Medicaid Disease Management

Abstract

Disease Management (DM) is the leading strategy that U.S. health plans, including some Medicaid programs, are using to address high-cost clients with chronic diseases. A cornerstone of DM is a positive return-on-investment, that is, an expectation that a DM program will eventually reduce medical expenses in excess of the cost of the DM program. In many states, enrolling Medicaid clients with certain high-cost chronic diseases in DM programs has slowed the overall growth of Medicaid spending for these clients, prevented expensive emergency department (ED) visits and inpatient hospital (IH) admissions, and improved clients' health outcomes.

Following recommendations to the Alaska Legislature by the Pacific Health Policy Group (January 2007), the Department of Health and Social Services (DHSS) designed a Medicaid DM Program. Implementation is contingent on funding from the legislature. Implementing a DM program is one of a limited number of options that DHSS has available to slow the growth of Alaska Medicaid spending without cutting benefits or restricting eligibility.

Before settling on a specific DM program design, the Division of Health Care Services and the Section of Chronic Disease Prevention and Health Promotion in the Division of Public Health, reviewed the literature in an effort to provide direction to an Alaska Medicaid DM program. This review included studies that addressed: (1) disease-specific programs, (2) programs that target the most expensive clients, and (3) programs that target high cost populations. Alaska Medicaid data were also reviewed to help identify which specific sub-populations should be targeted. This document summarizes some of these data findings. Prior to this study, Alaska Medicaid claims data have not been well-utilized for identifying the most prevalent and costly chronic diseases/conditions of the Medicaid population.

Suggested citation for this article: Available from: Nancy Cornwell, Division of Health Care Services, and Charles J. Utermohle, PhD, Section of Chronic Disease Prevention and Health Promotion, Division of Public Health. Additional data tables available at http://www.hss.state.ak.us/dph/infocenter/
Background

Alaska Medicaid

Medicaid is an “entitlement program” that provides payment for medical services for low-income and other qualified Alaskans. It is jointly funded by the federal and state governments and covered 18% of Alaskans in 2007. Between State Fiscal Years (SFY) 2000 and SFY2007, while the overall population in Alaska grew by 8%, the number of Alaskans receiving services paid for by Medicaid increased 21%. During the same period, the Consumer Price Index for Medical Care Inflation in Anchorage increased by 35.2%, while total Medicaid payments to providers increased 109%. Thus, the increase in Medicaid costs is not solely due to either the increase in the number of clients nor the increased unit cost of services, but rather greater use of available services.

Table 1: Alaska Medicaid, Alaska Population, and Anchorage Consumer Price Index for All Urban Consumers, Changes from State Fiscal Years 2000 - 2007

<table>
<thead>
<tr>
<th>ALASKA MEDICAID:</th>
<th>Years</th>
<th>Magnitude of Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eligible Clients—All Ages</td>
<td>2000</td>
<td>109,316</td>
</tr>
<tr>
<td>Clients Receiving Paid Services (Recipients)</td>
<td>93,736</td>
<td>113,388</td>
</tr>
<tr>
<td>Payments to Providers</td>
<td>$439,017,595</td>
<td>$918,177,887</td>
</tr>
<tr>
<td>Per Capita Payments</td>
<td>$4,683.55</td>
<td>$8,097.66</td>
</tr>
</tbody>
</table>

COMPARATIVE CHANGES:

| Alaska Population—All Ages | 2000  | 626,932 | 2007  | 677,108 | 50,176.0 | 8.0% |

Consumer Price Index for All Urban Consumers

| Anchorage: All Items | 2000  | 150.0 | 2007  | 179.4 | 29.4 | 19.6% |
| Anchorage: Medical Care | 269.5 | 364.4 | 94.9 | 35.2% |

Source: DPH SCDPHP conducted its own data extracts based on dates of service. Our data will likely differ from those reported by DHSS FMS for budgeting and auditing purposes. For all years, SCDPHP waited for 4 months following the end of the SFY to account for dates of service within the SFY. For clients, recipients, eligibles, and payment data: 2082 reports for SFY2000 – SFY2007 provided by DHSS, HCS. For Alaska population: AK Department of Labor, Research and Analysis. For CPI: U.S. Bureau of Labor Statistics.

