist them in determining which individuals would be appropriate to refer to QRP.

Design a prospective study to follow a group of individuals who visit the ED during a defined period that allows for the collection of data on functional outcome measures, client satisfaction, service provider satisfaction, and costs – not only to the system, but to the individual and/or caregiver as well.

5.4 Implications

5.4.1 Implications for Programs and Services

QRP is a lower-cost service delivery program that provides access to community-based care as opposed to the alternate, hospital care, for non-acute individuals. While this study did not measure acceptability or accessibility of community-based services initiated by QRP from the perspective of either the service provider or service recipient, it is a less costly alternative. However, cost cannot be the only factor in determining which individuals may appropriately, effectively and safely be provided with community-based services as an alternate to hospital admission. Other factors to consider are: appropriateness of service required; the demands of the individual who is being assessed; the ability of the system to provide the intensity and type of services required; and the willingness of the individual to accept services.

A challenge still exists in knowing which individuals to refer to QRP and why some refuse - how concerned should we be when they refuse services? For those who refuse services, more information is needed on why they refuse, what costs they incur for any health-related community services, and how this affects their ability to function in the community or at home.

This information would have significant implications on future delivery of community-based services, especially if the population age at a rate that is currently projected.

QRP in SDH is part of the CAU, which is a well-established single-entry case management framework for community-based services and long-term care in SDH. As QRP has evolved, QRP Coordinators have established good working relationships with the staff of the EDs. One of the successes of the QRP in SDH is this integration and close working relationship. These take time to develop and it is not to say that a QRP without these same circumstances would be as effective in preventing non-acute hospital admissions as this system in SDH. However, successful programs are usually successful because of the environment in which they function.

5.4.2 Implications for Canadian Health Policy

Population projections from the Health Services Utilization and Research Commission (HSURC) for elderly individuals in SDH show an increase of 31% by 2015. Many more of these individuals will be accessing community-based services, hospital care, and emergency departments. It is imperative that

plans are in place to provide appropriate and cost-effective care for this age group.

QRP is part of a multi-pronged approach to providing community-based services and care in the community. In SDH, all acute-care, long-term care, community-based care, and public health services are administered by one organization. QRP in SDH is successful because it exists within this integrated health care system that resulted from regionalization. Implementing QRP is an appropriate, client-focused method of providing access to community-based services that costs less than hospital stay.

6. DISSEMINATION PLAN

Several different reports will be produced for dissemination, targeted at different audiences and, as different audiences need different information, there will be a slightly different focus for each. Reports will also be available on the SDH Website. In addition, academic publication and conference presentations will be undertaken.

6.1 Primary target audiences

- Health care administrators for Saskatoon District Health, including the CEO, Vice-Presidents, General Managers, Directors and Professional Leaders. An information session will be arranged for this.
- Home Care staff and CAU/QRP Coordinators will be invited to attend sessions arranged specifically for them.
- Other interested SDH staff such as Emergency Department staff, Community Services, hospital nursing staff will be invited to an information session.
- Saskatchewan Health staff will receive a written report.
- Provincial and national utilization research groups such as HSURC (Health Services Utilization and Research Commission) in Saskatoon will receive a summary report.

6.2 Secondary target audiences

- All health districts in Saskatchewan.
- Professional organizations such as the Canadian Home Care Association, Canadian Association of Gerontology, Saskatchewan Medical Association, Canadian Medical Association, Saskatchewan Nurses Association.

6.3 Electronic Distribution

The reports, as distributed above, will be posted on the SDH Website with links from HTF and the National Evaluation of the Cost-Effectiveness of Home Care.

6.4 Media Coverage

SDH has an internal newsletter that is widely distributed throughout SDH and its affiliates that will release a short summary of the report. Media coverage is also planned which will be facilitated by our communications department.

6.5 Academic Publications/Presentations

Journal submissions: not yet determined – plan to submit to CHCA Journal

Presentations – abstract submitted to World Congress of Gerontology in Vancouver July 2001

