

**Evaluation of Wisconsin's BadgerCare Plus Core Plan for
Adults without Dependent Children**

Report #1

How Does Coverage of Childless Adults Affect Their Utilization?



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EXECUTIVE SUMMARY

This is the first of two reports that present findings from an evaluation of Wisconsin's BadgerCare Plus Core Plan - a 2009 expansion of coverage to low-income adults without dependent children (hereafter referred to as "childless adults"). The Core Plan launched with an automatic enrollment of approximately 12,000 very low-income uninsured childless adults from Milwaukee County's previous General Assistance Medical Program (GAMP). In July 2009, enrollment was opened statewide to low-income uninsured childless adults. Enrollment quickly surpassed state projections and, on October 9, 2009, enrollment was closed; applications made after that date were placed on a waiting list. Total enrollment with this cap reached a peak of 65,057 and then steadily declined with attrition.

This evaluation uses administrative claims to compare the medical care utilization of 9,619 prior GAMP-Core Plan childless adults both prior to and one year following their enrollment into the Core Plan. It also assesses the experience of 56,103 other Core Plan members who enrolled between July 15 and October 9, 2009.

This report (#1) presents findings about the service utilization of the Core Plan population. Report #2 presents findings from an evaluation of the Health Needs Assessment that was required of the non-GAMP enrollees who entered Core Plan in the open enrollment period. That evaluation assesses the utility of the HNA in identifying the presence of chronic conditions and other health needs, and of identifying future resource utilization.

Summary of Findings, Report #1

Question 1. Did service utilization change from pre- to post-enrollment into the Core Plan for the former GAMP population?

Overall, enrollment into the Core Plan from GAMP brought a significant change in service utilization. In particular, Core Plan enrollment led to large increases in ED and outpatient visits and large decreases in hospitalizations for this population.

Emergency Department Utilization

- When enrolled in Core Plan, the former GAMP population shows a 39% increase in total ED visits.
 - In 2008, (under GAMP), individuals averaged 0.132 visits per month to the ED. Once enrolled in Core Plan, they averaged 0.184 visits per month – a sizable and statistically significant increase of 0.052 visits per month.
- This increase in ED visits occurred primarily for visits that are ambulatory care sensitive (ACS). These types of visits include non-emergent visits, visits that are emergent but that could have been treated in a primary care setting, and visits that would have been avoidable had the person had access to good primary care.
- ACS visits increased from 0.065 visits per month in 2008 to 0.0979 visits per month in 2009, an increase of almost 50%. Most of the increase in ACS visits was due to an increase in visits that were non-emergent.
- Visits that are emergent, not primary care treatable, and not avoidable did not increase between 2008 and 2009.
- The remaining visits – injuries, visits for mental health, drug or alcohol treatment, and other visits – increased 46 percent, from 0.043 visits per month in 2008 to 0.063 visits per month in 2009.
 - 62% of the increase in ED visits is attributable to ACS visits.

- Of pre-Core ED visits, 17% resulted in a hospital admission, while 9.5% of post-Core ED visits did so. This significant 45% decline is notable in that Wisconsin Medicaid payment policy considers an ED visit “appropriate” when it results in a hospital admission. The trend is consistent with the increase use of non-emergent ED services that are “ambulatory care sensitive.”
- Increases in ED visits are evident for all subgroups examined, though the magnitude of these increases varies.
 - ED visits increase for both men and women, but the increase was larger for women (68% versus 23%).
 - ED visits also increase for all age groups. While in percentage-point terms these increases are roughly of equal magnitude across groups, in percentage terms ED visits increased the most for individuals aged 55 or older.
 - ED visits among Blacks increased roughly 30% compared with a 50% increase among Whites, a 74% increase among Hispanics, and a 40% increase among those whose race/ethnicity is not reported.

Hospitalizations

- Enrollment into Core Plan led to a 29% decline in the monthly hospitalization rate among former GAMP members.
 - In 2008, individuals averaged 0.046 hospitalizations per month and in 2009 they averaged 0.033 hospitalizations per month, a statistically significant decline of 0.013 visits per month.
- Declines are also evident in 10 out of the 11 PQIs, which are indicators that people are receiving adequate primary care to maintain health. For example,
 - The monthly admission rate for short-term complications related to diabetes declined 32% and that for long-term complications related to diabetes declined 58%.
 - Admissions for hypertension declined 66%; admissions for dehydration declined 81%.
- Hospitalizations declined for all sub-groups examined but fell substantially more among men (40%) than among women (9.1%).
- Hospitalizations fell for all age groups, but declined slightly less for those aged 55 or older.
- Hospitalizations declined for Whites, Blacks, and those with race/ethnicity not reported, but increased slightly among Hispanics.

Outpatient Visits

- Enrollment into the Core Plan led to a statistically significant increase in total outpatient visits per month of 65 percent, from 0.654 to 1.082 visits per month
 - The majority (61% or 0.262 / 0.427) of the increase in visits was due to increases visits to specialists.
 - Only a small amount of this increase (16%) was due to an increase in primary care visits.
 - Most of this increase was due to increases in therapeutic care (52%) and episodic care (46%), while there was no increase in the use of preventive care.

Q1 General Conclusions: GAMP pre- and post- Core Plan Enrollment

- Overall, expanding insurance coverage to childless adults reduces hospitalizations and improves health by increasing access to primary care.
- This increase in primary care, however, appears to have occurred too often in the ED rather than in a primary care setting.

