

Effect of NC Open Access Collaborative on Medicaid Utilization and Costs for Children in Primary Care Practices

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Executive Summary

Objectives

Appointment delays and long office waiting times impede access to primary health care for children. By reducing appointment delays and office waiting, open access scheduling may improve access to primary health care, as well as lower the costs of primary health care. The objective of this study was to assess the impact of the 2003-2004 Division of Medical Assistance (DMA) supported Open Access Collaborative on primary care outpatient, urgent care center and emergency room utilization and costs for children served by Medicaid.

Methods

This study compares Medicaid utilization and cost data from calendar years 2002, 2003, and 2004 for two groups of practices: 14 practices that participated in DMA's Open Access Collaborative (OA) between March 2003 and February 2004 and 28 matched primary care practices (Control Group). Controls were matched by Medicaid enrollee size, Medicaid program type (e.g., Access I), and by specialty (e.g., pediatric or family medicine). The Open Access Collaborative intervention consisted of a year-long quality improvement collaborative designed to help the 14 practices implement ten open access principles intended to reduce delays for appointments and reduce office waiting times. Each annual reporting period focused on the entire pediatric population covered by Medicaid, ages 0-21 years old. For each of the two groups of practices (OA and Controls), the frequency of service was calculated per 100 children and costs were calculated as per member per month (PMPM) costs.

Results

The OA practices experienced a 26% decline in primary care provider visits for children during the study period while control practices experienced minimal change (2% decrease). This translated into a 33% reduction in PMPM costs of these visits for OA practices compared to a 19% reduction in control practices. Overall, this represents a total annual savings of \$272,004 for DMA. Preventive care visits (EPSDT) did not change in



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either group. Urgent care center visits decreased by 25% in the OA practices while these visits almost doubled in control practices. This translated into a \$.08 reduction in PMPM costs for urgent care center visits for OA practices while control practices experienced a slight increase in costs. Overall, this represents a total annual savings of \$27,756 for DMA. There was little difference in emergency room visit rates or costs between OA and control practices.

Conclusions

In a previous DMA report, we documented that the 2003-2004 Open Access Collaborative improved quality of care, including reduced delays for appointments, reduced office waiting times, increased patient satisfaction, increased continuity of care, and improved adult and pediatric preventive service delivery. This study shows that practices implementing open access principles can also reduce the utilization and costs of outpatient care and urgent care center visits for children served by Medicaid. It is important to note that the decrease in outpatient visits in the OA group were from acute and follow-up visits – preventive care visits did not change. Since the decline in outpatient visit rates was much greater than the reduction in costs for these visits (relative to the control group), the decline in outpatient visits appears to be due to a decrease in lower value (lower RVU) or unnecessary visits, the type of visits generated in practices with poor accessibility and low continuity of care. Based on the PMPM cost reductions found in this study, the potential cost savings for the NC Medicaid program are substantial. *If all practices caring for children served by Medicaid in NC (an estimated 870,000 children) implemented open access principles and had similar results, the NC Medicaid program could save approximately \$11,275,000 each year from urgent care center charges and outpatient charges.* In this study, we did not find evidence of an effect on emergency room utilization. In future studies, longer follow-up may be needed to assess whether open access has any effect on emergency room utilization and costs.



Introduction

Access barriers for primary care represent a significant problem for US children.¹ These barriers exist at multiple levels including patient, health care system, and policy levels.² Two important barriers to primary care access for children are difficulty obtaining timely appointments and long office waiting times, causing care-giver frustration as well as leading to lower quality of care.³

Open access, also referred to as “same-day scheduling” or “advanced access”, is an alternative scheduling system based on the principle that patient demand for appointments is predictable. Therefore, practices can match appointment capacity to anticipated demand, and patients can be offered same-day appointments with their primary care physician (PCP) for both acute and preventative care visits. A recently published pilot study in NC demonstrated that primary care practices can successfully implement open access by using quality improvement (QI) collaborative methods. Further, this study showed that open access decreased delays for appointments, improved continuity of care, increased parent satisfaction, and decreased appointment no-shows.⁴ Similarly, a previous report from the 2003-2004 DMA Open Access Collaborative demonstrated that primary care practices participating in the collaborative reduced delays for appointments, office waiting times, increased parent satisfaction, decreased appointment no-shows, and improved adult and pediatric preventive service delivery (see <http://www.dhhs.state.nc.us/dma/ca/accesscollaborative.pdf>).