BIBLIOGRAPHY

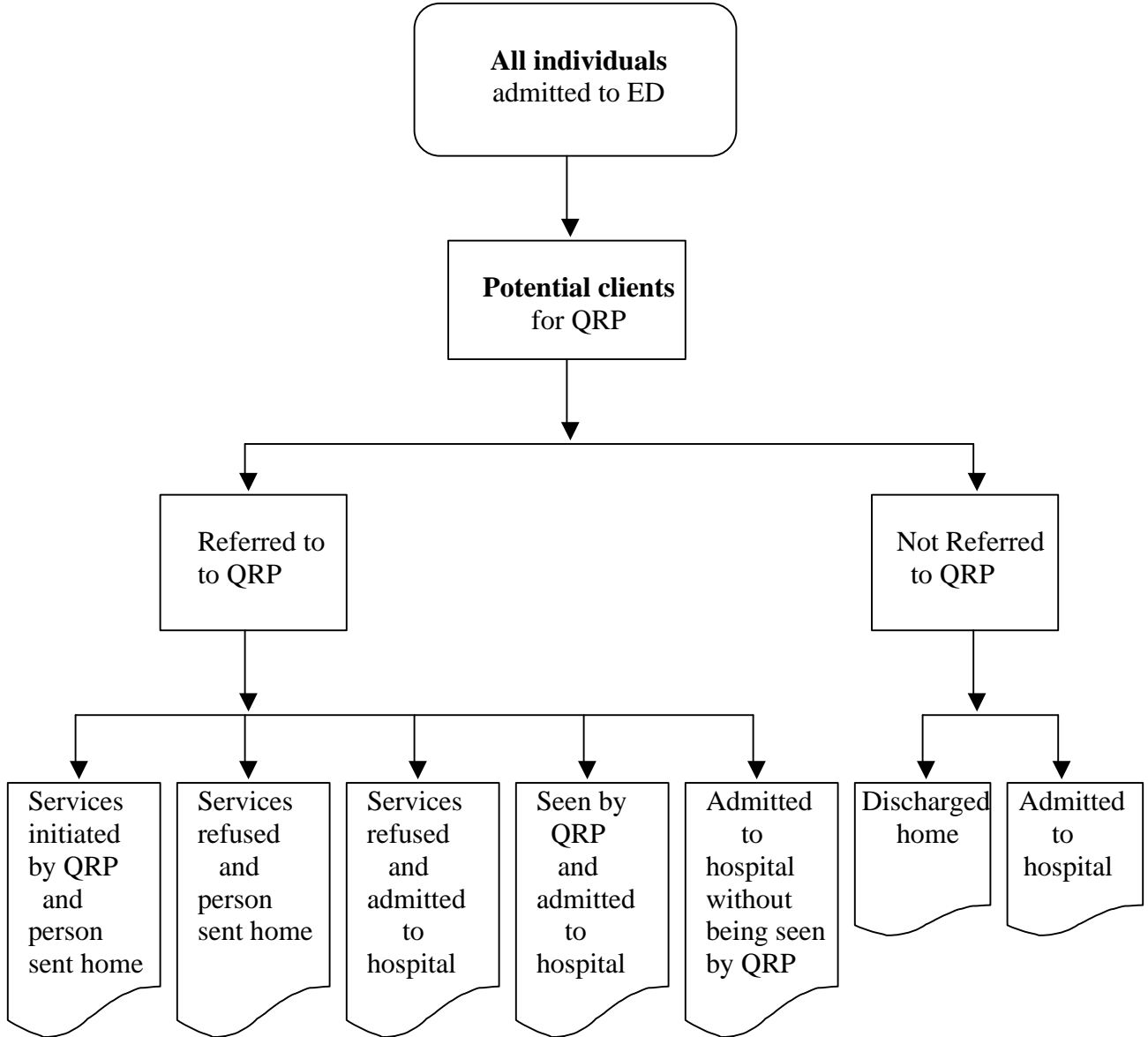
- . (1996). System-wide medical audit report (unpublished report). Saskatoon: Saskatoon District Health.
- . (1997). InterQual® bed management trial report (unpublished report). Saskatoon: Saskatoon District Health.
- . (1998). Royal University Hospital unit 6300 workload audit (unpublished report). Saskatoon: Saskatoon District Health.
- . (1999). Medical patient acuity data tracking (unpublished report). Saskatoon: Saskatoon District Health.
- Brook, R., Kamberg C., Mayer-Oakers, A., Beers, M., Raube, K., & Steiner, A. (1990). Appropriateness of acute medical care for the elderly: an analysis of the literature. *Health Policy*, 14(1990):225-242.
- Brookoff, D., & Minniti-Hill, M. (1994). Emergency department-based home care. *Annals of Emergency Medicine*, 23(5):1101-1106.
- Carmel, S., Anson, O., & Levin, M. (1990). Emergency department utilization: A comparative analysis of older-adults, old and old-old patients. *Aging*, 2(4):387-393.
- Castro, J. Anderson, M.A., Hanson K., & Helms, L. (1998). Home care referral after emergency department discharge. *Journal of Emergency Nursing*, 24(2):127-132.
- Coyte, P., & Young, W. (1999). Regional variations in the use of home care services in Ontario, 1993/95. *Canadian Medical Association Journal*, 161(4):376-380.
- DeCoster, C., Peterson, S., Chough Carriere, K., & Kasian, P. (1999). Assessing the extent to which hospitals are used for acute care purposes. *Medical Care*, 37(6):JS151-JS16.
- Flintoft, V., Williams, J., Williams, R., Basinski, A., Blackstien-Hirsch, P., & Naylor, C. (1998). The need for acute, subacute and nonacute care at 105 general hospital sites in Ontario. *Canadian Medical Association Journal*, 158(10):1289-1296.
- Jones, J., Wilson, A., Parker, H., Wynn, A., Jagger, C., Spiers, N., & Parker, G. (1999). Economic evaluation of hospital at home versus hospital care: cost minimization analysis of data from randomized controlled trial. *British Medical Journal*, 319(11 December):1547-1550.
- McCusker, J., Healey, E., Bellavance, F., & Connolly, B. (1997). Predictors of repeat emergency department visits by elders. *Academy of Emergency Medicine*, 4:581-588.