Question 2. *How do the utilization patterns differ between former GAMP members relative to other CORE Plan members?*

- Former GAMP members incur much higher Core Plan use than do other Core members for hospital-related services and prescription utilization.
- Former GAMP enrollees generally have lower utilization of outpatient services than do the other Core Plan members.
- But, within outpatient services, former GAMP enrollees have higher visits for Episodic and Primary Provider and lower for Preventive and Specialty care than do other Core Plan members.
- These differences hold adjusting for any differences in age and gender compositions in the two groups.

Question 3. *What are the top ten diagnoses in Emergency Department settings among Core Plan enrollees?*

- The top ten reasons for Emergency Department visits account for only 21% of all ED visits among Core Plan enrollees. The presenting reasons correspond closely to the top ten reasons reported nationally, particularly by males, for visits to the emergency department.
- The percentage of hospital admissions from the emergency department declined dramatically.
- Among those members with any hospitalization, the entry via the emergency department declined by 52%.

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I. Background

The State of Wisconsin in 2009 launched the BadgerCare Plus Core Plan for adults without dependent children (“childless adults”). Eligible individuals have incomes up to 200% of the Federal Poverty Line (FPL) and do not have access to other forms of health insurance. The Core plan’s program offers a pared down version of those benefits available through the state’s existing Medicaid/CHIP program (BadgerCare Plus). Enrollment for Core Plan opened in July 2009 and was ultimately capped at approximately 65,000 enrollees. In January 2009, prior to opening enrollment to all eligible persons, the State automatically transitioned twelve thousand low income childless adults from Milwaukee County’s General Assistance Medical Program (GAMP) to the Core Plan.

GAMP was established in 1997 in response to the closing of Milwaukee County’s Doyne Hospital, which had provided health care to the indigent population of Milwaukee County. GAMP primarily served to reimburse hospitals and other providers for their expenses related to providing care to chronically uninsured indigent adults with a need for health services. GAMP also contracted with community-based clinics to provide primary and specialty care for enrollees. Individuals could only apply if they were presenting themselves for health care services at a participating provider clinic or emergency department (which included all hospitals in Milwaukee County). To qualify for GAMP, an applicant’s income could not exceed 100% of the federal poverty level for most family sizes. Once approved, enrollment was for six months, after which a person would have to re-enroll.

All enrolled GAMP members as of December 26, 2008 were automatically transitioned to the BadgerCare Plus Core plan on January 1, 2009, at which point GAMP ceased to exist. General Core Plan enrollment opened on July 15, 2009.¹ Table 1a provides summary demographic characteristics of the former GAMP members who enrolled in the Core Plan and Table 1b provides the same information for other Core enrollees. In the GAMP sample, forty-two percent is female. The average age is 43.5 with 26.5% being less than age 35, 55% being between 35 and 55, and 18% being age 55 or older. As the race and ethnicity of a public health program member is not relevant to program eligibility, it is often not reported in the administrative file. Race / ethnicity is missing for 41% of the sample. 23% of the sample is reported as White, 36% as Black, and 7% as Hispanic. The main difference between the two samples: a smaller proportion of the GAMP sample is white and the GAMP sample is somewhat older than the Core Sample.

The Core Plan differs from GAMP in several important ways. The Core Plan provides health care coverage to adults with no dependent children who have incomes below 200% FPL. Once enrolled, members receive a managed care benefit package and face little cost sharing. With some exceptions, coverage is not available to persons who already have any form of private health insurance, quit their job, or voluntarily dropped any health insurance in the last 12 months.

GAMP was a general relief program, rather than an insurance program. As such it differed from insurance coverage in two key features. First, application for the program occurred only upon presentation as an uninsured patient at a participating provider site, while the Core Plan, like other public insurance programs allowed participants to enroll in advance of needing treatment. Interviews with program administrators indicate that GAMP consisted of two general types of enrollees. The first type came in through the emergency department and often transitioned out of coverage at the time of re-enrollment.

¹Application levels for the Core Plan immediately exceeded projections and program budget. Total program enrollment reached a high of 65,057. As a result of this unanticipated demand for the program, an enrollment cap was imposed on October 9, 2009. Applications received after that date were placed on a waiting list and (with a few exceptions for cancer and heart disease patients) none of the waiting list applicants have been enrolled into coverage.

The second type was more stable and used the program for obtaining needed prescriptions and management of chronic illness, generally requiring at least monthly contact with the health system.

Table 1a: Demographic Characteristics of the Transitional (former GAMP) Core Population			
	All	Men	Women
Number of Enrollees	9,619	5,581	4,038
Female	41.98%	--	--
Age (Mean/average)	43.50	42.11	45.42
Age < 35	26.50%	29.48%	22.39%
Age >=35 & Age < 55	55.17%	56.30%	53.62%
Age >=55	18.33%	14.23%	24.00%
White	23.28%	21.45%	26.00%
Black	35.54%	33.60%	38.24%
Hispanic	6.74%	5.61%	8.30%
Race / Ethnicity Missing	41.48%	45.15%	36.40%

