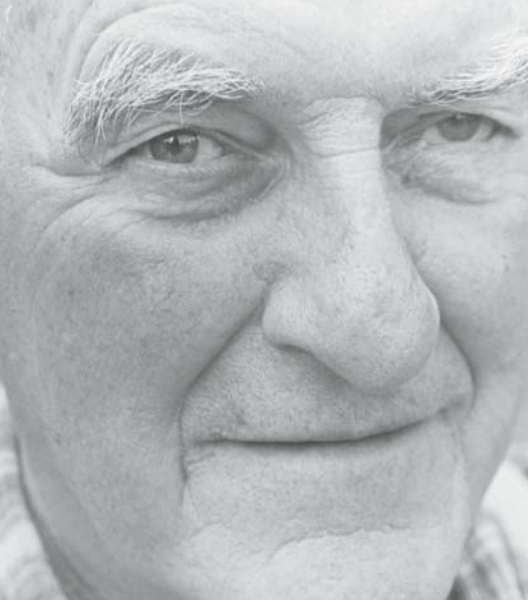
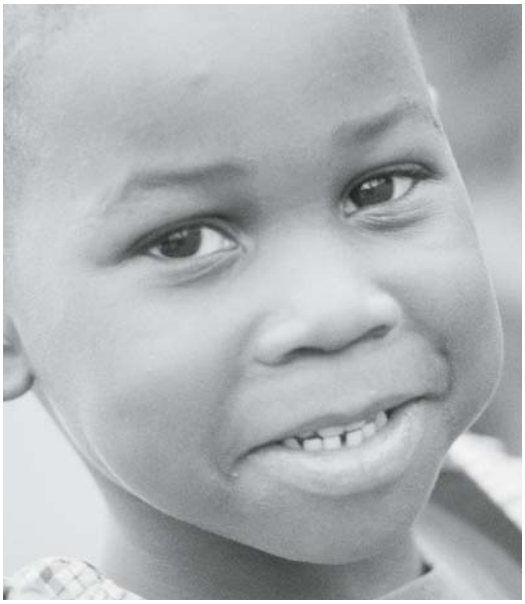


Comparative Assessment of Cost and Care Outcomes Among Georgia's Community-based and Facility-based Long-term Care Programs
Final Report

prepared for

Georgia Department of Community Health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Executive Director
June, 2004

Georgia Health Policy Center

Executive Summary

The Original[1] Study

- The Study's major objective was to, "Comparatively evaluate cost and care outcomes among traditional Nursing Facility programs and four Home and Community Based Services (HCBS) Programs in Georgia." The four HCBS programs are: Community Care Services Programs (CCSP), Service Options Using Resources in Community Environments (SOURCE), Independent Care Waiver Program (ICWP), and Shepherd Care. Particular interest was first between NFs and the HCBS programs as a group. Subsequent interest was then focused on differences within Groups 1 and 2.

- In common, the five evaluated Programs all have a long-term care focus and all their patients have been pre-certified for a nursing facility or hospital level of care. In terms of services offered, their organization and management, the programs are all different. Nursing facility is the only program among the five that offers twenty-four hour a day, seven day a week care services in an institutional setting.

- For evaluative comparison, the four HCBS programs were divided into two groups on the basis of services and patient population similarities: Group 1 included CCSP and SOURCE, and Group 2 included ICWP and Shepherd Care.

- For the calendar years 1998 – 2000, 11,305,572 Medicaid and Medicare claims were collected and integrated on all 34,652 Georgians who were admitted at least once to a Nursing Facility in calendar year 1999 or admitted to or already a client of an HCBS. For a one year observation period (OY) for each of those persons, any long-term and/or other health care service(s) reimbursed by either Medicare or Medicaid were documented and studied.

LTC Patients' Sources of Care Payment

- Medicaid and/or Medicare were the major sources of care payment. It was estimated that only ten percent of the patients were covered privately or by governmental programs other than Medicare and Medicaid, such the as the Veterans Administration.

- At the time of admission, approximately 60 percent of the publicly insured patients were dually eligible for Medicare and Medicaid; one-third was eligible for Medicare-only, and less than ten percent were eligible for Medicaid-only.

    - Within Nursing Facilities (NF), almost sixty percent of the patients were reimbursed only by Medicare and receiving rehabilitation care (e.g. post-stroke) for a period of less than 100 days. The majority of patients staying longer than 100 days was dually eligible and was in general, receiving non-rehabilitation long-term care services.

[1] The original Study focused on the time period 1998-2000. In order to further examine cost and care outcome patterns, the original time period was subsequently expanded an additional two years, through calendar year 2002. The design and findings of both investigations are presented in this Report. To differentiate whenever necessary between the two efforts, the 1998-2000 work is referred to as the original Study; the 2000-2002 work is referred to as the extended Study.

- The four HCBS Programs are Medicaid-waiver or waiver-related programs. As a consequence, there were no Medicare-only patients in these programs; over 85 percent of the patients were dually eligible (DE) and the remaining balance, Medicaid. Within the Group 1 programs, DE accounts for over eighty-five percent of the patients; in Group 2, the DE proportion, while lower, is still a majority at over sixty-five percent.

- Post-admission, insurance eligibility status does not remain constant. Given Medicare's limits on both long-term care benefits and benefit period, Medicare-only patients eventually can become Medicaid eligible, increasing the numbers of dually eligible to an estimated more than 80 percent of the Cohort. There is also evidence than private pay patients spend down into Medicaid eligibility.

Patient Differences among the LTC Programs

- NFs have the oldest patients, with a median age of 80 years. The Group 1 program patients are somewhat younger, at a median age of 76 years. The gender majority in all three programs is female. In terms of race, non-whites are a majority of patients only in SOURCE. Also, SOURCE is the only program of NF and Group 1 to have a majority of patients with an urban residence.

- The Group 2 Programs focus on care services for the severely physically disabled (e.g. quadriplegics). Such individuals tend to be young and male. As a result, the Group 2 patients have a median age of less than forty years and are almost two-thirds male. The majority of the patients lives in urban areas, as opposed to rural, and is white.

- In terms of illness severity[2], NF patients, overall, have the highest (sickest) severity scores - almost six on a ten point scale; the Group 2 Programs have lower severity scores than NFs at between 5.5 – 5.7. Group 1 Programs have the lowest severity scores at between 3.8 and 4.0. While there is a slight numerical difference within the Group 1 and Group 2 programs, it is not statistically significant - the intra-Program level of acuity is basically the same.

- NFs and the Group 1 Programs share in common, seven out of their individual top ten diagnoses. NFs, however, do have more chronic conditions than the Group 1 programs. It is these chronic conditions that require increased resource utilization and produce higher costs.

- There is considerably more diagnostic variation among Group 2 programs. However, such variation lies within a common framework of clinical care for severely and/or permanently disabled individuals.

Use of LTC-related Services: Hospital Inpatient and Emergency Services

- Almost seventy-five percent of NF patients use hospital inpatient services at least once during their LTC program stay—a higher proportion than HCBS. About forty percent of Group 1 and thirty-five percent of Group 2 patients use those services.

[2] As scored by DCG system, see p. 46.

- Both HCBS Groups' 1 and 2 patients, however, use Emergency Services at higher proportions (39 to 45 percent) than do NF patients (36 percent).

- At least twenty percent of the five LTC programs' patients have three or more transfers[3] to hospital inpatient and/or emergency services during the twelve month Observation Year (OY);

- In terms of three or more ER transfers during the OY, NF patients had the smallest proportion with less than 20 percent; Group 1 patient transfers were higher at 25 percent; and Group 2 were the highest with between 35 and 40 percent.

- The large proportion of frequent users (3 or more transfers during the OY) of hospital inpatient and emergency services among all LTC programs has patient care management and cost control implications.

Ambulatory Care Sensitive Conditions- Original Study

- Ambulatory Care Sensitive Conditions (ACSC) were originally developed as primary care quality indicators in populations under age 65. ACSC are a cluster of conditions that, if appropriately managed in ambulatory care settings, should not require hospital inpatient or emergency service admissions. All of the LTC Study Programs experienced some level of ACSC transfers to hospitals:

    - More than 25 percent of NF patients had at least one ACSC admission during the OY, the highest proportion among the Study Programs;
    - CCSP experienced 18 percent ACSC admissions whereas SOURCE experienced 13 percent. That difference was one of the few statistically significant observations between the two Group 1 Programs. The majority of that difference, though, centered on one diagnosis: Bacterial Pneumonia.
    - ICWP and Shepherd Care also experienced ACSC admissions of 15 and 21 percent respectively. Because of the small number of Shepherd Care patients, the significance of the difference could not be tested.

  In younger populations, a high proportion of ACSC can indicate an opportunity for quality of care improvement. However in older frail populations such as found in this Study, ACSC admissions could indicate appropriate, aggressive treatment in more skilled settings.

Ambulatory Care Sensitive Conditions – Extended Study

In an attempt to understand further the significance of ACSCs in a frail elderly population and there significance to both care and cost outcomes, the original ACSC database was extended for two years through the calendar year 2002.

Findings

- Demographically, the ACSC patients in each of the four HCBS programs were not significantly different from the full patient complement in each program.

[3] Transfer = from LTC program to hospital and return to LTC program.

- When viewing the proportion of ACSC admissions for each of the four programs, both Group 1 programs and Group 2 programs were internally very similar over time.

- Some selected case anomalies were noted with Shepherd. When there were investigated they all were rated to non-compliant patient behavior. This observation and finding however did raise a larger policy-related issue. ACSC can be important measures of quality. However, to effectively analyze ACSC patterns per hospital more data are required than a normally found on a claims form. It is therefore important, for both the hospitals and insuring / regulatory agencies to have a common understanding and specialized database from which to systematically examine ACSCs and appropriate corrective changes.

- Across the programs there is a proportion of ACSC patients with multiple admissions. It appears that SOURCE is able to reduce such multiples over time more than CCSP--- again, potential the result of authority for more aggressive care management.

- The ACSC investigation was limited in scope because of the data limits of claims forms. Despite these limits, from the available analyses it was concluded that:

    - The proportional levels of ACSCs among the LTC programs appear reasonable given the frail health status of the Study's elderly population;
    - Access to primary care as reflected through ACSCs, appear adequate in both urban and rural areas for LTC patients;
    - The full significance of ACSCs in a frail elderly population is still not known both in terms of care quality and costs. Further study supported from a clinical database potentially holds promise to produce results for both regulatory improvement and cost benefits. .

Patient Status at Observation Year-End

- NF patients experienced the highest number of deaths (34 percent) among the LTC Programs, as would be expected given the comparative older age and frailty of their population. The number of Group 1 deaths was slightly more than ten percent, with no significant difference between CCSP and SOURCE; and Group 2 had the smallest proportion at three percent - somewhat to be expected given the young age of their patients.

- Few transfers were found between long-term care programs. The highest transfer rate (at ten percent) was found in the Group 1 Programs. In almost all cases, such transfers were from the HCBS program to a NF. Transfers from NFs and Group 2 Programs were negligible.

- The NF rehabilitation population, primarily reimbursed by Medicare, is a large but comparatively short-stay group (less than 100 days). As a consequence, only slightly more than 35 percent of the NF population was still in that type of facility at the end of the OY. The Group 1 programs both experienced about a 30 percent discharge rate before the end of the OY. In Group 2, the discharge rate was comparatively low - ten percent or less. Given the nature of their patients' overall health problems and their permanence, that could be expected.

- The Study was designed to collect a total Medicare and/or Medicaid history of its patient population. Therefore, it was possible to observe the patients' use of health services after discharge from their original LTC program if that occurred prior to the end of the OY. The Group 1 patients experienced about a five percent use of health services post discharge; Group 2 a proportion of less than two percent. However, former NF patients experience a rate of almost 25 percent.

Original Study and Extended Study

At the time the Study was initiated, both CCSP and ICWP had been in operation for many years. However, both Shepherd Care and SOURCE had been in operation for less than two years and their patient populations were still quite small.

The original Study identified some statistically significant cost and care outcome differences among NFs and the HCBS. However, the small population sizes (especially of SOURCE and Shepherd Care) and evolving program policies and procedures, make the stability of those observations especially for future care outcomes, unknown. To overcome that limitation, an extended Study was developed to analyze the HCBS programs for a longer period of time (through calendar year 2002) and with larger patient populations.

Findings from both efforts are comparatively presented. They are both methodologically and mathematically correct. However, results especially of the original Study should be cautiously used because of the programs' newness and small sizes.

Average Monthly Unadjusted Costs of Care

- In ranking LTC Program costs[4], Group 2's ICWP program is the most expensive, followed by NFs, Shepherd and Group 1 programs (about sixty percent less costly than NFs.) The NF versus Group 1 cost difference is largely caused by the fact that NF services are continuously provided on an inpatient basis and tend to offer an array of skilled resources "in-residence".

  Within the Group 1 programs: CCSP LTC costs are approximately 15 percent less than SOURCE. Shepherd Care's costs are approximately one-third less than ICWP.

- All services required by a LTC patient are not available within the LTC programs studied. NF and Group 1 LTC program expenses account for forty percent of the total cost of their patients' overall care. Within Group 2, the program costs account for approximately seventy-five percent of that total. Therefore, viewing other care costs together with LTC program costs is an important perspective to understand LTC patients' total needs and resource consumption. Viewing only the LTC component shows only the tip of an informational iceberg.

- Just as the most complete perspective of LTC patient cost is seen when considering program costs plus "other" costs, it is also important to evaluate what share of those costs are reimbursed by Medicaid and Medicare. This is especially important given the fact that the majority of patients are eligible for both Medicare and Medicaid.

[4] Costs unadjusted for demographic and/or medical inter-program patient differences.

- Within Group 1 programs, between forty and fifty percent of the total patient care costs are reimbursed by Medicare. Within Group 2 programs however, Medicare covers only between fifteen and twenty percent of the total cost. The NF Medicare percentage of more than sixty percent is considerably higher than any of the HCBS programs. That percentage, however, is heavily weighted by the large percentage of rehabilitation patients within NFs whose care is reimbursed by Medicare.

- Among the Study patients, there is also private liability (patient or private insurance payment). Within NFs, that proportion is approximately 15 percent of the total cost. Within the HCBS programs, its drops to three percent. However, it is felt those HCBS small percentages of other liability are unreliable. There is evidence that such payment sources are not completely reported within the claims database; therefore, the "other" liabilities reported should be considered minimums.

Average Monthly Adjusted Costs of Care

- As indicated, differences exist among the LTC Programs being evaluated. These involve patient characteristics, care patterns, and differences inherent in the programs themselves. In order to create a level playing field among the programs for evaluative purposes, statistical controls were used on the following differences: diagnoses (controlled through illness severity adjustments), age, race, urban or rural patient residence, new admission or admission prior to the OY, and alive or dead at the end of the OY.

- The results of the various controls were then measured in terms of their increases or decreases on a benchmark average monthly cost of $3887, the illness severity adjusted cost of a rural white male NF patient.

    - With a change in patient residence from rural to urban, the benchmark cost will increase cost about 11 percent; patient death will increase cost by 40 percent – an indication of the extraordinary use of medical resources in the last stages of life.
    - A change in LTC program from NF to CCSP will decrease the average monthly cost by almost 35 percent, and a change to SOURCE will decrease cost by approximately thirty percent. For the Group 2 programs, a change to ICWP will increase cost 77 percent, and Shepherd Care will increase cost by slightly more than 18 percent.

- A second adjustment calculated the cost of monthly care for the same type of patient (demographically and clinically) in each of the five programs: a white, urban, dual eligible patient who was admitted to a program during CY99, did not die during the OY, and had an average severity score for all the patients in the Cohort.

    - Using the NF as the comparative base for total cost of the identical patient ($3970); equating that NF cost to 100 percent, comparative percentages of the other LTC Programs are:
        - CCSP = 66%
        - SOURCE = 71%
        - ICWP = 175%
        - Shepherd Care = 117%

- The Medicare and Medicaid proportional share was:

LTC Program	Medicare Cost %	Medicaid Cost %
NF	62	38
CCSP	64	36
SOURCE	60	40
ICWP	20	80
Shepherd	25	75

Extended Study: HCBS Care and Cost Pattern Changes Two Year Later

Background and Methodology

- To re-evaluate the originally observed cost and care outcome patterns, the original Study's analytic time frame was expanded through calendar year 2002. The patient cohort for that period included all patients that received care in CCSP, SOURCE, ICWP or Shepherd during 2001 and 2002.

- Nursing facilities were excluded from the extension due to a consensus around the stability of their care and cost patterns observed in the original Study and the significant cost of inclusion because of their population size. Medicare data were also not requested from CMS because of time and budget limitations. Since the HCBS programs are Medicaid-waiver related, such an exclusion would not affect the analyses of their long-term segments per se.

- Apart from the above, the methodological design and analytic plan of the extended Study was identical to the original Study[5].

Findings

- SOURCE, ICWP and Shepherd each had considerable patient population growth during the extension period ranging from 145 to 225 %; CCSP for analytic purposes was sufficiently large even at the time of the original Study. By 2002 there was a sufficiently large patient population and greater organizational maturity among the HCBS program to numerically more detailed analyses and statistically testing.

- As observed in the original Study, there still sees to be a very small proportion of inter-program transfer (<2%). There were also implications that the average length of stay in an HCBS program exceeded two years.

- Demographically, very little difference was observed between the patient characteristics within and among the HCBS program in the original Study and the extension. With the exception of SOURCE, the characteristics essentially remained stable. In the case of SOURCE, there was a considerable amount of organizational and patient population growth. As a result it appears SOURCE patients are now growing to resemble those of CCSP especially in terms of proportions, more rural residents and more white clients (but still the strongest proportional representation of non-white clients among the HCBS programs).

[5] As a reminder – SOURCE does not admit MAO patients, but CCSP does. To assure analytic equity, the CCSP and SOURCE comparisons exclude CCSP MAO patients. Further, SOURCE Level III and IV patients (non-institutionally certified) are also excluded.

- Demographically, SOUCE and CCSP patients continue to be similar and ICWP and Shepherd patients continue to be similar.

- Dual Eligibles continue to be the insurance majority in all four programs. However, there has been a significant proportional growth in Medicaid patients as the expense of Dual Eligibles in Shepherd. This shift does influence the shift in cost outcomes to be subsequently discussed.

- Between SOURCE and CCSP, their proportion differences in both LTC and total costs narrowed. While SOURCE continued to be somewhat more costly[6] than CCSP, the total cost difference had shrunk from 13% to 8%; the LTC cost had shrunk from 27% to 13%.

- Between ICWP and Shepherd, the proportional cost differences were more dramatic. Beginning circa 2000, DCH began an aggressive campaign to tighten the management of the ICWP program. This action was somewhat influenced by the care management success of Shepherd. The results of this change significantly changed the cost outcome relationship between ICWP and Shepherd. At the end of the original Study, Shepherd cost was significantly less than ICWP. Specifically, their LTC cost was 40% less than ICWP and their total, 37% less. However, by the end of 2002, the Shepherd LTC cost was only 7 % less than ICWP and their LTC cost was 3 % more than ICWP. While the change in management emphasis obviously had a strong effect o the cost shifts, a change in patient severity may have been more significant.

- The illness severity scores for SOURCE in the new time period increased significantly over CCSP, a difference not observed in the original Study time period. In addition, during the same time period, SOURCE as an organization was growing markedly. Such growth traditionally is accompanied by higher than usual expenditures. That expectation did not occur with SOURCE; growth has been efficiently managed. While all the factors cannot be quantified within the scope of either Study, there certainly are implications, that SOURCE is delivering more aggressive care at a lower cost than CCSP.

- Unfortunately, Shepherd appears to be at the negative end of patient placement. They have clearly been receiving more severely ill patients than ICWP. The size of the disparity between the severity scores and the related pattern of development indicate non-random placement. Further, the proportion of Medicaid only patients in Shepherd has been increased. This has further exacerbated the cost disparity by reducing their access to Medicare benefits. Considering all those factors and despite the numerical differences, Shepherd probably continues to deliver more cost-effective care than ICWP and is making better use of resources.

