Evaluating Enhanced Service Coordination in Ohio's Housing for Low-Income Older Adults and People with Disabilities

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Suzanne Kunkel, PhD
Shahla Mehdizadeh, PhD
Kate de Medeiros, PhD
Matt Nelson, MGS
Cassandra Hua, MGS

M

MIAMI UNIVERSITY
SCRIPPS GERONTOLOGY CENTER
An Ohio Center of Excellence

MIAMI UNIVERSITY

Scripps Gerontology Center

An Ohio Center of Excellence

100 Bishop Circle, Upham Hall 396, Oxford, OH 45056
MiamiOH.edu/ScrippsAging.org │ 513.529.2914 │ Scripps@MiamiOH.edu

Suzanne Kunkel, PhD
Shahla Mehdizadeh, PhD
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Cassandra Hua, MGS

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EXECUTIVE SUMMARY

Background: This project was designed to evaluate the implementation and impact of Enhanced Service Coordination (ESC) in affordable housing for older adults and people with disabilities. The ESC model emphasizes proactive outreach and ongoing monitoring and engagement with residents to provide service coordination that enhances their abilities to remain as healthy and independent as possible.

Methods: The project included two phases. The qualitative phase involved site visits and key informant interviews designed to elicit the fundamental features of ESC and to identify the ways in which ESC is distinct from traditional service coordination (SC). The quantitative phase of the project compared health care utilization and expenditures of residents in ESC buildings (379 individuals in 29 properties) to those for residents of affordable housing with SC (281 individuals in 47 properties) or no service coordination (no SC). All residents were dually eligible for Medicare and Medicaid. Aggregated data (by building type ESC, SC, no SC) were compared cross-sectionally at three points in time.

Major findings: The qualitative phase of the project revealed consistency among ESC providers regarding the philosophy and goals underlying the model, but considerable variation in how the model was put into practice. Given the person-centered approach underlying ESC, customization and professional discretion were defined as important to its success. The comparison of health care utilization and expenditures showed little difference between ESC and SC. This unexpected finding may be partly attributable to variations in "dosage" of ESC (individuals with higher need received more intense levels of intervention); these possible variations in intervention and related outcomes were masked by the aggregation of all ESC building residents in the analysis, a step that was necessary because of the nature of the data and data use agreements. In addition, the longer-term health outcomes that might be expected to be positively affected by ESC were not measured in this study.

Discussion: This study resulted in a helpful elucidation of the major components of ESC, and the variable ways in which they are operationalized. While person-centered customization of ESC is seen as a strength, it also creates a challenge for evaluating its impact as an intervention. A careful articulation of the theory of change that underlies the activities and investments of ESC and the ways in which those elements lead to desired outcomes will be a helpful next step in building evidence for the impact of this model. The findings of the current study suggest that there may be short-term increases in expenditures and utilization that could have long-term effects of reducing more costly and potentially avoidable health care encounters. A longitudinal study of individual-level expenditures and utilization that tests the causal links among ESC interventions and short-term, mid-term, and long-term outcomes is a necessary next step in understanding the impact of ESC.

BACKGROUND

Aging in place is a phenomenon that encompasses individual preferences for remaining at home in the community for as long as possible, and the adaptations that are often required to honor those preferences. Age-friendly communities, home- and community-based services, and supportive housing are examples of environmental and programmatic initiatives that help elders remain in the community for as long as possible; these initiatives help to maintain independence and prevent premature and/or unnecessary reliance on more costly forms of acute and long-term care. Within congregate housing for low-income seniors, service coordinators can play an important role in linking elders to services that support them in their preference to live independently. Enhanced Service Coordination (ESC) adds to traditional service coordination a person-centered, proactive stance that translates into outreach and ongoing monitoring to maximize the residents' health and independence.