- Pope, D., Fernandes, C., Bouthillette, F., & Etherington, J. (2000). Frequent users of the emergency department: a program to improve care and reduce visits. *Canadian Medical Association Journal*, 162(7):1017-1020.
- Shepherd S. (2001). Hospital and home care for the elderly client in Saskatoon. SK124 Health Transition Fund Report (unpublished report). Saskatoon: Saskatoon District Health.
- Sheps, S., Reid, R., Barer, M., Krueger, H., McGrail, K., Green, B., Evans, R., & Hertzman, C. (2000). Hospital downsizing and trends in health care use among elderly individuals in British Columbia. *Canadian Medical Association Journal*, 163(4):397-401.
- Soderstrom, L., Tousignant, P., & Kaufman, T. (1999). The health and cost effects of substituting home care for inpatient acute care: a review of the evidence. *Canadian Medical Association Journal*, 160(8):1151-1155.
- Weir, R., Browne, G., Byrne, C., Roberts, J., Gagni, A., & Thompson, A. (1998). The efficacy and efficiency of the quick response program: A randomized controlled trial. *Canadian Journal on Aging*, 17(3):272-295.
- Weissert, W. (1985). Seven reasons why it is so difficult to make community-based long-term care cost-effective. *Health Services Research*, 20(4):423-33.

APPENDICES

APPENDIX A:
Study Design Flow Chart

APPENDIX A. STUDY DESIGN FLOW CHART



APPENDIX B:

Guidelines for InterQual® ISD-A

Alternate Level of Care Guidelines Delayed Discharge Categories

Alternate Level of Care		Definition	Service Specifics
1	Independent Dwelling	No further acute care is required. Patient's condition and Intensity of Service (IS) indicate that the patient does not need the hospital or further alternate care.	
2	Outpatient Services	<p>Patients who have tests and procedures that are not defined in Rehabilitation Services and Mental Health Services and:</p> <ul style="list-style-type: none"> ◇ do not require inpatient care because of the nature of the procedure and the patient's good health ◇ and can be provided on an outpatient basis 	<ul style="list-style-type: none"> • Endoscopy • Cardiopulmonary Testing • Education • Diagnostic Testing • Blood, Urine Testing • Biopsies (refer to CIHI list of day procedures) • IV Therapy • Blood Transfusion • Urology Procedures • Cast Clinic • Gynecology Clinic • Dialysis • Dermatology Procedures • Arthritis Clinics • Pulse Therapy • Other
3	Home-Based Care	<p>Patients who are not receiving an acute level of care and do not require services provided as defined in:</p> <ul style="list-style-type: none"> ◇ Outpatient Services ◇ Long Term Care ◇ Rehabilitation Services ◇ Mental Health Services <p>Patients with heavy care needs can be accommodated at home with good support from family, live-in or volunteer support and home-based services programs, and may not necessarily require long-term care.</p>	<ul style="list-style-type: none"> • Nursing Care • IV Therapy • Patient Family Education • Home Management • Personal Care • Laboratory Services • Case Management • Nutrition Services • Meals • Volunteer Services • Attendant Care • Elemental Support • Respite Care

4	Special Housing	Patient requires minimal continuous 24-hour supervision, non-skilled care, and cannot be cared for at home due to unavailable and/or unstable family or live-in support	
5	Palliative Services	<p>Terminally ill patients who require:</p> <ul style="list-style-type: none"> ◇ outpatient care ◇ facility-based palliative care unit ◇ home-based palliative care 	<ul style="list-style-type: none"> • Hypodermoclysis • Social work • Pastoral care • Respite Care • Nursing Care • Case Management • Mental Health • PT/OT • Nutrition Services • Pharmacy services • Volunteer Services • Pain and Symptom Management • Home Management • Attendant Care • Personal Care • Meals
6	Rehabilitation Services	<p>Patients who are not receiving an acute level of care but require supervision and assessment by a team of rehabilitation personnel for:</p> <ul style="list-style-type: none"> ◇ Inpatients ◇ Outpatients ◇ Home-based 	<ul style="list-style-type: none"> • PT/OT • Social work • Rehab • Speech Therapy • Respiratory Therapy/O₂ • Vocational Services
7	Long Term Care	<p>Patients not receiving an acute level of care and:</p> <ul style="list-style-type: none"> ◇ do require skilled nursing care and supervision on a 24-hour basis ◇ cannot be cared for at home due to unavailable and/or unstable family or live-in support 	
8	Geriatric Assessment	Patients who require assessment by an interdisciplinary team of geriatric personnel	