[6] It is again noted that there are some performance aspects of SOURCE that have not been, and perhaps cannot be measured. As example, their proactive management of care obviously has a cost to perform, but has a potentially greater cost saving. These intangibles need to be recognized in policy decisions related to HCBS program development

Supplemental Study: Medical Assistance Only (MAO) Eligibility

- The MAO eligibility category allows an individual to use incurred medical expenses to "spend down" the difference between their income and the Medicaid income limit to become eligible for all basic Medicaid benefits. At the request of DCH, the MAO component of the Study Cohort was analyzed:

    - MAOs within NFs constitute about 36 percent of all patients. That proportion increases to 52 percent for CCSP; and approximately 50 and 60 percent respectively for ICWP and Shepherd Care (SOURCE does not admit MAO patients.)
    - In all programs that accept MAO clients, the majority (ranging from 65 to 90 percent) of MAOs are dually eligible for both Medicare and Medicaid;
    - In terms of severity of illness, MAO patients consistently are ranked higher (sicker) than non-MAO patients in all programs. In terms of sickness levels, NFs are the highest, followed by CCSP, ICWP, and Shepherd Care.
    - In terms of total costs to Medicaid (only), within NFs, ICWP, and Shepherd Care, the MAO patients are consistently more costly than non-MAO by factors of almost two to three times greater.
    - For CCSP, the only program requiring patients to cost-share, the cost pattern reverses; MAO patients are approximately 20 percent less expensive than non-MAO. It is hypothesized that this difference is related to the spend-down requirement; however that Medicaid data field is not sufficiently populated to draw supportable conclusions.

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I. Background

Issues Leading to the Study

During the 1990's, while Georgia's state budget increased almost 65 percent, its Medicaid budget increased almost 95 percent, and expenditures related to the Medicaid Aged, Blind and Disabled (ABD) eligibility category more than doubled. The ABD category constituted 25 percent of Medicaid's eligibility rolls but 65 percent of the budget. Population estimates[7] for the first quarter of the 21st century, indicate increasing numbers of individuals over age sixty-five. This age group, more than any other, has a high potential for Medicaid ABD-eligibility. Costs for their care also will continue to escalate unless significant long-term care organization and delivery changes are made.

Nursing facilities (NF) are been the traditional source of long-term care nationwide (Dunlop, Manheim, Song and Chang, 2002, Wallace, Levy-Storms, Kingston, Anderson, 1998, and Headen, 1993). A large proportion of NF revenue comes from the Medicaid ABD population (Feder, Komisar and Niefeld, 2000). Because of continually growing costs per client and the growing population in need of LTC services, Georgia Medicaid in the early 1980's began to develop home and community-based services (HCBS) as alternatives to NFs. It was hoped that HCBS options could prove to be as effective as, but less costly than, NFs. Further impetus was added to HCBS expansion with the Supreme Court's Olmstead Decision in 1999. Georgia Medicaid now has established several HCBS programs.

The current economies of state government place an urgent priority on controlling budget growth. More effective Medicaid resource allocation could assist state budget control, especially regarding the ABD population. However, improved resource allocation is dependent on information designed and collected to facilitate cost-effective decision-making. The potential for such information comes from the underlying objective of this Study: comparatively assessing costs and care outcomes of Georgia's current LTC NF and HCBS programs.

The Study

In the late 1990's, Georgia State University researchers began a series of studies related to improving long-term care services and controlling the costs of Medicaid's ABD population. As a result, in 2001, Georgia's Department of Community Health (DCH) funded those researchers[8] to comparatively evaluate cost and care outcomes among nursing facilities and four alternative forms[9] of LTC: Community Care Services Program (CCSP), Service Options Using Resources in Community Environments (SOURCE), Independent Care Waiver Program (ICWP) and Shepherd Care[10].

The Study was designed as a retrospective comparative analysis of costs and services used by selected LTC patients (Cohort). The principal database used was integrated Medicare and Medicaid claims.

[7] "Population Projections for States, By Age, Sex, Race and Hispanic Origin: 1995-2025"; Population Paper Listing #27; U.S. Bureau of the Census.
[8] The Study staff is listed in Appendix A.
[9] Within the Study, these four programs, as a group, are referred to as home and community-based services (HCBS).
[10] Service descriptions of the five LTC programs under study are in Appendix B.

Initial work focused on developing the claims database. A protocol[11] was submitted to the Centers for Medicare and Medicaid Services (CMS) to request the release of Medicare's eligibility and claims data for the Study cohort. Data requests were also made to the Georgia Medical Care Foundation, Georgia Medicaid, and the Vital Statistics unit of the Georgia Division of Public Health. In December 2001, CMS approved the protocol and agreed to furnish the requested data at no cost. By the spring of 2002, all requested database components from all sources had been received.[12][13]

Study Advisory Committee
A LTC Stakeholders Advisory Committee[14] was developed to provide the researchers access to managerial, financial, and public policy expertise concerning the programs under study. It met for the first time in the fall of 2001 and four times subsequently. The general oversight, information, commentary and recommendations provided by Committee members both in and out of session have been invaluable to the Study.

II. Study Progress and Final Reporting

During the course of the Study, the investigators have periodically reported their progress and provisional informational outcomes to DCH and the Advisory Committee. In addition to this Final Report, the investigators delivered four draft progress reports: December 20, 2002, April 15, 2003, September 15, 2003, and November 9, 2003.

From the beginning of the analytic phase, the researchers responded to DCH's special requests. In anticipation that special requests could continue for a period subsequent to the scheduled termination of the expanded and extended study (June 30, 2004), the Data Use Agreement between DCH and CMS was designed to permit the Study database to be kept intact through CY04. Unless the Agreement is extended prior to that date, the database must then be destroyed.

Study Extension
One concern about health services research is that because of its complex and demanding methodologies, it takes too much time to develop databases, their related findings and conclusions. As a consequence, the results can appear several years after the actual occurrence. However, a gap between findings and current patterns does not usually outdate the reported patterns. As an example, hospital and/or nursing facility utilization trends do not markedly differ from year to year; therefore, it takes several years (usually at least three to five) to observe a significant difference in utilization patterns, all other things being equal.

The exception to this research "rule of thumb" is when the programs being observed are new and expanding over time. That is the case with ICWP, SOURCE, and Shepherd Care. Two of the Study's five LTC programs, nursing facilities and CCSP, have large patient populations and have been in existence for many years. However, ICWP, SOURCE, and Shepherd Care are newer and smaller.

[11] See Appendix C: Executive Summary – Study Protocol to Centers for Medicare and Medicaid Services.
[12] During initial protocol development and database management, the Kerr L. White Center for Health Services Research, Inc., Decatur, Georgia, provided contractual assistance to the Study investigators.
[13] JEN Associates, Inc. (JAI) of Cambridge, Massachusetts, was contracted to manage the linking of the Medicare and Medicaid databases.
[14] Members of the Committee are listed in Appendix D.

At the beginning of the Study, the researchers expressed concern about the disparities between CCSP and SOURCE and ICWP and Shepherd Care. Such differences could affect inter-program statistical testing and the longitudinal stability of observed differences. As the analyses were developed, such problems became real. Therefore, the Advisory Committee, DCH senior staff, and the researchers agreed the Study work should be extended and expanded into 2004 to accomplish two additional tasks:

- Collect the Medicaid portion of HCBS claims for an additional two years (through FY02) to provide an analytic picture of care and cost outcomes with a larger and more current patient database.

- Investigate the cost/benefit of Ambulatory Care Sensitive Conditions (ACSC), especially among the CCSP and SOURCE programs.

Preliminary findings from the extension Study were presented to DCH in the fall of 2003 and the Advisory Committee in early 2004. Findings from both studies were presented by invitation to the Georgia General Assembly's Budgetary Responsibility Oversight Committee (BROC) in August and December of 2003. This current Report integrates the development and findings from both studies.

Identifying Published Information Relevant to Study Development and Outcomes

To assist the researchers and stakeholders in the Study's development and analytic plan, a literature review was initiated, primarily from 1990 to the present. Specific interest was focused on efforts using Medicare/Medicaid LTC database studies; comparative evaluations of LTC service program options and outcomes; and Medicare/Medicaid policy issues related to LTC delivery, cost, and outcomes. Over 150 studies were specifically abstracted for their relevance to components of the Study. Some of these are referenced in this Report. However, the review identified only two studies in the currently published literature that used LTC Medicare/Medicaid integrated databases and analyzed comparative information related to NF and HCBS programs.[15] Five other studies were identified as using pieces of similar databases or comparative analysis (e.g. Medicaid, but not Medicare and/or NFs, but not HCBS).[16]

[16] Temkin-Greener H, Meiners M. Transitions in Long-Term Care. *The Gerontologist*. 1995; 35:196-206; and Saucier P, Bezanson L, Booth M, et al. Linked Data Analysis of Dually Eligible Beneficiaries in New England. *Health Care Financing Review*. 1998; 20:91-108.

[16] Arling G, Buhaug H, Hagan S, Zimmerman D. Medicaid Spenddown Among Nursing Home Residents in Wisconsin. *The Gerontologist*. 1991; 31:174-182; Porell F, Caro F, Silva A, Monane M. A Longitudinal Analysis of Nursing Home Outcomes. *Health Services Research*. 1998;33:835-865; Spector W, Mukamel D. Using Outcomes to Make Inferences about Nursing Home Quality. *Evaluation and the Health Professions.* 1998; 21(3):291-315; Alecxih L, Lutzky S, Corea J. Estimated Cost Savings from the Use of Home and Community-Based Alternatives to Nursing Home Facility Care in Three States. *American Association of Retired Persons, Public Policy Institute*. 1996:1-31; and, Braun K, Rose C, Finch M. Patient Characteristics and Outcomes in Institutional and Community Long-Term Care. *The Gerontologist*. 1991;31:648-656.

Limitations

Several factors involving the Study database, the LTC programs themselves, and the effects of passing time cannot be controlled. These factors are noted below to assist the reader in appropriately using the results for policy and program considerations.

- The Study's database was primarily developed from Medicare and Medicaid claims and eligibility files. Claims were designed for administrative purposes such as billing and fiscal oversight. The use of administrative data pre-defines and, consequently, can limit analytic options for non-administrative purposes such as research. All things that may affect care and its cost are not available from a claims form. For example, the patient chart contains a richer source of clinical data. Consequently, administrative data have limitations, especially for the analyses of qualitative issues related to care. In certain instances, the administrative database may not support definitive answers but rather only provide implications for further exploration through a set of more clinically oriented data.

- Some Medicare and Medicaid data elements, while common to both programs, are not uniformly defined.[17]

- Georgia Vital Records death certificates were referenced to validate deaths reported[18].

- As is the case with large administrative databases, data cells with no valid entry are randomly found despite editing and validation checks[19].

- Study findings reflect program status and performance at the time data were collected and not necessarily their status and performance today.

[17] During the Study, it was found that Medicare and Medicaid data were in agreement on age, race, gender, and patient residence on more than 90 percent of the claims.

[18] Between Georgia Vital Records' death certificates and payment claims, there was agreement on death in 86 percent of the cases. Where there was a discrepancy in death status, the death certificate data took precedent.

[19] For further discussion of data validation, see Appendix E: Methodological Notes

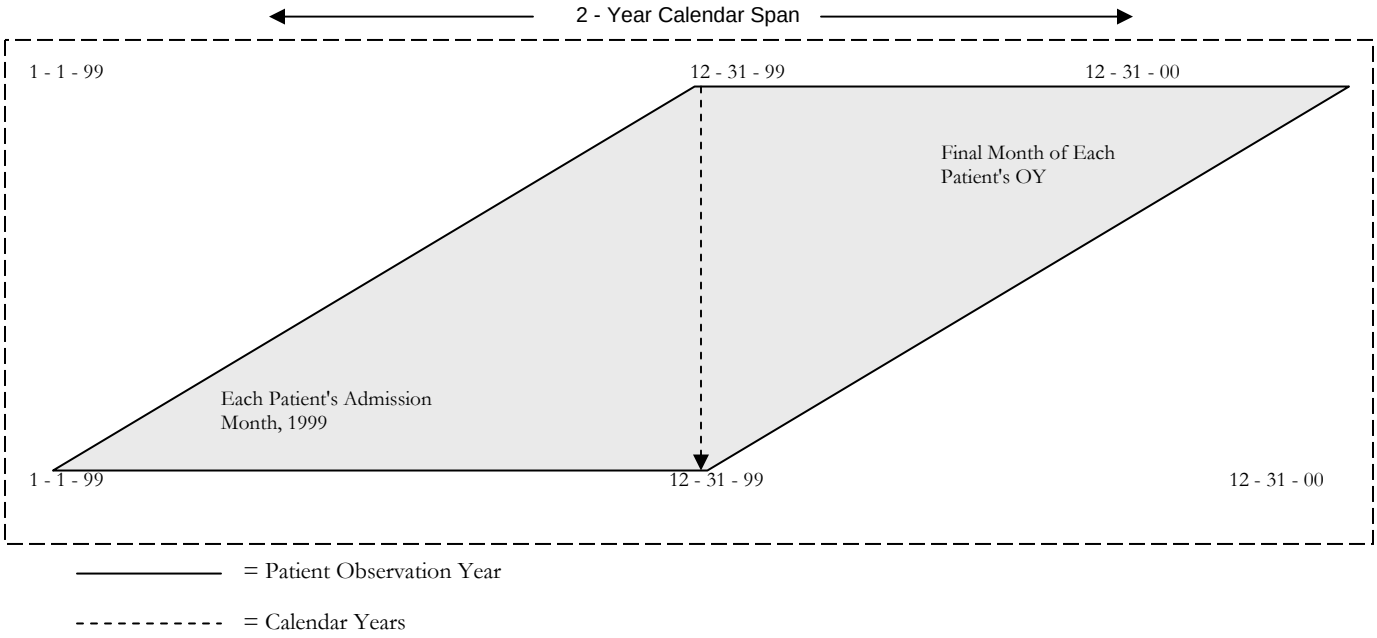
III. Developing the Study's LTC Patient Cohort

34,652 LTC patients[20] that had been certified for an institutional level of care[21][22] were identified for inclusion the Study's Cohort using the following criteria[23]:

- All individuals certified for, and admitted to, a Georgia NF in calendar year (CY) 1999; and
- All individuals with any Georgia Medicaid claim for home and community-based services in CY99 in the following programs: CCSP, SOURCE, ICWP, or Shepherd Care[24].

Once admitted to the Cohort, each individual's use of any Medicare and/or Medicaid health care services was catalogued[25] over the subsequent twelve months[26]. Figure 1 illustrates the observational timeframe.

Figure 1
Observation Timeframe: Patient Observation Year (OY)



[20] Because of the variability of enrollment among the Study's programs, it was decided not to sample, but to use each long-term care program's complete census.
[21] Because of this certification requirement, all the Study's patients share at least a minimal level of functional disability;
[22] Within the SOURCE program, there are four levels of care: I, II, III and IV. For certification purposes, only levels I and II meet an institutional level of care. Therefore, only data related to levels I and II were used in the Study analyses.
[23] Appendix F outlines the methodology and decision points involved in the development of the Study cohort. Appendix G illustrates the Cohort members allocated among the five LTC programs by payment source and age. In addition, it contains qualifications on certain Cohort characteristics.
[24] For discussion of NF Cohort incidence (new admissions only CY 1999) versus HCBS cohort prevalence (CY 1999 new admissions plus patients still under care but admitted pre-1999), see Appendix E: Methodological Notes.
[25] Claims for the total Cohort exceeded 11 million;
[26] In the event of death, the individual was followed only through the month in which death occurred.

IV. The Study's Long-term Care Programs

Figure 2 illustrates summary characteristics of the five programs included in the Study.

Figure 2
Summary Descriptions of the Study's Long-Term Care Programs

LTC Program	Type	Date Est.	OY 1999 Patients[27]	Insurance Status (%)[28]			Admit MAO[29]	Cost-Share Required	Summary Characteristics
				MCR	MCD	DE			
Nursing Facilities (NF)	Institutional	1967	19,677	58	5	37	Yes	No	Twenty-four hour, seven day a week institutionally-based skilled services to individuals certified for such a level of care
Community Care Service Program (CCSP)	Georgia home and community-based waiver program	1982	14,262	0	12	88	Yes	Yes	In lieu of nursing facility placement to individuals certified for such a level of care, provides home and community-based services
Service Options Using Resources in Community Environments (SOURCE)	Georgia home and community-based waiver demonstration program	1997	462	0	17	83	No	No	In lieu of nursing facility placement to individuals certified for such a level of care, provides home and community-based services with physician oversight and enhanced case management
Independent Care Waiver Program (ICWP)	Georgia home and community-based waiver program	1992	213	0	36	64	Yes	No	In lieu of institutional placement to individuals certified for such a level of care, provides home and community-based services to severely disabled individuals (e.g. paraplegics)
Shepherd Care	Georgia home and community-based waiver demonstration program	1997	38	0	32	68	Yes	No	In lieu of institutional placement to individuals certified for such a level of care, provides home and community-based services with enhanced case management to severely disabled individuals (e.g. paraplegics)

V. The Study Problem and Its Analysis

In Medicaid's financing of long-term care services, two major and related administrative questions are:

- How can costs be controlled?

[27] OY = Observation Year established for each individual patient based on a twelve month period following their admission to the Study Cohort. Including all Study patients' Observation Years, the time period overall spans a period beginning January of 1999 and ending in December of 2000.
[28] Calculated as a percentage of the OY99 patients in each LTC program. Insurance eligibility is as of the patient's admission to the Study Cohort.
[29] MAO = Medical Assistance Only

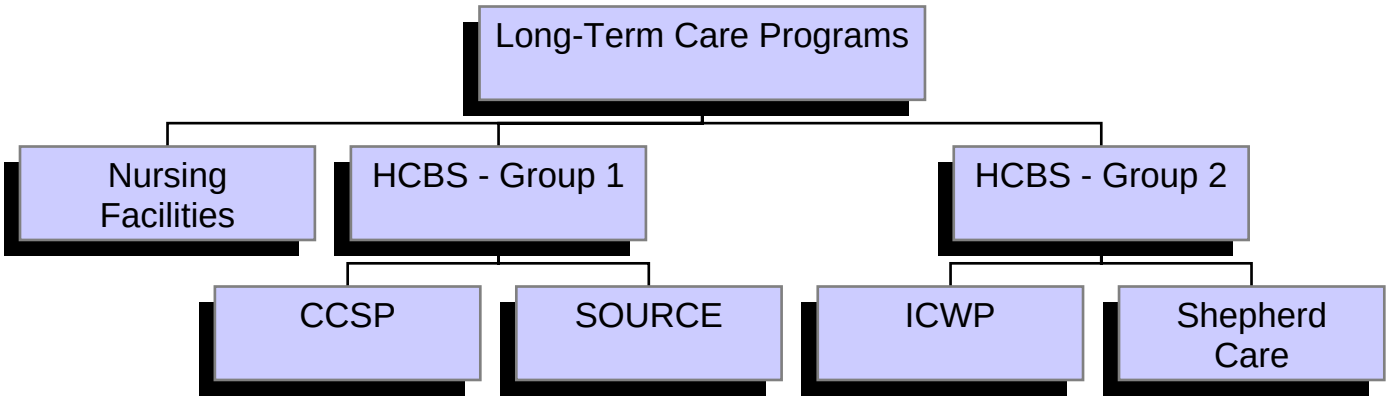
- Will current care outcomes be improved or, at least, be maintained under such cost controls?

The Study's analytic design was developed to determine 1.) if patient care and/or outcome differences exist among nursing facility patients and HCBS groups, and 2.) if differences exist between CCSP and SOURCE, and between ICWP and Shepherd.

Differences between NFs and HCBS programs can emerge from patient characteristics, program organization, and/or service options. Such differences have been described by other researchers (Braun, Rose and Finch, 1991, Gabrel, 2000, Jeete, Branch, Sleeper, et al., 1992 and Boaz and Muller, 1991). Assuming differences are observed in Georgia, the essential Study "problem" is to: 1) identify the causes of differences — patient characteristics, program services, or patient management characteristics, and 2) identify the impact of the differences on care and costs.

At the time of the Study, the actual cost-benefits of existing HCBS options were unknown. However, a Georgia study done more than twenty years ago did imply HCBS cost benefits in comparison to NFs. (Skellie, 1982).

Figure 3
Classification of Long-term Care Programs



As illustrated by Figure 3, for study analyses, the four HCBS programs were paired into two groups: 1) CCSP and SOURCE, and 2) ICWP and Shepherd Care. All of the programs are Medicaid waivers, and the majority of their patients are dually eligible.

Within NFs, patients generally can be classified within one of two subgroups: rehabilitative patients (e.g., post-stroke, hip fracture care) and custodial care patients. The former group is typically short-stay (about 100 days) and usually, but not exclusively, comprises the total Medicare-only population within the facility. The custodial care group usually will remain in the facility longer than 100 days. As a group, it is normally comprised of very elderly individuals in frail health who require a protected nursing environment and are dually eligible for Medicare and Medicaid - the balance being funded by Medicaid.