Source: BadgerCare Plus Core Plan Enrollment File

Table 1b: Demographic Characteristics of the Non-GAMP Core Population BadgerCare			
	All	Men	Women
Number of Enrollees	56,103	28,578	27,525
Female	49.06%	--	--
Age (Mean/average)	40.57	39.24	41.95
Age < 35	38.35%	41.82%	34.74%
Age >=35 & Age < 55	41.42%	41.89%	40.93%
Age >=55	20.23%	16.29%	24.33%
White	77.30%	74.06%	80.66%
Black	14.51%	17.43%	11.47%
Hispanic	3.97%	4.23%	3.71%
Race / Ethnicity Missing	6.12%	6.57%	5.66%

Source: BadgerCare Plus Core Plan Enrollment File

Second, GAMP served as a mechanism for providers to receive partial payment for services that would have otherwise been uncompensated, with providers typically paying any enrollment fees for beneficiaries. One goal under GAMP was an equitable distribution of burden among providers under the limited amount of money available for the program. Because total inpatient outlays were capped, after the point that the cap was reached hospitals no longer received payments on claims (though claims were submitted regardless of payment status). This means that treatment decisions were made in many cases without expectation of compensation for the providers. From a provider perspective, the Core Plan is

superior because payments under Core are not capped or subject to priority setting. All emergency departments and hospitals in Milwaukee County were required or chose to accept GAMP as a payer. Federally-Qualified Health Centers acted as the principal primary care providers for GAMP. The network of primary care providers was small.

There are some key differences in terms of the services covered by GAMP and by the Core Plan, but as noted above, GAMP paid for services as a safety net program so the meaning of a covered service is less clear. Up until the exhaustion of the annual budget, GAMP paid for hospitalizations and physician visits. Emergency department visits were paid unless the visit was determined to be non-emergent. No payment was provided for services such as behavioral health, health education, physical or occupational therapy, or alcohol or substance treatment. Under the Core Plan, all of the services that GAMP paid for are covered, as well as the additional services mentioned above that GAMP did not pay for. The Core Plan requires nominal co-payments for hospital stays and for physician office visits. Co-payments for emergency department visits apply only for those with income greater than 100% FPL (which is uncommon among the former GAMP population) and in the more likely scenario of the visit not resulting in a hospital admission.

II. Evaluation Approach

State administrative enrollment and claims data were used to assess the effectiveness of the Wisconsin CORE plan in 1) delivering appropriate care to its members, 2) achieving DHS' goals for members' efficiency of service utilization and 3) promoting members' progress toward improved health outcomes.

A. Research Questions

The UW Population Health Institute, in collaboration with DHS, identified the following research questions regarding service utilization for analysis in CY2011. This analysis will be followed by a subsequent study of pent-up demand.

1. Did service utilization change from pre- to post-enrollment into the Core Plan for the former GAMP population?
 - a. *Was there a reduction in emergency department utilization and ACS emergency department utilization?*
 - b. *Was there a reduction in hospitalizations and ACS hospitalization?*
 - c. *Was there an increase utilization of primary or preventive care?*
2. *How do the utilization patterns differ between former GAMP members vs. other CORE members?*
3. *What are the top ten diagnoses in Emergency Department settings among Core Plan enrollees?*

B. Data and Outcome Measures

The data for all analyses were drawn from the State's administrative claims database (called the InterChange system) and from the State's eligibility determination system (called the CARES database). The analyses consider two different samples of Core Plan enrollees. The first is the former-GAMP members who were automatically enrolled in the Core Plan in January 2009. The second is other voluntary enrollees to the Core Plan who enrolled between July 1 and October 9, 2009.

For the GAMP sample, claims data were merged from the GAMP program in 2008 with claims data from the Core Plan in 2009 and with demographic data from the Core Plan enrollment file. Claims were matched for the same set of individuals across years using social security numbers (SSN). For a subset of enrollees, SSN matches did not succeed: 3,333 individuals with GAMP claims in December 2008 (and who should have been automatically enrolled into the Core Plan), were not found in the Core Plan enrollment file. 3,600 Core Plan enrollees with medical status codes indicating that they are members of the former GAMP population had no GAMP claims in 2008 (it is possible, though unlikely, for an individual in GAMP not to have any claims over the course of a year). The individuals in these two samples of 'unmatched' claims are believed by the study team to be largely the same. However, the study limited the sample to the 9,619 individuals who were able to match, leaving a balanced panel. Outcomes were compared for the matched and unmatched samples in both 2008 and 2009 and no differences, on average, were found.

For the Core sample, claims data were drawn from July 15, 2009 (the beginning of coverage under the Core Plan for non-GAMP enrollees) through September 2010. Claims data provided information on diagnoses and utilization by category, while the CARES data provided demographic and income information.²

The outcomes examined include three categories of utilization based on claims data: emergency department (ED) visits, inpatient hospitalizations, and outpatient visits. Separate examination was conducted of ambulatory care sensitive (ACS) ED visits, ACS hospitalizations, and outpatient visits by type of provider (primary care, specialist, or unknown) and by type of care received (preventive, episodic, or therapeutic such as physical therapy). For each person in each year, a "visits per month" measure of utilization was constructed as the total number of visits in that year divided by the number of months the person was enrolled in the program.

One limitation of the administrative data: the research team lack of access to a formal enrollment file for the GAMP program, having only claims for the year 2008. In order to account for exposure time, comparing utilization across the two programs, enrollment status in GAMP is imputed. Imputation is done by allowing the first month in 2008 in which a claim was filed for a beneficiary to begin an enrollment spell. By this account, many spells begin in January but many also begin in December, with spells distributed fairly evenly across other months. The average length of enrollment in GAMP by this measure is 7.43 months.