The figure below reflects the change in Medicaid payments from SFY2000 to SFY2007. Payments peaked in SFY2006 at $970 million (M) and then declined to $918M in SFY2007. The decline between SFY2006 and SFY2007 is in large part due to the implementation of the Medicare Part D (prescription) coverage for elderly Medicaid clients. However, the decline is expected to stabilize and then Medicaid expenditures are expected to continue to climb and grow at an annual rate of 7% to 9% in the future.

http://www.hss.state.ak.us/dph/chronic/
The figure below shows the payments for selected services provided in SFY2007. Inpatient hospital payments were $243M, community care payments were $197M, pharmacy and prescribed devices totaled $82M, outpatient hospital including Emergency Department payments were $75M, professional medical services were $72M, and mental health payments were $65M.

Figure 2. Alaska Medicaid Selected Services, Payments SFY2007
Source: DPH SCDPHP STARS data extracts for SFY2007 dates of service.
Another way to look at Medicaid expenditures is to examine the reasons clients sought care, or their diagnoses. An
analysis of Medicaid expenditures by primary diagnosis disease groupings\(^5\) revealed the most expensive diagnostic
categories: mental disorders at $171M (for which approximately 20% of all Medicaid clients had a claim during
SFY2007); pregnancy, childbirth, and puerperium at $36M; respiratory system at $32M; healthy (and unhealthy)
live-born infants at $28M; and, heart disease at $26M. All of these disease groups except pregnancy, childbirth,
and puerperium and live-born infants, tend to be ongoing or persistent medical conditions.

**Disease Management**

Disease management refers to an integrated approach to health care delivery that seeks to improve health
outcomes and reduce health care costs. Disease management is defined as a set of interventions designed to
improve the health of individuals, especially those with chronic diseases. Disease management program services
include: 1) evidence-based clinical practice guidelines; 2) collaborative practice models to include physician and
support service providers; 3) patient self-management education (includes primary prevention, behavioral
modification, and compliance surveillance); 4) case management; 5) process and outcome measurement, evaluation
and management; and 6) routine reporting/feedback loop (includes communication with the patient, physician,
ancillary providers, and practice profiling). Alaska Medicaid has never had a DM program.

The promise of DM is that it will yield savings by improving patient care and health status. DM programs focus on
chronic diseases that are prevalent, high-cost, where there is an apparent gap between existing practice and
evidenced-based treatment guidelines, and where improved patient care will enhance quality of life and reduce
costs.

Nationally, DM programs have evolved from disease-specific programs that targeted individual patients with
asthma, congestive heart failure, coronary artery disease, diabetes, or chronic obstructive pulmonary disease, to
programs that targeted individual high-cost patients who often have multiple chronic conditions, and then to
programs that target high cost populations. Most recently, a few states are broadening their DM programs to
include “health management” activities that help individuals avoid chronic health problems or those that focus on
early identification of chronic disease risk factors.

**Methods**

The first step in the design of any DM program is the analysis of prevalence and services utilization data to
determine the potential impact. Initially three years of Alaska Medicaid billing data based upon dates of service
from SFY2003 through SFY2005 were extracted using the Services Tracking, Analysis and Reporting System
(STARS) interface. These data have been augmented through SFY2007 based upon dates of service. Medicaid
payments are subject to revision so the present data may vary from previous and subsequent depictions.\(^6\) The data
include a unique client identifier, primary and secondary diagnoses (when available), the type of service rendered,
provider identification, and approved payment amount. The approximately 6 million billing records per fiscal year
were exported as delimited text files which were imported into an Access database. The Medicaid information was
then incorporated into SPSS data files for analysis. All datasets reside on a secure, restricted-access server.

Data procedures recommended by the Agency for Healthcare Research and Quality (AHRQ) were used to define
chronic conditions, preventive quality indicators, and co-morbidities. The AHRQ Chronic Condition Indicator
categorizes all ICD-9-CM diagnosis codes as chronic or non-chronic.\(^7\) A chronic condition is defined as a condition
that lasts 12 months or longer and meets one or both of the following tests: (a) it places limitations on self-care,
independent living, and social interactions; (b) it results in the need for ongoing intervention with medical
products, services, and special equipment. The identification of the chronic conditions is based on all-5 digit ICD-9-
CM codes. E codes, or external cause of injury codes, are not classified as all injuries are assumed to be acute.