CCSP and SOURCE patients are generally not severely disabled and tend to resemble the traditional NF population. However, the patient populations in ICWP and Shepherd Care are typically severely physically disabled (e.g. paraplegics). When comparing CCSP to SOURCE and ICWP to Shepherd Care, they differ largely in terms of patient management and some service options.

VI. The Cohort: Patient Characteristics Among LTC Programs[30]

As illustrated in Table 1, patient characteristics vary among the Georgia LTC programs. The most noticeable differences include:

- Patients in Group 2 are considerably younger and more often male than NF or Group 1 patients. However, the Group 2 programs focus on adults with severe physical disabilities (e.g., paraplegia). This population tends to be young and male.

- Nursing facilities have the lowest proportion of non-whites when compared to the other LTC programs, and SOURCE has the highest. However, at the time of the Study, SOURCE had only recently been established and provided service primarily to a largely minority population in an urban neighborhood.

- In terms of patient residence (urban or rural), SOURCE and Group 2 are more urban than CCSP or NFs.

Table 1: Selected Patient Demographics Among LTC Programs

Characteristics		NF (n=19677)	Group 1		Group 2	
			CCSP (n=14,262)	SOURCE (n=462)	ICWP (n=213)	Shepherd Care (n=38)
Age	Median year	80	77	75	39	38
	<65 yrs old **%**	10	24	27	94	100
Gender	Female **%**	65	76	80	37	26
Race	Non-White **%**	25	42	73	40	32
Patient Residence	Rural **%**	45	57	17	20	3

[30] Braun et al indicate that patients using NF vary from patients using HCBS in terms of age, gender, race, mortality status. However, the Study's literature review was not able to identify studies with information as to the existence of patients with variations in patient characteristics among various models of HCBS programs either in Georgia or other states.

As illustrated in Table 2, for all characteristics except age group 65-74, the observed demographic differences between nursing facilities and CCSP are statistically significant (.01).
Between SOURCE and CCSP, the race and patient residence differences are also strongly significant; however, gender differences are less strong (.05).

Table 2: Statistical Differences[31] of Selected Demographics

Demographic Characteristics		Characteristic %			Statistical Differences	
		NF (n=19677)	CCSP (n=14262)	SOURCE (n=462)	NF:CCSP	CCSP:SOURCE
Age	< 65 yrs	10	24	27	.01	None
	65-74	19	19	23	None	.05
	75-84	38	29	28	.01	None
	85 and over	32	27	22	.01	None
Gender	Male	35	24	20	.01	.05
	Female	65	76	80	.01	.05
Race	White	75	58	27	.01	.01
	Non-White	25	42	73	.01	.01
Patient Residence	Rural	45	57	17	.01	.01
	Urban	55	43	83	.01	.01

While the HCBS programs are Medicaid waiver programs, the majority of their patients are dually eligible for payments from Medicare and Medicaid (Table 3). Payment for services[32] offered within the HCBS programs is from Medicaid, while services outside of Medicaid HCBS waiver programs are reimbursed by Medicare, Medicaid or the patient (Levit, Sensenig, Cowan, et al., 1994).

[31] See Appendix E: Methodological Notes for a discussion of the Study's pattern of statistical testing for differences.
[32] See Appendix B.

While patient numbers in Group 2 programs were too small to test for the statistical significance of observed differences[33], NFs and Group 1 patient numbers were sufficiently large for such tests. Table 3 illustrates those differences.

Table 3: Patient Insurance Status by Program

Insurance Eligibility[34]	NF% (n=19677)	Group 1 %		Statistical Differences		Group 2 %		Total % (n=34652)
		CCSP (n=14262)	SOURCE (n=462)	NF: CCSP	CCSP: SOURCE	ICWP (n=213)	Shepherd Care (n=38)	
Medicare	58	0	0	N/A	N/A	0	0	33
Medicaid	5	12	17	.01	.01	36	32	8
Dual Eligibility	37	88	83	.01	.01	64	68	59

VII. Most Frequently Occurring Principal Diagnoses by LTC Program

Tables 4, 5 and 6 illustrate the leading diagnoses recorded on claims forms and the percent of patients having those diagnoses at least once during the OY.

Table 4: Ten Most Frequently Occurring Principal Diagnoses: NF Patients
(n = 19,677)

DIAGNOSES (ICD-9-CM#)	% Patients	Rank Order
Essential hypertension (401)	62	1
General symptoms (780)	57	2
Symptoms involving respiratory system and other chest symptoms (786)	50	3
Disorder of fluid, electrolyte and acid-base balance (276)	44	4
Unspecified disorders of urethra and urinary tract (599.9)	42	5
Heart failure (428)	38	6
Unspecified anemias (285.9)	36	7
Cardiac dysarhythmias (427.9)	34	8
Hydrarthosis (719)	32	9
Diabetes mellitus (250)	32	10

[33] In a majority of testing situations throughout the Study, the Group 2 program numbers were too small for statistical testing purposes;
[34] Eligibility determined at the time of admission/first claim payment.

Table 5: Ten Most Frequently Occurring Principal Diagnoses, Group 1

Diagnoses (ICD-9-CM#)	CCSP (n=14262)		SOURCE (n=462)	
	%	Rank Order	%	Rank Order
Essential hypertension (401)	57	1	61	1
General symptoms (780)	44	2	48	2
Symptoms involving respiratory system & other chest symptoms (786)	41	3	45	3
Diabetes mellitus (250)	33	4	32	4
Osteoarthrosis & allied disorders (715)	32	6 (tie)	27	7
Heart failure (428)	32	6 (tie)	26	9 (tie)
Other disorders of urethra & urinary tract (599.8)	29	7	31	5
Disorders of fluid, electrolyte and acid-base balance (276)	27	8	26	9 (tie)
Cytoplastic anemia (285)	23	9	N/A[35]	N/A
Coronary arteriosclerosis (414.0)	24	10	N/A	N/A
Dermatophytosis (110)	N/A	N/A	28	6
Disorders of the joints (719.9)	N/A	N/A	25	10

[35] N/A = diagnosis was not among the Ten Most Frequently Occurring Principal Diagnoses for that LTC program

Table 6: Ten Most Frequently Occurring Principal Diagnoses, Group 2

Diagnoses (ICD-9-CM#)	ICWP		Shepherd Care	
	%	Rank Order	%	Rank Order
Other paralytic syndromes (344.9)	46	1	58	1
Unspecified disorders of urethra & urinary tract (599.9)	36	2	34	6
Chronic ulcer of skin (707)	31	3	50	2
General Symptoms (780)	30	4	27	7
Symptoms of the urinary system (788.9)	27	5	45	4 (tie)
Symptoms of respiratory system & other chest symptoms (786)	23	6	N/A	N/A
Disorders of muscle, ligament and fascia (728.9)	22	7	45	4 (tie)
Nausea and vomiting (787)	20	8	N/A	N/A
Other disorders of the bladder (596)	18	10 (tie)	21	10
Essential hypertension (401)	18	10 (tie)	N/A	N/A
Functional digestive disorders (536.9)	N/A	N/A	42	5
Intestinal obstruction: non-hernial (560.9)	N/A	N/A	24	9 (tie)
Late effect of injuries to the nervous system (907)	N/A	N/A	24	9 (tie)

Group 1 programs have eight diagnoses in common and are identical in rank for the top four. Group 2 programs share seven common diagnoses, but they are identical only on one.

NFs, SOURCE, and CCSP share seven of their individual top ten diagnoses. Table 7 illustrates those shared diagnoses and the statistical significance of proportional differences among them.

Table 7: Statistical Differences of Shared Diagnoses (NF and Group 1)

Shared Diagnoses (ICD-9-CM#)	Diagnoses %			Statistical Differences	
	NF (n=19677)	CCSP (n=14262)	SOURCE (n=462)	NF:CCSP	CCSP: SOURCE
Essential hypertension (401)	62	57	61	.01	.10
General symptoms(780)	57	44	48	.01	.10
Symptoms involving respiratory system & other chest systems(786)	50	41	45	.01	.10
Unspecified disorders of urethra & urinary tract (599.9)	42	29	31	.01	None
Disorder of fluid, electrolyte & acid-base balance (276)	44	27	26	.01	None
Heart failure (428)	38	32	26	.01	.01
Diabetes mellitus (250)	32	33	32	None	None

Between nursing facilities and CCSP, proportional differences for all shared diagnoses (except diabetes) are significant (.01), indicating that the populations are clinically different. While such differences also exist between CCSP and SOURCE, statistically they are not as strong (.10).

The observations demonstrate a broad array of common diagnoses among the NF and Group 1 programs. Acute conditions (e.g. urinary tract infections, pneumonia, fluid/electrolyte and acid-base disturbances) and chronic conditions (e.g., hypertension, diabetes mellitus and paralytic syndromes) are found as principal diagnoses among patients in all LTC settings. However, NF patients have more chronic conditions as principal diagnoses than CCSP and SOURCE patients. This fact is reflected in other studies (Boaz and Muller, 1991, Tsuji, Whalen and Finucane, 1995 and Wallace, Levy-Storms, Kingston and Anderson, 1998). Chronic conditions require increased resource utilization and higher costs regardless of the patient's program setting. Consequently, their high NF percentages contribute to the higher cost of those facilities when compared to HCBS.

VIII. Cohort Use of Health Care Services

The Study's integrated Medicare and Medicaid database provides the opportunity to observe the Cohort's use of long-term care and other services. Not all patients remained in their original program for the full 12 months. At the end of the OY, 23 percent of the Cohort was still receiving health care services but not from their original LTC Program.

Table 8 illustrates the percent of Cohort patients using selected health care services while in their original LTC program and after discharge from that program.

.

Table 8: Percent of Patients by LTC Program using Selected Services During LTC and after Discharge

Care-Related Services	LTC Programs	In-Program %[36]	Post-Discharge %[37]
Hospital Inpatient Services	NF	74	11
	CCSP	42	7
	SOURCE	39	7
	ICWP	36	2
	Shepherd Care	34	0
Hospital Emergency Services[38]	NF	36	10
	CCSP	43	5
	SOURCE	43	8
	ICWP	45	3
	Shepherd Care	39	0
Outpatient Service[39]	NF	96	31
	CCSP	93	16
	SOURCE	95	19
	ICWP	90	5
	Shepherd Care	95	0
Outpatient Therapy Service[40]	NF	83	6
	CCSP	22	9
	SOURCE	23	10
	ICWP	28	2
	Shepherd Care	26	0

[36] Percent of program patients using the service at least once during the Observation Year
[37] Percent of former (discharged) patients using the service at least once during the OY. Twenty-three percent of the Cohort continued to receive some form of service(s)during the balance of their individual OYs remaining.
[38] An Emergency Service visit that evolves into a Hospital Inpatient Admission is classified as an Inpatient Admission (Hospital Inpatient Service).
[39] Encounter with a physician outside of hospital stay or emergency service visit
[40] Encounter with one of a various rehabilitation therapists (e.g. Physical Therapist) outside of a hospital stay or emergency service visit.

Observations:

- At least one-third of all LTC patients use hospital inpatient and/or emergency services at least once during the OY.
- A smaller proportion of HCBS patients (34 to 42 percent) use inpatient services than do NF patients (74 percent).
- HCBS patients use emergency services at about the same levels (36 to 45 percent) as inpatient services. However, NF patients use emergency services at a much lower level (36 percent) than they use inpatient services and at lower levels than the HCBS patients.
- More HCBS patients use emergency services more often than do NF patients while enrolled in the LTC program. However, after discharge, former NF patients use emergency services at higher levels than any of the HCBS program patients.
  Compared to other patients' hospital inpatient use, the percent of NF patients with inpatient admissions is markedly higher both during and after LTC program use.
- During LTC, at least 90 percent of all Programs' patients use Outpatient Services. In use of Therapy Services, NF patients continue a high level of use (80 percent.)

As would be anticipated after LTC program discharge, patients from all programs use all services significantly less. Use of outpatient services is greatest for NF and HCBS patients. In all cases, the observed differences between CCSP and NF patient proportions were statistically significant at the .01 level. The differences between CCSP and SOURCE were not.

IX. Service Use as an Indicator of Care Management

Patterns of Use: Hospital Emergency and Inpatient Services

Utilization patterns of emergency room and hospital inpatient services can be indicators of the effectiveness of case management within a LTC program (Brooks, 1994; Jones, 1997.) An earlier investigation by some of the present Study's researchers (Cooney, Landers, 2001) found that about 20 percent of Georgia NF patients were frequently (three or more times) transferred between the facility and hospitals over short periods of time (six months or less). This pattern of frequent inter-institutional movement was termed "churning". Anecdotally, the pattern appeared more frequently in the dually eligible and was hypothesized to be a product more of payment policy than patient care needs. Its underlying causes have yet to be definitively identified, nor have its implied effects on care outcomes and costs been measured.

Table 9 examines variations in patient use patterns between inpatient and emergency services, but with a focus on "churned" patients who were transferred at least three times during the OY.

Table 9: Percent of Patients Experiencing Three or More Inpatient Admissions or Emergency Service Visits by Program

Services	LTC Program	Patients[41] %	Admissions/Visits %
Hospital Inpatient Services	NF (8)[42]	19	40
	CCSP (9)	19	42
	SOURCE (7)	15	36
	ICWP (4)	17	33
	Shepherd (3)	23	41
Emergency Services	NF (11)	17	40
	CCSP (16)	27	55
	SOURCE (21)	26	59
	ICWP (12)	33	65
	Shepherd (7)	40	66

The information indicates that that almost 20 percent NF patients account for 40 percent of the inter-institutional transfers. This disproportionate distribution was also observed in the first Churning Study. More significantly, the current Study demonstrates that "churned" patients exist in all the LTC Programs.

Transfers from LTC Programs to Hospitals: Principal Diagnoses at Admission

Tables 10, 11 and 12 illustrate the ten leading inpatient diagnoses at the time of transfer from LTC programs to hospitals. An initial assessment of these patterns indicates a potential for improving care management in all LTC programs to control hospitalizations for conditions that, on the surface, appear manageable without use of hospital inpatient or emergency services.[43] In addition to care quality, such control potentially could affect costs for both Medicare and Medicaid.

[41] Denominator includes only patients experiencing at least one inpatient admission or emergency service visit.
[42] Maximum number of reported visits/inpatient admissions during in-program care period for 99 percent of program Cohort.
[43] For related observations and discussion, see X - Ambulatory Care Sensitive Conditions, p. 33.

Table 10: NF Transfer – Ten Most Frequently Occurring Principal Diagnoses at Hospital Admission

DIAGNOSES (ICD-9-CM#)	NF (n=19677)	
	%	Rank Order
Pneumonia, organism unspecified (486)	6.9	1
Transcervical fracture (820)	6.8	2
Septicemia (038)	5.6	3
Congestive heart failure (428.0)	5.4	4
Unspecified disorders of urethra and urinary tract (599.9)	4.6	5
Disorders of fluid, electrolyte and acid-base balance (276)	4.2	6
Pneumonitis due to solids and liquids (507)	3.6	7
Cerebral thrombosis (434.0)	3.0	8
Mechanical complication of cardiac device, implant, graft (996.0)	2.5	9
Chronic bronchitis (491)	2.3	10

Table 11: HCBS Group 1 Transfers – Ten Most Frequently Occurring Principal Diagnoses at Hospital Admission

DIAGNOSES (ICD-9-CM#)	CCSP (n= 14262)		SOURCE (n=462)	
	%	Rank Order	%	Rank Order
Congestive heart failure (428)	8.3	1	5.6	1
Pneumonia, organism unspecified (486)	6.2	2	2.7	8
Chronic bronchitis (491)	5.2	3	N/A	N/A
Disorders of fluid, electrolyte and acid-base balance (276)	4.2	4	3.4	6
Unspecified disorders of urethra and urinary tract (599.9)	3.8	5	4.0	4
Mechanical complication of cardiac device, implant, graft (966.0)	3.1	6	2.4	9
Diabetes mellitus (250)	3.0	7	4.5	3
Cerebral thrombosis (434.0)	2.6	8	2.2	10
Coronary arteriosclerosis (414.0)	2.5	10	N/A	N/A
Alteration of consciousness (780.0)	2.5	10	N/A	N/A
Septicemia (038)	N/A[44]	N/A	5.2	2
Cardiac dysrythmias (427.9)	N/A	N/A	3.4	6
Arteriosclerosis (440)	N/A	N/A	2.9	7

While CCSP and SOURCE patients share seven out of the top ten diagnoses at admission, there is an observable difference in the volume of those diagnoses and, consequently, their rank order.

[44] N/A = Diagnosis was not one of the "top ten" in that LTC Program.

Table 12: HCBS Group 2 Transfers – Ten Most Frequently Occurring Principal Diagnoses at Hospital Admission

DIAGNOSES (ICD-9-CM#)	ICWP (n=213)		Shepherd Care (n=38)	
	%	Rank Order	%	Rank order
Unspecified disorders of urethra & urinary tract (599.9)	15.3	1	23.3	1
Septicemia (038)	11.0	2	9.3	5
Pneumonia, organism unspecified (486)	7.5	3	4.7	10
Mechanical complication of cardiac device, implant, graft (996.0)	6.3	4	N/A	N/A
Chronic ulcer of the skin (707)	4.7	5	N/A	N/A
Pneumonia due to solids and liquids (507)	4.3	6	N/A	N/A
Other bacterial pneumonia (482)	3.1	8	N/A	N/A
Calculous of kidney and urethra (592)	3.1	8	N/A	N/A
Disease of the esophagus (530.9)	2.4	10	N/A	N/A
Functional digestive disorders, not elsewhere classified (536.9)	2.4	10	N/A	N/A
Other cellulitus and abscess (682)	N/A	N/A	14.0	2
Unspecified intestinal obstruction (560.9)	N/A	N/A	9.3.	5
Chronic pyelonephritis (590.0)	N/A	N/A	9.3	5
Other paralytic syndromes (344.9)	N/A	N/A	4.7	10
Congestive heart failure (428.0)	N/A	N/A	4.7	10
Bronchiectasis (494)	N/A	N/A	4.7	10
Gastritis and duodenitis (535)	N/A	N/A	4.7	10

ICWP and Shepherd Care patients share only three out of the top ten diagnoses at admission. There is an observable difference in the volume of those shared diagnoses and, consequently, their rank.

Nursing facility, SOURCE, and CCSP patients share five of their individual top ten diagnoses. Table 13 illustrates those shared diagnoses and the statistical significance of volume differences among them.

Table 13: NF, SOURCE and CCSP Volume Difference of Patients' Shared Diagnoses

Shared Diagnoses (ICD-9-CM#)	Volume %			Statistical Differences	
	NF (n=19677)	CCSP (n=14262)	SOURCE (n=462)	NF: CCSP	CCSP: SOURCE
Pneumonia, organism unspecified (486)	6.9	6.2	2.7	.01	.01
Congestive heart failure (428.0)	5.4	8.3	5.6	.01	.05
Unspecified disorders urethra & urinary tract (599.9)	4.6	3.8	4	.01	None
Disorders of fluid, electrolyte & acid base balance (276)	4.2	4.2	3.4	None	None
Cerebral thrombosis (434.0)	3	2.6	2.2	.05	None

Volume differences for all shared diagnoses except one (Disorders of Fluid etc.) are statistically significant between nursing facility and CCSP patients, potentially indicating clinical differences and/or differing case management techniques. Differences between CCSP and SOURCE patients exist in only two out of the five diagnoses and are not as strong.

X. Ambulatory Care Sensitive Conditions (ACSC)

Some health services researchers (Billings, Anderson, & Newman; 1996 and Blustein, Hanson, & Shea; 1998) have advocated using the incidence of hospitalization for certain conditions as one indicator of the quality of care received. The underlying theory is that if individuals receive appropriate primary care management, inpatient hospitalization for that condition should not be necessary (Mehdizadeh, 2002). Twenty-three conditions collectively have been termed Ambulatory Care Sensitive Conditions (ACSC).[45] Thirteen of these, identified in Table 14, directly relate to elderly populations.