9	Observation	<ul style="list-style-type: none"> ◇ Patients requiring close nursing observation and support for a short period of time (less than 24 hours) ◇ Patient at risk but requires little or no services - meets SI but not IS ◇ Refer to InterQual Observation Criteria for clarification 	<ul style="list-style-type: none"> • Post-Day Surgery not ready for discharge • Emergency Referrals • High Probability of onset of acute condition • Outpatient Chemo
10	Aggressive Acute Inpatient Testing	<p>Patients in acute care who require or are undergoing aggressive testing or procedures for diagnosis</p> <ul style="list-style-type: none"> ◇ on admission ◇ specify 	<ul style="list-style-type: none"> • refer to SI &IS Criteria
11	Respite	Patients who require respite care to relieve the caregiver	
12	Emergency Respite	<p>Patients that require:</p> <ul style="list-style-type: none"> ◇ institutional respite care that is unplanned and emergent ◇ intermediate nursing care (not attendant care) and/or continuous supervision ◇ respite provided for patient, not caregiver 	
13	Sleep assessments	Patients who require assessment for sleep disorders	
14	Mental Health Services	<p>Patients who require psychiatric services:</p> <ul style="list-style-type: none"> ◇ inpatient ◇ outpatient ◇ home based services ◇ 	<ul style="list-style-type: none"> • Abuse • Alcohol/Drug Problems • Crisis Situations
15	Temporary Housing	<p>Patients from out of district or rural areas requiring lodging while undergoing tests/procedures/diagnosis</p> <ul style="list-style-type: none"> ◇ specify 	Could accompany 2,3,5,6,11 and 13
16	Out of District Care	Patients who need alternate level of care in their home district	Includes 1-13 above

17	Subacute/ Convalescence	<ul style="list-style-type: none"> ◇ Patients who have a pre-existing confirmed diagnosis (e.g. Ca Lung, Diabetes etc.) and admitted specifically for a defined planned treatment of that disease process (e.g. Radiation treatments, blood sugar stabilization, med readjustment, switch to insulin from oral hypoglycemics). ◇ Patients who were admitted with an acute condition and treated at an acute level of care (receiving an intensity of service) for a number of days and now non-acute. Because of frailty or weakness etc., require a period of convalescence which will result in a need for a lesser intensity ALC i.e. home care vs. long term care 	
18	Other (Specify)	<p>Patients that require an alternate level of care not described in the above categories</p> <ul style="list-style-type: none"> ◇ specify 	

DELAYED DISCHARGE CATEGORIES

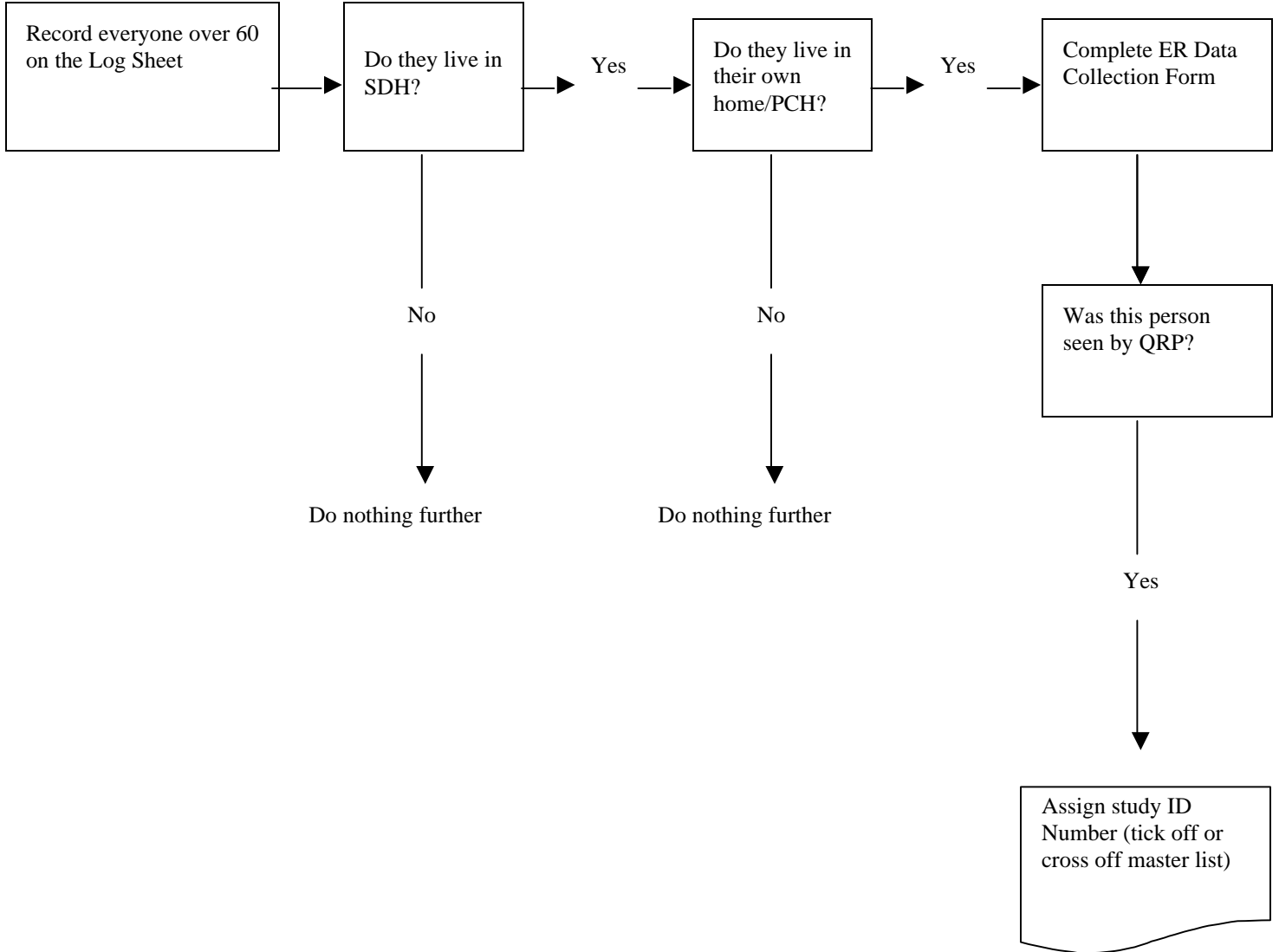
1	Patient/family refuses
2	Patient/family having difficulty/delay in making decision on further care
3	No family/support present
4	Family/support present but: <ul style="list-style-type: none"> ◆ not available or accessible ◆ not suitable
5	Waiting for transportation
6	Referral for discharge planning <u>not sent</u> to date to: <ul style="list-style-type: none"> ◆ Community Services (Home Based Care, Long Term Care) ◆ other health care professional i.e. OT/PT/Speech Therapy/Dietitian
7	Waiting for placement to Long Term Care/Medical Transition Unit
8	Waiting for acquisition of Personal Care Home Contract
9	Waiting for placement in Rehabilitation Services
10a 10b 10c 10d 10e 10f 10g 10h	Waiting for Home-Based Services (referral made, CAU assessment completed) <ul style="list-style-type: none"> Nursing Care IV Therapy Respite Care Home Services Nutrition/Meals/Elemental Support Volunteer Services Attendant Care Other - specify
11	Waiting for tests/procedures <ul style="list-style-type: none"> ◆ specify
12a 12b 12c 12d	Waiting for assessment/visit from other health care professional <ul style="list-style-type: none"> ◆ OT ◆ PT ◆ Speech Therapy ◆ Respiratory Therapy

