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The Ambulatory Integration of the Medical and Social (AIMS) model: A retrospective evaluation

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ABSTRACT
An exploratory, retrospective evaluation of Ambulatory Integration of the Medical and Social (AIMS), a care coordination model designed to integrate medical and non-medical needs of patients and delivered exclusively by social workers was conducted to examine mean utilization of costly health care services for older adult patients. Results reveal mean utilization of 30-day hospital readmissions, emergency department (ED) visits, and hospital admissions are significantly lower for the study sample compared to the larger patient population. Comparisons with national population statistics reveal significantly lower mean utilization of 30-day admissions and ED visits for the study sample. The findings offer preliminary support regarding the value of AIMS.

Background
In 2008, Berwick and colleagues first described the triple aim of improving population health (better health), improving the patient experience of care (better care) and reducing per capita health care costs (lower costs) (Berwick, Nolan, & Whittington, 2008). Since this time, the triple aim framework has been widely adopted both nationally and internationally by the Centers for Medicare and Medicaid Services (CMS), private and public health care organizations, and more than 100 sites participating in the Institute for Healthcare Improvement (IHI) triple aim initiative (Beasley, 2009; Steifel & Nolan, 2012). Triple aim concepts are also present in the Patient Protection and Affordable Care Act (ACA) (2010). For example, Section 3025 of the ACA added Section 1886(q) to the Social Security Act, which establishes the Hospital Readmissions Reduction Program. This program requires the CMS to reduce payments to acute inpatient
prospective payment system (IPPS) hospitals with excessive readmissions (CMS, 2012). The ACA also encourages the use of integrated care coordination. It also requires the utilization of electronic health records (EHRs). All of these ACA provisions can lead to better health, better care, and lower costs because they encourage the: (1) provision of population health prevention strategies; (2) development of interprofessional health care teams to address the medical and non-medical needs of high risk populations in a coordinated fashion across health care settings; and (3) sharing of health information across settings and health care disciplines to minimize the fragmentation of health care delivery.

At the same time that the triple aim framework is being adopted widely, there is increasing recognition that non-medical issues, and specifically social determinants of health, are intricately linked to health and health outcomes. The World Health Organization (WHO) recognizes that addressing social determinants of health, including unmet non-medical needs, is fundamental to their work as evidenced by its organizational priority in the WHO current plan (WHO, 2008, 2012).

Many individuals find themselves unable to comply with their medical care plans as a result of non-medical needs, such as social and economic barriers, which can result in new or exacerbated medical conditions (RWJF, 2011; RWJF, NPR, & Harvard, 2015). Unmet non-medical issues often result in poorer health at a high, avoidable cost, including increased mortality, greater use of the emergency department (ED) and other acute care services, and unnecessary hospitalizations (CDC, 2011; RWJF, 2008, 2011). The negative outcomes associated with non-medical issues are even greater for older adults and those with multiple chronic health issues (Moon & Shin, 2006).

Health care leaders, researchers, and advocates are responding to the triple aim of better health, better care, and lower health care costs by recognizing that the integration of services to address the non-medical and medical needs of patients can maximize the achievement of the triple aim. While some non-medical factors can be eliminated with population-based interventions through the work of organizations, many may also be mitigated or alleviated through the integration of medical and non-medical care needs for patients (Williams, Costa, Odunlami, & Mohammed, 2008). The consequences of the historical fragmentation of the American health care delivery system have been poor population health, less than satisfactory care, and skyrocketing costs partly because each health care discipline worked in a silo and did not communicate well with other health care providers or the patients. Therefore, the doctor more often than not did not address unmet non-medical needs that impact patients’ care plans and other health care professionals working with the patients did not know that unmet non-medical needs were impacting the patients’ ability to follow through in their care plans. Addressing the
Several care coordination models designed to integrate medical and non-medical needs for patients currently exist. A review of the literature conducted by Shier and colleagues (2013) revealed seven distinct care models that link medical and non-medical services for patients. The existing models use established or ad hoc interdisciplinary care teams and share many common elements (i.e., baseline health assessment, social assessment, individualized care plan, case management, and referral to, or arrangement for, social or supportive services). The literature reveals that many existing models have a positive impact on health and demonstrate cost savings (Shier et al., 2013).