ED visits are measured as a day with an ED claim, identified using procedure billing codes. ACS ED visits are defined according to Billings et al., (2000) and using the corresponding algorithm, which is publically available from the authors. Using this method, an ED visit is classified on a probabilistic basis into one of five categories, with the first three considered ACS: (1) non-emergent, (2) emergent/primary care treatable, (3) emergent but preventable, and (4) emergent not preventable, (5) injuries, mental health,

²This study's claims data files go through June 2011, but because of potential lags in the filing of claims by providers, a more restricted time frame is used for analysis.

drug or alcohol, other. The final category is separated because the visits that comprise it are likely unrelated to the availability of primary care.

Hospitalizations were measured here as the number of hospital stays, using bed day revenue codes to identify them in the claims. This analysis is careful to distinguish between new admissions and transfers between hospitals, as transfers should not be considered new hospitalizations. Since transfers cannot be observed directly, this study infers that any gap of less than two days between an admission and a discharge or last bed day is a transfer. ACS hospitalizations are measured using AHRQ (2010) Preventive Quality Indices (PQIs). PQIs indicate conditions for which good outpatient care can potentially prevent the need for hospitalization, or for which early intervention can prevent complications or more severe disease. The PQIs considered here are hospital admissions due to the following: (1) short-term complications from diabetes, (2) perforated appendix, (3) long-term complications from diabetes, (4) chronic obstructive pulmonary disease (COPD), (5) hypertension, (6) congestive heart failure, (7) dehydration, (8) bacterial pneumonia, (9) urinary tract infection, (10) angina without procedure, (11) asthma.

Outpatient visits were measured here as the number of provider-day visits. Total outpatient visits are defined using a procedure code that is used only for outpatient visits (which includes skilled nursing visits). These visits are also broken down by type of provider: primary care, specialist, or unknown. Within these categories, visits are further categorized as preventive, episodic, mental/behavioral health (which includes alcohol and substance abuse treatment), or other therapeutic (PT/OT).

C. Methods

Question A1. *Did service utilization change from pre- to post-enrollment into the Core Plan for the former GAMP population?*

The GAMP sample described above was analyzed – the 9,619 individuals with GAMP claims in 2008 who enrolled in Core in January 2009.

Individual-level fixed effects models used here estimate whether outcomes in 2009 (when individuals were enrolled in the Core Plan) differ from their levels in 2008 (when individuals were enrolled in GAMP). This a particularly strong design, as each individual serves as his/her own control.³ As the administrative data lack any time-varying covariates, these models take a particularly simple form:

$$(1) \quad y_{i,t} = b_0 + b_1 Year_{i,t}^{2009} + \phi_i + e_{i,t}$$

where

$y_{i,t}$ is a measure of health care utilization for person i in year t ,

$Year_{i,t}^{2009}$ is an indicator variable for the observation being from 2009;

$\phi_{i,t}$ is an individual level fixed effect; and

$\varepsilon_{i,t}$ is an error term that is uncorrelated with the other covariates.

The coefficient, β_1 , indicates the average change in health care utilization between 2008 and 2009, measured in the units of utilization, for example, visits per month. For ease of interpretation, these changes were converted into percentage changes, $pc_y = \beta_1 / y_{2008}$, where y_{2008} is the average utilization rate

³This approach is similar to that in previous analyses of the impact of Medicaid HMOs (Pollack et al. 2007; Aizer et al. 2005).

in 2008 for the sample. This analysis was also conducted for sub-groups of the GAMP sample defined by age, sex, and race/ethnicity.

The outcomes examined are described in detail in the previous section and include three categories of utilization based on claims data: emergency department (ED) visits, inpatient hospitalizations, and outpatient visits. Also separately examined: ambulatory care sensitive (ACS) ED visits, ACS hospitalizations, and outpatient visits by type of provider (primary care, specialist, or unknown) and by type of care received (preventive, episodic, or therapeutic such as physical therapy). For each person in each year, “visits per month” measure of utilization was constructed as the total number of visits in that year divided by the number of months the person was enrolled in the program.

Question A2. *How do the utilization patterns differ between former GAMP members vs. other CORE members?*

Claims data are used to report the percentage of chronic conditions and utilization differences between those Core Plan members that came from GAMP and the other enrollees. The former GAMP members are defined here as those for whom enrollment began January 1, 2009.

Question A3. *What are the top ten diagnoses in ED settings among Core Plan enrollees?*

This study reports the top ten presenting reasons, as coded in claims, for emergency department visits by all Core Plan enrollees (former GAMP and other) in the study period. Results are presented in comparison to reason reported by the National Ambulatory Medical Care Survey, in order to assess whether the Core Plan population differs substantially in its Emergency Department presenting complaints from the U.S. population overall.

Data describing overall utilization mean and comparison by subgroups is also provided. This allows a picture of the variation in intensity of service use among various subgroups in the Core Plan, apart from the study of GAMP and other enrollees.

III. Results

Question A1. *Did service utilization change from pre- to post-enrollment into the Core Plan for the former GAMP population?*

Emergency Department Visits

When enrolled in Core Plan, the former GAMP population shows an increase in total ED visits of 40 percent (Table 2). In 2008, (under GAMP), individuals averaged 0.132 visits per month to the ED. Once enrolled in Core Plan, they averaged 0.184 visits per month – a sizable and statistically significant increase of 0.052 visits per month.