12e 12f 12g 12h 12j 12k 12m	<ul style="list-style-type: none"> ◆ Dietitian ◆ Social Work ◆ Ostomy Nurse ◆ Diabetic Educator/RN ◆ Cardiac Educator/RN ◆ Pharmacy ◆ Other - specify
13	Waiting for consulting physician
14	Unable to contact physician for discharge order
15	Physician's individual practice/choice
16	<p>Waiting for improvement in patient condition - documented evidence of:</p> <ul style="list-style-type: none"> ◆ patient is in frail condition and ◆ patient's condition is currently improving and ◆ improvement will place patient at another level of care and ◆ improvements are expected over the short term, measured in days not months - maximum of five (5) days
17	<p>Services required do not exist</p> <ul style="list-style-type: none"> ◆ specify
18a 18b 18c 18d 18e	<p>Services required are present but not currently available</p> <ul style="list-style-type: none"> Respite Bed Equipment Community Day Programs Out of District Services Other - specify
19	No documented evidence available to categorize reason for delayed discharge
20a 20b 20c 20d 20e	<p>Patient in emergency >24 hours:</p> <ul style="list-style-type: none"> Bed not available Patient requires observation Patient undergoing aggressive testing No apparent physical reasons Other - specify
21	<p>Other</p> <ul style="list-style-type: none"> ◆ specify