Although the review conducted by Shier and colleagues’ (2013) provides support for care models that integrate medical and non-medical needs, the review failed to identify the extent to which service components of existing models achieve results. Based on their review of the literature, Shier et al. (2013) call for more research to specifically explore the relationship between social service provision to address patients’ unmet non-medical needs in integrated models of care and the achievement of the triple aim components.

The AIMS model

To extend the success of existing models in integrating non-medical and medical services to meet patients’ needs, social workers at Rush University Medical Center (RUMC) Health and Aging (RHA) in consultation with experts in primary care models (Shier et al., 2013), developed the Ambulatory Integration of the Medical and Social (AIMS) model. The model is a protocolized four-step care coordination intervention delivered exclusively by masters level social workers. The goal of AIMS is to integrate medical and non-medical services to address patients’ health care outcomes, including patients’ use of health services, patients’ self-reported outcomes and patients’ satisfaction with health care service. The model is delivered telephonically, in-person, or both and is typically completed in 6 weeks.

The AIMS model, described in detail elsewhere (Rizzo, Rowe, Shier Kricke, Kraji, & Golden, in press), involves four steps: (1) Patient engagement—the social worker will establish rapport and trust, and ensure that the patient understands the need for care coordination. Through the engagement process, the social worker joins with the patient to identify immediate non-medical goals; (2) Assessment and care plan development—the social worker conducts a comprehensive biopsychosocial assessment using a multidimensional assessment tool. The tool includes seven
domains. It assesses strengths and identifies non-medical factors that may affect medical plan adherence, health care services utilization, and health care outcomes. With the assessment information, a mutually agreed upon care plan is developed; (3) *Case management*—the social worker assists the patient in implementing the care plan, which may include providing information, linking the patient with community resources, employing problem-solving techniques, and motivational interviewing techniques. When clinically appropriate, patients are encouraged to independently implement goals with the support of the social worker. The social worker maintains weekly contact to assess goal(s) attainment, modify the care plan goal(s) if necessary and conduct direct referrals to services if necessary; (4) *Ongoing care as needed*—the social worker closes the case upon successful achievement of goals, ensures community-based resources are in place to support the patient in the long term, and encourages the patient to contact the social worker if new challenges emerge.

The AIMS model was piloted in March 2010 and later integrated into five primary care clinics at RUMC in January 2012. Since the original pilot, AIMS has been used to serve over 1,000 patients aged 60 and older who received primary care medical services through RUMC’s network of primary care physicians. In March 2014, the AIMS model was recognized by the Agency for Healthcare Research and Quality’s (AHRQ) Health Care Innovations Exchange as an intervention with suggestive evidence (AHRQ, 2013). While AIMS has received widespread attention, there is little evidence to document its effectiveness.

To assess the merits of AIMS with respect to one aspect of the triple aim, lower costs (Berwick et al., 2008), an exploratory retrospective evaluation was conducted to explore the links between AIMS and utilization of costly health care services by older adult patients. The evaluation addresses the following questions: (1) To what extent does AIMS affect 30-day readmissions? (2) To what extent does AIMS affect ED usage? And, (3) To what extent does AIMS affect hospitalizations?

**Methods**

**Procedures**

An exploratory retrospective evaluation with a one-group design was used to examine the extent to which AIMS affected one component of the triple aim: lower cost. Services identified in the ACA as being used excessively, including 30-day readmissions, ED usage, and hospital admissions (Patient Protection and Affordable Care Act, 2010) were examined. Service utilization means, extracted from existing records for the sample, were compared to service
utilization means available for the larger RUMC population and national or regional populations.