Table 14: Ambulatory Care Sensitive Conditions (ACSC) by LTC Program

Ambulatory Care Sensitive Condition	NF % (N=19677)	CCSP% (N=14262)	SOURCE% (N=462)	ICWP% (N=213)	Shepherd Care % (N= 38)	Statistical Significance NF:CCSP	Statistical Significance CCSP: SOURCE
Dehydration	4	2	2	X[46]	X	.01	None
Bacterial Pneumonia	8	5	2	5	3	.01	.01
Urinary Tract Infection	6	3	3	8	13	.01	None
Perforated Appendix	0[47]	0	X	X	X	None	None
Angina	0	0	X	X	X	.01	None
Asthma	0	0	1	X	X	None	None
COPD	3	4	2	1	3	.01	.05
CHF	7	5	3	1	3	.01	None
Diabetes, Short Term	0	0	0	X	X	None	None
Diabetes, Uncontrolled	0	0	0	X	X	None	None
Diabetes, Long Term	1	1	1	0	X	None	None
Hypertension	0	0	0	X	X	None	None
Diabetes, Lower Extremity Amp's	1	0	0	X	X	.01	None
Patients with at Least One ACSC	**26**	**18**	**13**	**15**	**21**	**.01**	**.01**

Over half of the observed differences between NF and CCSP patients are statistically significant. Generally, it appears NF patients have a higher incidence of ACSC inpatient treatment than do CCSP patients. CCSP patients have a higher incidence of hospitalization for ACSC than SOURCE patients. The majority of that difference is centered, though, in one ACSC - Bacterial Pneumonia.

It is accepted that ACSC are relevant to studying patient care management in the general population. However, the interpretation of results, when applied to an elderly population in frail health status, may be different than when applied to a younger, healthier population. For an older cohort, hospitalization for an ACSC may be more appropriate than treatment in a primary care setting. In fact, CMS is currently considering using ACSC as a measurement of overall quality; however, interpretation of ACSC patterns should be cautious pending the results of further research. ACSC definitely do represent sentinel conditions related to potentially serious, but usually manageable, health problems. At present, the message from the

[45] A complete list of ACSC and associated ICD-9-CM codes is available in Appendix H.
[46] X indicates no ACSC with the diagnoses.
[47] 0 indicates less than .05 percent of the ACSC present in the program.

sentinel is unclear. In an attempt to gain a better understanding of the meaning of ACSC rates with a frail elderly population, additional analyses of ACSC in a broader and more recent database were undertaken as a component of the extended study. The results are discussed in the next section.

XI. Ambulatory Care Sensitive Conditions – An Extended Analysis[48]

Background

In the elderly, chronic medical conditions such as diabetes, chronic obstructive pulmonary disease (COPD), hypertension and congestive heart failure (CHF) are conditions that often can be managed with timely and effective treatment in an outpatient setting, thereby preventing unnecessary and costly hospitalization. It is commonly held that hospitalization for chronically ill individuals may indicate an episodic or even potentially permanent, decline in health status. However, because of the lack of access to primary care or patient non-compliance with prescribed therapy, hospitalization may become unavoidable. The rate of preventable inpatient admissions, therefore, provides a practical means of evaluating primary care delivery and areas needing improvement in the access and quality of care.

Over the past decade Ambulatory Care Sensitive Conditions (ACSC) have become increasingly common tools for analyzing access to care[49]. If an ACSC diagnosis (e.g. asthma) is treated in a timely fashion by a primary care provider in an outpatient setting, in most instances it should not degenerate to the point where hospitalization is required.

ACSC and the LTC Study

In our original Study, very few significant non-cost differences have been observed within the Group 1 programs or within the Group 2 programs; analyses of ACSC have not been an exception to this pattern. As previously illustrated in Table 14, all the Study's long-term care programs experienced some level of ACSC hospitalizations ranging from a high of 26% to a low of 15%. Statistically, the difference between NF and CCSP ACSC rates was significant (<.01); however, the difference between the two Group 1 programs was not; and, numerically the Group 2 program cases were too small to test.

Despite the lack of known major ACSC differentiation among the HCBS programs, in the extended study a further investigation of the ACSC diagnoses family was developed. This effort represented an attempt to determine the ACSC relationship to primary care adequacy, to identify differential characteristics of ACSC patients from other patients, and optimistically to gain some insight into the significance of ACSC as sentinel events for the frail elderly. It had also been hoped that some measure of cost effects could be measured; however, both a small number of common inter-program cases and the informational limits of the claims forms precluded such an effort.

All CCSP, SOURCE, ICWP and Shepherd claims and eligibility data for clients receiving services in calendar years 1998, 1999, and/or 2000 were included in the extended ACSC Study. Using the earlier Study's JAI algorithm for ACSC[50], HCBS clients who were hospitalized during 1998-2000 were matched against the 13 ACSC. For analytic purposes, the matched hospitalizations were allocated into either an acute or chronic ACSC diagnosis group[51].

The overall analytic strategy was to identify and examine patient characteristics associated with hospital admissions for the thirteen ACSC.

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[48] The material in this section is based on work designed and executed by Dr. RH Curry, Dr. J Bae, and Ms. M. Zhou.

[49] Billings J, Anderson GM, Newman LS. Recent findings on preventable hospitalizations. *Health Affairs* . 15:239-249, Fall 1996.

[50] As noted in the previous section, the original ACSC family group of 23 diagnoses emerged from studies of non-elderly populations. Based on literature and clinician review, 13 of the original group were selected for the GSU analyses on the basis of their relevance to elderly populations.

[51] ***Chronic*** (asthma, chronic obstructive pulmonary disease [COPD], angina, congestive heart failure [CHF], diabetes, and hypertension); ***Acute*** (perforated appendix, diabetes – lower extremity amputation, urinary tract infections, dehydration, and bacterial pneumonia).

- First, descriptive statistics for each of the four HCBS programs' ACSC (i.e. 4 acute and 9 chronic conditions) were generated to provide a general characteristics profile of the LTC patients. These numbers were subsequently adjusted for length of stay in the program(s) to make the comparisons among programs unbiased.
- Next, comparisons were developed to determine the number of admissions each year for clients of each LTC program.
- Finally, statistical significant comparisons were then calculated for CCSP and SOURCE[52].

Findings

Demographics

Across each of the three years examined and considering variations due to the small number of Shepherd Care observations, the Group 1 and Group 2 program patients requiring ACSC hospitalization were proportionately similar in age, gender, race, and patient residence. Tables15 and 16 summarize this information for the study period.

Table 15: Demographic Characteristics for LTC Clients Having at Least 1 ACSC by CCSP and SOURCE Programs, CYs 1998-2000

CHARACTERISTICS		1998		1999		2000	
		CCSP N=1,152	SOURCE N=23	CCSP N=2,054	SOURCE N=48	CCSP N=1,892	SOURCE N=46
Age	Median	74	72	75	74	75	73
	<65 yrs old %	24	17	21	21	21	17
Gender	Female %	77	87	77	77	78	85
Race	Non-White %	39	74	39	73	38	80
Patient Residence	Rural %	64	0	60	0	61	13

[52] Since the number of ACSC admissions for ICWP and Shepherd were small, no significance comparisons could be calculated for these two LTC programs.

Table 16: Demographic Characteristics for LTC Clients Having at Least 1 ACSC by ICWP and Shepherd Care (SC) Programs, CYs 1998-2000

CHARACTERISTICS		1998		1999		2000	
		ICWP N=21	SC N=1	ICWP N=26	SC N=8	ICWP N=22	SC N=3
Age	Median	41	41	43	42	44	45
	<65 yrs old %	95	100	96	100	100	100
Gender	Female %	38	0	38	38	18	33
Race	Non-White %	48	100	42	38	41	67
Patient Residence	Rural %	24	0	15	13	18	0

In addition, the ACSC patients tended to resemble the demographic characteristics of each LTC program component of the original Cohort[53]. In brief, there appear to be no significant demographic differences between the ACSC patients in each LTC program and all the patients in that program. There were some indications that the ACSC patient tended to be older and more rural. However, because of the small number of observations, such indications cannot be definitively explored with the present database.

ACSC Comparative Profiles

Tables 17 (page 34) and 18 comparatively illustrate from 1998 -2000 hospitalization proportions for ACSC diagnoses among the four HCBS programs. Both Source and CCSP individually exhibit a proportional consistency from year to year. Further, there are no marked annual proportional differences between them. Neither program appears to differ in terms of the proportional number of ACSC over time; they exhibit a pattern of continuing stability.

In Group 2 programs as compared to Group 1, there are less ACSC diagnoses represented, and those appear more in acute conditions than in chronic. It is noted that Congestive heart failure regularly led the list of reasons for ACSC hospitalization for CCSP and SOURCE patients. In contrast, bacterial pneumonia and urinary tract infections were the principal reasons for ICWP and Shepherd Care patient admissions to the hospital.

[53] See Table 1.

Table 17: Ambulatory Care Sensitive Conditions (ACSC)
Adjusted by In Program Month for CCSP and SOURCE, CYs 1998-2000

Ambulatory Care Sensitive Conditions	1998		1999		2000	
	CCSP % N=9,329	SOURCE % N=253	CCSP % N=13,048	SOURCE % N=433	CCSP % N=10,728	SOURCE % N=351
ACUTE CONDITIONS:						
Dehydration	1	2	2	1	2	2
Bacterial Pneumonia	3	2	4	1	4	3
Urinary Tract Infection	2	3	2	3	3	1
Perforated Appendix	0	X	0	X	X	X
CHRONIC CONDITIONS:						
Angina	0	X	0	X	0	0
Asthma	0	X	0	1	0	1
COPD	3	1	3	1	4	2
Congestive Heart Failure	4	4	5	3	5	3
Diabetes, short term	0	1	0	0	0	0
Diabetes, uncontrolled	0	1	0	0	0	0
Diabetes, long term	1	2	1	0	1	2
Hypertension	0	X	0	0	0	0
Diabetes, lower ext	0	X	0	0	0	X
Number of Patients with at least one ACSC	14	12	6	11	17	12

NOTE: "O" indicates that the number of cases was less than 0.5 percent. "X" indicates there were no ACSC cases

Table 18: Ambulatory Care Sensitive Conditions (ACSCs)
Adjusted by In Program Month for ICWP and Shepherd Care (SC), CYs 1998-2000

Ambulatory Care Sensitive Conditions	1998		1999		2000	
	ICWP % N=194	SC % N=38	ICWP % N=224	SC % N=49	ICWP % N=206	SC % N=39
ACUTE CONDITIONS:						
Dehydration	X	X	X	X	2	X
Bacterial Pneumonia	5	X	5	3	5	3
Urinary Tract Infection	6	2	9	13	3	3
Perforated Appendix	X	X	X	X	X	X
CHRONIC CONDITIONS:						
Angina	X	X	X	X	X	X
Asthma	X	X	X	X	X	X
COPD	2	X	1	3	1	X
Congestive Heart Failure	X	X	X	2	0	X
Diabetes, short term	X	X	X	X	X	3
Diabetes, uncontrolled	X	X	X	X	X	X
Diabetes, long term	X	X	X	X	X	X
Hypertension	X	X	X	X	X	X
Diabetes, lower extremity	X	X	X	X	X	X
Number of Patients with at least one ACSC	11	2	13	20	10	8

NOTE: "O" indicates that the number of cases was less than 0.5 percent. "X" indicates there were no ACSC cases.

One anomaly is noticeable in Table 19 - the large proportion of patients (13%) admitted to Shepherd Care in 1999 for UTIs. On request, Shepherd Care case managers did provide documentation on those admissions. The information indicated that one patient had three separate admissions related to urosepsis and one admission for a combination of wound problems and urosepsis. This patient was hospitalized a total of 42 days for the four admissions. The underlying cause for these repetitive admissions was repetitive noncompliant behavior.

Additionally, another Shepherd patient had four separate hospitalizations for a total of 23 days. Although very compliant, this patient struggled with abdominal pain causing three admissions and a fourth admission for respiratory distress due to pneumonia. Another patient had two hospitalizations totaling 21 days due to obesity and congestive heart failure, respiratory distress and urosepsis.

These three patients alone represent 11 admissions, almost one-third of the ACSC admissions and total to 86 days. ACSC optimistically in most hospitals represent small numbers of the total admissions, but have a potential of disproportional negative impact on expense. It is therefore important therefore that LTC program keeping detailed data on lengths of stay for ACSC hospitalizations as well as additional behavioral descriptive information on compliance, etc. From these examples it is clear that primary care oversight is not the only variable that can contribute to preventable hospitalization rates. Effective remedial quality control action therefore must be developed from both a quantitative and qualitative database related to each ACSC admission.

Multiple ACSC Admissions

In the earlier discussion of the "churning effect"[54], it was observed that all the LTC programs appear to have a continuing proportion of their patients that experience multiple transfers back and forth between the LTC program and the hospital. That same frequent transfer phenomenon is also observed with ACSC patients. It was observed that a sub-sect of the churning patients have ACSC diagnoses.

Tables 19 and 20 illustrate the proportion HCBS patients by program admitted more than once for ACSC. For ACSC admissions at the three or more level, over the three-year period, the proportional levels appear to be much smaller than those for churning patients and are in the one to two percent range. CCSP, because of the large number of clients enrolled in the program, has multiple admissions consistently. However, SOURCE appears to reduce multiple admissions, perhaps as a result of its case management strategies. Because of the small numbers with the Group 2 programs, it is difficult to interpret safely, the illustrated trends.

Table 19
Number of Multiple Admissions for ACSC for CCSP and SOURCE Programs, CYs 1998-2000

ACSC COUNT	1998				1999				2000			
	CCSP		**SOURCE**		**CCSP**		**SOURCE**		**CCSP**		**SOURCE**	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
0	8,177	88	230	91	10,994	84	385	89	8,836	82	305	87
1	853	9	17	7	1,534	12	39	9	1,426	13	40	11
2	193	2	5	2	360	3	7	2	297	3	5	1
3+	106	1	1	0	160	1	2	0	169	2	1	0
Total	9,329	100%	253	100%	13,048	100%	433	100%	10,728	100	351	100%

[54] See p. 30.

Table 20
Number of Multiple Admissions for ACSC for ICWP and SC Programs, CYs 1998-2000

ACSC COUNT	1998				1999				2000			
	ICWP		SC		ICWP		SC		ICWP		SC	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
0	173	89	37	97	198	88	32	80	184	89	36	92
1	14	7	1	3	21	9	6	15	18	9	3	8
2	4	2	0	0	5	2	2	5	3	1	0	0
3+	3	2	0	0	0	0	0	0	1	0	0	0
Total	194	100%	38	100%	224	100%	40	100%	206	100%	39	100%

Discussion

In the elderly, better access to primary care increases the use of ambulatory care and prevents unnecessary hospitalizations. The real test as to whether there is equity in access to health care services for the elderly is whether there are systematic differences in the use of health services and health outcomes among groups and whether those differences result from barriers to primary care services.

Analysis of ACSC admissions rates for CY 1998-2000 in LTC programs identified no significant variations in each of the 4 long-term care programs in Georgia. Neither acute nor chronic conditions were demonstrated to result in increased number of hospital admissions for ACSC during the three-year study period. Further, the proportional levels of ACSC do appear reasonable given the frail health status of the Study's elderly population. These findings, within its acknowledged limitations, however, suggest that access to primary care, as reflected through ACSC, appears adequate in both urban and rural areas of Georgia for its long term care citizens. Overall, the results of our limited study of Georgia's LTC programs are consistent with existing national research findings on hospitalizations for ACSC.

Obviously, a claims database is insufficient for a definite study of ACSC. Therefore, certain questions have not been addressed - most notably are those related to the significance of ACSC in the frail elderly population. In a younger population a prevalence of ACSC hospitalizations is a negative indicator related to primary care management. However, in older populations ACSC hospitalizations may be appropriate. Before there is a rush to judgment especially is using ACSC in a regulatory mode for quality assessment, there is a need to comparatively assess ACSC in younger and older populations from a clinical database.

Despite the current ACSC knowledge limitations, monitoring ACSC in long term care programs on a consistent and timely basis can provide policy makers with data to address higher than expected hospital admissions for ACSC when they occur. As example, in the instance of CCSP and ICWP clients who have ACSC, it is possible that case managers would have a positive impact in reducing admissions for ACSC.

XI. Patients at Observation Year End

As illustrated in Table 21, patient disposition patterns are somewhat similar within Group 1 and Group 2 at the end of the Observation Year. The high mortality rate within nursing facilities underscores the age and frail health status of that Program's patients versus Groups 1 and 2. It is also reflected in a previous study (Kemper and Murtaugh, 1991.) In general, the statistical differences between nursing facility and CCSP patients' dispositions are significant; the differences between CCSP and SOURCE patients' dispositions are either less strong or non-existent.

Table 21: Patient Disposition Status at the End of the OY by Program

Disposition Status	NF % (n=19677)	Group 1		Statistical Significance		Group 2		Total %
		CCSP % (n=14262)	SOURCE % (n=462)	NF: CCSP	CCSP: SOURCE	ICWP % (n=213)	Shepherd Care % (n=38)	
Alive, same LTC program	38	73	69	.01	.10	89	97	52
Alive, different LTC program	1	9	10	.01	None	3	0	4
Alive, "other"[55] care	23	5	7	.01	.10	2	0	16
Alive, no care program	4	2	2	.01	None	2	0	3
Deceased	34	11	12	.01	None	4	3	25

Patients do not transfer among LTC programs in large numbers; less than five percent (1,571 patients) of the original Cohort did transfer among the Study's LTC programs. Contrary to anecdotal speculation, a large proportion of HCBS patients do not "graduate" to NFs - at least over twelve months. The most movement (>95%) occurred in both directions between NFs and CCSP. The disposition patterns for those who did transfer are illustrated in Table 22.

Table 22: Disposition Status at the End of OY for Patients Changing LTC Programs

Program	NF %	CCSP %	SOURCE %	ICWP %	Shepherd Care %	Total %
NF n = 261	N/A	95	4	1	0	100
CCSP n = 1,257	98	N/A	.5	1	0	100
SOURCE n = 47	85	15	N/A	0	0	100
ICWP n = 6	17	83	0	N/A	0	100
Shepherd Care	0	0	0	0	N/A	100

[55] "Other" care = health / medical care other than long-term care specific.

XII. Average Unadjusted Monthly Costs

Our challenge was to evaluate the LTC programs after adjustments are made to control differences (e.g., patient demographic characteristics) that do not relate to program performance and care management policy. Towards this goal, a baseline was established by calculating actual average monthly reimbursements for various program services for each payer. Service categories were collapsed into the following summary accounts.[56]

- *Long-Term Care*: Inpatient chronic, Medicare/Medicaid Skilled Nursing Facilities (SNF), Intermediate Care Facility (ICF), Mental Retardation Facility (MR), Medicare home health/Medicaid home care, adult day health, waiver payments and CCSP case management fees.

- *Physician*: All inpatient and outpatient physician payments that are based on individual medical procedures or revenue center charges for physician services. Payments to inpatient facilities including hospitals and SNFs for physician care based on revenue center charges are not included.

- *Prescriptions*: Charges for pharmaceutical products and supplies delivered in an outpatient setting by a clinic, Emergency Room, Ambulatory Surgical Center, End Stage Renal Disease (ESRD) facility or physician's office.

- *Non Long-Term Care*: Inpatient acute, outpatient, outpatient mental health, and hospice non-MD claims.

- *Support Care*: Non-physician practitioners (e.g., Physical Therapist), lab/radiology tests, ambulance, and durable medical equipment (DME).

- *Other Payment*: Any capitation, third party liability, deductible, co-payment, and crossover payments appearing in either the Medicare or Medicaid data.

[56] Georgia Medicare/Medicaid Database Layouts and Methods, Jen Associates, Inc.; Cambridge. MA, 2002.

Average Unadjusted Monthly In-Program Costs[57]

Table 23 presents information on the average actual monthly in-program costs by selected services for each of the five LTC programs studied.

Table 23
Average Unadjusted Monthly Medicare and Medicaid Overall Care Costs

LTC Program	Insurer	LTC $	Physician $	Prescription $	Non-LTC $	Support Care $	Unallocated Care Services Cost		Total Cost $
							Medicaid Crossover	Other Payer Liability	
NF (n= 19,677)	Medicare	1,241	289	26[58]	1,426	185	-	479[59 60]	3,167*[61]
	Medicaid	964	9	127	64	8	73	249[62]	1,244*
	Total	2,204	297	153	1,490	193	73	728	**5,138****[63]
CCSP (n= 14,262)	Medicare	244	111	32	429	138	-	42	954*
	Medicaid	577	11	206	77	26	116	8	1,014*
	Total	820	122	238	507	164	116	50	**2,017****
SOURCE (n=462)	Medicare	246	108	47	448	113	-	24	962*
	Medicaid	706	22	177	147	101	123	3	1,277*
	Total	951	131	224	595	214	123	27	**2,265****
ICWP N=213)	Medicare	202	80	10	309	200	-	29	801*
	Medicaid	5,151	32	182	327	129	100	6	5,922*
	Total	5,353	113	193	636	329	100	35	**6,759****
Shepherd Care (n=38)	Medicare	438	69	20	136	168	-	20	831*
	Medicaid	3,113	24	186	243	90	88	16	3,743*
	Total	3,551	92	206	379	258	88	36	**4,610****

ICWP leads the five programs as most expensive in terms of *Total Care Costs*, NF ranks second; Shepherd Care ranks third (approximately 30 percent less than ICWP.) The Group 1 programs rank least expensive, with CCSP patients' total care costs approximately ten percent less than those of SOURCE.[64]

[57] Actual costs incurred for LTC program-specific or related-care (e.g. hospital admission) services while the individual was receiving care within a LTC program. For further discussion, see section VII, p.24.
[58] Medicare currently offers only limited prescriptions.
[59] * = "Other payor liability" included in total cost column
[60] The dollar amount specified was incurred as patient or non-Medicare/Medicaid third party liability for a Medicare claim
[61] Excludes "other party liability cost"
[62] The dollar amount specified was incurred as patient or non- Medicare/Medicaid third party liability for a Medicaid claim
[63] ** =includes "other payor liability"
[64] These results, while analytically accurate, are considered preliminary pending outcomes of similar analyses on a more current and larger HCBS database.