APPENDIX C:
DATA COLLECTION PROCEDURES

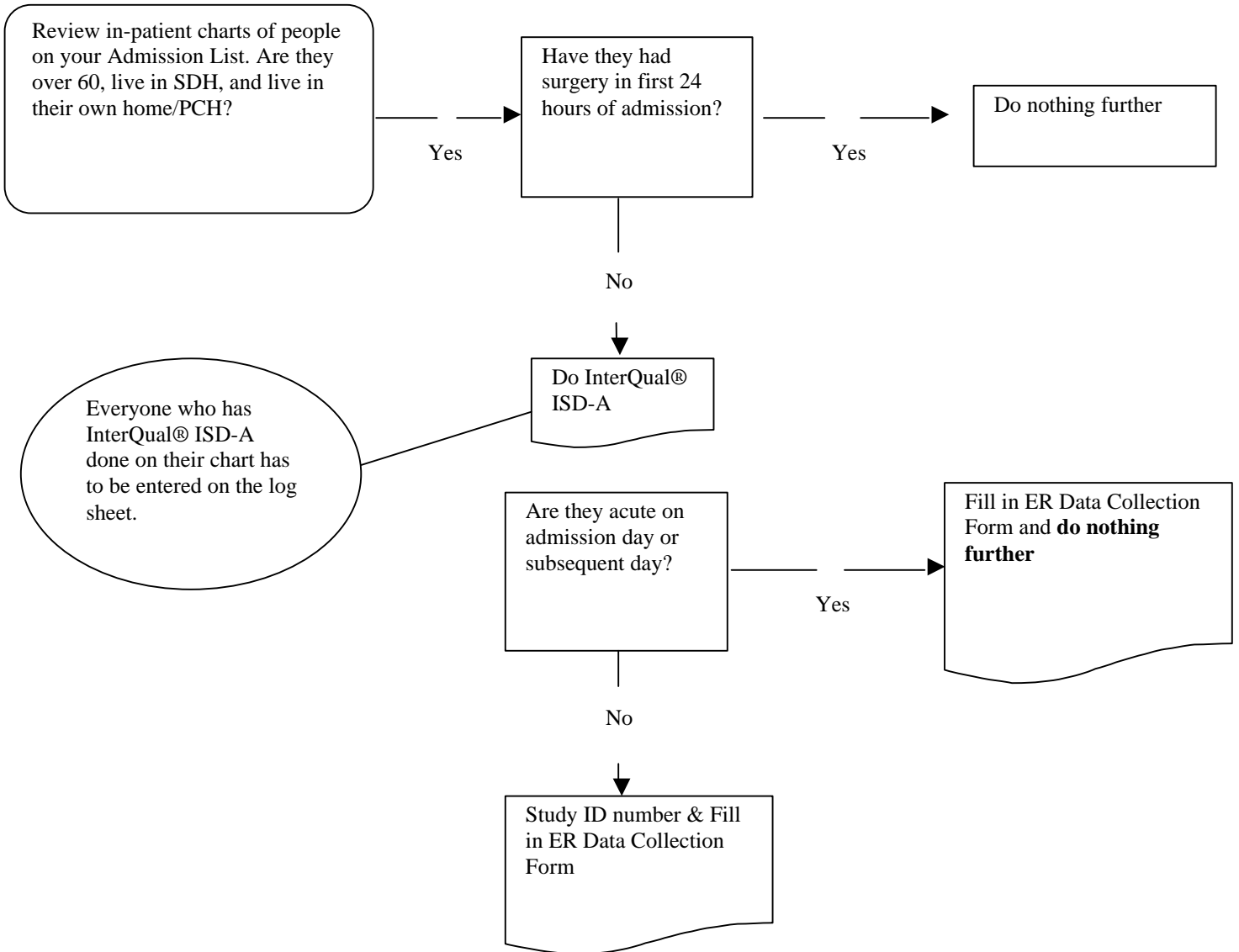
APPENDIX C. DATA COLLECTION PROCEDURES

ED CHART REVIEW



APPENDIX C. DATA COLLECTION PROCEDURES

IN- PATIENT CHART REVIEW



APPENDIX D:

Phase 1 Data collection Forms

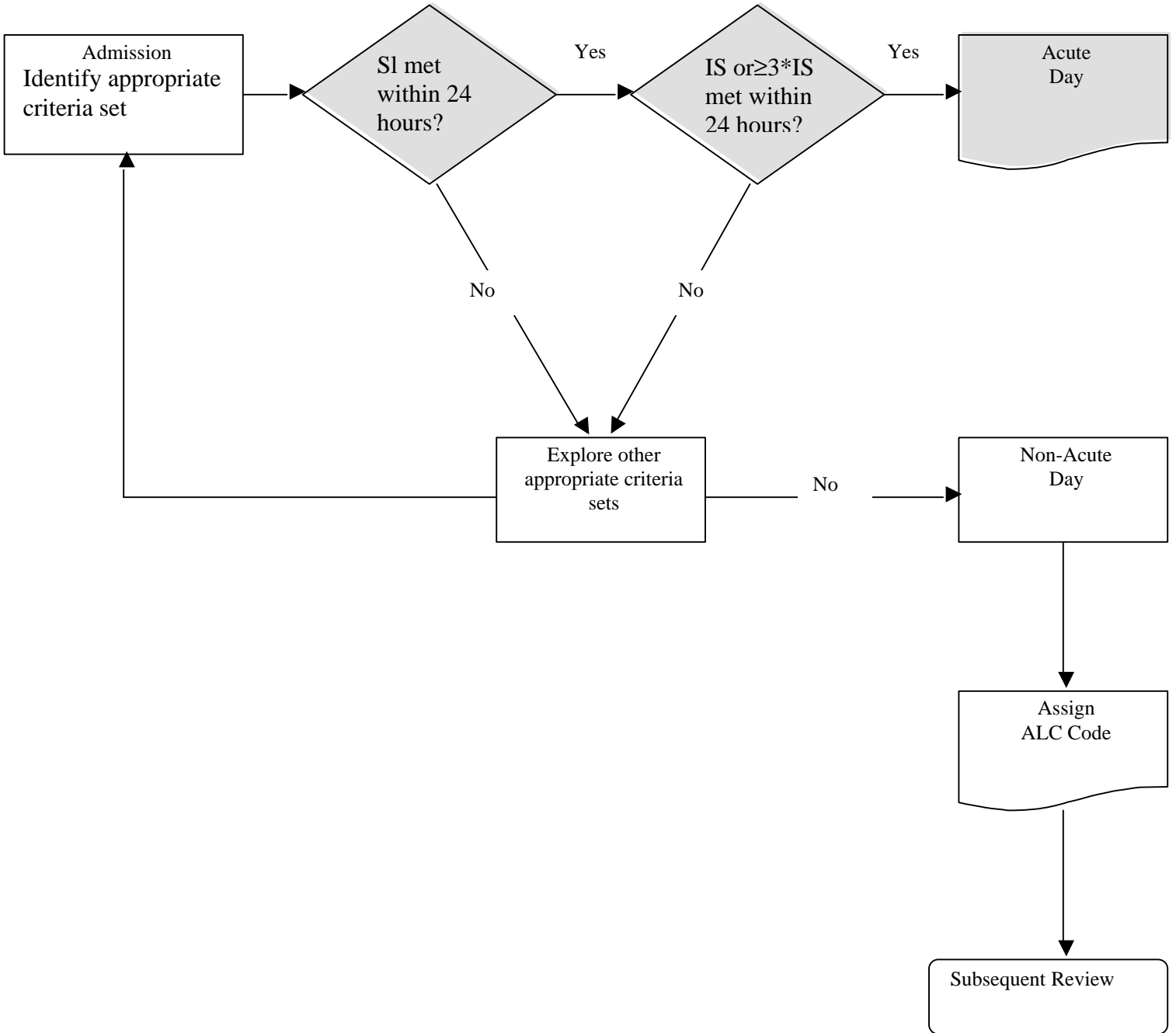
INSERT EMERGENCY VISIT DATA COLLECTION FORM (p.46)