The evaluation included 640 patients aged 60 and older who received the AIMS intervention between March 1, 2010 and February 28, 2014, and for whom AIMS record and service utilization information were documented in their EHRs. Patients who received the AIMS intervention were enrolled by way of referral from primary care providers within the RUMC network (i.e., primary care physicians or nurses) who identified individual patients with unmet non-medical needs that affected individual care plans. The evaluation was approved by the Institutional Review Boards of Rush University Medical Center (ORA # 14021 102-IRB01), the University of Wisconsin–Whitewater (Protocol # R13405137Q), and Binghamton University, State University of New York (IRB Study # 1409000063).

**Measures**

The primary outcome variables in this evaluation are 30-day readmissions, ED usage, and hospital admissions for patients who received services within the RUMC network. **Thirty-day readmissions** are the number of times a patient was admitted to RUMC within 30 days of a previous hospitalization for the 6 months after receiving AIMS. **ED usage** is the number of times a patient used ED services at RUMC for the 6 months after receiving AIMS. **Hospital admissions** are the number of times a patient was admitted to RUMC for the 6 months after receiving AIMS.

**Data**

**Sample**

The evaluation was informed by existing hospital EHRs. The EHR data were collected by RUMC and include medical, clinical, cost, and payer information for each patient. Also included in the EHR is information about service utilization for individual patients. Data extracted from the individual EHRs for the evaluation included demographic information and number of times services for the three outcome variables were used for the 6 months after receiving AIMS.

**Population**

Reported service utilization means for the larger RUMC population and national or regional populations were used to test whether the sample service utilization means differed from the population means.

Service utilization means for the RUMC population were derived from an existing RUMC unpublished internal report. The report was generated to provide RUMC stakeholders with an estimate of costly services utilized by
older adult patients. The report only included the average annual number of services used for the three primary outcome variables. Annual averages of the services utilized were used to estimate 6-month service utilization means, which were calculated by dividing each available annual average by two. The estimated 6-month service utilization means for the RUMC population are 0.35 for 30-day readmissions, 0.95 for ED usage, and 1.00 for hospital admissions.

Published national or regional data were used to identify service utilization means for the larger population of older adults. Due to the absence of national statistics for 30-day readmissions, which this study defines as the number of times a patient is readmitted to the hospital, regional data reported for the Chicago area were used (Brennan, 2012; Gerhardt et al., 2013). National estimates were used for ED usage (Albert, McCaig, & Ashman, 2013) and hospital admissions (AHRQ, 2011). Because regional and national studies report annual averages, 6-month estimates were calculated. Estimates were calculated by dividing documented annual number of services used for the three primary outcome variables by two. The estimated 6-month 30-day readmissions service utilization mean for the larger population is 2.45. A 6-month estimated service utilization mean of 0.26 was calculated for ED visits, and an estimated 6-month service utilization mean of 0.16 was calculated for hospital admissions for the larger population of older adults.

Data analysis

Ideally, regression analyses would have been conducted to assess whether service utilization means observed for the AIMS participant sample differed from population means. However, one-sample t-tests using IBM SPSS software version 22 (IBM Corporation, 2013) were used because full population information was unavailable (Knoke, Bohnstedt, & Potter Mee, 2002, p. 122). Two sets of analyses were performed. The first set of analyses examined whether 6-month service utilization means observed for the AIMS sample differed from means of utilization observed for the RUMC population of older adults. The second set of analyses examined whether the mean 6-month service utilization means observed for the AIMS sample differed from means of utilization observed for the national or regional population of older adults.