This increase in ED visits occurred primarily for visits that are ambulatory care sensitive (ACS). These types of visits include non-emergent visits, visits that are emergent but that could have been treated in a primary care setting, and visits that would have been avoidable had the person had access to good primary care. ACS visits increased from 0.065 visits per month in 2008 to 0.0979 visits per month in 2009, an increase of almost 50%. Most of the increase in ACS visits was due to an increase in visits that were non-emergent.

Visits that are emergent, not primary care treatable, and not avoidable did not increase between 2008 and 2009. The remaining visits – injuries, visits for mental health, drug or alcohol treatment, and other visits – increased 46 percent, from 0.043 visits per month in 2008 to 0.063 visits per month in 2009.

The 0.052 visit per month increase in ED visits can be decomposed into the percentages due to increases in ACS visits, non ACS visits, and injuries / mental health, drug, and alcohol / other. This shows that 62% of the increase is attributable to ACS visits.

Increases in ED visits are evident for all subgroups examined, though the magnitude of these increases varies. ED visits increase for both men and women, but the increase was larger for women (68% versus 23%; see Table 3). ED visits also increase for all age groups. While in percentage-point terms these increases are roughly of equal magnitude across groups, in percentage terms ED visits increased the most for individuals aged 55 or older. ED visits among Blacks increased roughly 30% compared with a 50% increase among Whites, a 74% increase among Hispanics, and a 40% increase among those whose race/ethnicity is not reported.

Consistent with the fact that the increase in ED visits was for non-emergent reasons, the percentage of hospital admissions from the emergency department increased by only 10% (compared with the 40% increase in ED visits). Table 4 shows this slight increase in hospitalizations via the Emergency Department for former GAMP enrollees. Looked at another way, we find that 44% of hospitalizations were via ED in pre-Core period, compared to 61% in the post-Core period. This is a significant 38% increase, resulting from the large increase in emergency department visits concurrent with the small decline in the overall rate of hospitalizations.

Conversely, 17% of pre-Core ED visits resulted in a hospital admission, while 9.5% of post-Core ED visits did so. (Table 4a) This significant 45% decline is notable in that Wisconsin Medicaid payment policy considers an ED visit “appropriate” when it results in a hospital admission. The trend is consistent with the increase use of non-emergent ED services that might otherwise be delivered in community settings.

	2008	2009	Difference	% Difference	
Number of Enrollees	9,619	9,619			
ED visits per month	0.132	0.184	0.052	39.5%	*
Ambulatory Care Sensitive Visits	0.065	0.097	0.032	49.0%	*
Non-emergent	0.022	0.042	0.020	92.1%	*
Primary Care Treatable	0.032	0.041	0.010	30.2%	*
Avoidable	0.012	0.014	0.002	20.2%	*
Emergent, Not PC Treatable, Not Avoidable	0.023	0.024	0.000	1.1%	
Injury, Mental Health, Drug, Alcohol, Other	0.043	0.063	0.020	45.9%	*
<i>Decomposing the increase in ED Visits</i>					
Ambulatory Care Sensitive Visits	61.5%				
Emergent, Not PC Treatable, Not Avoidable	0.5%				
Injury, Mental Health, Drug, Alcohol, Other	38.0%				

Note: * indicates p-value < 0.01

Table 3: Former GAMP, Change in ED Visits, by Subgroup				
	2008	2009	Difference	% Difference
Number of Enrollees	9,619	9,619		
Female	0.110	0.186	0.075	68.2% *
Male	0.149	0.183	0.034	23.1% *
Age < 35	0.168	0.210	0.042	24.8% *
Age ≥ 35 & Age < 55	0.136	0.196	0.059	43.5% *
Age ≥ 55	0.070	0.112	0.042	60.2% *
White	0.135	0.203	0.068	50.1% *
Black	0.139	0.181	0.041	29.7% *
Hispanic	0.087	0.151	0.064	73.6% *
Race / Ethnicity Missing	0.126	0.177	0.051	40.2% *

*indicates p-value < 0.05

Table 4: Hospital Admission via the Emergency Department				
	2008	2009 only	Difference	% Difference
Number of Enrollees	9,619	9,619		
Hospitalizations within 1 day of ED visit (Monthly adjusted), zero if no hospitalizations	0.083	0.091	0.008	+10%

Table 4a: Hospitalization Conditional on ED Visit and ED Visits Conditional on Hospitalization	Pre-Core Plan	Post-Core Plan	% Difference
Percent of Hospitalizations Admitted from the ED	44%	61%	+38%*
Percent of ED Visits Resulting in a Hospital Admittance	17%	9.5%	-45%*

*indicates p-value < 0.05

Hospitalizations

Enrollment into Core Plan led to a 29% decline in the monthly hospitalization rate among former GAMP members (Table 5). In 2008, individuals averaged 0.046 hospitalizations per month and in 2009 they averaged 0.033 hospitalizations per month, a statistically significant decline of 0.013 visits per month.

Declines are also evident in 10 out of the 11 PQIs, which are indicators that people are receiving adequate primary care to maintain health. For example, the monthly admission rate for short-term complications related to diabetes declined 32% and that for long-term complications related to diabetes declined 58%. Admissions for hypertension declined 66% and admissions for dehydration declined 81%.