For *LTC Costs*, the relationships for *Total Care Costs* hold, with the exception of Shepherd Care; it moves up to second most expensive overall, and NF moves down to third. When comparing Medicare and Medicaid unadjusted costs:

- For the four HCBS waiver programs, Medicaid pays a greater share than Medicare of *Total Care Costs*;
- For NFs, Medicare pays a greater share than Medicaid of *Total Patient Costs,* most likely attributable to the high proportion of Medicare short-stay rehabilitation patients in the Cohort;
- For prescription drug costs , Medicaid pays the greatest proportion for all LTC Programs, as would be expected, due to the extremely low Medicare prescription drug benefit;
- For Physician and Support Care costs, Medicare assumes a greater share than Medicaid in all Programs;
- In terms of non-LTC costs, Medicare provides the greatest payment proportion for NF and the two Group 1 programs; Medicaid has the largest proportion for Group 2.

Average Unadjusted Post LTC-Discharge Costs [65]

Not all members of the Cohort spent the entire OY in LTC[66]. Figure 4 (p. 41) illustrates the following patient statuses over the OY: remaining in-program, discharged to out-of-program, and deceased.

- Of the four programs, NF patients experienced the most out-of-program and deceased discharges. Most out-of-program discharges occur during the first 100 -120 days of the OY; this pattern is, again, probably influenced by the numbers of NF short-stay rehabilitation patients, Medicare policy limits on length of stay and the large proportion of deaths that traditionally occur in nursing facilities (Cooney, Landers; 2001.)
- Between SOURCE and CCSP, there are small differences in patient status changes, with a slightly higher proportion of patients moving to out-of-program status in SOURCE than CCSP.

[65] Unadjusted costs incurred for services after the patient has been discharged from the LTC program of original observation. For further discussion, see section VII, p. 20.

[66] Shepherd Care is not illustrated as they had no discharges during the OY except for one death.

Figure 4
By LTC Program, Patient Monthly Status Changes Over the OY.

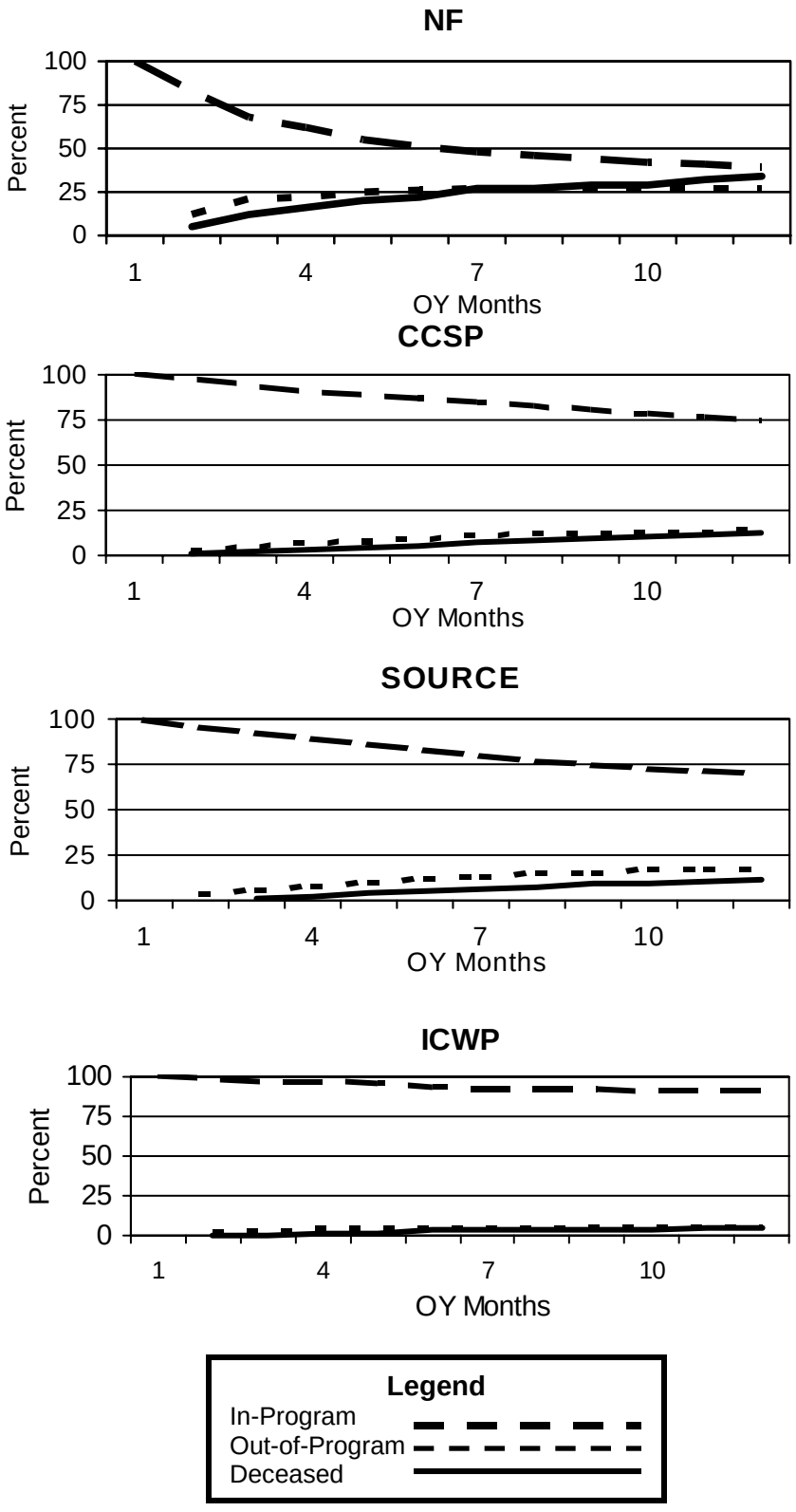


Table 24 presents information on the average monthly out-of-program costs of selected services for each of the five LTC programs studied. Apart from its focus on out-of-program costs, Table 24 parallels the content areas presented in Table 23.

Table 24
Average Unadjusted Monthly Medicare and Medicaid Costs Post Discharge from LTC

LTC Program	Insurer	LTC $	Physician $	Prescription $	Non-LTC $	Support Care $	Unallocated Care Services Cost		Total Cost $
							Medicaid Crossover	Other Payer Liability	
NF	Medicare	150	138	37	496	119	-	146	939*[67]
	Medicaid	24	2	16	15	3	12	8	72*
	Total[68]	174	140	53	511	121	12	154	**1165****[69]
CCSP	Medicare	563	159	27	842	130	-	232	1723*
	Medicaid	946	12	189	72	15	124	217	1357*
	Total	1509	171	216	915	145	124	449	**3529****
SOURCE	Medicare	643	168	15	675	98	-	204	1600*
	Medicaid	772	19	162	131	36	121	124	1241*
	Total	1416	187	177	807	134	121	328	**3169****
ICWP	Medicare	1135	306	41	1017	295	-	112	2795*
	Medicaid	435	0	129	0	8	300	84	871*
	Total	1570	306	170	1017	303	300	198	**3862****
Shepherd[70] Care	Medicare								
	Medicaid		During the Study period, there were no discharges from Shepherd Care						
	Total								

Information on post-LTC costs provides some insight into continuing care needs and implies the potential of the LTC program(s) in stabilizing health status.

- Group 1 Total Costs (post-LTC discharge) actually exceed the Total Costs of the patient while in the original LTC Program of admission.
- Discharged ICWP patients' Total Costs are the most expensive overall.
- Discharged NF patients' Total Costs rank as the least expensive, again potentially influenced by post-discharge care needs of short-term rehabilitation patients.
- Former SOURCE patients are the less expensive of the two Group 1 programs' patients and second least expensive overall. Anecdotally, this may be the result of more aggressive care management while

[67] * = Total payment excludes "other payor" liability
[68] Total includes as applicable, all payment sources; Medicare, Medicaid and other payers
[69] ** = Total Payment includes "other payor liability"
[70] There were no patient discharges from Shepherd Care during their OYs.

patients are in the program. However, such a potential finding could not be quantified due to the small number of observations.

- The above expense rankings hold additionally for *LTC Costs.*

When comparing actual out-of-program Medicare and Medicaid costs:

- For *LTC Costs*[71], Medicaid assumes the greater share (versus Medicare) of the total paid only for former CCSP and SOURCE patients;

- Medicare assumes a greater share of the Total, Physician, non-LTC, and Support Care costs for all Programs' former patients.

- With the exception of NF, Medicaid still paid the larger share of former patients' prescription drug costs.

[71] Such LTC costs would be incurred when patients are transferred from their original Program of admission to another LTC Program.

XIV. Controlling for Patient Difference Effects on LTC Program Costs

Studies show that in LTC programs, patient demographic and clinical differences contribute to program cost differences (Gruenberg, Kaganova, & Hornbrook, 1996; Komisar, Hunt-McCool, & Feder, 1997; McCall & Korb, 1998.) Such differences have been observed among the five Georgia LTC programs' patients.

In order to create a "level playing field" among the programs for valid, evaluative comparisons, the effect of inter-program patient differences has been controlled through statistical adjustments. Such controls attempt to establish inter-program patient uniformity.

Controlling for Patient Illness Severity

In reviewing the published literature, few studies were found that were similar to this study's evaluative focus on NFs and HCBS programs using a database developed from integrated Medicare and Medicaid claims. That absence of comparable studies is also reflected in the availability of illness severity adjustment systems applicable to the Study's LTC population. Most existing systems were designed for use with populations that did not share patient characteristics with the Study Cohort. However, two systems[72] were identified for use with populations that most closely resembled the Cohort: the Diagnostic Cost Group System (DCG) and the Chronic Illness and Disability Payment System (CDPS.) Both systems use diagnoses (via ICD-9-CM), age, gender, and disability status[73] to generate illness severity scores.

The DCG system achieves its analytic power primarily by combining diagnoses to classify patients based on clinical similarity (Ash, 2000); it was designed to accommodate both Medicare and Medicaid claims data. The CDPS system was designed to study disabled populations with Medicaid data only. Initially, both systems were tested for Study purposes by applying them to the Cohort population. Average severity scores generated through the test are illustrated in Table 25.

Table 25: DCG and CDPS Illness Severity Adjustment Scores

Model	NF	CCSP	SOURCE	ICWP	Shepherd
DCG	5.9*	3.8*	4.0*	5.7	5.5
CDPS	4.6	3.5	3.1	2.9	3.1

* Pair-wise difference in means t-test was performed between NF and CCSP and CCSP and SOURCE; the difference was significant at the one percent-level ($p < .01$).The difference between ICWP and Shepherd Care was not statistically significant.

Both systems demonstrate:

- NF patients are at a higher risk for resource consumption than either Group 1 or Group 2 patients;
- Within Group 1 and Group 2 programs there is similar illness severity and risk of resource consumption;
- Inter-system program scores were mathematically varied; however, within both severity systems, score relationships among the programs tended to be similar.

[72] Complete descriptions of both systems are contained in Appendix I.

[73] Diagnosis, gender and date of birth (age) data are in the individual Medicare or Medicaid claims files; disability status data is found in the Medicare or Medicaid patient eligibility files.

The inter-system comparison indicated a similarity of findings. Therefore, for reasons of clarity it was decided to proceed with only one system. DCG was adopted, as it had multiple, successful replications documented in peer-reviewed literature and also has a two-part Medicare and Medicaid module for analyses of dual eligible patients.

Measuring the Effect of Patient Characteristics on Program Costs

To control individual program costs for inter-program differences in severity and other patient characteristics, the following variables were used: illness severity scores, race, patient residence (rural or urban), rehabilitation status[74], dual eligibility, and mortality status at end of OY (alive or deceased).

Effect of Variable Patient and Program Characteristics on Costs

Table 26 illustrates the effect of some of the selected variables and program costs on individual patient costs using the average monthly cost of $3,887 for a white nursing facility patient living in a rural area as a benchmark.

Table 26: Variable Factor Costs per Month

	Non-White $	Urban $	Deceased $	CCSP $	SOURCE $	ICWP $	Shepherd Care $
DCG	203	426	1,610	-1,344	-1,169	2,983	686

Each of the patient or program characteristics increases or decreases the benchmark to varying degrees: *non-white* adds $203 per month; *urban residence* adds $426; *deceased* adds $1,610; *CCSP* subtracts $1,344; *SOURCE* subtracts $1,169; *ICWP* adds $2,983; and *Shepherd Care* adds $686. The most noticeable effect is that death during the OY increases average monthly cost by 40 percent - an indication of the extraordinary use of resources in the last stages of life. In terms of HCBS cost differences, there is only a small difference between Group 1 programs (13 percent); however, Shepherd Care is more than 77 percent less costly than ICWP within Group 2.

Moving the patient from a nursing facility to SOURCE decreases the average monthly cost by 30 percent - for CCSP, 35 percent. A move to ICWP increases cost 77 percent, and Shepherd Care increases cost by slightly more than 18 percent.

[74] Rehabilitation status was determined by JAI algorithm to separate patients in a LTC program for rehabilitation following a hospitalization versus patients in a LTC program for more traditional (and longer) long-term care.

Effect of Long-term Care Program on a Benchmark Patient's Average Monthly Cost
The previous section, offered a "mix and match" picture of the effect of various patient and Program characteristics on a benchmark cost.

In this section, patient characteristics are held constant among all five Programs, and the Program effect is measured. The "standard patient" admitted to each Program is: white, urban, dually eligible, admitted to a Program during CY99, did not die during the OY, and had the average DCG score for all patients in the Cohort. Table 27 presents costs for the same patient in each of the LTC programs.

Table 27: In-Program Total Costs Adjusted to a Patient Uniformly Common to Each LTC Program

	NF	CCSP	SOURCE	ICWP	Shepherd
MEDICARE	$2,470	$1,676	$1,669	$1,417	$1,153
MEDICAID	$1,500	$950	$1,132	$5,536	$3,503
TOTAL	$3,970	$2,626	$2,801	$6,953	$4,656

Assuming the NF total cost of $3,970 is equivalent to 100 percent, the other long-term care programs' relationships to that value are:

CCSP = 66%
SOURCE = 71%
ICWP = 175%
Shepherd = 117%

Among the Programs, the Medicare and Medicaid shares for the standard patient are:

LTC Program	Medicare Cost %	Medicaid Cost %
NF	62	38
CCSP	64	36
SOURCE	60	40
ICWP	20	80
Shepherd	25	75

The observed differences between the Group 1 and Group 2 Medicare and Medicaid allocations are statistically significant.

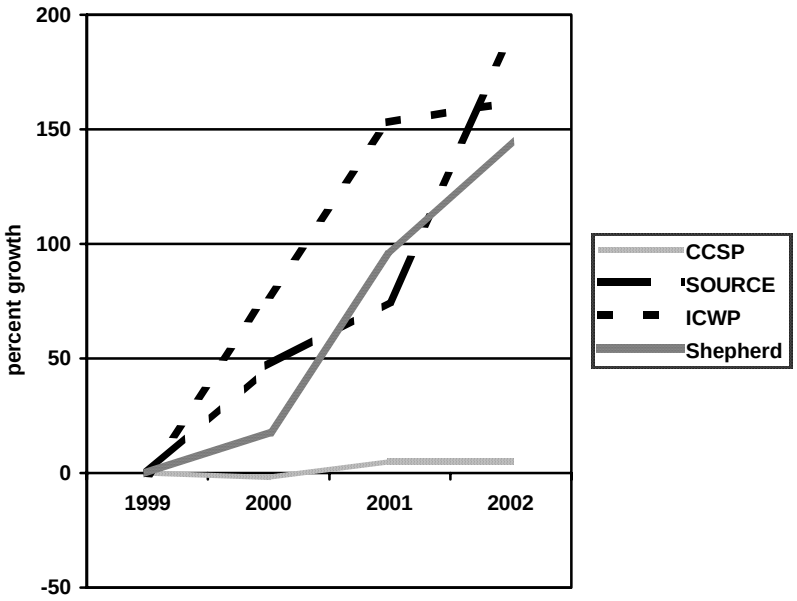
XV. Care and Cost Pattern Changes – Two Years Later

Background

At the time of the original analyses, the SOURCE and Shepherd Care programs were both new and had small patient volumes; whereas, ICWP and CCSP had considerably larger numbers of patients and had been in operation for many years. As previously observed, the small size of the newer programs frequently prevented statistical testing for differences; their short duration of operation also contributed questions about the future stability of observed cost and care outcome patterns.

As illustrated in Figure 5, by 2002, considerable patient and organizational growth had occurred with SOURCE, CCSP and Shepherd Care.

Figure 5
HCBS Program Patient Increase (%), 1999-2002
1999 = 0 %



The growth appeared sufficiently large in terms of both time and patient numbers to more adequately support analyses of cost and care outcome differences. Therefore, a portion of the original Study was extended in order to identify and analyze changes among the HCBS programs.

Methodology: Focus and Guidelines

The extension's primary focus was on Medicaid HCBS patients' care and cost patterns.

- The database would be limited to Medicaid claims data only. Both the cost and time to obtain Medicare data from CMS and integrate it with Medicaid data would be considerable.
- NF data would not be included because:
  - ✓ the NF patient population is considerably larger than HCBS - its inclusion would significantly increase cost;
  - ✓ a picture had emerged of NF cost and care patterns in Study 1. It was felt those patterns, because of the organizational maturity of nursing facilities and patient population size, care, and reimbursement, would not significantly change if examined over an additional two years - it was anticipated those of HCBS programs would.
  - ✓ Over half of the NF patients were Medicare-only. Without Medicare data, a new picture of NFs would be incomplete and not analytically useful;

- ✓ Subsequent to the initial study, DCH interest specifically shifted to identification of Medicaid cost and care outcome differences among the four HCBS programs.

- In order to maximize patient volume, program organizational maturity, and establish a trend-line, the extension would focus on 2001 - 2002. When the extension was initiated in the summer of 2003, 2002 data were both the most recent and most complete claims sets available through DCH.
- Tabular and related analytic outputs will initially parallel the original descriptive and analytic tables 1, except for the removal of Medicare and NF information.
- The CCSP program would be split into two analytic components: CCSP-MAO and CCSP non-MAO. While it was found in the original effort that MAO patients usually comprised "sicker" patients, the SOURCE program does not admit MAO patients. In the original Study, MAO patients were split out of the CCSP program's total and examined separately to ensure analytic comparability. The same analytic rationale holds for the extension. Since both the Group 2 programs (Shepherd Care and ICWP) admit MAO patients, it was decided not to split out those components, as there was no issue of analytic comparability.
- Because of the urgency of Medicaid budget decisions, a "quick" analysis of the HCBS database was to be done first for the purpose of identifying changes in trends among the programs. Such an early and limited analysis was followed by a more detailed investigation.
- The extended database would include all individuals admitted to or already in one of the four Georgia HCBS programs (CCSP, SOURCE[75], ICWP and Shepherd) in 2001 and 2002.

Findings

HCBS Cohort

Over the four-year period (OY99 – CY02), the HCBS patient population increased by thirteen percent. However, overall HCBS growth is driven by the fact that CCSP is the largest HCBS program. It accounts for almost 90 percent of all patients but experienced a particularly low growth rate (<5 percent) during the Study 2 period. As illustrated in Figure 5, all the other programs grew from not less than 145 percent to over 225 percent. In brief, there is now a sufficiently large patient population and greater organizational maturity among the HCBS programs to support more detailed analyses.