The objective of this study was to assess the impact of the 2003-2004 Division of Medical Assistance (DMA) supported Open Access Collaborative on primary care, urgent care center and emergency room utilization and costs for children served by Medicaid.

Methods

The study used a controlled before–after study design. Intervention practices were recruited through the joint efforts of the Center for Children’s Healthcare Improvement (CCHI) and DMA, including newsletters, booths at professional meetings, and calls to practices and health systems that had previously expressed interest in QI activities. Participation was voluntary for all practices. Twenty-five practices from NC participated, including 11 family medicine practices, 7 pediatric practices, 1 internal medicine practice, 1 OB/GYN practice, and 5 academic practices. For this study, we excluded the three internal medicine and OB/GYN practices, as well as the 5 practices that did not complete the year-long collaborative. Data for four practices in the same network were combined as one, yielding 14 intervention (OA) practices.



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OA practices included:

- Benson Area Medical Center, Inc.
- Durham Pediatrics
- UNC Chatham Crossing
- Charlotte Mecklenburg Health Services Foundation
- Henderson Family Medicine
- Wake Forest Family Practice
- The Pediatric Practice of Cape Fear Valley
- ECU Primary Pediatrics Clinic
- Duke University Affiliated Practices
- Durham Medical Center
- Hillsborough Family Practice
- Mountain View Pediatrics
- High Point Family Practice
- Sandhills Pediatrics

Control practices were selected from the Medicaid practice database by selecting two practices that were the closest match to each OA practice based on Medicaid enrollee size, Medicaid program type (e.g., Access I), and by identical specialty (e.g., pediatric or family medicine).

The intervention consisted of a year-long QI collaborative designed to help the 14 OA practices implement ten open access principles designed to reduce delays for appointments and reduce office waiting times. QI collaborative methodology has been described elsewhere.⁵ Briefly, this QI collaborative involved multidisciplinary practice teams (usually a physician, nurse, and administrative staff member) working together to implement open access principles over a year. The collaborative was led by faculty with expertise in open access or QI methods who used two 2-day workshops to assist teams with implementation. Between meetings, practice teams applied what they had learned with assistance from faculty through monthly conference calls and e-mail listserv support.

In the collaborative, practices implemented the key components of open access (Table 1).^{4,6} After a period of baseline data gathering, teams temporarily increased their daily appointment capacity and improved office efficiency through the redesign of patient-flow processes to reduce the backlog of scheduled appointments. Practices began offering same-day appointments to all patients once the waiting time had been reduced to <1 week. Practices continued to monitor appointment demand and availability to maintain an appropriate balance and avoid reaccumulation of the waiting list.



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TABLE 1. Ten Principles of OA

Principle	Examples
Balance appointment supply with patient demand	Predict appointment supply by accounting for holidays, vacations and nonclinical work
Work down the backlog (waiting list)	Predict patient demand for appointments by collecting appointment data Distinguish between "good" (planned care) and "bad" (delayed care) backlogs Measure the extent of the backlog and make a plan for reducing it, including a start and end date
Reduce appointment types	Reduce number of appointment types (new preventive, established brief, acute, etc) Standardize appointment lengths (eg, consider 20-min appointments for all visits)
Plan for contingencies	Increase capacity at peak times Plan for predictable seasonal increases in appointment demand
Reduce future patient demand	Maximize activity at appointments to reduce future demand Extend intervals for return appointments
Manage the bottlenecks	Identify bottlenecks in clinic flow Drive unnecessary work away from the bottlenecks
Synchronize patient, provider, and information	First AM and PM appointments start on time Patient registration done by phone if confirming patient appointment
Predict and anticipate patient needs at the time of the appointment	Use regular "huddles" to anticipate and plan for contingencies in schedule Use notepads, whiteboards, flag systems, etc to communicate during the day
Optimize rooms and equipment	Use "open rooming" to maximize flexibility Standardize supplies in all rooms and have them stocked at all times
Use continuous-flow strategies	Do this moment's work now (eg, dictate immediately after visits) Use scheduled pauses to apply continuous-flow approach to nonappointment activities (eg, returning phone calls)

Medicaid claims data were the sole source of data for the study. Each annual reporting period focused on the entire pediatric population covered by Medicaid, ages 0-21 years old. For each of the two groups of practices (OA and Controls), the frequency of service was calculated per 100 children and costs were calculated as per member per month (PMPM) costs. Details of claims data specifications are in the appendix. Total annual savings were calculated by multiplying the 2004 enrollment of 0-21 year olds in the intervention practices (23,130 children) by the difference in the change in PMPM cost between intervention and control practices.