Hospitalizations declined for all groups examined, but fell substantially more among men (40%), than among women (9.1%). (Table 6) They fell for all age groups, but declined slightly less for those aged 55 or older. Hospitalizations declined for Whites, Blacks, and those with race/ethnicity not reported, but increased slightly among Hispanics.

Outpatient Visits

Enrollment into the Core Plan led to a statistically significant increase in total outpatient visits per month of 65 percent, from 0.654 to 1.082 visits per month (Table 7). Visits are disaggregated in two dimensions: by type of provider (primary care provider, specialist, and unknown/missing)⁴ and by type of care (preventive care, episodic care, and therapeutic care).⁵

When sorted by type of provider, the majority (61% or 0.262 / 0.427) of the increase in visits was due to increased visits to specialists. Only a small amount of this increase (16%) was due to an increase in primary care visits. Sorting by type of care shows that the bulk of this increase was due to increases in therapeutic care (52%) and episodic care (46%), while there was no increase in the use of preventive care.

	2008	2009	Difference	% Difference	
Number of Enrollees	9,619	9,619			
Inpatient Hospitalizations per Month	0.04600	0.03265	-0.01335	-29.0%	*
<i>Prevention Quality Indices</i>					
PQI 1. Diabetes Short Term Complications	0.00122	0.00083	-0.00039	-31.8%	*
PQI 2. Perforated Appendix	0.00008	0.00011	0.00003	42.9%	
PQI 3. Diabetes Long Term Complications	0.00061	0.00026	-0.00035	-58.0%	*
PQI 5. Chronic Obstructive Pulmonary Disease	0.00036	0.00027	-0.00009	-24.5%	
PQI 7. Hypertension	0.00076	0.00026	-0.00050	-65.6%	*
PQI 8. Congestive Heart Failure	0.00096	0.00077	-0.00019	-20.2%	*
PQI 10. Dehydration	0.00023	0.00004	-0.00018	-81.1%	*
PQI 11. Bacterial Pneumonia	0.00079	0.00065	-0.00015	-18.5%	
PQI 12. Urinary Tract Infection	0.00031	0.00019	-0.00012	-39.0%	
PQI 13. Angina without Procedure	0.00009	0.00003	-0.00006	-65.7%	
PQI 15. Asthma	0.00126	0.00115	-0.00011	-8.6%	
Any PQI	0.00667	0.00456	-0.00211	-31.6%	*

Note: * indicates p-value < 0.05

⁴The provider codes in claims data sometimes refer to the provider group, not the physician. In these cases it is not possible to differentiate between primary and specialty care providers.

⁵Preventive care includes all well-visits, episodic care includes sick-visits, and therapeutic care includes physical and occupational therapy, behavioral health visits, ophthalmology, alcohol and drug abuse treatment, smoking cessation, and chiropractic visits.

	2008	2009	Difference	% Difference	
Number of Enrollees	9,619	9,619			
Female	0.038	0.034	-0.003	-9.1%	*
Male	0.052	0.031	-0.021	-40.0%	*
Age < 35	0.043	0.027	-0.016	-38.0%	*
Age ≥ 35 & Age < 55	0.050	0.035	-0.015	-29.3%	*
Age ≥ 55	0.040	0.035	-0.006	-14.3%	*
White	0.050	0.035	-0.015	-29.9%	*
Black	0.039	0.032	-0.007	-18.1%	*
Hispanic	0.028	0.031	0.003	9.4%	*
Race / Ethnicity Missing	0.050	0.032	-0.018	-36.7%	*

Note: * indicates p-value < 0.05

	2008	2009	Difference	% Difference	
Number of Enrollees	9,619	9,619			
Total Outpatient Visits per Month	0.654	1.082	0.427	65%	*
Type of Provider					
Primary Care Provider	0.403	0.472	0.069	17%	*
Specialist	0.165	0.427	0.262	159%	*
Unknown / Missing	0.086	0.183	0.097	113%	*
Type of Care					
Preventive	0.039	0.045	0.006	17%	
Episodic	0.550	0.748	0.199	36%	*
Therapeutic	0.065	0.288	0.222	341%	*
<i>Decomposing the increase</i>					
Primary Care Provider	16%				
Specialist	61%				
Unknown / Missing	23%				
Preventive	2%				
Episodic	46%				
Therapeutic	52%				

Note: Therapeutic includes PT/OT, behavioral health, ophthalmology, AODA, smoking cessation, and chiropractic visits.

* indicates p-value < 0.05

Question A2. *How do the utilization patterns differ between former GAMP members vs. other CORE members?*

Table 8 reports the percentage of chronic conditions, while Table 9 details utilization differences between those Core Plan members that came from GAMP and the other enrollees. The former GAMP members are defined here as those for whom enrollment began January 1, 2009.

- Former GAMP enrollees show higher rates of chronic illness, through diagnoses reported in claims, for every condition studied.
- Former GAMP members incur much higher Core Plan use than do other Core members for hospital-related services and prescription utilization.
- The GAMP group generally has lower utilization of outpatient services than does the other Core Plan members.
- In the Outpatient Visit category, GAMP has higher visits for Episodic and Primary Provider and lower for Preventive and Specialty.
- These trends hold regardless of age and sex.