This study was designed to examine the role of ESC in the lives of older people or people with disability residing in affordable housing who are dually eligible for Medicaid and Medicare. An Enhanced Service coordinator (ES coordinator) is in a unique position to provide an array of supportive services to help older people or people with disability manage their health and long-term services; appropriate and timely access to preventative and health-maximizing services can reduce unnecessary and expensive encounters with the health care system. For example, ensuring that medical appointments occur, prescriptions are filled and followed, and individuals are well monitored after a health incident such as a fall could reduce unnecessary health and long-term services use. The on-site, proactive outreach and monitoring features of ESC have the potential to impact health and long-term service utilization by lowering costs and improving consumer outcomes.

PROJECT PLAN

In August 2015, researchers at the Scripps Gerontology Center began working with LeadingAge Ohio and four senior housing providers (National Church Residences, Graceworks Housing Services, Episcopal Retirement Homes, and Jennings Center for Older Adults) to understand the implementation and impact of ESC in Ohio. Funded by a grant from Ohio Department of Medicaid (fully matched by Scripps Gerontology Center and Miami University), the project was designed to have two major phases: a process evaluation and an impact evaluation. In the original impact evaluation proposal, four housing providers across Ohio would implement a standardized ESC model with common assessment components and comparable caseload sizes, service coordinator responsibilities, and resident monitoring strategies.

In the first two quarters of the project, we held monthly calls and some in-person meetings with housing providers and other stakeholders to understand ESC in greater detail, to collaborate with project partners to identify standard elements for the intervention, and to work through the logistics of the impact evaluation design. In these calls and meetings, we sought specifically to 1) understand the difference between traditional service coordination and enhanced service coordination; 2) determine how ES coordinators monitor health status and care needs of the residents; 3) find a mechanism to identify comparison properties; 4) assess level of willingness of the MyCare health plans to participate in this study; and 5) explore measurable health expenditures and utilization and the sources for that data.

Based on these conversations and on the early results of the process evaluation, the study design was altered over the course of the first year. Because all of the providers had already transitioned into their own customized ESC models before this project began, a comparative pre-post intervention design was not possible, and the need for a deeper process evaluation was clear. As a result, the final design had two major components: 1) an in-depth, two-stage process evaluation to illuminate the major features of ESC and how they are variously implemented, and 2) an outcomes assessment with residents in a subset of the provider properties, comparing health outcomes for residents in ESC properties to those without ESC.

PROCESS EVALUATION

For the first stage of the process evaluation, each of the housing partners submitted copies of job descriptions for ES coordinators within their organizations. Content analysis was conducted to identify similarities across organizations and to identify key categories. This process resulted in identification of seven components of ESC: programs; assessment/evaluation; outreach and advocacy, services support, documentation, reporting and analysis; ongoing training; and fundraising/donations. Categories, to include detailed descriptions and subcategories, were distributed to the housing partners for feedback and verification, a process known as "member checking." Housing partners also asked for a comparison between ESC and traditional service coordination. These elements were then added. Modifications based on input from the partners was made and a revised description redistributed until unanimous consensus was achieved. (See Figure 1.)

The second step in this first round of the process evaluation involved site visits. A team of two Scripps Gerontology Center researchers visited properties identified by the housing partner to interview service coordinators and review documents associated with the service coordinator duties (e.g., activities calendars, software systems, semi-annual reports.) The purpose of these initial site visits was to better understand how

coordinators themselves viewed ESC and to gain better knowledge of whether (and how) ESC might differ in concept and implementation among organizations. The site visits consistently reinforced two important ideas implicitly embedded in the practice of ESC: 1) proactive outreach, and 2) person-level identification, follow-up, and tracking of services needed and utilized.

In the second major phase of the process evaluation, the qualitative research team visited four additional properties (identified by the project partners) to obtain a fine-grained understanding of how the elements of the ESC model are implemented in different locations to include the specific intervals at which the ES coordinator makes contact with a resident, procedures for follow-up, process for identifying "at risk" residents, tracking mechanisms, and others. Of particular interest was knowing the ways in which interactions with residents were recorded and what systems were in place to insure the proactive nature of ESC. The report from that phase, which will be submitted as a journal article by the end of 2018, provides details about the people and processes involved in all seven components of the ESC model. The functions that SC and ESC providers fulfill are consistent, and there is some overlap in how those functions are fulfilled. The most important distinction observed between SC and ESC is the extent to which enhanced services coordinators are expected to organize events, reach out in a systematic and customized way to their residents, and monitor and track residents' health and independence needs. Figure 1 provides a comparison of ESC and traditional service coordination (SC).