The initial Cohort information also indicated there is a very small proportion of inter-program transfer (<2 percent). The patterns across the time period imply that the overall length of stay in individual programs appears to be greater than two years on the average.

[75] Excluding Levels III / IV.

Cohort Demographics by HCBS Program

Table 28 illustrates the demographic patterns among the four HCBS programs in Study 2. Differences noted with a potential for increasing costs between 1999 and 2002 are:

- A slight increase in median age in Group 2;
- An increase in females in most programs, especially Shepherd Care (from 26 to 49 percent);
- An increase in non-white proportions across all programs except SOURCE, which already had a high proportion of non-white patients; and,
- A slight decrease in rural residence for CCSP and increases in rural residence for all other programs.

Table 28
Selected Patient Demographics among HCBS Programs, FY02

Characteristics			Group 1		Group 2	
		CCSP MAO (n=7,454)	**CCSP Non-MAO** (n=7,514)	**SOURCE** (n=1,005)	**ICWP** (n=428)	**Shepherd Care** (n=86)
Age	Median	77	77	74	43	40
	<65 yrs old %	20	26	32	97	98
Gender	Female %	72	80	78	38	49
Race	Non-White %	31	59	73	43	49
Patient Residence	Rural %	57	55	28	27	8

Table 29 indicates the Cohort's insurance status in FY02. In comparison to findings in the original Study, CCSP, SOURCE, and Shepherd Care have proportionately fewer dually eligible patients, while ICWP has more. The insurance status differences between the two Group 2 programs as of FY02 were statistically significant ($p<.10$). Such a shift has the potential to contribute to the observed cost changes between those programs.

Table 29
Patient Insurance Status by HCBS Program, FY02

Insurance Eligibility	Group 1 %			Group 2 %		Total %
	CCSP MAO (n=7,454)	**CCSP -** (n=7,514)	**SOURCE** (n=1,005)	**ICWP** (n=428)	**Shepherd Care** (n=86)	
Medicaid %	6	20	26	32	42	15
Dual Eligibility %	94	80	74	68	58	85

Table 30 illustrates that over the four-year period, there have been some very different cost shifts between non-MAO CCSP and SOURCE. Specifically, CCSP non-MAO LTC costs have increased at a greater rate than those of SOURCE, but drug costs increased at a greater rate for SOURCE. As a net result (LTC costs being the greatest proportion of all HCBS programs' costs), the overall costs of SOURCE increased at a slower rate than non-MAO CCSP.

Table 30
Costs and Proportional Changes, Group 1 Programs 1999-2002

Cost Centers	Proportional Change (1999 – 2002)		Unadjusted Average Monthly Cost (1999)		Unadjusted Average Monthly Cost (2001)		Unadjusted Average Monthly Cost (2002)	
	CCSP[76] %	SOURCE %	CCSP $	SOURCE $	CCSP $	SOURCE $	CCSP $	SOURCE $
Long-Term Care	+ 49	+ 33	555	706	732	878	827	938
Prescriptions	+ 37	+53	201	177	251	225	276	271
All Other Centers	-18	-20	378	394	277	226	310	316
Total	**+ 25**	**+19**	**1,134**	**1,277**	**1,260**	**1,329**	**1,413**	**1,525**
(All Other Centers: Available $ Detail)								
Physician Care			N/A[77]	22	21	21	27	33
Acute/ Other Care			N/A	147	135	96	160	163
Support Care			N/A	101	25	15	28	22
Medicaid Crossover			N/A	123	96	94	95	98

Also, as illustrated in Table 31, the original (1999) LTC and Total Cost differences between the two programs narrowed by FY02.

Table 31
SOURCE Program Costs In Relation to Non-MAO CCSP Costs
1999 and 2002

Cost Center	1999 %	2002 %
LTC Costs	+27	+13
Total Costs	+13	+8

[76] Non-MAO CCSP only
[77] In the original Study only selected non-MAO CCSP center costs were calculated: LTC, Rx, and Total; all other Costs were summarized as "All Other".

As illustrated in Table 32, the cost relationships between Shepherd Care and ICWP changed in the extended analyses. Total costs in ICWP declined by twenty-five percent, whereas comparable costs in Shepherd Care increased by more than twenty percent. The net result was that at the end of FY02, Shepherd Care was slightly more expensive to Medicaid than ICWP. However, viewing LTC costs only, Shepherd Care remained less expensive than ICWP. Table 5A also illustrates those proportional shifts.

Table 32
Costs and Proportional Changes, Group 2 Programs 1999-2002

Cost Centers	Proportional Change (1999 – 2002)		Unadjusted Average Monthly Cost (1999)		Unadjusted Average Monthly Cost (2001)		Unadjusted Average Monthly Cost (2002)	
	ICWP %	Shepherd %	ICWP $	Shepherd $	ICWP $	Shepherd $	ICWP $	Shepherd $
Long-Term Care	-28	+12	5,151	3,113	4,027	3,168	3,719	3,475
Physician Care	+16	+79	32	24	43	25	37	43
Prescriptions	+41	+98	182	186	276	271	256	369
Acute/Other Care	-36	+67	327	243	308	208	210	407
Support Care	-22	+103	129	90	126	124	100	183
Medicaid Crossover	-5	-20	100	88	85	60	95	70
Total	**-25**	**21**	**5,922**	**3,743**	**4,865**	**3,856**	**4,417**	**4,547**

Table 33
Shepherd Program Costs In Relation to ICWP Program Costs
1999 and 2002

Cost Center	1999 %	2002 %
LTC Costs	-40	-7
Total Costs	-37	+3

Examination of cost center detail among the programs indicates changes that could be indicative of shifts in patient severity, potentially explaining cost shifts between Group 1 and Group 2. Within the Group 1 and Group 2 HCBS programs, the patient severity indices were quite similar in the original Study. As indicated in the next section, those relationships have now changed.

Patient Severity Scores
Table 34 indicates that between FY01 and FY02, there has been a change in DCG patient severity scores in each of the four HCBS programs:

Group 1: Over the Study 2 period, CCSP non-MAO patient illness severity increased, as it did for patients in SOURCE. Between FY01 and FY02, there is a strong statistically significant difference ($p<0.001$) between CCSP non-MAO and SOURCE. SOURCE patients, at the beginning, had a higher severity score than their CCSP counterparts, and that disparity continues to increase. Such significant differences were not observed in the original Study.

Group 2: During Study 1, the severity indices between Shepherd Care and ICWP were almost identical; ICWP had a slightly higher, but not statistically significant, score. Post -1999, however, the ICWP severity index decreased and Shepherd Care severity increased. In the end of FY02, there is a statistically significant difference ($p<0.001$) between severities in the two programs - Shepherd Care has a much higher severity score than ICWP. This was also not observed in the original Study

The change in patient severity, when fully analyzed, could explain the cost differences observed among the programs.

Table 34
DCG Patient Severity Scores, HCBS Programs 2001-2002

Study Year	Group 1 Programs			Group 2 Programs	
	CCSP MAO	CCSP non-MAO	SOURCE	ICWP	Shepherd
FY01	2.95	3.34	3.56	5.65	6.51
FY02	3.02	3.39	3.68	5.39	7.30

Relationship(s) between Illness Severity and Average Monthly Cost
The extended analyses have identified small but potentially cost-affecting demographic differences among the HCBS programs' patients and severity and cost differences between the Group 1 and Group 2 programs' patients. These cost/severity differences are of major interest, as they possibly can provide insights, subsequent to further analyses, related to comparative cost-effectiveness among the HCBS programs.

One possible explanation related to the observed cost and severity differences among the programs is they do not share the same types of patients. SOURCE and Shepherd Care appear to have more severely ill patients. More severely ill patients are, statistically, more costly. Therefore, the comparatively higher costs observed in SOURCE and Shepherd Care are possibly related to patient complexity and not to less effective resource management. Analyses have been designed to explore such relationships.

- Outliers – for each of the four HCBS programs, the top 5 and 10 percent of their patients were identified both in terms of total average monthly cost and illness severity. Table 35 contains the average monthly cost results. Table 8, the illness severity scores

Table 35: Costs

HCBS Program	Top 10% $ Breakpoint		Top 10% Average Monthly $		Bottom 90% Average Monthly $	
	FY 2001	FY 2002	FY 2001	FY 2002	FY 2001	FY 2002
CCSP[78]	$ 1,906	$ 2,175	$ 3,209	$ 3,607	$ 1,049	$ 1,174
SOURCE	2,114	2,482	3,067	3,956	1,131	1,247
ICWP	7,812	8,026	10,438	9,928	4,130	3,745
Shepherd	5,696	6,588	7,436	9,738	3,451	3,977

Table 36: Illness Severity

HCBS Program	Top 10% Score Breakpoint		Top 10% Average Score		Bottom 90% Average Score	
	FY01	FY02	FY01	FY02	FY01	FY02
CCSP	5.39	5.60	7.06	7.37	2.56	2.59
SOURCE	5.94	6.36	7.44	7.70	2.70	2.88
ICWP	9.67	9.55	12.36	10.92	3.70	3.87
Shepherd	9.70	10.03	12.29	11.58	4.90	5.77

- ✓ In terms of the top ten percent breakpoint for the FYs:
- ✓ Patient cost and severity scores in CCSP are less than for patients in SOURCE;
- ✓ ICWP costs are higher that Shepherd Care's, but their severity scores are lower in both FYs.

Possible Implications

For CCSP and SOURCE, CCSP is handling a less complex patient population than SOURCE; both could be efficiently handling their resources. SOURCE costs are higher because of more complex patients. If patient populations were identical, SOURCE would possibly be cheaper, but even if it is not, it appears to be more proactive with patients. Anecdotally, proactive patient management is more costly. However, we cannot quantify the dollar consequences of such management because of measurement difficulties and the cost of such measurements.

For ICWP and Shepherd Care, their patient populations in terms of complexity are not identical. Shepherd Care appears to be more cost-effective than ICWP, as Shepherd Care is managing a more complex patient population at similar costs.

- In terms of monthly averages for both FYs:

  - ✓ CCSP cost is higher than SOURCE in FY01, but lower in FY02;
  - ✓ SOURCE severity is higher than CCSP in both FYs;
  - ✓ ICWP costs are higher than Shepherd for both FY's;
  - ✓ Monthly scores for both ICWP and Shepherd Care patients drop from FY01 to FY02; ICWP patients' scores were higher than Shepherd Care's patients in FY01, but lower in FY02.

CCSP appears to have become more cost-efficient in FY02 than it was in FY01; Shepherd Care appears to be handling more complex patients more economically than ICWP.

- In terms of the bottom 90 percent:
  - ✓ CCSP cost is lower than SOURCE in both FYs;
  - ✓ SOURCE severity is higher than CCSP in both FYs;
  - ✓ ICWP costs and severity scores are lower than Shepherd Care in FY02.

Concluding Overview

At this time it appears that:

- In both Group 1 and Group 2, the patient populations for the individual programs are not identical in terms of severity;
- ICWP has undergone changes in resource management since the original Study that have positively affected their patient costs;
- Shepherd Care has undergone changes in its patient severity, which has, on the surface, negatively affected its costs.
- SOURCE has expanded sites over the two-year period and, yet, appears to have maintained a stable fiscal balance;

- SOURCE appears to be delivering more aggressive patient care at potentially lower costs than CCSP, given the differences in their respective patient severity indices.

XIII. Program Management Implications of Observed Inter-Program Cost and Care Differences: Research Team Opinion

Each of the five Study's long-term care programs has its own unique mix of mission, resources, and management:

a. Nursing facilities are the most organizationally complex (and consequently expensive) service within a long-term care system: a centralized, institutional environment that provides skilled professionals and related technology twenty-four hours a day, seven days a week. In terms of complexity and cost, nursing facilities are the equivalent of the hospital in the acute care environment.
b. Home and community-based services function in the absence of an institutional environment. All else being equal, this should reduce cost. However, there is a potential cost off-set in that services are usually delivered to a patient's residence; for nursing facilities, the patient is delivered to the service location. This reversal can add distance, time, and other costs not found with nursing facilities.
c. CCSP and SOURCE differ in that SOURCE offers enhanced case management; CCSP does not. Case management may result in higher costs over the short term but lower costs over the long-term.
d. Group 2 programs specialize in patients with severe physical disabilities. While such individuals can be randomly found in Group 1 and nursing facilities, they are exclusive within Group 2. Such patients, because of the usually permanent and complex nature of their disabilities, are very high cost.

The uniqueness of each program will produce cost variations among them. Such variations, some with statistical significance, were observed between nursing facilities and the two HCBS groups. However, intra-program differences were comparatively small between CCSP and SOURCE, ICWP and Shepherd Care, and were, generally, not significant.

Greater outcome variations begin to emerge when patient clinical characteristics are considered. Severity of illness scores between nursing facilities and Group 1 programs illustrate such a differential distribution: more high-cost chronic diagnoses are found in nursing facilities. Yet again, within the Group 1 and 2 pairs, no significant diagnostic differences were observed. The only noticeable one is *within* Group 2. After applying statistical controls, the cost difference between ICWP and Shepherd Care is quite striking.

From a program management perspective, it appears that the targeting systems in place sufficiently allocate individuals between nursing facilities and HCBS programs on the basis of severity. All long-term care patients must be certified for an institutional level of care. Nursing facilities serve patients with the highest severity scores. The findings observed in this Study, though, appear to indicate that a sizable group of certified patients can and do benefit from less costly HCBS programs.

The targeting issue between Group 1 and Group 2 is more complex, at least at the present level of research. These programs, while targeting similar populations, differ in terms of services and patient management. The current research has not been able to identify what types of HCBS patients might receive more care and/or cost benefit as a result of one program's characteristics versus the other, if at all.

The results also appear to imply the appropriateness of initial patient targeting when observing year-end status. Inter-program transfers are not frequent, implying the potential prevention of further functional degeneration and associated costs.

Both Group 2 programs are, overall, the most expensive before and after severity adjustment. Such higher costs result, primarily, from the complex nature of the patients. The adjusted cost differences between nursing facility and HCBS patients indicate a potential for significant Medicaid savings through a shift of resources to HCBS programs. However, there cannot be a total substitution of HCBS for nursing facilities. There is a population of individuals whose functional status and care needs require the continuous, skilled, but costly resources of a nursing facility.

Examining adjusted costs within Group 1 did not identify major differences between CCSP and SOURCE. However, it appears that the enhanced case management of SOURCE may result in marginal care outcome benefits.

In the opinion of the researchers, until there are findings that can prioritize cost-effectiveness and quality among existing HCBS programs, multiple long-term care program options should be encouraged. This is based on an assumption that such programs are individually cost-effective and maintain patient function. "One size" of long-term care program will not cost-effectively "fit" all patients. The essential problem remains how to match the right patient to the right program.

XVII. Points for Future Consideration

The following issues and observations encountered during the Study have been cited on the basis of their potential assistance to Medicare or Medicaid program leadership in resource allocation decisions and refinement of the programs' policies and operations; and, to health services researchers as a reference benchmark from which to improve similar studies in the future.

Creating a "level-playing field" for comparative evaluation purposes
Despite the controls undertaken to make comparable inter-program comparisons, a totally level-playing field is not possible. There are differences among the programs that are not controllable, at least in the usual statistical sense. Noted in particular are the following:

> ***All programs except SOURCE accept Medical Assistance Only (MAO) clients*** Having one program unequal to the others makes comparisons and analysis more difficult but not impossible. The comparisons between SOURCE and CCSP only use the non-MAO population of the CCSP program and the SOURCE clients who are all non-MAO.

Are LTC patients being appropriately placed?
On the basis of severity scores, it appears that patients are allocated appropriately among the evaluated programs. Nursing facility patients, overall, have the highest severity scores; the scores are lower for Group 1 (CCSP and SOURCE) and Group 2 (ICWP and Shepherd Care) patients. However, between Group 1 and NFs there is a sharing of diagnostic types. By policy, all LTC patients must be pre-certified for an institutional level of care. Severity score variations indicate a gradation in patients' severity among the programs, with NFs being the most severe. Within the range, all patients share a need for institutional level care. However, the patient profiles and outcomes, especially of Group 1, indicate there is a sizable group of NF eligible individuals that benefit from the less costly HCBS programs.

Anecdotally, there had been speculation that HCBS programs only delayed NF admission. The Study's findings indicate that less than 10 percent of the SOURCE and CCSP patients were transferred into other LTC programs during the OY. The present Study cannot serve as a definitive evaluation of a preventive role for HCBS programs.

Need for range of LTC programs?
In terms of state budgets, aging populations, and the Olmstead decision, there is a strong incentive for the Medicaid program to encourage development of less costly alternatives to NFs that would provide at least the same outcomes. Having said that, there clearly exists today and potentially into the future, individuals who require a NF level of care because of their health status and/or lack of family support. The critical economic and care issue is how to identify persons who require and would benefit from that most expensive level of long-term care.

The converse of the above problem translates to all HCBS programs: identification of the patients that would benefit most from HCBS. However, the issue among individual HCBS programs becomes more complex at least at the present level of research. These programs, while potentially targeting similar populations (e.g. SOURCE and CCSP) differ in terms of services and patient management. The research to date has not been able to identify what types of patients clinically and demographically might benefit from one program's type of services versus the other, if at all.

Until there are study results that can prioritize cost-effectiveness and quality among existing HCBS programs, multiple long-term care program options should be encouraged. This is assuming these programs are individually cost-effective and maintain quality of care. One size of LTC program clearly will not effectively fit all patients, and the essential problem remains how to match the right patient to the right program.

Ambulatory Care Sensitive Conditions (ACSC)
Earlier ACSC research focused on younger, healthier patients largely in acute care environments. From that work, assumptions emerged that hospital admissions for a diagnosis within the ACSC family might result from ineffective patient care management.

Thirteen ACSC specifically relate to older populations. Care management patterns related to those conditions were analyzed within the context of our Study. Results indicated variations among the programs under evaluation, some of which were statistically significant. None of the programs experienced extremely high proportions of ACSC. NFs had the highest at about 25 percent of their population.

ACSC in a long-term care population can be important sentinels for care modification and quality assessment. However, the nature of the signals received from the sentinel events is not clear when studying an elderly, frail population. Clarification of ACSC meaning and use in such populations needs exploration and could greatly enhance their use as tools for patient and quality assessment. Currently, it is the appropriate reaction to the emergence of such conditions that is unclear.

Opportunities for inter-institutional care coordination
Cost and quality outcomes for some patients being served by each of the LTC programs could potentially be enhanced through inter-institutional coordination, especially churned patients. Varying proportions of the cohort did experience transfers to hospital care. A small sub-set of those experienced multiple transfers. This finding replicates and extends the "churning effect" observed in an earlier study. There is need for further understanding and documentation of the effect both in care and cost outcome terms. However, it is currently evident that potential enhancements to care and quality do exist if appropriate inter-institutional care planning and coordination is implemented.

The Research Database
The Study's database was built by integrating Medicare and Medicaid claims and eligibility files for almost 35,000 persons receiving long-term care in Georgia in calendar year 1999. The numbers of individual transactions, spanning a 36-month period from January 1998 through December 2000, totaled more than 11,500,000. This number included: 6,563,626 Medicare transactions, 4,741,946 Medicaid transactions, 129,668 Georgia Vital Statistics records, and 30,309 nursing facility pre-certification records from the Georgia Medical Care Foundation. In addition to the size of the file under construction, literature review, as well as information from the Study's database consultants, indicated this type of file construction, at least for long-term care, was comparatively unique. As a result, there was not a large body of knowledge to assist the staff when data merger and/or data analytic problems were encountered.

It is recognized that the basic purpose of claims files is not to facilitate research, but to facilitate provider payments and to serve as an information base for overall program management. Research opportunities from this administrative database are, therefore, serendipitous.

There is a large group of patients shared between Medicare and Medicaid as Dually Eligible. At the point of admission, over 60 percent were Dually Eligible; over time and also in selected programs, that proportion increased to 80 percent or more. However, Medicare and Medicaid have never been integrated in terms of billing or the development of shared policies commonly affecting patients and providers.

Despite this historical lack of integration, we feel this effort demonstrates, at least within long-term care, the potential of database integration to significantly benefit program policy, management, and research. Not withstanding current technical and mechanical problems of integrating Medicare and Medicaid databases, such integration, especially for shared patient populations, offers a picture of the roles of both insurers in the provision of services and costs for those patients. It also points out potential areas of unintended policy dysfunction, especially those that adversely affect care and cost. The "churning effect" noted in this Study is

one example of such potential dysfunction. In addition, the potential of the integrated database to follow patients post-discharge offers a picture of changing roles of, and costs to, both programs. Such changes appear to imply areas for potential improvement in care and cost management, again to both programs.