Analyses were conducted for both the primary diagnosis alone as well as any mention on the primary or secondary
diagnosis fields. A serious limitation of the dataset extracted from STARS is that it stores only a primary and
secondary diagnosis for each claim. Some services, such as drugs, do not have any associated diagnoses. Drug

[http://www.hss.state.ak.us/dph/chronic/](http://www.hss.state.ak.us/dph/chronic/)
usage was determined for the individual and then linked to the master billing records. Disease-specific payments do not include pharmacy payments unless specifically noted. Aggregations of general and specific diagnostic groupings were defined using ICD-9 coding.

**Findings**

Using AHRQ data definition procedures, average payments were calculated. In SFY2007, the average payment for a Medicaid client with one or more chronic conditions was $14,869, while the average for the patient without a chronic condition (primary or secondary diagnosis) was $2,514.

<table>
<thead>
<tr>
<th>AHRQ CHRONIC CONDITION INDICATOR</th>
<th>Mean Payments</th>
<th>% of Clients</th>
<th>Mean Payments</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic</td>
<td>$14,869</td>
<td>43.1%</td>
<td>$698,891,026</td>
<td>82.7%</td>
</tr>
<tr>
<td>Non-Chronic</td>
<td>$2,514</td>
<td>48.5%</td>
<td>$121,850,624</td>
<td>15.7%</td>
</tr>
<tr>
<td>Unknown</td>
<td>$1,425</td>
<td>8.4%</td>
<td>$13,030,754</td>
<td>1.5%</td>
</tr>
<tr>
<td>Total</td>
<td>$7,750</td>
<td>100.0%</td>
<td>$844,772,404</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

*Source: DPH SCDPHP STARS data extracts for SFY2007 dates of service.*

In SFY2007, Medicaid covered 109,001 Alaskans with total payments exceeding $844M. In the same year, clients with chronic conditions represented 43% of active Medicaid clients and over $699M, or 82.7%, of all Medicaid payments.

**Figure 3: Alaska Medicaid SFY2007: Chronic Condition Indicator, Clients and Payments, All Ages**

*Source: DPH SCDPHP STARS data extracts for SFY2007 dates of service.*

Having established the size and rate of growth of the Medicaid program and population and the prevalence of chronic conditions, the DHSS used claims data to consider the appropriateness of three DM program models: one targeting clients with a specific disease, one targeting the most expensive clients, and one targeting the most expensive populations. What follows is a sampling of the data analysis conducted and conclusions drawn about each program model.
DM Program Model: Disease-Specific

First generation DM programs enrolled patients in single chronic disease programs.

The initial Alaska Medicaid data analysis identified the number of clients, total payments, and potentially avoidable emergency department (ED) and inpatient hospital (IH) payments for asthma, diabetes, and heart failure clients. Total payments for diabetes were higher than those for asthma and heart failure but the avoidable ED and IH payments were significantly smaller. This finding coupled with a recommendation from AHRQ led the DHSS to examine two (2) single disease management programs, one for asthma clients and the other for heart failure clients.

A decision was made to not focus on clients 65 years of age and older since Medicare is the primary payer for emergency department and inpatient hospital claims for this age group. Many state Medicaid programs have made similar decisions.

In SFY2005, 3,850 clients less than 65 years of age had at least one Medicaid service in which the primary diagnosis was asthma. Asthma-related services represented $2.2M in total payments, of which $0.9M were potentially avoidable ED and IH costs.

In the same year, 337 clients less than 65 years of age had at least one Medicaid service in which the primary diagnosis was heart failure (HF) including $1.2M in total payments and $0.8M in potentially avoidable ED and IH expenditures.