Figure 1. Comparison of Enhanced Service Coordination and Traditional Service Coordination

3. ESC Community Outreach and Advocacy

- Liaison between management, family, and tenants
- Resource directory for tenants
- Newsletters and calendars for tenants
- Presentations to local agencies
- New partners/referrals
- Legislators

3. SC Community Outreach and Advocacy

- Monitor ongoing provision of community services
- Keep agencies up-to-date with individual's progress
- Liaison between community agencies, networks, and service providers

4. ESC Support Services

- Conflict mediation
- Assist resident in locating appropriate programs & services
- Hospitalizations, pharmacy & discharge coordination
- Moves & aging in place (to include hospitalization, rehab, nursing
- End-of-life planning
- Legal assistance

4. SC Support Services

- Refer and link residents to service providers
- May provide training to residents in the obligations of tenancy or coordinate such training
- Educate residents on service availability, application procedure, & client rights, providing advocacy as appropriate
- Shop around to determine/develop the best "deals" in service pricing to assure individualized, flexible, and creative services for the resident involved

5. ESC Documentation, Reporting & Analysis

- Case files for each tenant
- Reports
- Use of data for quality assurance and improvement (e.g., trends, needs)

5. SC Documentation, Reporting & Analysis

- Case files for each tenent
- Reports

6. ESC Ongoing Training

- HUD-mandated
- Organization-mandated

6. SC Ongoing Training

- HUD-mandated

7. ESC Fundraising/ Donations (optional)	7. SC Fundraising/ Donations (optional)
Encouraged to seek grants for additional service-related amenities or opportunities	Not a typical function or expectation
Private support for community/bldg needs (e.g., food pantry)	
Grants Management	

IMPACT EVALUATION

The original intent of this project was to compare changes in health status and outcomes for a group of residents receiving a standardized ESC intervention to a propensity score-matched sample of senior housing residents without ESC. Based on ongoing conversations with project partners and early results of phase one of the process evaluation, that design was revised. The first challenge was that all of the ESC providers had already transitioned into their own customized models before this project began; due to the fact that there was no identifiable date for the official start of the intervention, a comparative pre-post intervention design was not possible. The second challenge was variability in implementation of ESC. While all of our housing provider partners adhere to the same principles and functions of ESC, the model is put into practice in different ways. Two of the major differences are 1) whether or not the primary functions of the ES coordinator role reside with one particular position, and 2) the detail with which the ES coordinator's actions, contact points with residents, and resident outcomes are systematically tracked and documented. These variations made data comparability across the properties problematic. As a result, the impact evaluation focuses on one housing provider, National Church Residences (NCR), which uses a software platform (CareGuide) that records initial, annual, and event-based assessments of health, depressive symptoms, friendship, and functional ability. The software also tracks ES coordinator interactions with residents, and resident utilization of some acute care services including emergency room (ER) visits and 911 calls.

The decision to work with one housing provider and a comparison group was a major step in the design of the impact study. From the outset, the target population for study has been low-income older residents and residents with disability of federally subsidized housing who are dually eligible for Medicare and Medicaid. That aspect of the study has not changed, nor has the focus on major health outcomes related to utilization and expenditures. These two factors (dual eligible target population, and need for health utilization and expenditure data) meant that the cooperation of the MyCare managed care plans was very important, since they cover the vast majority of our target population in Ohio's urban/suburban planning and service areas. The health plans were generally enthusiastic about the project, and they provided us with important information about potential outcome data. However, the competing pressures on health plan resources and the complexities of their data systems resulted in insurmountable obstacles to receiving data from them. This along with several other data challenges and opportunities resulted in the final design: a population-based comparison of NCR residents in non-MyCare counties with older dual eligible residents of geographically matched federally subsidized housing without Enhanced Service Coordination. The complete chronology of the evolution of the design and data sources is available upon request from Scripps Gerontology Center. The final design (comparison of residents of NCR properties and geographically matched low-income housing properties), methods, and results follow.