Inferential statistics were not used nor needed as the entire Medicaid population of children was used for each practice, rather than a sample of each practice's children served by Medicaid.

Results

The intervention practices (OA) experienced a 26% decline in primary care provider visits for children, from 24.1 to 17.9 visits per 100 enrollees per month between the year prior to the intervention (baseline year, 2002) to the post-intervention year, 2004. Control practices experienced minimal change (2% decrease) from 28.3 to 27.7 visits per 100 enrollees per month from the baseline to post-intervention periods (see Figure 1). This translated into a 33% reduction in PMPM costs of these visits from \$10.98 to \$7.35 for OA practices from the baseline to post-intervention periods. Control practices experienced a 19% reduction in PMPM, from \$14.00 to \$11.35 (Figure 2). Overall, this represents a total



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annual savings of \$272,004 for DMA. Preventive care visits (EPSDT) did not change in either group.

Figure 1. Primary care provider outpatient visit rates (per 100 enrollees per month) for intervention practices in the Access collaborative (OA) and control practices (CTRL), from 2002 – 2004.

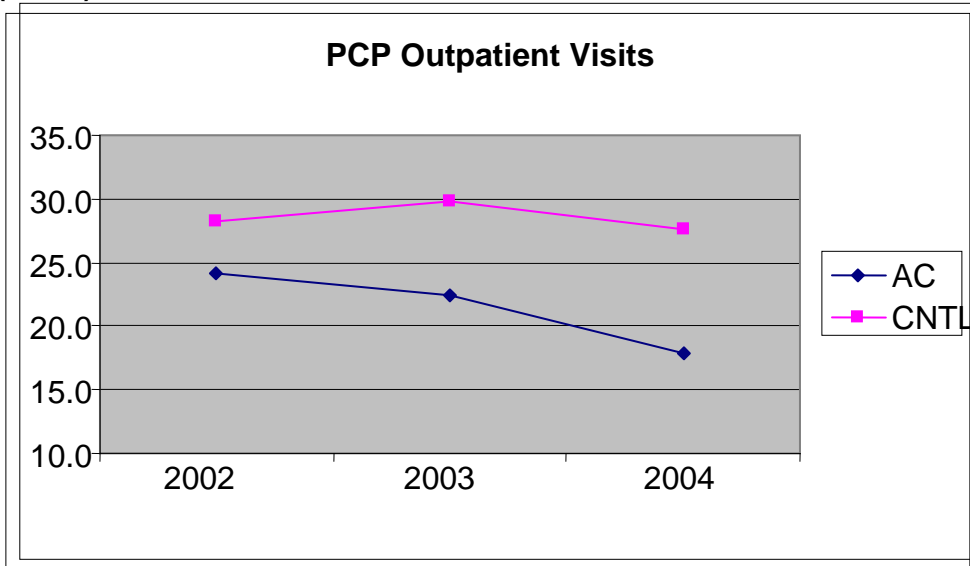
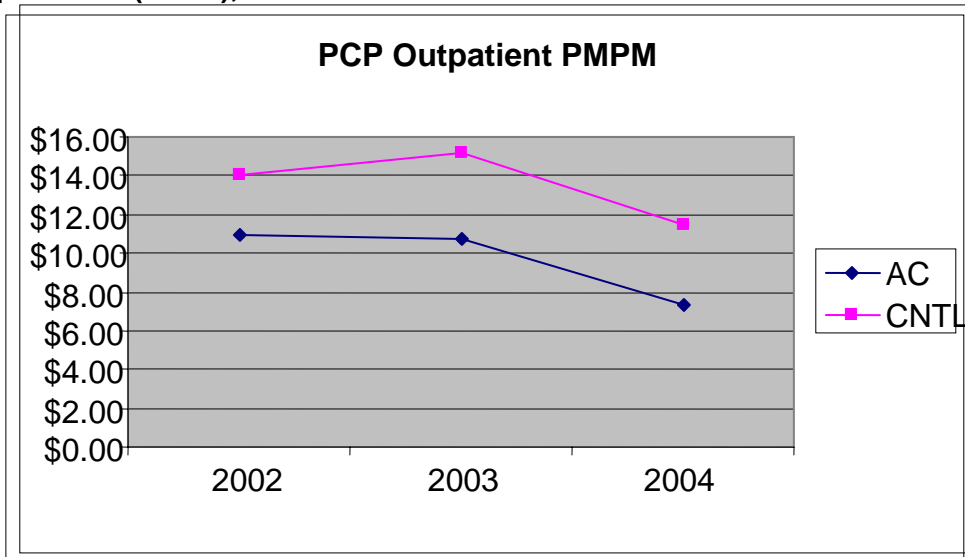


Figure 2. Primary care provider outpatient visit per member per month costs (dollars) for intervention practices in the Access collaborative (OA) and control practices (CTRL), from 2002 – 2004.