### Table 3: Total Medicaid Clients with and Payments for Primary Diagnosis of Asthma and Heart Failure, Emergency Department and Inpatient Hospital Payments, Total If Avoidable, Alaska Medicaid, SFY2005

<table>
<thead>
<tr>
<th></th>
<th>TOTAL [A]</th>
<th>Emergency Dept. [B]</th>
<th>Inpatient Hospital [C]</th>
<th>If avoidable, (B + C)</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma</td>
<td>3,850</td>
<td>$2,205,092</td>
<td>$79,740</td>
<td>$824,826</td>
<td>$904,766</td>
</tr>
<tr>
<td>Heart Failure</td>
<td>377</td>
<td>$1,176,677</td>
<td>$10,396</td>
<td>$828,982</td>
<td>$839,378</td>
</tr>
</tbody>
</table>

Source: DPH SCDPHP STARS data extracts for SFY2005 dates of service.

The total payments from “all diagnoses” for the asthma ($59.2M) and heart failure clients ($23.5M) were generated. They were very large in comparison to the asthma-only and HF-only payments. This finding led to the conclusion that a DM program would need to address all the co-morbidities of these clients, not just their asthma- or HF-related problems. Also, it was determined that 377 heart failure clients were too small of a population to build a DM program around.

Further, directors of other state Medicaid programs made informal recommendations that Alaska Medicaid consider other DM program models than those that focus on single diseases.

DM Program Model: The Most Expensive Medicaid Clients

Early analysis raised questions about whether Alaska Medicaid's DM program should target the most expensive Medicaid clients. To that end, claims data for the top five percent (5.0%) and the top half-percent (0.5%) most expensive Medicaid clients were analyzed.

The 5% most expensive clients in SFY2007 were 5,451 individuals who accounted for $436M in Medicaid payments or 52% of all payments that year.

[http://www.hss.state.ak.us/dph/chronic/](http://www.hss.state.ak.us/dph/chronic/)
Retention, or ongoing Medicaid eligibility, of these clients was analyzed. Over a three-year period, 48% of the most expensive clients in the first year were still in the top 5% most expensive clients 2 years later, and they still accounted for nearly 52% of payments of this most expensive group.

Figure 5. Top 5% of Clients Retention and Percentage of Payments in Top 5% in SFY2006 and SFY2007, All Ages
Source: DPH SCDPHP

http://www.hss.state.ak.us/dph/chronic/
In tracking clients over even a longer (5-year) period from SFY2003 to SFY2007, one-third of the original top 5% most expensive clients were still among the top 5% four years later and responsible for over a third of payments. Of the original 5,567 clients in the top 5% in SFY2003, 3,472 (62%) were still in the Medicaid system at some level in SFY2007 and accounted for over 20% of all payments in the latter year. This suggests that the most expensive clients will continue to be very expensive over the long-term. It also suggests that predictive modeling, an important feature of any DM programs, should be used to identify these clients.

The 0.5% most expensive clients in SFY2007 were also identified. They included 546 individuals who accounted for $98.1M in Medicaid payments or 11.6% of all payments that year (see Figure 5).

Of the 546 most expensive clients, 47% were in settings where their medical care was already managed including:
- skilled nursing facilities (SNF) or intensive care units (ICU) (defined as their total SNF/ICU costs exceeded $100,000 in SFY2007),
- neonatal intensive care unit (NICU) (defined as more than 66% of their payments were coded to NICU services and the clients were 3 years of age or younger), and
- inpatient or residential psychiatric settings (defined as hospitalization costs exceeded $100,000 in SFY2007).

For the remaining 289 clients (of the 546 most expensive clients), some cases were probably managed by the Medicaid program’s Quality Improvement Organization (QIO contractor Qualis Health), generally at the time of a facility discharge. The most expensive diagnoses and average costs for the remaining 289 were:
- pregnancy, childbirth, and puerperium (4 clients at $121,402)
- malignant neoplasms (40 clients at $104,673)
- end-stage renal disease (43 clients at $68,657),
- mental disorders (154 clients at $60,220),
- chronic liver disease (5 clients at $42,011), and
- cerebral hemorrhage (5 clients at $40,734).

Analysis of the 5% and 0.5% most expensive Medicaid clients suggested that an Alaska DM program based on this approach could have several limitations. About half of these most expensive clients (in both groups) were in situations where their care was already managed (for example, in nursing homes). Others had expensive acute illnesses or episodes and did not remain in the most expensive category over long-periods. Some were undoubtedly managed by the QIO, often at the time of discharge. However, many of the remainder had long-term, complex medical, mental health, and even social problems that needed to be addressed if the chronic medical conditions were to be stabilized and managed. The challenge for any Medicaid DM program is to predict which clients will join “the most expensive” group prior to expensive episodes and of those, which are suitable for care management in a DM program.