STUDY PARTICIPANTS

The intervention group for this study were 379 dual eligible residents in 29 NCR properties in non-MyCare counties; all of these properties that had Section 202 or Section 811 Housing and Urban Development (HUD) designation. As noted above, because NCR uses the CareGuide system to standardize assessment and monitoring, and the ES coordinator role is uniform across NCR properties, which is not the case for other housing providers. In the ESC intervention provided by NCR, ES coordinators develop a person-centered care plan with the residents that identify service needs and then track the intervention in the software system called CareGuide. These interventions include, but are not limited to, advocacy, conflict resolution, family support, wellness programs, crisis intervention, assistance with chronic health conditions, and assistance with application for benefits. Residents are assessed yearly if they have a VES (Vulnerable Elderly Score) of five or higher because they are believed to be at greater risk for an adverse health incident, otherwise the assessments are biennial.

A comparison group of Section 202 and Section 811 properties was selected using the following website: http://section-8-housing.credio.com. Comparison properties were located within 15 miles of the NCR properties and were selected using the search filters of the website. Properties were chosen for the study only if they were not currently

providing ESC. That determination was based on a file received via a personal correspondence with the U.S. Government Accountability Office. The sample size for this group was 47 properties housing 297 dual eligible individuals. In some cases, comparison properties were drawn from neighboring counties.

After the sampling frame of the matched properties was established, a research assistant made telephone calls to the main office of the properties to determine whether it provided traditional service coordination or no service coordination. Three properties could not be reached. These properties and their 10 residents were dropped from the sample. Another 10 residents were dropped from the sample because the property managers reported that they received ESC. The final sample size for the study was 379 residents in NCR properties, 173 residents who received traditional service coordination, and 108 residents who received no service coordination.

To avoid problems with censored data due to death or relocation, only residents who were living in their building during the entire period of the study were included. Continuous residence was determined by availability of data at all three points in time, or, at a minimum, at Time One and Time Three.

DATA SOURCE AND TIME PERIOD OF STUDY

As approved by Miami's Institutional Review Board, this study compared the service utilization rates and the Medicare and Medicaid expenditures of the residents in properties receiving ESC with utilization and expenditures of residents in properties either receiving traditional service coordination or no service coordination over a 30-month period. The expenditures and utilization data came from the Medicare Part A, Medicare Part B, and Medicaid claims data of 676 individuals residing in Section 202 and Section 811 properties. For each of these groups (ESC, traditional service coordination, and no service coordination), Medicare and Medicaid data related to health care utilization and expenditures were averaged as per-member, per-year for Ohio fiscal year 2015, fiscal year 2016, and the first half of fiscal year 2017. All individuals in the NCR and match groups were dual eligible or received insurance coverage from Medicare and Medicaid for "medically necessary" services. As noted above, it was deemed not feasible to obtain data from Medicaid managed care plans, so all residents were enrolled in fee-for-service Medicare and Medicaid. Downloaded data were also received from CareGuide (resident assessing and monitoring software) from NCR properties on activities of daily living (ADL) disability, instrumental activities of daily living (IADL) disability, health conditions, fall risk, depressive symptoms, ER utilization, and self-rated health for the study period to perform supplementary analysis.