Urgent care center visits decreased from .10 to .075 visits per 100 enrollees per month in the intervention practices from the baseline to post-intervention periods, a 25% reduction.



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In control practices, these visits almost doubled, from .24 to .43 visits per 100 enrollees per month (Figure 3). This translated into a reduction in PMPM costs of these visits from \$.12 to \$.04 for intervention practices. Control practices experienced a slight increase in PMPM costs, from \$.16 to \$.18 (Figure 4). Overall, this represents a total annual savings of \$27,756 for DMA.

Figure 3. Urgent care center visit rates (per 100 enrollees per month) for intervention practices in the Access collaborative (OA) and control practices (CTRL), from 2002 – 2004.

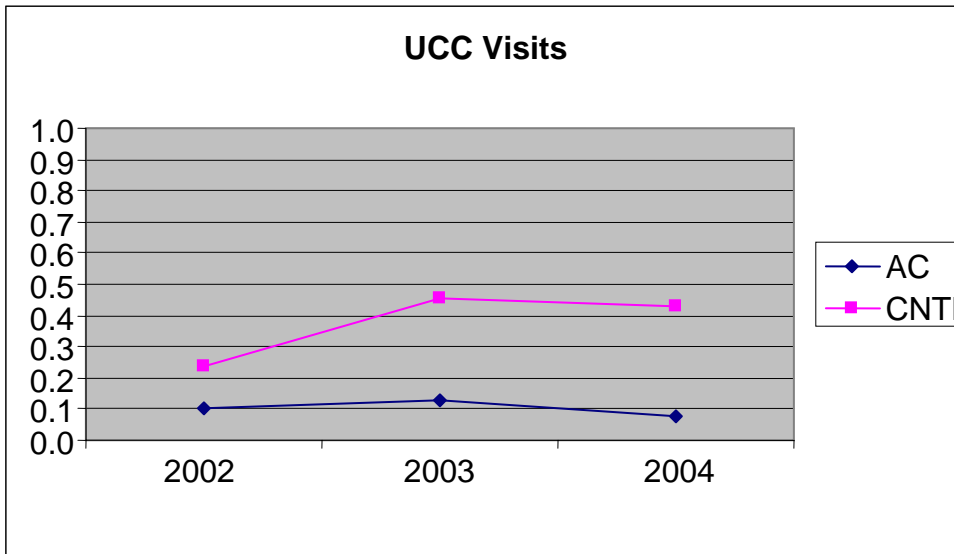
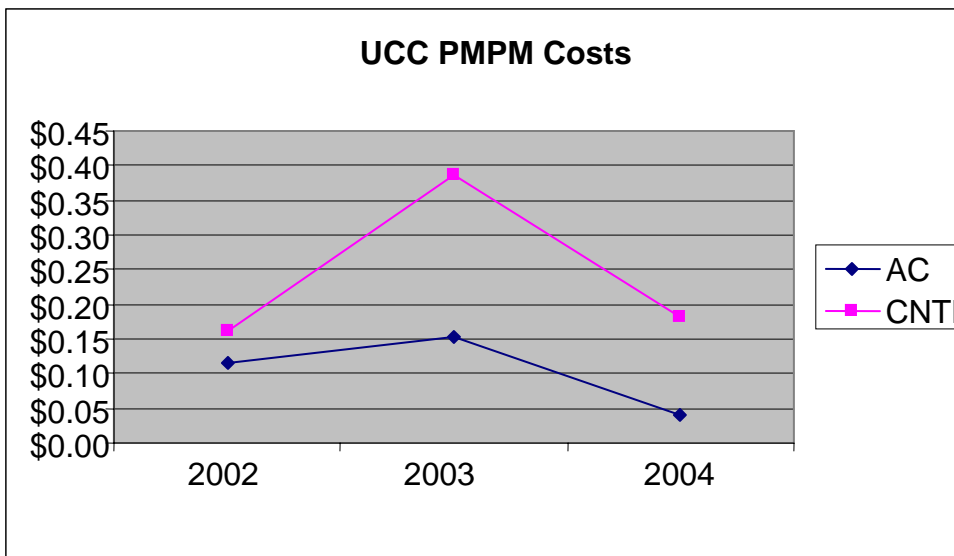


Figure 4. Urgent care center visit costs per member per month costs (dollars) for intervention practices in the Access collaborative (OA) and control practices (CTRL), from 2002 – 2004.