The analysis of the most expensive clients led the department to examine expensive populations or groups of Medicaid clients with multiple chronic diseases.
DM Program Model: High Cost Populations

Another DM model adopted by some states is to target high cost populations, for example, Blind and/or Disabled (BD) clients or dual eligibles, those eligible for both Medicare and Medicaid as a result of being aged 65 and/or the extreme nature of their illness/disability. Dual eligibles were excluded from this analysis because Alaska Medicaid is not the primary payer for ED visits and IH admissions for these clients. Children were not included in this analysis because as a group they have few chronic diseases.

Consistent with the current direction of many state Medicaid programs, the DHSS focused on Blind and/or Disabled (BD) Medicaid clients who receive Supplemental Security Income (SSI) and/or Adult Public Assistance (APA). These clients often have multiple chronic diseases and the care they need is complex. In many cases, these clients became disabled as adults and often retain their Medicaid eligibility for long periods.

In SFY2007, there were approximately 5,254 BD Medicaid clients 18 – 64 years of age. This group had 44,700 Evaluation and Management (E & M) visits including 31,600 outpatient, 6,900 IH, and 6,000 ED visits. These clients averaged 8.50 E & M visits per year including 1.13 ED visits and 1.32 IH admissions.

For the BD population ages 18 – 64, payments in SFY2007 were $21.9M for pharmacy, $11.3M for outpatient hospital visits (which includes ED visits), $10.7M for IH admissions, $8.9M for personal care, $8.6M for physician/practitioner services, $6.5M for outpatient mental health services, $4.4M for nursing home care (these clients are often excluded from DM programs as their medical care is already being managed), $2.9M for health clinic services, $2.5M for transportation, and $1.2M for Durable Medical Equipment/Supplies.
In SFY2007, eligible BD clients who accessed Alaska health care providers accounted for the following payments in each of the following 5 geographic areas: Anchorage $45.2M, Palmer/Wasilla $8.9M, Fairbanks $6.6M, Juneau $3.2M, and Soldotna $2.4M.

http://www.hss.state.ak.us/dph/chronic/
A premise of DM programs is a positive return-on-investment. In order to calculate potential savings, the DHSS identified what proportion of the BD population were Alaska Native (AN) and whether those clients received care from tribal providers. Alaska Natives make up about 40% of the Medicaid population and when they use approved tribal (facility) providers, the federal government reimburses the State of Alaska 100% for their services. In SFY2007, approximately 26% of the BD population were AN. Less than 13.4% of the total SFY2007 Medicaid payments for services to the BD population were made to tribal providers.

Figure 9. Blind/Disabled, Clients by Alaska Native Status, Aged 18 – 64, SFY2007, Total = 5,254
Source: DPH SCDPHP STARS data extracts for SFY2007 dates of service.

As identified in other Medicaid studies, the more that AN Medicaid clients use tribal health providers, the greater the positive fiscal impact for the State of Alaska. In the future, some AN clients may be able to access targeted case management services from tribal health providers and these services may be very similar to DM services. However, AN BD clients would also be able to participate in a DM program.

Even if all AN BD clients receive their care in the tribal health system, there is a sufficiently large non-AN BD Medicaid population to realize a positive return-on-investment in a DM program.

**Conclusion**

The foundation of a DM program is a positive return-on-investment where the savings in Medicaid payments are higher than the DM program costs. An optimal DM program size is dependent on many factors including the size of the Medicaid DM program budget the size of the DM program target population and their avoidable ED and IH costs, their chronic conditions, their retention in the Medicaid program, their geographical location, and the geographical location of their health care providers.

DM programs that focus on single diseases are limited and do not take into account multiple disease occurrences. Many of the most expensive clients are not well-suited for DM programs but for those that are, predictive modeling should be used to identify these clients and their care should be actively managed by a DM program. Creating a DM program for the Blind/Disabled population meets the criteria of a sufficiently large and stable group of clients where a DM program could have a positive impact on their expensive chronic conditions. An initial DM program focused on the BD population could provide the program infrastructure so that other Medicaid clients could be engaged in future years. For any DM program to be successful, it must predict and intervene with clients before they become high cost. Without this edge, a program will not be able to slow the growth rate of Medicaid spending.