MEASURES

We designated expenditures into six categories: inpatient, outpatient, physician & other Medicare Part B, home health, skilled nursing, and home- and community-based services (HCBS). Inpatient refers to the care and services received in acute hospitals, psychiatric hospitals, and rehabilitation facilities, among others. Medicare Part A insurance covers all medically necessary services provided in these settings. For dual eligible individuals, Medicaid covers the copayments and premiums. Short-stay Skilled Nursing Facility (SNF) stays are covered by Medicare Part A following a three day inpatient stay. Medicare coverage depends on the length of stay. Medicare fully covers stays lasting up to 20 days. Between days 21-100, there are copayments ($167.50 per day). Medicare covers none of the cost after 100 days. For dual eligible individuals, Medicaid covers the copayments through day 100 and fully covers long-term or custodial stays after 100 days.

Physician, labs, and other Part B professional services are primarily covered by Medicare Part B insurance. These services include, but are not limited to, physician's services, alcohol and drug addiction services, lab work, ambulance services, therapies, and podiatry. Outpatient services include diagnostic, treatment, and same-day surgeries that are received outside of hospital but affiliated with a hospital; these services are also covered by Medicare Part B insurance. Home health care for medically necessary skilled nursing care or therapy (physical, speech, occupational) services can be covered by Medicare Part A and/or Medicare Part B insurance. Medicaid covers the individuals' co-payments and coinsurance and premiums. Home- and community-based services provided to residents in the study were covered fully by Medicaid through PASSPORT (Ohio's Medicaid waiver program allowing individuals who are eligible for nursing facility care and eligible for Medicaid to receive services at home).

STATISTICAL ANALYSIS

Demographic data are first presented to describe the characteristics of each group of residents. Differences in average age and the number of chronic conditions were examined using one-way analysis of variance (ANOVA). Means, medians, and ranges of each expenditure type are presented. Differences in mean Medicare payments were investigated using one-way ANOVA. Bonferroni's correction was utilized for multiple-comparison tests. All statistical analysis were performed using Statistical Analysis System (SAS) software version 9.4.

RESULTS

Table 1 presents demographic statistics of the NCR residents compared to the residents in the matched properties measured in the baseline wave. Residents of all

three groups of properties were predominantly non-Hispanic white. In buildings that received no service coordination, residents were more likely to be black than residents receiving some form of service coordination. Approximately 13% of residents in these properties were black compared to approximately 7% of residents in NCR properties and 3% of residents in properties receiving traditional service coordination. Residents in buildings receiving traditional service coordination were older on average than residents of the other types of properties. Buildings with no service coordination available had a higher proportion of younger residents; approximately 12% of residents in these buildings were aged 50 and younger compared to 7% of NCR residents and 3% of residents receiving traditional service coordination. The mean age was also significantly lower for this group. Most residents in the three property types had between two and three chronic conditions. The mean number of conditions did not vary significantly between the three groups.

Table 1. Descriptive Statistics of Residents Receiving Enhanced, Traditional, or No Service Coordination			
	Enhanced *n* = 379	**Traditional** *n* = 173	**No SC** *n* = 108
Race (%)			
Non-Hispanic White	93.25	94.22	85.17
Black	6.23	4.05	12.98
Other/Unknown	0.52	1.73	1.85
Age (%)			
< = 40	2.90	2.31	3.70
41 - 50	3.69	0.58	8.33
51 - 60	11.87	8.67	9.26
61 - 70	31.93	26.01	32.41
71 - 80	33.77	38.73	34.26
81 - 90	13.46	20.23	12.04
91+	2.37	3.47	0.00
Mean age	69.20*	73.01*	67.00*
Sex (%)			
Female	71.77	75.72	62.04
Male	28.23	24.28	37.96
Conditions (%)			
Stroke	8.22	7.51	8.33
Cancer	8.71	8.67	5.56
Arthritis	50.40	50.29	43.52
Depression	38.46	40.46	37.04
Heart Disease	31.13	42.20	24.07
Diabetes	48.01	45.66	43.52
COPD	33.42	37.57	30.56
Chronic Kidney Disease	27.59	37.57	22.22
Alzheimer's	12.73	15.61	10.19
Index mean	2.59	2.86	2.25

*$p < .05$

INPATIENT AND OUTPATIENT EXPENDITURES

Average expenditures and utilization rates for each group at each point in time are presented in Table 2. Medians and means are reported in Table 1, Appendix A. As shown in table two, there were no significant differences in mean inpatient expenditures across three points in time between the three groups. Utilization rates were lower for the group that received no service coordination when compared to the groups that received enhanced or traditional service coordination. For example, at Time One, 27% of people receiving ESC and 30% of people receiving traditional service coordination utilized inpatient services compared to 21% of individuals who did not receive any service coordination.