**Emergency Visit Data Collection Form
Description of Data Sources**

Data Source	Description
Study ID #	Enter the study ID # you have assigned to the patient.
Date of Emergency Visit	Enter this value as “month/day/year”. Example: January 13, 1998 or 01/13/98
Emergency Registration Time	Enter this value using the 2400 clock. Example: 6:00 am is 0600; 6:00 p.m. is 1800.
Health Record Number	Fill in the Health Record Number
Surname	Print the name of the patient.
Sex	Circle the appropriate response.
Birthdate	Enter this value as “month/day/year” (see previous example).
PHIN	Fill in the Personal Hospital Insurance Number
Accompanied by	If anyone is noted as accompanying the patient, print this here. For example, “parent, son/daughter, friend, caregiver”.
Reason for Visit	What is the reason for the visit to the emergency department?
Diagnosis	Print the diagnosis found in the box at the bottom of the pink sheet.
QRP Referral Made	Check this box if a referral was made to QRP.
Time of referral	Enter this value using the 2400 clock (see previous example).
Patient Seen by QRP	Check this box if QRP saw the patient.
Time seen by QRP	Enter this value using the 2400 clock (see previous example).
Services initiated by QRP	Check this box if QRP staff have indicated that services will be initiated for the patient.
Specify reason for NO	If the patient refuses services from QRP, print the reason (s) for their refusal.
Admitted to hospital	Check this box if the patient is admitted to hospital.