In brief, it would be beneficial to the Medicare and Medicaid programs, the providers of their services, the patient recipients, and health services researchers to develop a relational database that enables decision-makers to analyze claims information in a readily usable form for practice and policy considerations.

Despite problems encountered in developing and using the database, outstanding technical support was consistently received from staffs of the Georgia Department of Community Health, the Centers for Medicare and Medicaid Services, and the ResDAC at the University Of Minnesota School Of Public Health. Assistance was prompt, knowledgeable, and supportive. In the course of the work, problems were frequently encountered that were new not only to the researchers, but also to the Medicare and Medicaid experts. In these instances, especially at the University of Minnesota ResDAC and DCH, their staffs became proactive problem solvers. Such support significantly encouraged the current researchers, but also should be an incentive to future researchers working with these databases.

Observed problems of the Research Database

Administrative program data have inherent problems for research purposes, but the problems do not preclude them from being effective sources of data. Those problems do encourage caution about use and underscore the importance of in-depth knowledge about the database in terms of its elements, their collection, and validation.

The following are situations that were encountered during the Study process. None of the situations endangered the Study; although, they frequently encouraged creative solutions or changes in analytic directions.

Unpopulated cells

Randomly, it was discovered that data cells were unpopulated. This certainly did not occur often. However, in some cases it did encourage caution in interpreting results and also points out the necessity to pre-screen data elements for completeness of information measured against the denominator base before initiating analyses. Frequently, such lack of data was observed in the more secondary elements of the claims - elements that were not central to processing the claim but could be central to research (e.g. associated diagnoses).

Medicare and Medicaid definitions not always compatible Considering that the Medicare and Medicaid programs are not operationally integrated, the definitional unity observed between their respective databases is remarkable. However, a difference in definition will occur infrequently between "identical" data elements in both programs. Examples of these include variations in diagnostic definitions, date of birth in lieu of age, and subcategories of race/ethnicity. In all cases, such differences could be managed. However, their existence does point out the need to comparatively review such definitions between the programs before merger efforts begin.

Definitions sometimes not reflected in cell content Infrequently, it was found that available data did not appear to match their definition. The most noteworthy example from the Study was "deductible" data. In Medicare, the size and number of deductibles reported supported their completeness. However, in Medicaid there was obvious under-reporting or perhaps non-reporting. The solution(s) here for the research future include pre-screening and testing the logic of informational output and reviewing in advance with program staffs their experiences with its completeness and accuracy.

Problems of decentralized HCBS information In developing the Study's cohort, it was necessary to identify 100 percent of the individuals enrolled in the LTC programs under evaluation. In the case of nursing facilities,

such identification was facilitated by the pre-certification program administered by the Georgia Medical Care Foundation. This program's records not only identify all individuals prior to NF admission but also provide valuable patient descriptor material useful both for sample frame development and data validation against other informational sources.

Cohort identification, however, was not as easy in the case of HCBS patients. While many of the HCBS programs throughout the state did have excellent data and client information systems, there was no overall central repository for all programs. One system (AIMS) was under development, but not sufficiently operational to assist us.

It was therefore necessary to work from the Medicaid claims database to identify the HCBS clients who received services in CY99. However, it was problematic to differentiate patients in that group between those newly admitted to HCBS in CY99" and "those already in care at the beginning of CY99". Theoretically, it would have been possible to query the CY99 "new admission only" from the individual HCBS programs. However, such an effort proved to be prohibitively expensive in terms of time and money. In the Study's Methodological Notes, the consequences of this problem are outlined. However, the new, centralized information system within DHR should reduce, if not totally eliminate, the problems of decentralized information systems.

Extreme data outliers

As indicated, despite care in editing and validating administrative databases, problems such as unpopulated cells will remain. A variation on that problem is extreme data outliers. As an example, we occasionally would encounter what appeared to be an excessive amount of services by a small number of patients (usually less than five). While easy to detect and link back to the source document, the data elements reflect the same "excessive" volume. Further, tracing to the source of such a small number of events proves to be inefficient. As a better alternative, the case(s) must be eliminated from the analyses. While few in number, such cases can have a disproportional effect, for example when calculating means or ranges. Once again, pre-screening selected data elements prior to analyses will assist in detecting the outliers.

It should be noted that use of the administrative files for multiple purposes beyond program management does enhance the quality of future data from those files. Use frequently detects data oversights and errors. Subsequently, through queries to data providers, the present flaws are corrected. There is also a positive consequence in improvement of future quality through recognition by the data providers that the material is actually being used. The providers, therefore, tend to exercise greater data oversight.

Patient confidentiality versus a necessary "audit trail"

The critical, ethical premise that should underlie all studies depending on patient specific information is the preservation of patient privacy and confidentiality. However, such a necessity can complicate if not bar some investigations. With large administrative databases, data elements can be frequently missing or appear erroneous. It is important to the validity and reliability of the study to attempt to find missing information and to correct existing errors. An audit trail back to the original source material is an operational device to facilitate such correction. Patient name, however, is normally not an appropriate option for linking research and source files. Most research files, in fact, should not contain names. However, a variety of link numbers have evolved over the years that do facilitate tracking back to an original source with a high degree of accuracy while not compromising privacy or confidentiality. In the Study, link numbers were used exclusively and presented no unmanageable problems in necessary connections between source and research records.

Problems of developing a "functional status" database

Liu (1998) discusses the uses of functional status as a predictor of Medicare cost. In the early stage of the Study, it became obvious that traditional descriptive measures such as diagnoses, found to be analytically useful within an acute care environment, were not as useful within a long-term care environment, especially in

terms of describing why a patient was in fact in a long-term care program. Functional status was felt to be a more useful descriptor. While the claims form does not contain data elements sufficient to determine functional status, the MDS (minimum data set) could provide functional status information, at least for the NF portion of the Cohort. While permission was obtained to access such information, the system did not contain the data years (1999-2000) required for the Study. It was, therefore, not possible to explore the power of functional status to provide greater insight into patient care outcomes and costs within the Cohort. It was felt that such an analysis could have been productive in determining the critical elements that "explain" the observed severity of illness differences between MAO and non-MAO patients.

Need for additional studies

While the Study optimistically will answer existing operational and policy questions, its process produced new questions. Many of these are translatable into new studies. New knowledge does produce new questions. Answers to these new questions conceivably will identify future directions for improving LTC program cost and quality:

> What defines "churning" patients and their care patterns and outcomes? What are the cost-consequences? If adverse, are they remedial?
>
> What is the effect of the cost-share requirement?
>
> What factors define differences in illness severity and/or functional status? Are they predictive for different patient outcomes? Can they be useful in more precise patient program placement?
>
> What contributes to the significant cost differences between Shepherd and ICWP? Can such identification be translated into "best practices" in care management for all of the five LTC programs?
>
> Regarding ACSC, what are the underlying factors, their care outcomes, and costs, especially for the CCSP and SOURCE programs?
>
> To understand the effect of patient cost-share on MAO versus non-MAO costs, the existing DCH and CMS databases need to be monitored to ensure they do collect such data completely on every patient affected.

The Georgia LTC Study

The American Health Care Association (ACHA)[79] recently released a synthesis of studies related to the cost-effectiveness of HCBS programs versus NFs. They also offered a critique of such studies in terms of their limits to effectively quantify cost differences. Cited limits included: insufficient database development (largely due to high costs and low research budgets) sufficient to fully identify and value the plethora of costs associated with HCBS and NF services; failure to account for differences in case mix and apply such differences to cost adjustments; and failure to capture actual spending related to care outside the LTC program.

Echoing ACHA, our report indicates few currently published studies in addition to ours and our Study has integrated Medicare and Medicaid claims to create a database having an analytic capacity for both nursing facility and HCBS service use and costs.

In specific reference to the ACHA critiques of previous studies: the Georgia Study does identify a very wide range of Medicare and Medicaid costs associated with both HCBS and NF; it has also overcome the cost and difficulty of obtaining such data for analytic purposes; the Study does account for differences in case mix and subsequently, applies them to adjust cost between NF and HCBS and within HCBS programs; and finally, it

[79] American Health Care Association; "Issues of Cost-Effectiveness for Home- and Community-Based Services for Long-Term are"; August 26, 2003.

does capture actual Medicare and Medicaid care spending outside the scope of the LTC programs services per se. The overall results provide access to information that has not been previously available in Georgia (and possibly elsewhere.) Consequently, the effort does represent significant steps forward both in terms of new information to facilitate LTC program resource allocation and enhanced research methodologies in the Study area.

However, as with all such studies, some Study-answered questions produce new questions and some original Study questions remain yet unanswered. Cost and care outcome differences between NFs and at least the Group 1 HCBS programs were identified. The need for various models of LTC programs is also supported by findings. However, lacking a sufficiently detailed clinical database, the Study could not quantify patient clinical characteristics that would enable more effective targeting of patient to program.

The observed cost differences between NFs and HCBS, in general, indicate the potential of significant Medicaid savings through the increased use of HCBS programs. However, it must be recognized that HCBS programs are not perfect substitutes for nursing facilities. There is a population of individuals whose care needs require the continuous and skilled resources of a NF. It also must be recognized that such services are costly. The central policy issue here should be how to make prudent use of such services for the right patients (through evaluation of care needs, health status, and support resources), not to eliminate nursing facility care altogether.[80] Individuals can thrive with supportive care in their homes or community settings. The bottom line, however, is that Medicaid can realize significant savings with no erosion in care outcomes through program diversification and patient targeting.

[80] Nursing facilities are appropriately the most expensive component of our long-term care system just as hospitals are the most expensive component of our acute care system. Their costs largely emerge from their institutional environments.

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SUPPLEMENTAL REPORTS

Supplemental Report 1: Medical Assistant Only (MAO) Patients: Cost Patterns and Consequences to Medicare and Medicaid

Individuals eligible for Medical Assistance Only (MAO) include the aged, blind, disabled, some pregnant women and children, whose family income exceeds the established Supplemental Security Income (SSI) limit. The MAO eligibility category allows a person to use incurred/unpaid medical bills to "spend down" the difference between their income and the income limit[81] to become eligible for all basic Medicaid benefits.

Characteristics of the MAO LTC Study Patient Cohort

As illustrated in Table A, a large overall proportion (forty-two percent) of the Cohort is classified as (MAO). Their distribution among individual LTC Programs ranges from slightly more than one-third to almost two-thirds.

Table A: Distribution of MAO Patients Among LTC Programs

Program	MAO Patients #	MAO Patients %
NF (n=19677)	7144	36
CCSP (n=14262)	7366	52
SOURCE I & II (n=462)	NA[82]	NA
ICWP (n=213)	102	48
Shepherd Care (n=38)	23	61
All Programs (n=34652)	14,635	42

As illustrated in Table B, within most LTC programs there are only very slight age-group differences between MAO and non-MAO patients.

Table B: Proportional Distribution of MAO Patients by Age Group Within LTC Programs

Programs	< 65 yrs %		65-74 yrs %		75-84 yrs %		> 84 yrs %	
	Non-MAO	MAO	Non-MAO	MAO	Non-MAO	MAO	Non-MAO	MAO
NF (n=19677)	10	12	20	18	39	36	31	34
CCSP (n=14262)	28	21	17	21	26	33	29	25
ICWP (n=213)	96	92	2	5	0	2	2	1
Shepherd Care (n=38)	100	100	0	0	0	0	0	0

As illustrated in Table C the majority (65 – 95 percent) of MAO patients in all LTC programs are dually eligible for both Medicare and Medicaid.

[81] Current maximum allowed income limit is $317 per month/$3804 per year for individuals and $375 per month/$4500 per year for couples. Current maximum allowable resource limit is $2,000 for individuals and $4,000 for couples.

[82] MAO patients are not eligible for the SOURCE program.

Table C: Proportional Distribution of MAO Patients by Insurance Eligibility Within LTC Programs

Programs	Dual Eligible %		Medicaid %		Medicare %		Total %	
	Non-MAO	MAO	Non-MAO	MAO	Non-MAO	MAO	MAO	Non-MAO
NF (n=19677)	22	65	4	5	74	30	100	100
CCSP (n=14262)	80	95	20	5	0	0	100	100
ICWP (n=213)	40	90	60	10	0	0	100	100
Shepherd Care (n=38)	47	83	53	10	0	0	100	100

When compared by DCG severity scores (Table D), the MAO patients in every one of the five LTC programs are more severely ill than their non-MAO counterparts; consequently, they also represent a greater risk of program resource consumption.

Table D: Illness Severity Scores[83]

Program	MAO*	Non-MAO
NF	6.62	5.65
CCSP	4.15	3.70
SOURCE I & II	NA	4.04
ICWP	6.83	4.77
Shepherd Care	6.74	3.45

*All score differences between MAOs and Non-MAOs are significant at the .01 level.

MAO versus non-MAO Cost Patterns and Consequences to Medicare and Medicaid

Tables E through G present average unadjusted monthly Medicare and Medicaid cost figures for MAOs and Non-MAOs in each of the four LTC programs accepting MAO patients. Within each program, the costs have been allocated between: (1) those incurred while the patient received services in the LTC program of original admission (in-program); and (2) those incurred during the OY but after the patient was discharged from the original LTC program of admission (post-discharge).

[83] DCG calculations

Table E: Nursing Home Costs

Care Status and Insurer	MAO $	Non-MAO $
In-Program	n= 7144	n=12,533
Medicare	2167	4264
Medicaid	1847	605
Post-Discharge[84]		
Medicare	1240	912
Medicaid	405	51
Total [85]		
Medicare	2112	2814
Medicaid	1762	365

Table F: CCSP and SOURCE Costs

Care Status and Insurer	CCSP MAO $	CCSP Non-MAO $	SOURCE Non-MAO $
In-Program	n=7366	n=6896	n=462
Medicare	1142	771	962
Medicaid	901	1124	1277
Post-Discharge			
Medicare	1846	1389	1600
Medicaid	1408	1319	1254
Total			
Medicare	1230	801	1041
Medicaid	964	1134	1274

Table G: ICWP and Shepherd Care[86] Costs

Care Status and Insurer	ICWP MAO $	Shepherd Care MAO $	ICWP Non-MAO $	Shepherd Care Non-MAO $
In-Program	n=102	n=23	n=111	n=15
Medicare	1237	1284	428	141
Medicaid	5470	3769	6346	3704
Post-Discharge				
Medicare	2711	NA	3014	NA
Medicaid	943	NA	683	NA
Total				
Medicare	1314	1284	476	141
Medicaid	5232	3769	6241	3704

[84] "Average" calculation developed using patients who experienced out-of-program care.
[85] "Total" indicates all the payments made by Medicare/Medicaid. It does not include payments made by other parties such as costs paid by patients or private insurance.
[86] No Shepherd Care patient had out-of-program expenditures.

Informational patterns in the tables indicate:

- The non-MAO NF population is dominated by Medicare-only patients. As a whole, this group Medicaid cost burden is very low.
- For CCSP patients, Medicare costs are higher for MAOs than for non-MAOs; however, Medicaid costs are lower for MAOs than for non-MAOs.

When directly comparing non-MAO CCSP patients to SOURCE patients, the CCSP patients had:

- Lower in-program and overall Medicaid and Medicare costs than non-MAO SOURCE patients;
- Lower post-discharge Medicare costs; and
- Slightly higher out-of-program Medicaid costs than SOURCE patients who used post-discharge services.[87]

- ICWP MAO patients cost Medicare more for in-program services and less for in-program Medicaid services than their non-MAO counterparts.
- Shepherd Care MAO patients are more likely to be dually eligible than Shepherd non-MAO patients and subsequently cost Medicare more than Shepherd Care Non-MAO patients, but cost the same for Medicaid services.

Viewing MAO versus non-MAO patient costs within CCSP (Table H) illustrates differences in the use of Medicaid services. Though differences do exist, between the two groups Medicaid costs are generally in the same proportions.

Table H: Average CCSP Medicaid Costs[88] per Expense Area for MAOs and Non-MAOs

CCSP Medicaid Costs	MAO n=7366		Non-MAO n=6896	
	$	%	$	%
Total Medicaid Costs	964	NA	1134	NA
Long-term care	504	52	555	49
Prescription Drugs	208	22	201	18
All Other	252	26	378	33

While MAO patients spend a higher proportion on prescription drugs than non-MAO patients, the difference ($7 a month) is not statistically significant. The lower Medicaid "other" expenditure is probably related to their higher Medicare expenditures. Overall, Medicaid costs for MAO patients are less than for non-MAO patients.

Within CCSP, MAO patients have a high severity adjustment score, but compared to non-MAO patients, their Medicaid costs are lower. This disparity appears on the surface, to be illogical - high risk should also have high cost. It is speculated, however, that the observed difference could be the consequence of the cost-share requirement. As earlier indicated, data were not available for the researchers to investigate the question[89]. Had the data been available, the Medicaid costs would have been unaffected; however, the overall total costs between SOURCE and CCSP would have changed, but to an unknown magnitude.

[87] Twelve percent of all non-MAO CCSP patients experienced out-of-program months in which they used services, compared to 17 percent for SOURCE.
[88] Costs are unadjusted total (combined in-program and post-discharge) per patient, per month costs.
[89] See Supplemental Report 2: Patient "Spend-Down".

In summary, major differences among the LTC programs between MAO and non-MAO include:

- Large numbers of MAO patients are both residents of nursing homes and recipients of HCBS.
- In the four LTC programs that enroll MAOs, MAO patients are sicker than non-MAO patients. In terms of illness severity, MAO patients in HCBS resemble NF patients more than non-MAO patients.
- In each LTC program, MAO patients cost more to Medicare and less to Medicaid than non-MAO patients.

Supplemental Report 2: Patient "Spend-Down"

Under the terms of the original contract, GSU researchers were to comparatively evaluate the cost and care outcomes of five LTC programs using an integrated database of Medicare and Medicaid claims. That was accomplished. However, in the fall of 2002 DCH raised questions concerning program service payments from sources other than Medicare or Medicaid: patient share (e.g., deductibles and co-pays) and/or other third party payments. There was specific interest in MAO patient "spend-down" payments. DCH was attempting to identify how total costs (Medicare + Medicaid + "other" sources) might change program rankings from those established by the Study's initial analyses which were limited to Medicare and Medicaid cost sources only.

According to the Medicaid data dictionary, the existing DCH claims database should contain both third party and patient payment amounts (e.g., spend down amounts in the case of MAO patients). Consequently, the data to expand our "other" cost analyses should exist within DCH and CMS base files; and, because of the methods used to develop the Study's integrated database, the basic data should be contained within our research files.

The Study's comparative analyses were expanded to determine the effect non-Medicare/Medicaid payment amounts would have on the total cost of each program. Initial review of these analyses indicated that, for Medicaid, there were very small amounts of "other" payments, and they appeared randomly throughout the files. In contrast, Medicare dollars appeared in much larger amounts and were much more regularly found. Comparatively, the quality and quantity of the Medicaid "other" cost data indicated there was a high probability that those data elements were not being collected uniformly and completely within the system, at least for our Study period (1998 -2000.) It was concluded by the researchers and seconded by DCH that the source database was insufficient, at least at present, to support the requested analyses.

The analyses contained in the Report relating to Medicare and Medicaid costs *per se* emerge from a database of sufficient validity and reliability. Therefore, it is possible to understand the relative contribution of both those payment sources to LTC patient care and the cost of such care in each program. A picture emerges of LTC programs' dependence on Medicare and/or Medicaid resources. However, with the existing DCH database, costs covered by patients or non-Medicare or Medicaid third parties cannot be completely determined.

APPENDICES

Appendix A
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Appendix B
Long-Term Care Program Descriptions

I. Nursing Facilities

Nursing facilities are providers of: a. Skilled Nursing Care and related services for residents who require medical or nursing care; b. Rehabilitation services for the rehabilitation of injured, disabled or sick persons; c. other health-related care and services in an institutional setting. Nursing facilities are required to meet a number of standards relating to provision of services, residents' rights, provision of information, and administration by Medicare/Medicaid.

Medicaid offers nursing facility (NF) services as a federally mandated benefit for beneficiaries age 21 and older. Medicare offers the Skilled Nursing Facility benefit for up to 100 days. Certain items and services included in the facility payment by Medicaid or Medicare may not be charged to the resident, but other uncovered services may be charged to the resident. During the course of a covered stay, payment could include cover nursing services, dietary services, activities, room/bed maintenance services, routine personal hygiene items and services,[90] and medically related social services.[91]

II. Home & Community-Based Waiver Programs

Home and Community-Based Waivers are authorized under Section 1915 of the Social Security Act, which encourages states to seek waivers of certain Medicaid statutory requirements to cover home and community-based services as an alternative to institutionalization. This gives the states broad discretion to address the needs of individuals who would otherwise receive costly institutional care. Average per person expenditures under waivers for home and community-based services may not exceed the average per capita expenditures that would have been made that same year for the level of care provided in a hospital, nursing facility, or an Intermediate Care Facility for the Mentally Retarded.