Also shown in Table 2, most residents in all property types utilized outpatient services. Utilization rates were similar across the three points in time for the three groups. Outpatient expenditures were significantly higher for ESC properties when compared to properties that received no service coordination in Time One. Expenditures were approximately 44% higher for people who received ESC when compared to individuals who received no service coordination. However, there appeared to be no significant differences in expenditures between individuals who received enhanced versus traditional service coordination.

PHYSICIAN, LAB, AND OTHER MEDICARE PART B SERVICES

Table 2 presents utilization and expenditure data. For all three groups, the majority of residents utilized Medicare Part B services during each point in time. Utilization rates were slightly higher for individuals receiving ESC or traditional service coordination when compared to individuals receiving no service coordination. Utilization rates did not, however, seem to differ very much between people receiving enhanced or traditional service coordination. Average physician, lab, and other Medicare Part B expenditures were significantly higher for residents receiving traditional service coordination in Time One when compared to residents receiving no service coordination. These expenditures were significantly higher for NCR properties in Time Two when compared to properties that had no service coordination; average expenditures were 31% higher on average for NCR properties than properties that received no service coordination. However, there were no statistically significant differences in physician expenditures between ESC properties and properties providing traditional service coordination at any point in time. The greatest differences in expenditures appeared to be between properties receiving any service coordination and properties receiving no service coordination.

HCBS AND HOME HEALTH AIDE EXPENDITURES

Residents receiving either enhanced or traditional service coordination were more likely to use HCBS than individuals not receiving any service coordination. During year one, for example, only 33% of residents in housing properties with no service coordination received HCBS compared to between 52% and 63% of residents in NCR and properties with traditional service coordination. Utilization rates appeared to be highest for individuals receiving traditional service coordination at each point in time.

Average HCBS expenditures were the lowest for individuals receiving no service coordination. However, they were comparably higher for the group receiving traditional service coordination than the group receiving ESC. Expenditures were 16% higher for people living in traditional service coordinated housing when compared to housing with no service coordination at Time One and nearly 30% higher during Time Three.

Individuals who received no service coordination also had lower home health aide utilization. During Time Two, for example, 28% of individuals with no service coordination received home health aide services compared to 46% of people with ESC and 50% of people with traditional service coordination. During each point in time, individuals who received no service coordination had the lowest home health aide (HHA) expenditures. These differences were statistically significant in Time Three. Home health aide expenditures were approximately twice as high in Time Three when comparing the traditional service coordination group to the no service coordination group.

SKILLED NURSING FACILITY EXPENDITURES

Utilization of skilled nursing facilities (SNF) was slightly lower in the group not receiving any service coordination when compared to the groups receiving some service coordination. For example, in Time Two, 14% of individuals who received traditional service coordination used skilled nursing facility service when compared to the groups receiving either traditional service coordination or ESC. There were no statistically significant differences in SNF expenditures across the three points in time.