Conditions	Transitional Enrollees (Former GAMP) N=9,619	Other Core Enrollees N=56,103
Asthma	20.28%	10.84%
Cancer	5.44%	4.69%
COPD	18.87%	9.09%
Emphysema	2.92%	1.05%
Depression	26.91%	21.65%
Diabetes	27.42%	17.21%
Heart Problems	27.89%	13.69%
High Blood Pressure	49.78%	29.72%
Stroke	6.19%	2.49%
No HNA Conditions (Not including Mental Health)	26.11%	42.03%

Source: BadgerCare Plus Core Plan Enrollment and Claims Files

Question A3. *What are the top ten diagnoses in Emergency Department settings among Core Plan enrollees?*

Table 10 lists the top ten reasons for emergency department visits of Core Plan enrollees. These top ten reasons account for only 21% of all ED visits among Core Plan enrollees, indicating that Core Plan enrollees utilize ED services for a wide range of concerns. The presenting reasons correspond closely to the top ten reasons reported nationally, particularly by males, for visits to the emergency department. Nationally reported top reasons for females vary because the national sample includes women with reproductive complications, a population not included in the Core Plan.

Table 9: Service Utilization, GAMP Core vs. Non-GAMP Core				Regression Adjusted (Age/Sex)
	Mean			
	Enrolled January 1	Enrolled any other 2009	Difference	Difference
Number	12,941	56,103		
Any Utilization (medical, Rx, dental)	0.9426	0.9175	.0251*	
ED visits in first year, monthly averaged	0.1275	0.0769	0.0506*	0.0510*
Hospitalizations (monthly averaged)	0.0173	0.0122	0.0051*	0.0042*
Readmissions (proportion of hospitalizations)	0.2079	0.0860	0.1219*	0.1181*
Readmissions (monthly averaged)	0.0106	0.0027	0.0079*	0.0077*
Prescription Fills (monthly averaged, allowed more than one per day)	1.5845	1.3777	0.2068*	0.1707*
Total Outpatient (monthly averaged, allowed more than one per day)	0.6998	0.8183	-0.1184*	-0.1196*
Primary provider	0.7759	0.4559	0.3199*	0.3206*
Specialty provider	0.3631	0.4510	-0.0878*	-0.0883*
Preventive	0.0380	0.0615	-0.0235*	-0.0214*
Episodic	0.5011	0.4820	0.0191*	0.0160*
PTOT	0.0936	0.0915	0.0021	-0.0014
Mental Health	0.0467	0.0500	-0.0033	-0.0024

* Estimates are statistically different from zero at the 5% level

**Table 10: All Core Plan Enrollees (both former GAMP and other)
Top Ten ED Visit Diagnoses (January 1009-September 2010)**

Core Plan Member ED Visit Reasons	Frequency of Visits	Percent of all ED Visits	Top reported for Males Nationally, Males Ages 15-64*	Top Reported for Females Nationally, Ages 15-64*
1. Unspecified Chest Pain	2,647	3.21%	1. Chest pain and related symptoms	1. Stomach pain cramps and spasms
2. Lumbago	2,167	2.62%	2. Stomach pain, cramps, and spasms	2. Chest pain and related symptoms
3. Abdominal Pain, Other unspecified site	2,039	2.47%	3. Back symptoms	3. Headache, pain in head
4. Headache	2,028	2.46%	4. Pain, site not referable to a specific body system	4. Back symptoms
5. Nondependent Alcohol Abuse, Unspecified Drinking Behavior	1,762	2.13%	5. Headache pain in head	5. Problems of pregnancy and the post-partum period
6. Unspecified Disorder of the Teeth and Supporting Structures	1,631	1.98%	6. Lacerations and cuts—upper extremity	6. Pain, site not referable to a specific body system
7. Other Chest Pain	1,456	1.76%	7. Shortness of breath	7. Symptoms referable to throat
8. Abdominal Pain Unspecified Site	1,401	1.70%	8. Symptoms referable to throat	8. Shortness of breath
9. Backache Unspecified	1,279	1.55%	9. Low back symptoms	9. Nausea
10. Pain in Limb	1,194	1.45%	10. Leg symptoms	10. Uterine and vaginal bleeding
Total of Top 10 Reasons	17,604	21.32%		

Source: National ED Utilization data from Niska R, Bhuiya R, Xu J. National Hospital Ambulatory Medical Care Survey: 2007 Emergency Department Summary. CDC National Health Statistics Reports Number 26, August 6, 2010.

IV. Discussion

The BadgerCare Plus Core Plan has had a significant effect on the utilization of health care by the low-income, uninsured, childless adult population of Wisconsin. First, this population substantially increased their use of the emergency department. Much of this increase was for ambulatory care sensitive reasons, non-emergent care and for care related to mental health, drug, and alcohol treatment. This finding is entirely consistent with previous studies such as Anderson et al. (2011), who found a decrease in ED visits of 40 percent when a young population ages out of their parent's insurance policies and becomes uninsured. The current study's result differs from that of Finkelstein et al. (2011) who found no statistically significant increase in ED use from being covered by public insurance.