Some of the services provided to individuals in waiver programs include: personal support, skilled nursing, environmental modification services, specialized medical equipment and supplies, counseling, emergency response system, home health services, transportation, day care, day habilitation, personal care home, home delivered meals, respite care services, and case management services.

A. Community Care Services Program

Georgia Medicaid's Community Care Services Program (CCSP) is a waiver program developed in 1982 to provide home and community-based services to people who are functionally impaired or disabled. The program helps eligible recipients remain in their own homes, the homes of caregivers, or in other community settings as long as possible. Individuals served through the CCSP must meet the medical and functional criteria for placement in a nursing facility. DCH pays a fee to DHR for administering CCSP.

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[90] Covered routine personal hygiene items and services include personal hygiene supplies, hospital gowns, over the counter drugs, bathing supplies, and basic personal laundry.

[91] There are several services typically offered by nursing facilities, but not covered by Medicare or Medicaid. Such services include telephone, personal clothing, and cosmetics.

B. SOURCE

SOURCE (Service Options Using Resources in a Community Environment) is not a waiver program, but a demonstration project developed in 1997 to provide long-term health services in a person's home or community. SOURCE is a case management model that provides the framework to manage the care of a consumer across all lines of services, diagnosis or disability. Based on a person's care needs, participants are assigned one of four levels of care for medical monitoring and assistance with functional tasks as follows.

Patients in Level I and II have substantial cognitive or physical impairments and meet the criteria for admission to a Georgia nursing facility. Patients in Level III and IV have greater ability to function independently and do not meet Georgia nursing facility admission criteria.

Table 1. Scope of Services in CCSP and SOURCE

	CCSP	SOURCE
Case Management		X
Adult Day Health Care	X	X
Alternative Living Services	X	X
Emergency Response System	X	X
Home Delivered Meals	X	X
Home Delivered Services	X	X
Personal Support Services	X	X
Respite Care	X	X

C. Independent Care Waiver Services Program

The Independent Care Program is a waiver program that was started in May 1992. It offers services that help a limited number of adult Medicaid recipients with physical disabilities live in their own homes or in the community instead of a hospital or nursing facility.

Independent Care is for eligible Medicaid recipients who are severely physically disabled, are between the ages of 21 and 64, and meet one of the criteria below:
a. Are medically stable enough to leave the hospital, but cannot do so without the support services available through this program;
b. Will be admitted to a hospital on a long-term basis without the support services available through this program;
c. Wish to return to Georgia from out-of-state nursing facilities; or
d. Are at immediate risk of nursing facility placement.

D. Shepherd Care

Shepherd Care provides care through an outreach program managed by advanced practice nurses who coordinate medical care for severely disabled people. Shepherd Care was started in 1997 and is a demonstration project that receives a flat monthly fee per recipient for managing each person's care. Its objectives include reducing emergency room use or hospitalizations and nursing home placement while providing appropriate medical and supported living services in the community. The program is available in 20 Georgia counties: Barrow, Bartow, Carroll, Cherokee, Clayton, Cobb, Coweta, DeKalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Henry, Newton, Paulding, Pickens, Rockdale, Spalding, and Walton.

Table 2. Scope of Services in ICWP and Shepherd Care

	ICWP	Shepherd Care
Case Management	X	X
Personal Support Services	X	X
Specialized Medical Equipment and Supplies	X	X
Occupational Therapy	X	X
Respite Care Services	X	X
Counseling	X	X
Environment Modification	X	X
Personal Emergency Response Services	X	X
Adult Day Services	X	
Behavior Management	X	
Speech Therapy	X	
Physical Therapy	X	
Skilled Nursing	X	X

Appendix C
Executive Summary – Study Protocol to Centers for Medicare and Medicaid Services

Using a Longitudinal and Integrated Medicare and Medicaid Database to Comparatively Assess the Cost and Outcomes of Care among Georgia's Community and Facility-based Long-Term Care Programs

The Georgia Department of Community Health Division of Medical Assistance has funded a sixteen-month contract with Georgia State University investigators to:

- Evaluate cost and quality outcomes among currently available long-term care programs.[92]
- Develop nursing facility quality improvement and cost control options related to care continuity and inter-institutional transfers.

The two components vary in methodology and knowledge outcomes but share a common design: retrospective cohort analyses from an integrated Medicare and Medicaid claims database. The cohort encompasses 46,041 individuals admitted to at least one Georgia long-term care program in calendar year 1999. Care and cost patterns, as reflected through claims, will be analyzed for a twenty-four month period[93].

It is estimated that at least 90 percent of the cohort are Medicare- and/or Medicaid-eligible[94]. Because of the large proportion (estimated to be at least 48 percent) of dually-eligible recipients, the success of both study components is predicated on the availability of the Medicare claims data and its subsequent integration with the Medicaid data. The integrated database, methodological design, and analytic plan replicate, but also considerably expand upon, the investigators' previous long-term care work funded in part by the Division of Medical Assistance.

The investigators have already identified the cohort's Medicaid claims. For the Medicare component, CMS is being requested to identify and pull Medicare claims for calendar years 1998-2000 from seven Standard Analytical Files (SAF): Inpatient SAF, Outpatient SAF, Hospice SAF, Home Health SAF, Skilled Nursing Facility SAF, Durable Medical Equipment (DME) SAF, and the Carrier SAF. In addition, the Medicare Denominator File will be required. The investigators will integrate these CMS-provided claims, stripped of individual identifiers, with the available Medicaid data similarly controlled to protect privacy and confidentiality.

By providing comparative cost and quality information heretofore unavailable to the state (or the nation), outcomes of both components will furnish significant informational assistance to the Department for resource allocation decisions and in developing cost-effective program improvements. Because of the large proportion of dually eligible recipients, the findings should be important for similar reasons to CMS. Further, the large size and diversity of the cohort will make the findings potentially useful to other state Medicaid programs.

[92] The programs include the traditional nursing facility and four types of home and community-based services.
[93] Twelve months each preceding and following admission.
[94] Those eligible for both programs are estimated to be at a least 48 percent of the total.

Appendix D
LTC Stakeholders Advisory Committee to the Study

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Pamela Erdman, MD	Past President	Georgia Medical Director's Association
Jennifer Harrison, RN, MBA	Director, Health Services Research	Georgia Medical Care Foundation
Hunter Hurst	SOURCE Coordinator	St. Joseph-Candler Health System Savannah
Sharon Kirby	Shepherd Care Program Coordinator	Shepherd Spinal Center, Atlanta
Norma Jean Morgan	Director for Aging and Community Services	Georgia Department of Community Health, Division of Medical Assistance
Joseph Parker	President	Georgia Hospital Association
George Rust, MD	Physician	National Center for Primary Care at Morehouse School of Medicine
Scott Shull	Vice President	UHS Pruitt Corporation
Dorothy Smith	Medicaid Operations Branch	CMS (Atlanta Regional Office)
Mark Trail	Director	Georgia Division of Medical Assistance
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Appendix E

Methodological Notes

Cohort Development Decisions and Their Consequences

Development Decisions

The Study's original methodological plan called for a Cohort that included all calendar year 1999 (CY99) admissions to the five LTC programs being evaluated. In addition, for the CY 99 admissions, their claims for CYs 1998 and 2000 (98 and 00) were also collected. The CY 00 data were collected to permit following each patient for a full twelve months post-LTC admission (see Figure 1 in the Report).

The original plan had to be modified for the following circumstances: centralized information on all patients certified for and admitted to nursing facilities in 1999 was available. A picture, including the size and relevant demographics of the NF portion of the Cohort could be developed (see Appendix G). However, a comparable picture could not be developed for the HCBS segment due to the decentralized nature of that program's information systems. There were no data cost-effectively available for estimating the potential size of a HCBS cohort, let alone its relevant characteristics. Further, programs most of the HCBS were quite small in total; if their cohort was restricted only to new admissions, the number of cases that would result was unknown, let alone the sufficiency of that number for analytic purposes.

Using the DCH Medicaid claims database, it is possible to identify all individuals receiving HCBS services. However, it is difficult to determine with a high degree of accuracy, whether that individual began care in CY 99. In brief, we could develop a HCBS cohort that was receiving care in CY 99, but we could not tell if the individual patients were new to HCBS in 1999 or had been admitted before 1999 and were still receiving care.

For nursing facilities, we could identify both the 1999 new and old (<1999) admissions. Therefore, the methodological plan could be modified to include in the cohort both new and old 1999 patients. However, it was estimated that the NF cohort population would at least double if not triple if all patients in residence in 1999 were included. As a consequence, the NF component of the cohort could potentially outweigh the HCBS portion by a factor of 21/2 to 3 times. It also would significantly increase the cost of the Study and the time to integrate the database.

Faced with no good alternative, we opted to include in the cohort: for nursing facilities, only new admissions in CY 99; and for HCBS programs, all patients receiving HCBS care in CY 99. This compromise did avoid both the high cost problem of including all NF patients and the potential of a "too small" HCBS population (at least in certain programs).

Consequences

While this decision did mix the ever-present "apples and oranges", this analytic problem was somewhat offset by the fact that the essential evaluative comparisons occurred between the paired HCBS programs and not between those programs and nursing facilities.

Because of the decision to exclude NF patients in residence prior to 1999, the Study Cohort has a comparatively high proportion of Medicare-only patients as compared with annual reports. Medicare will pay only, in most cases, the first 100 days of NF care after a hospital stay. After the 100 days the proportion of Medicare cases in the Study drops by almost one-third. The majority of continuing patients will be Medicaid

or dual eligibles (including former Medicare patients who have lost that NF coverage and have spent their resources down sufficiently to become Medicaid eligible).

The overall consequence is that the Medicare-related portion of the NF cohort has a stronger effect on the clinical profile of the facilities as well as the cost outcomes. This disproportional dominance has been pointed out several times in the report.

In-program averages were calculated by summing total payment values for all patients during the months they were enrolled in a given program and dividing the sum by the total number of months all patients spent in a given program. Likewise, out-of-program costs were calculated by summing total payment values for all patients during the months they spent out of their original program of origin and in which they were still living. This amount was divided by the total number of months all patients were alive and out of their program of origin.

Data Validation

Although infrequent, administrative databases, such as Medicare and Medicaid claims, may contain erroneous data points. Error sources may include incomplete coding, improper claims adjudication, or faulty data entry. To assure accuracy (precision) and consistency (non-bias) in the data, a number of validation algorithms were used. The following data validation steps were taken.

Because claims data are a record of financial transactions between the payer and the providers over time, it is important to construct a complete account of payments and reconcile any subsequent adjustments for adjudication of claims. Once all adjudicated payment information is properly assembled, the claims data were filtered through several algorithms. For example, the payment amount variable is examined for reasonableness by the category of services. If a payment amount is unusually high or low for the category of service, then the claim was pulled out for audit. The lack of continuity (i.e. a measurable jump or drop in the flow of data) may indicate possible errors. If discontinuities were detected, more validation steps were taken to preserve internal consistency and validity.

Statistical Testing

In testing the significance of observed differences among programs, the t-test of differences in means was employed. Comparative practice used throughout the Report follows:

- Differences between nursing facilities (NF) and CCSP are separately tested;
- Differences between CCSP and SOURCE (Group 1) are separately tested;
- Differences between SOURCE and NF are not tested as the results of the preceding two tests automatically define the difference significance (if any) between NF and SOURCE.
- In most instances, unless otherwise noted in the Report, the small patient cohort size for both Shepherd Care and ICWP (Group2) precluded any statistical testing.

Appendix F
Cohort Development: Methodology and Decision Points

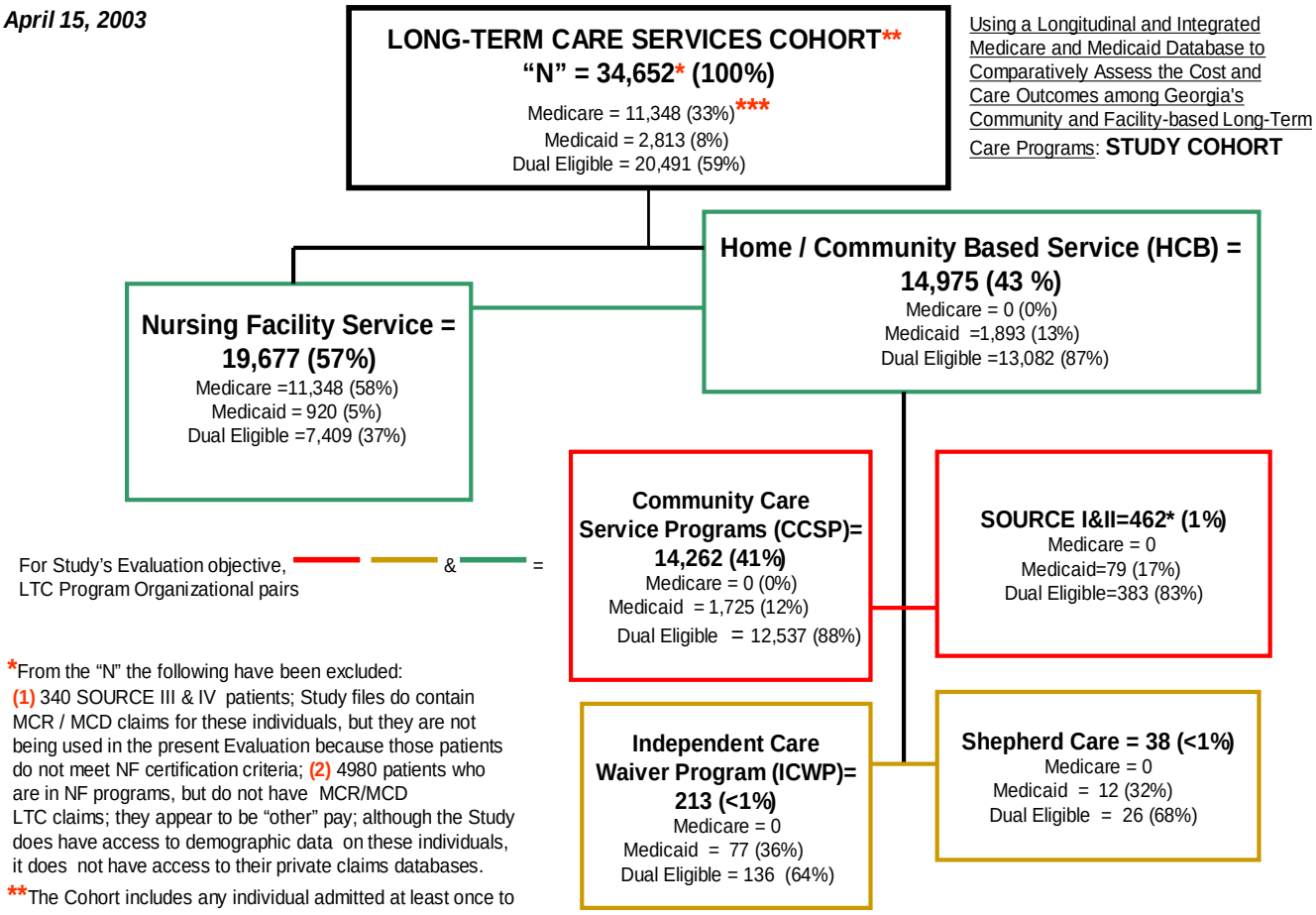
Patient claims were identified from Georgia Medicaid eligibility and claims data[95] for 1998, 1999, and 2000, Medicare denominator and claims files[96] from 1998, 1999, and 2000, and Georgia nursing facility certification files for 1999. Georgia Public Health death records were obtained for years 1999 and 2000 to validate the accuracy of death reporting in Medicare and Medicaid eligibility files.

The nursing facility certification files were first merged with the 1999 Medicaid HCBS eligibility files. The result was the identification of 46,041 Social Security Numbers (SSN)[97] representing the maximum number of individuals meeting the guidelines for selection. Subsequently, the SSN finder file was validated against the eligibility and claims files of both the Centers for Medicare and Medicaid (CMS) and Georgia Medicaid. Under the direction of Jen Associates, Inc. (JAI) of Cambridge Massachusetts, the claims and eligibility files were reviewed, edited, and merged. As a result, the following numbers of records were removed from the original 46,041: 2,253 duplicates representing individuals who had been admitted to both a nursing facility and HCBS in 1999, 1,945 records containing no data, 1,871 individuals pre-certified but never admitted to a nursing facility, 340 non-certified SOURCE patients, and 4,980 patients whose claims were paid from sources other than Medicare and Medicaid. These adjustments reduced the maximum possible cohort size to 34,652 individuals.

[95] Including medical, long-term care, and drug files.
[96] Including Inpatient Standard Analytic File (SAF), Outpatient SAF, Hospice SAF, Home Health SAF, Skilled Nursing Facility SAF, Durable Medical Equipment SAF, Carrier SAF, and the Denominator file.
[97] This file was labeled the SSN finder file (SSNFF.)

Appendix G
Study Cohort: Insurance Status and Patient Group Size within Evaluated LTC Programs

April 15, 2003



*From the "N" the following have been excluded: (1) 340 SOURCE III & IV patients; Study files do contain MCR / MCD claims for these individuals, but they are not being used in the present Evaluation because those patients do not meet NF certification criteria; (2) 4980 patients who are in NF programs, but do not have MCR/MCD LTC claims; they appear to be "other" pay; although the Study does have access to demographic data on these individuals, it does not have access to their private claims databases.

**The Cohort includes any individual admitted at least once to a Georgia nursing facility in CY1999 or admitted to or already a client of, a home and community-based program (CCSP, SOURCE, ICWP or Shepherd Care) in CY 1999. Each individual's care, as reflected through their claims history is being followed for one year post-1st CY 1999 LTC claim.

*** MCR / MCD claims data have been collected and integrated for each Cohort member for CY 1998, 1999 and 2000. They have been collected for twelve months prior to the 1st CY 1999 LTC claim to determine if the individual had experienced any LTC in that prior period.

Appendix H
Ambulatory Care Case Sensitive Conditions and Associated ICD-9-CM Codes[98]

Congenital syphilis 090
Immunization-related/preventable 033,037,045,320.0,390,391.
Grand mal/epileptic convulsions 345,780.3.
Severe ENT infections 382,462,463,465,472.1
Pulmonary tuberculosis 011
Other tuberculosis 012-018
COPD 491,492,494,496
Bacterial pneumonia 481,482.2,482.3,482.9, 483,485,486.
Asthma 493
Congestive heart failure 428,402.01,402.11,402.91,518.4
Hypertension 401.0,401.9,402.00,402.10,402.90
Angina 411.1,411.8,413
Cellulitis 681,682,683,686
Diabetes 250.1,250.2,250.3
Hypoglycemia 251.2
Gastroenteritis 558.9
Kidney/urinary infection 590,599.0,599.9
Rehydration/volume depletion 276.5
Iron deficiency anemia 280.1,280.8,280.9
Nutritional deficiencies 260,261,262,268.0,268.1
Failure to thrive 783.4
Pelvic inflammatory disease 614
Dental conditions 521,522,523,525,528

[98] Billings J, Zeitel L, Lukomnik J, Carey TS, Blank AE, Newman L: Impact of socioeconomic status on hospital use in New York City. Health Aff 1993;(Spring):162-173.

Appendix I
Illness Severity Adjustment Systems

Two illness adjustment models were identified for use with populations that are similar to the Cohort: the Diagnostic Cost Group System (DCG) and the Chronic Illness and Disability Payment System (CDPS.) Both systems use diagnoses, age, gender, and disability status[99] to generate severity scores. The DCG system, achieving its predictive power primarily by combining ICD-9-CM diagnoses to classify patients based on clinical similarity, was designed to accommodate both Medicare and Medicaid claims data. The CDPS system was designed to study disabled populations with Medicaid data only.

Both models were tested with Study data. While they produced different numerical scores, the severity hierarchy among the five programs was quite similar. DCG was adopted for the Study analysis as it had multiple successful replications documented in peer-reviewed literature, and also has a two-part Medicare and Medicaid module for analyses of dual eligible patients.

[99] Diagnosis, gender and date of birth (age) data are in the individual Medicare or Medicaid claims files; disability status data is found in the Medicare or Medicaid patient eligibility files.