Results

Participant profiles

Demographic characteristics of patients who received the AIMS intervention (n = 640) are shown in Table 1. Patients ranged in age from 60 to 98 years, with a sample mean age of 72.4 (SD = 8.6). About two-thirds were women (62.3%), a little over a third were White (39.8%) and Black
In terms of functional ability level, the average number of activities of daily living (ADL) impairments was 2.6 ($SD = 3.1$) and the average number of instrumental activities of daily living (IADLs) impairments was 3.9 ($SD = 3.0$). Approximately one-fifth of the participants had some level of cognitive impairment, dementia, or suspected dementia. Patients were referred to AIMS 1.43 times on average, with some clients being referred as many as six times during the evaluation period. The majority of patients were referred for a full social work assessment (23.4%) and assistance with in-home services (28.4%). Other reasons for referrals included caregiver support/education (7.5%) financial benefits program screening (4.4%), personal health record assistance (5.8%), stress management support/education (7.7%), and mental health counseling (2.8%).

Table 2 identifies the primary payer source information. The majority of patients were Medicare insured (59.1%) followed by other insurance providers (31.3%), which included self-pay patients, private HMOs, and participating provider organizations (PPOs). Few patients were insured by Medicaid (4.7%), and even fewer were dual eligibles, meaning they were insured by both Medicare and Medicaid (1.3%).
AIMS and Rush population

The average number of 30-day readmissions, ED usage, and hospital admissions at 6 months for AIMS participants, shown in Table 3, are 0.51, 0.10, and 0.15, respectively. A set of one-sample t-tests comparing the AIMS sample to the RUMC population, shown in Table 4, was conducted to examine whether 6-month means for AIMS participants are significantly lower than estimated 6-month means for the RUMC population. The first t-test was conducted to examine 30-day readmissions. The results reveal the mean 0.15 (SD = 0.68) observed for AIMS participants is significantly lower than the mean 0.35 observed for RUMC population, t(580) = -7.2, p = .000. The second t-test was conducted to examine ED usage. The results reveal the mean 0.10 (SD = 0.44) observed for AIMS participants is significantly lower than the mean 0.95 observed for the RUMC population, t(598) = -47.9, p = .000. A third t-test was conducted to examine hospital admissions. The results reveal mean 0.51 (SD = 1.23) observed for AIMS participants is significantly lower than the mean 1.00 observed for RUMC population, t(598) = -9.8, p = .000. The results support the conclusion that AIMS participants have significantly fewer 30-day readmissions, less ED usage, and lower hospital admissions at 6 months compared to the RUMC population.

Table 2. Insurance or payer sources.

<table>
<thead>
<tr>
<th>Payer Source</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicare</td>
<td>374</td>
<td>59.1</td>
</tr>
<tr>
<td>Medicaid</td>
<td>30</td>
<td>4.7</td>
</tr>
<tr>
<td>Dual eligible</td>
<td>8</td>
<td>1.3</td>
</tr>
<tr>
<td>Other insurance*</td>
<td>200</td>
<td>31.3</td>
</tr>
<tr>
<td>Missing</td>
<td>24</td>
<td>3.8</td>
</tr>
</tbody>
</table>

*Other includes self-pay, HMO, PPO, or combination of categories.

Table 3. 6-month 30-day readmissions, ED visits, and hospital admissions.

<table>
<thead>
<tr>
<th>Item</th>
<th>Number</th>
<th>Range</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-day readmissions</td>
<td>581</td>
<td>0–7</td>
<td>0.15</td>
<td>0.68</td>
</tr>
<tr>
<td>ED visits</td>
<td>599</td>
<td>0–5</td>
<td>0.10</td>
<td>0.44</td>
</tr>
<tr>
<td>Hospital admissions</td>
<td>599</td>
<td>0–12</td>
<td>0.51</td>
<td>1.23</td>
</tr>
</tbody>
</table>

Table 4. One-sample t-tests for 30-day readmissions, ED visits, and hospital admissions at 6 months comparing estimated 6-month RUMC averages.