Second, the Core Plan population had a sizeable reduction in their rate of hospitalizations. The fact that preventive quality indices also declined -- for example, admissions for hypertension -- suggests that the underlying health of this population improved, and that increased access to ambulatory care led to such improvement. This result is a striking difference from previous findings. Anderson et al. (2011) found that inpatient hospitalizations decreased by 60 percent when young adults age out of their parents' policies, Dafny and Gruber (2005) found that expansions in Medicaid coverage lead to an increase in hospitalizations among children, and Finkelstein et al. (2011), who reported that Medicaid coverage leads to an increase in hospitalizations. Only Kaestner et al. (2001) found a similar result, that Medicaid expansions lead to a relative decline in avoidable hospitalizations among children.

Third, this Core Plan study finds a large increase in the number of outpatient visits. However, this increase is driven entirely by increased use of specialty care; no increase in the use of primary and preventive care was observed. Again, this is partially inconsistent with the findings of Finkelstein et al. (2011). That study, like the current study, found that public coverage leads to an increase in outpatient visits. However, the current study finds a much smaller effect on primary care and no effect on preventive visits, while Finkelstein and colleague found large increases in both.

Differences between this study's findings and those of previous studies are likely due to important differences in the characteristics of the populations studied and in the nature of the intervention. For example, Anderson et al. (2011) studied non-poor young adults, Kaestner et al. (2001) and Dafney and Gruber (2005) studied poor children. Finkelstein et al. (2011), like the current study, examined the experience of poor childless adults. However, former GAMP members are even lower income than those who enrolled in either the Core Plan generally or in the Oregon expansion program. Moreover, the GAMP population in Wisconsin was automatically enrolled into the Core plan; whether they would have voluntarily enrolled is unknown. By contrast, entering the Oregon lottery was voluntary. Finally, the population of Wisconsin's former GAMP enrollees is somewhat sicker than the overall set of enrollees in Wisconsin's Core Plan (who are more comparable to the Oregon uninsured childless adult population). The Core Plan study finds, for example, the incidence of chronic illness among Core Plan sample to be almost twice what it among other enrollees (see Table 7).

Wisconsin's experience with covering uninsured childless adults, therefore, shows mixed results. On the one hand, hospitalizations declined substantially as did hospitalizations related to ACS conditions. This finding strongly suggests that the underlying health of this population improved as a result of increased access to preventive and primary care. On the other hand, the study finds a dramatic increase in emergency department visits for ACS conditions and no increase in the utilization of primary or preventive care in an outpatient setting. Public insurance coverage seems to be reducing hospitalizations and improving health through increased preventive care, but this care is being obtained in the emergency department rather than in a more appropriate primary care setting. Thus, despite the potential benefits of expanding public insurance, this population still faces challenges either with lack of access to and/or appropriate use of primary care in physician offices and community-based settings.

Appendix: Previous Literature

Many studies have documented that the uninsured are more likely than the insured to delay care, use the emergency department on an episodic basis, and enter the health care system through more expensive entry points, including otherwise avoidable hospitalizations or emergency department visits, and may present with greater severity of illness. Efforts to cover the uninsured tend to rely on the expectation that, while some aspects of utilization may increase, more appropriate and timely care could reduce overall spending while improving health (IOM 2002). However, the vast majority of the research underlying this expectation lacks a credible research design. Simple comparisons of the uninsured to the insured do not demonstrate how the utilization of the uninsured would change should they be covered by a health insurance program because, for example, those who anticipate needing higher levels of health services are likely to already be insured.

A number of studies in the economics literature have employed credible research designs to measure the impact of health insurance coverage on utilization. Anderson et al. (2011), employ a regression discontinuity that exploits the exogenous variation in insurance coverage that occurs when young adults age out of their parents' insurance coverage. They find that, for this group, insurance coverage increases ED visits by 40 percent and increases hospitalizations by more than 60 percent. Card et al. (2008) also use a regression discontinuity to take advantage of the large change in the source of insurance coverage at age 65 and find that Medicare coverage leads to an increase in health care utilization, although they cannot disentangle the effect of moving from uninsured to Medicare from that of moving from private coverage to Medicare. Doyle (2005) compares uninsured and insured individuals who were hospitalized following automobile accidents and find that insurance status is positively related to the number of days spent in the hospital.

A few studies have examined the impacts of expansions in Medicaid eligibility on health care utilization. Kaestner et al. (2001) compares avoidable hospitalizations among children in poor, near poor, and other neighborhoods between 1988 and 1992 (a period of expansions in public coverage for children) and find declines in avoidable hospitalizations for children in poor and near poor neighborhoods relative to other children over this time period. Dafny and Gruber (2005), like Kaestner et al. (2001), use expansions in Medicaid eligibility for children in the late 1980s and early 1990s to identify the effect of public insurance coverage on hospitalizations. They find that this coverage increases hospitalizations, but only unavoidable hospitalizations. Avoidable hospitalizations increase by a statistically insignificant amount. Currie and colleagues (2008) find that Medicaid expansions to older children increase the use of preventive care but do not improve health.

This Wisconsin study differs from these previous studies in that the population examined consists of very low-income adults without dependent children. Previous studies have either examined children or those with high rates of private insurance (and higher incomes).

The paper that is most similar to ours is Finkelstein et al. (2011). This study compares uninsured low-income childless adults who were selected by lottery to be given the chance to apply for Medicaid with those that entered the lottery but were not selected. They find that those who won the lottery were 25 percentage points more likely to have insurance a year later, had higher health care utilization overall, and had higher rates of primary care, preventive care, and hospitalization.

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