Finally, the DHSS should continue to track the chronic diseases of Medicaid clients in order to address the avalanche of costs and chronic disease problems. Further, we recommend that the dataset created for this analysis should be enhanced and maintained as it offers the State of Alaska an opportunity to understand how the state’s health care system needs to change to better meet the chronic conditions of all Alaskans.

http://www.hss.state.ak.us/dph/chronic/
Footnotes

2. Between SFY2000 and SFY2007, the general and Medicaid populations by selected age categories grew at different rates. The Medicaid population ages 0 – 20 and ages 21- 64 grew at substantially higher rates than the Alaska population as a whole, while Medicaid recipients ages 65+ grew at 25.3% and the Alaska population increased by 33.0%. Comparing the CPI-U Anchorage to total Medicaid cost increase is not a perfect comparison in that it does not include the entire state and the CPI-U is a measure of prices alone and does not reflect changes in volume used over time.
3. In SFY2007, Alaska Medicaid made a $16M “clawback” payment to the Centers for Medicare and Medicaid Services to offset the new federal responsibility for Medicare Part D (prescription drug coverage) for dual eligibles.
4. Community care includes home and community based services, residential supported living arrangements, environmental modifications, private duty nursing, hospice, home health, care coordination, RN, LPN, and personal care.
5. These are based on primary diagnoses, and do not include payments for claims that have no diagnosis information. DHSS analyzed a large volume of diagnostic data and found several problems that limit its usefulness in this report. For example, diagnostic disease categories reflect both routine health care and disease occurrence. Certain Medicaid payments are not associated with diagnostic codes, including pharmacy which represents approximately 9% of total Medicaid payments. For these reasons, the authors decided not to include all of these analyses in this report.
6. STARS does not have the net claim payment amount and differs from the accounting, budget, and JUCE data published elsewhere. According to Jill Lewis, DHSS FMS, the 2007 Medicaid annual counts and payments presented in this document are off 4% for enrollment, 7% for clients, and 2% for total payments. However, adding the $16M clawback (a required payment to CMS to cover the Medicare Part D for dual eligibles), to the $918M in annual payments presented in this report accurately reflects the $934M in FY2007 annual payments published in other reports.
8. Some clients without a primary or secondary chronic condition diagnosis may have a chronic condition but Medicaid claims submitted for services they received did not include any chronic condition diagnoses.
9. DPH SCDPHP STARS data extracts for SFY2007 dates of service.
10. The assumption that emergency department and hospitalization payments can be avoided by asthma and HF clients is borrowed from the Agency for Healthcare Research and Quality’s Prevention Quality Indicators (November 24, 2004). AHRQ suggests that there is evidence that admissions for “ambulatory care sensitive conditions” could be avoided, at least in part, through better outpatient care. Hospitals, community leaders, and policy makers can use such data to identify community need levels, target resources, and track the impact of programmatic and policy interventions.
11. An early analysis identified $5.1M in total payments for clients with a primary diagnosis of diabetes, $2.4M for heart failure, and $2.9M for asthma. Avoidable ED and IH payments for diabetes were $0.7M, but were $1.0M for heart failure and $1.2M for asthma. Noting that the avoidable costs for HF and asthma exceeded those costs for diabetes, as well as the understanding that diabetes DM programs take a longer period to see a positive return-on-investment, only asthma and HF DM programs were initially considered. In late fall 2006, AHRQ arranged to have Denise Levis with North Carolina Medicaid, and Kathy Moses, previously with Indiana Medicaid, meet with Alaska Medicaid staff. Over several phone calls, Ms. Levis and Ms. Moses recommended two (2) single disease management programs for Alaska, one for asthma and the other for heart failure clients.
12. The DHSS anticipates that an Alaska Medicaid DM program would be considered an administrative function under CMS guidance in which the cost of the program would be split between the State and federal governments. However, as with similar efforts to maximize the 100% federal match, the DHSS will encourage AN Medicaid clients to access Disease Management-like services from tribal providers. Alaska Medicaid’s Disease Management program will coordinate with tribal efforts.