<table>
<thead>
<tr>
<th>Item</th>
<th>Number</th>
<th>Mean (SD)</th>
<th>Comparison mean</th>
<th>t-value</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-day readmissions</td>
<td>581</td>
<td>0.15 (0.68)</td>
<td>0.35</td>
<td>-7.2</td>
<td>.000</td>
</tr>
<tr>
<td>ED visits</td>
<td>599</td>
<td>0.10 (0.44)</td>
<td>0.95</td>
<td>-47.9</td>
<td>.000</td>
</tr>
<tr>
<td>Hospital admissions</td>
<td>599</td>
<td>0.51 (1.23)</td>
<td>1.00</td>
<td>-9.8</td>
<td>.000</td>
</tr>
</tbody>
</table>
Table 5. One-sample t-tests for 30-day readmissions, ED visits, and hospital admissions at 6 months comparing estimated 6-month national/regional averages.

<table>
<thead>
<tr>
<th>Item</th>
<th>Number</th>
<th>Mean (SD)</th>
<th>Comparison mean</th>
<th>t-value</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-day readmissions</td>
<td>581</td>
<td>0.15 (0.68)</td>
<td>2.45&lt;sup&gt;1&lt;/sup&gt;</td>
<td>−81.9</td>
<td>.000</td>
</tr>
<tr>
<td>ED visits</td>
<td>599</td>
<td>0.10 (0.44)</td>
<td>0.26&lt;sup&gt;2&lt;/sup&gt;</td>
<td>−9.1</td>
<td>.000</td>
</tr>
<tr>
<td>Hospital admissions</td>
<td>599</td>
<td>0.51 (1.23)</td>
<td>0.16&lt;sup&gt;3&lt;/sup&gt;</td>
<td>6.9</td>
<td>.000</td>
</tr>
</tbody>
</table>

<sup>1</sup>Brennan (2012) and Gerhardt et al. (2013); <sup>2</sup>Albert et al. (2013); <sup>3</sup>AHRQ (2011).

<sup>a</sup>Significant, but fails to support AIMS.

**AIMS and national or regional averages**

A second set of one-sample t-tests comparing the AIMS sample to the national or regional statistics, shown in Table 5, was conducted to examine whether 6-month means for AIMS participants are significantly lower than estimated 6-month means for the larger populations. The first t-test was conducted to compare 30-day readmissions for AIMS participants with the observed estimated Chicago area mean. The results reveal the mean 0.15 (SD = 0.68) observed for AIMS participants is significantly lower than the mean 2.45 observed for Chicago area older adult population, $t(580) = −81.9$, $p = .000$.

Subsequent tests were conducted to compare ED usage and hospital admissions for AIMS participants with observed estimated national means. The second t-test was conducted to examine ED usage. The results reveal the mean 0.10 (SD = 0.44) observed for AIMS participants is significantly lower than the mean 0.26 observed for larger national population, $t(598) = −9.1$, $p = .000$. The third t-test was conducted to examine hospital admissions. The results reveal the mean 0.51 (SD = 1.23) observed for AIMS participants is significantly higher than the mean .16 observed for larger national population.

The results support the conclusion that patients served with AIMS have fewer 30-day readmissions and ED visits compared to Chicago area older adult population and larger national population, respectively. However, the results failed to provide support that AIMS participants have lower hospital admissions compared to larger national population.

**Discussion**

The findings from this exploratory evaluation provide preliminary support regarding the value of AIMS. By examining services identified by ACA (2010) as being used excessively, including 30-day readmissions, ED visits, and hospitalizations, which are proxy variables for health care cost, the study also provides some initial support regarding the value of AIMS in relation to the triple aim component: lower cost. Patients served with AIMS had fewer 30-day readmissions, ED visits, and hospitalizations at 6-months compared
to the larger RUMC population. The findings also revealed that patients served with AIMS had fewer 30-day readmissions and ED visits compared to national statistics for older persons.