There was little difference in emergency room visit rates between OA and control practices. OA practices total ER visits for children increased from 5.4 to 5.5 visits per 100 enrollees per month while control practices' ER visits declined from 4.7 to 4.4 visits per 100 enrollees per month.

Summary and Discussion

The results of this study show that practices implementing open access principles can reduce the utilization and costs of outpatient care and urgent care center visits for children served by Medicaid within a relatively short period of time (one year). During the one year follow-up period, we did not find an effect on emergency room utilization.

To our knowledge, this is the first study to examine the impact of open access on costs and utilization for children served by Medicaid, thus there is not a comparative body of literature applicable to these findings. However, reports from individual practices and health systems participating in previous QI collaboratives have suggested a decline in outpatient visit rates of 5-15 % due to a decline in low value or unnecessary outpatient visits (personal communication, Mark Murray, June 2005). The theory behind this decline in visits is that: 1) better continuity of care from open access decreases patients' desire to confirm findings made by less familiar clinicians with their own primary clinician (thus generating two visits rather than one) and 2) that easier and more timely access to primary care services decreases patients' anxiety levels and thus decreases unnecessary visits for relatively minor concerns. Indeed, a previous report (see <http://www.dhhs.state.nc.us/dma/ca/accesscollaborative.pdf>) from this collaborative demonstrated increased continuity of care from open access. In this study, outpatient visit costs in OA practices did not decline as much as the number of visits, which we speculate may be due to a decrease in visits for relatively minor concerns (which would be billed at a lower charge per visit [lower RVU]). In addition, the finding that preventive care visits (EPSDT) did not change in either group, supports the conclusion that open access reduces lower value or unnecessary visits.

The degree of reduction in primary care outpatient visits in this study, much greater than the unpublished reports from previous QI collaboratives, deserves special comment. Certainly, this finding deserves further investigation. It is possible that open access has a greater impact on outpatient visit rates among children served by Medicaid. For example, previous studies have demonstrated that impoverished patients have much lower continuity of care, so there is more room for improvement in this area and potentially greater impact.⁷

It should not be surprising that the higher continuity of care and timelier primary care open access provides could lower the utilization of urgent care centers. This study provides data verifying this theory. However, it is somewhat surprising that although urgent care center visits decreased in this study, emergency room visits did not. Since emergency room care is generally sought after usual primary care office hours, open access may not have as much impact. However, it may be that a longer period of time is required for patients to change longstanding behavior related to emergency room use – this study had a very short follow-up period post-intervention (less than one year). If this is the case,



longer follow-up of emergency room utilization may be needed to assess whether open access affects emergency room utilization and costs.

This study has some notable limitations. The study has a short follow-up period post-intervention (less than one year). This could underestimate the impact of open access if measures require longer than one year to respond to changed processes. Also, this short follow-up period means that we cannot assess the sustainability of the changes made. Finally, this study cannot assess the full impact of open access, only the impact of the collaborative intervention because we included all practices that completed the intervention regardless of the degree of implementation of open access (some practices did not fully implement open access within the study period).

In summary, this study shows that open access may offer some important benefits and cost savings for both Medicaid programs and Medicaid recipients. Lower utilization of urgent care center services can benefit Medicaid programs by lowering costs and benefit its recipients by promoting a medical home. Lower utilization of outpatient primary care services can also benefit Medicaid programs by lowering costs and benefit its recipients by reducing the number of lower value or unnecessary visits they attend. Based on the per member per month cost reductions found in this study, the potential cost savings for the NC Medicaid program are substantial. If all practices caring for children served by Medicaid in NC (an estimated 870,000 children in FY2004) implemented open access principles and had similar results, the NC Medicaid program could save approximately \$11,275,000 each year – \$1,044,000 from urgent care center charges and \$10,231,000 from outpatient charges.