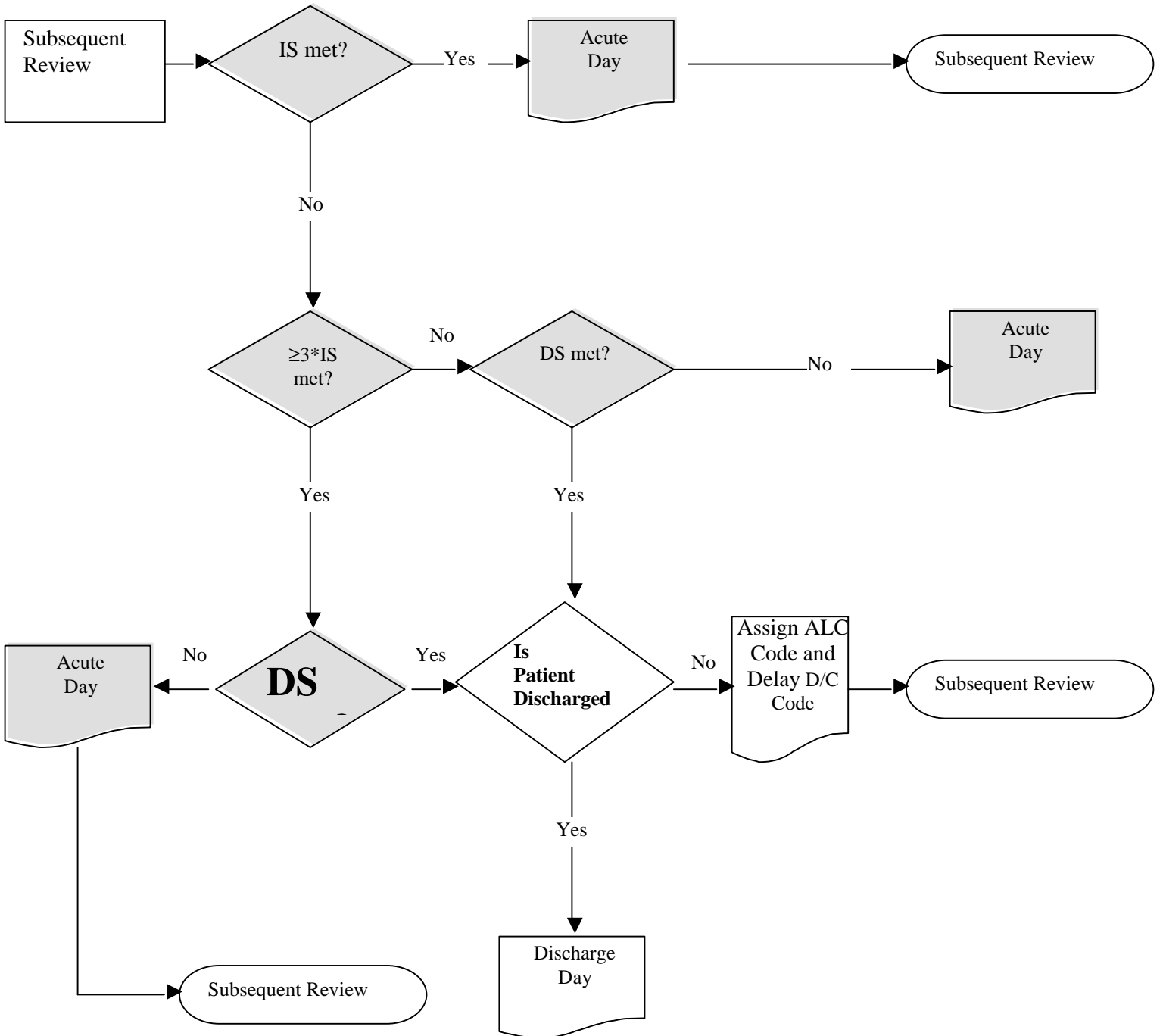
APPENDIX E:
Data Collection Procedures

INTERQUAL® ISD-A ASSESSMENT - ADMISSION



SI = Severity of Illness
IS = Intensity of Service
ALC = Alternate Level of Care Guidelines

INTERQUAL® ISD-A ASSESSMENT – SUBSEQUENT REVIEW



SI = Severity of Illness
 IS = Intensity of Service
 ALC = Alternate Level of Care Guidelines

INSERT DEMOGRAPHICS DATA COLLECTION FORM (p.50)

INSERT ACUTE ADMISSION DATA COLLECTION (p.51)

APPENDIX F:

QRP/CAU Workload Measurement Form

APPENDIX G:

Community-Based Services Data Collection Forms

INSERT NURSING SERVICES DATA (p.54)

INSERT (PAGE 56)

INSERT (PAGE 57)

INSERT (PAGE 58)

INSERT (PAGE 59)

INSERT (PAGE 60)

INSERT (PAGE 61)

MOW Data Collection

For regular study subjects:

1. Review the route lists to see if the study subject received MOW during the 60 period of data collection. For those who did receive MOW, record the total number in that time frame.
2. For those study subjects who received MOW, record the date of each meal received. Record the date by writing it out. For example, write “September 30, 1999” and not 09/30/99.
3. Record if the meal was received before or after the visit to the Emergency Room. If the meal was received on the same date, record – “Date of ER Visit” across the columns “Pre ER visit/Post ER Visit”.

For study subjects who had repeat visits to the ER, without a study ID number:

4. Record each date they received a MOW, from the first to last date listed on the form. If possible, also record the date of any ER visits during that time period. Use the “QRP Repeat Visit to ER Subject List” as a guide for this.

For study subjects who had repeat visits to ER, with a study ID number:

5. You will have to fill out 2 separate forms for these people.
 - 1 form for the visit noted on the form – and the 30 days before and 30 days after, as for the regular study subjects. Use the MOW Data Collection Form, Regular Study Subjects.
 - 1 form for all the visits from written in pen on the from of the form. Use the MOW Data Collection Form, Repeat ER Visits.

For these, write on the top of the form the dates between which you are collecting data.

Staple these forms to the subject data form.

APPENDIX H:

Frequent ED Users ED Chart Review Data Collection

**FREQUENT ED USERS
ED CHART REVIEW DATA COLLECTION**

Reviewing QRP Study Subject Charts

Each of the 26 subjects in this chart review visited the ER's at least 4 times from Sept. 25, 1999 to Dec. 12, 1999. What we are looking for is something that can tell us that perhaps a subsequent ER visit could have been prevented, if community services were in place or had been put in place with the previous ER visit.

What you will review, in the charts, for each ER visit:

- pink ER sheet
- consultation notes
- progress notes
- nurses notes
- diagnostic test results

For each visit record:

1. QRP Referral made – yes or no
Was there a referral made to QRP – either noted by Dr. order, on nurses notes, wherever? Check if the answer is yes.
2. QRP Seen – yes or no
Was the patient seen by QRP – either noted on ER sheet, on nurses notes, QRP visit record, wherever? Check if the answer is yes.
3. QRP Initiated Services – yes or no
Was there any services initiated for the patient/client by QRP – either noted on ER sheet, nurses notes, QRP visit record, wherever? Check if the answer is yes.
4. ER Visit Preventable – yes or no
In your opinion, from review of the ER visit information, the previous visits, the next visits, was this particular visit preventable? Check if the answer is yes.

For the remainder of the form:

Complete this information only if you think that these services could have been initiated for the client/patient, and if you think that these services could have prevented a subsequent ER visit. Check the box if the answer is yes.

Home Care Nursing
Community PT
Community SW
Emergency Respite
Transportation

Home Care Aide/LPN
Community OT
Meals on Wheels
Equipment
Case Management

Other – any other services that could have been initiated i.e. private home making, etc.

Is there anything else that you would think is relevant to providing community-based services or to preventing a subsequent ER visit for this patient/client?

[If there is not enough room, use the back of the page.]

INSERT PAGE 67 OF ORIGINAL APPENDICES