Addressing non-medical issues is critical to the health and well-being of older adults and controlling costs related to chronic health issues (Centers for Disease Control [CDC], 2011; RWJF, 2008, 2011). Shier et al. (2013) reported that the current integrated care models they reviewed did not examine the specific impact of the social service component of the models. This exploratory retrospective evaluation specifically examined the contribution of the social service component of an integrated care model. The evaluation results suggest that the provision of social services to address the unmet non-medical needs of patients as part of an integrated model of care may have a positive impact on health care utilization and costs.

The negative findings regarding the hospital admissions for AIMS participants compared to national averages may be related to geography. Previous research reveals that patients residing in the Chicago area tend to have the highest number of 30-day readmissions in the country (Brennan, 2012; Gerhardt et al., 2013). Given this information, and the other results from this study, one could argue that the 30-day readmissions may have been even greater if patients had not received the AIMS intervention. Further research is needed to determine the specific impact of AIMS on 30-day readmissions.

Although not the focus of this study, the low number of dual eligibles or individuals enrolled in Medicare and Medicaid was an unexpected finding. In 2011, 19% of Medicare enrollees in Illinois were also enrolled in Medicaid (Kaiser Family Foundation, 2011). Yet, a little more than 1% of our participants (n = 8) were dually eligible. One possible explanation for this finding is that dually eligible individuals 60 years of age and older are more likely to be receiving services in the long-term care system. These individuals tend to be sicker, more disabled, and more likely to live in institutions. Additionally, older persons receiving services in the long-term care system are no longer going to primary care clinics to receive medical care. Instead, they receive their health care services in the home, in medical adult day care centers, through the Program for All Inclusive Care of the Elderly (PACE)—a program specifically designed for dual eligibles, or nursing homes. A recent Kaiser Family Foundation issue brief (Jacobson, Neuman, & Damico, 2012) supports this explanation. The sample of dual eligibles should be explored further in future AIMS studies.

The findings also indirectly provide suggestive evidence regarding the value of social workers in addressing the non-medical needs of patients in health care settings. AIMS was developed by MSW-level social workers. Furthermore, it is currently delivered exclusively by MSW-level social workers at RUMC. The AIMS intervention has highly specified intervention guidelines and protocols, which make it feasible to replicate and to identify
the specific tasks and activities completed by social workers that may have a positive impact on components of the triple aim.

The protocolized nature of AIMS provides an opportunity to address the shortage of studies regarding the efficacy and effectiveness of social work in aging and health discussed by Rizzo and Rowe (2006, 2014). Additionally, the AIMS model provides an opportunity to address a call for studies that identify the: (1) Professional skills and knowledge to address patients’ non-medical needs; and (2) Specific tasks, activities, and services designed to meet patients’ non-medical needs that result in positive outcomes (Shier et al., 2013). Future studies of AIMS should include rigorous process evaluations of the delivery of the intervention by social workers to address the gaps identified in the research literature.

**Limitations**

There are several limitations that temper the study findings. The main limitations are its retrospective design and data analysis approach. The retrospective design, which is widely utilized in practice arenas, has low internal and external validity. As such the findings can only be viewed as preliminary and are not generalizable (Rubin & Babbie, 2013, p. 199). To evaluate the effectiveness of AIMS, future studies that utilize a prospective, quasi-experimental, or experimental design with hypotheses stated in advance are needed.

Despite the weaknesses of the retrospective design, a main benefit is its feasibility. By utilizing existing records, such as EHRs, practitioners and researchers can examine potential relationships and estimate the effects of an exposure on an outcome (Rubin & Babbie, 2013, pp. 268–271). Preliminary findings, such as the ones reported in the study, can be used to develop and fund future more rigorous studies as well as refine existing interventions or develop new interventions.