References

1. Simpson L, Zodet MW, Chevarley FM, Owens PL, Dougherty D, McCormick M. Health care for children and youth in the United States: 2020 report on trends in access, utilization, quality, and expenditures. *Ambul Pediatr*. 2004;4:131-153
2. Aday LA, Andersen R. A framework for the study of access to medical care. *Health Serv Res*. 1974;9:208-220
3. Morrow AL, Rosenthal J, Lakkis HD, et al. A population-based study of access to immunization among urban Virginia children served by public, private, and military health care systems. *Pediatrics*. 1998;101(2). Available at: www.pediatrics.org/cgi/content/full/101/2/e5
4. Bundy DG, Randolph GD, Murray M, Anderson J, Margolis PA. Open Access in Primary Care: Results of a North Carolina Pilot Project. *Pediatrics* 2005; 116(1); 82-87.
5. Ovreteit J, Bate P, Cleary P, et al. Quality collaboratives: lessons from research. *Qual Saf Health Care*. 2002;11:345–351.
6. Murray M, Berwick DM. Advanced access: reducing waiting and delays in primary care. *JAMA*. 2003;289:1035-1040
7. Mustard CA, Mayer T, Black C, Postl B. Continuity of pediatric ambulatory care in a universally insured population. *Pediatrics*. 1996;98(6 Pt 1):1028-1034.



Appendix

Claims Data Specifications:

Medicaid (Carolina Access) - Open Access Collaborative

The data are reported for the following periods:

CY2002

CY2003

CY2004

Each reporting period is divided into the following age cohorts:
0-21 years old

Two groups of providers are included:

Access Collaborative group (contains 14 providers)

Control group (contains 28 providers)

(For complete lists of the 42 providers, see attached worksheet titled 'PROVIDERS')

The totals are rolled up to the group level.

Regarding claims data -

Include - only claims for listed providers
claims for all clients from all eligibility programs
claim types as described per service categories listed below.
all paid, clean, unvoided original or adjustment Medicaid claims
(does not include NC HealthChoice)
(does include HMO encounter claims)

NOTES - When computing costs, sum the entire claim amount,
not just the claim details for the specific services.

When counting visits, count one visit per client MID/date-of-service/admit-hour. So, a client going for ER visits at 09:00a and 11:00p on the same date, count two ER visits.

Product includes separate totals for each of the following services:

(for each category - display total services, total costs, services per 100 recipients, and PMPM costs)

Average monthly enrollment

(sum the total enrollment for the year, then divide by 12)

ER visits - broken down by true-emergency and non-emergent diagnosis codes

COUNTING VISITS

('M' claims for RC450 and RC451)

COMPUTING COSTS

('M' claims for RC450 and RC451)

Cost for Physician Services for ER and Urgent Care

(do not count visits)

Computing Costs

'J' claims for

CPTs 99281, 99282, 99283, 99284, 99285, 99286, 99287, 99288

Hospital Based Urgent Care-

Counting Visits

(M claims for RC456 and RC459)

Computing Costs

(M claims for RC456 and RC459)

Hospital admissions

COUNTING VISITS



('S' claims - exclude 'Rehab'
[DRG -
462]
- include mental health related inpatient visits
[DRG - '424','425','426','427','428','429','430','431',
'432','433','434','435','436','437','521','522','523']])

COMPUTING COSTS

('S' claims - exclude 'Rehab'
[DRG -
462]
- include mental health related inpatient visits
[DRG - '424','425','426','427','428','429','430','431',
'432','433','434','435','436','437','521','522','523']
and
'J' claims for place-of-service = '1-hospital inpatient')

Outpatient visits

COUNTING VISITS

('J' claims for place-of-service = '3-office'
Exclude 'maternity care' claims
[CPTs - W8201, W8202, W8203, W8204, W8205, S9442,
S9445, T1001, T1017, 99501, 99502]
Exclude claims for -
certain provider-type/provider-specialty combinations:
Head Start - (001/060)
DEC - (038/060)
CAP - (082/094, 082/104)
Hearing Aids - (084/*)
LEA - (093/060)
Case Management - (099/060)
Exclude 'mental health' related outpatient services
(see flowchart for Carolina Access Quarterly Utilization Report)
Exclude 'therapy services'
(see flowchart for Carolina Access Quarterly Utilization Report)
Exclude 'xray' and 'lab' services
(see flowchart for Carolina Access Quarterly Utilization Report))

COMPUTING COSTS

(same as counting 'outpatient visits' as listed above except do not
exclude 'xray' and 'lab' services)

Product may be described as:

For each of the two groups of providers, report counts and costs for certain types of services.

Derive numbers for counts per 100 clients and PMPM costs.

Report the numbers by age cohort within the measurement periods.