A second limitation of the study is the data analysis approach and use of existing data. The data analysis was constrained by availability of data. Data for the study sample were limited to variables included in the EHR, and data for the hospital and national/regional populations were obtained from means reported in an internal report and published in the literature. The availability of service utilization means only provided the statistics needed to test whether the means observed from the AIMS sample group differed from the means observed for RUMC population and for the larger national/regional populations. A one-sample \( t \)-test is appropriate when the sample comes from a specific population, in this case population of older adults with chronic health care issues, but the full population information is unavailable (Knoke et al., 2002). The absence of individual level data not only limited the analysis to the use of one-sample \( t \)-tests, but also precluded the use of more sophisticated analyses such as regression difference tests (Knoke et al., 2002,
p. 199). Also absent from the sample data were several exploratory variables, such as number and type of chronic illnesses and length of intervention that could be used in a more robust predictive data analysis model. Data limitations, including absence and availability of data are common issues in retrospective studies that utilize existing records (Rubin & Babbie, 2013, pp. 268–271).

A third limitation also relating to data is the fact that 12-month data were not available for most AIMS patients making it difficult to make comparisons with a national/regional sample regarding observed annual 30-day readmissions, ED visits, and hospital admissions. Instead, the researchers could only compare the 6-month AIMS sample means with estimated 6-month RUMC population and national/regional population means. Out of necessity, the 12-month means for the RUMC sample and the 12-month means for the national/regional populations were divided in half to get an estimated 6-month average that could be used for comparisons with the observed AIMS sample 6-month means.

Although these were the best measures available for comparison in this study, the estimated 6-month averages are limiting because they are not “true” estimates. Dividing annual averages for 30-day readmissions, ED visits, and hospital admissions by two assumes that these averages remain static from month to month. Previous research indicates this is not the case. For example, the risk for readmission following an inpatient hospitalization is high for many months. However, the risk of readmission for the first 6 months following an inpatient stay is much higher than this risk for the next 6 months. The averages used in this study do not account for fluctuations from month to month, which means the 6-month average could be an underestimation or overestimation of the true average (RWJF, 2013). For this reason, the results must be viewed as preliminary. Future studies of the AIMS model should prospectively identify measures for data collection and time intervals for data collection, minimally at baseline, 6 months, and 12 months. Also, clear guidelines for data collection and quality assurance should be established to ensure the integrity of the data and minimize missing data.

A fourth limitation of this study is that service utilization for patients was only examined at RUMC. It is plausible that patients also received services elsewhere in the Chicago area. In order to understand the impact of AIMS on the use of costly services, future research should include examination of service utilization for patients statewide.

A final limitation relates to the referral process for the AIMS intervention. As shown in Table 1, almost one-third of patients were referred multiple times (27.1%) for the AIMS intervention in a short period of time. The patient would be assessed, receive a care plan, and be discharged from the AIMS intervention as soon as the care plan was completed only to be referred again in a short period of time. This pattern of referral, discharge from AIMS, and re-referral did not allow us to estimate the average length of
the AIMS intervention for the study sample. This pattern of referral, discharge, and re-referral also suggests that patients had ongoing needs for AIMS at various times in their health care journey. The re-referral reinforces the need for social work integration into primary care throughout patients’ utilization of primary health care.

**Conclusion**

Despite the study limitations, this exploratory study offers some preliminary evidence regarding the value of AIMS and its potential to reduce utilization of costly health care services. The results of this retrospective evaluation suggest that the AIMS model assists patients and also has a positive and significant impact on 30-day readmissions, ED visits, and hospital admissions. Thus, AIMS has the potential to achieve one goal of the triple aim: lower costs.

In order to successfully achieve the goals of the triple aim (better health, better care, and lower costs), health care organizations and health care professionals need to develop and implement integrated models of care that address both the non-medical and medical needs of patients. The AIMS is one such model of integrated care. To build evidence for AIMS intervention effectiveness for all components of the triple aim as well as the value of social workers in addressing the non-medical needs that impact patients’ health, future studies of AIMS should include: (1) Rigorous, prospective quasi-experimental/experimental designs to allow for generalizability and replication and (2) Rigorous process evaluations to identify the professional knowledge and skills necessary to address the non-medical needs of patients as well as the tasks, activities and services needed to address these needs with positive outcomes.

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**References**