Table 2. Health Care Utilization and Average Medicare and Medicaid Expenditures of the NCR and Comparison Properties Across Three Points in Time (Per-Member, Per-Year)									
	Time 1			Time 2			Time 3		
Expenditure Category	Enhanced *n* = 379	Traditional *n* = 173	No SC *n* = 108	Enhanced *n* = 379	Traditional *n* = 173	No SC *n* = 108	Enhanced *n* = 379	Traditional *n* = 173	No SC *n* = 108
Inpatient									
Mean	$4,223	$5,166	$4,684	$5,185	$5,167	$5,436	$3,901	$2,386	$2,419
Mean of those with expenditures	$15,690	$17,186	$21,996	$14,557	$14,416	$18,347	$18,250	$12,510	$12,440
% Utilized	27%	30%	21%	36%	36%	30%	22%	19%	19%
Outpatient									
Mean	$3,019*	$2,900	$1,701*	$3,596	$3,671	$2,254	$1,848	$1,815	$1,063
Mean of those with expenditures	$3,356*	$3,116	$1,894*	$3,989	$3,920	$2,484	$2,289	$2,309	$1,418
% Utilized	90%	93%	90%	91%	94%	91%	81%	79%	75%
Physician, labs, and other Part B services									
Mean	$4,104	$4,419*	$2,953*	$4,548*	$4,179	$3,141*	$2,283	$2,106	$1,689
Mean of those with expenditures	$4,215	$4,497	$3,097	$4,711	$4,278	$3,359	$2,500	$2,277	$1,920
% Utilized	97%	98%	95%	98%	98%	94%	91%	92%	88%
Home Health Aide									
Mean	$3,346	$3,754	$2,705	$3,329	$3,913*	$2,031*	$1,378	$1,840*	$924*
Mean of those with expenditures	$7,459	$7,731	$8,345	$7,168	$7,781	$7,312	$3,795	$4,188	$3,990
% Utilized	45%	49%	32%	46%	50%	28%	36%	44%	23%
HCBS									
Mean	$5,436*	$6,497*	$3,160*	$5,395	$7,319*	$3,212*	$2,480*	$3,525*	$1,599*
Mean of those with expenditures	$10,459	$10,312	$9,751	$10,540	$11,108	$9,635	$5,530	$5,809	$5,397
% Utilized	52%	63%	32%	51%	66%	33%	45%	61%	30%
Skilled Nursing Facility									
Mean	$2,497	$2,340	$1,523	$4,871	$3,568	$3,579	$3,755	$2,257	$3,616
Mean of those with expenditures	$16,310	$13,957	$13,703	$23,974	$17,634	$25,765	$19,231	$15,621	$21,693
% Utilized	%15	%17	%11	%20	%20	%14	%20	%14	%17

p<.05

DISCUSSION

This study compared Medicare and Medicaid expenditures of dual eligible individuals receiving ESC to expenditures of individuals receiving either traditional service coordination or no service coordination across three points in time. It was expected that inpatient and outpatient expenditures would be lower for individuals who received ESC than the comparison groups. However, we found that inpatient expenditures were similar across three points in time. Outpatient costs were actually higher for the group receiving ESC in Time One.

These discrepancies in our expectations and our findings regarding outpatient expenditures may be due to our inability from the available data to determine what outpatient care received was medically necessary and what was not. Emergency department services that are deemed unnecessary are believed to be reduced by the ESC program.[1] An ER visit due to a fall, for example, is potentially avoidable. ESC providers can provide classes that promote exercise to increase strength and balance to prevent falls.[2] However, some outpatient expenditures may not be preventable, such as some outpatient surgeries (e.g., cataract removal). These types of expenditures may actually increase for individuals receiving ESC who receive needed care as a result of the intervention. Therefore, we suggest that stakeholders first clarify specifically what types of outpatient expenditures are expected to be lowered by the ESC program. Then, researchers can clarify ways to best operationalize what is an "avoidable" outpatient expenditure for future research.

Another unexpected finding is that physician service expenditures did not seem to differ significantly between the ESC and the traditional service coordination groups. The largest differences appear to be between the groups receiving no coordination and the groups receiving any service coordination. A potential reason for this lack of difference when comparing the ESC group to the traditional service coordination group is the continuing evolution of these models and the lack of a clear dividing line that differentiates the components and implementation of the ESC intervention exactly compared to traditional service coordination. Some service coordinators may fill roles similar to those filled by ES coordinators and help residents access primary care physicians before their conditions get more serious, and the customization of ESC might mean that a resident of a traditional service coordination property would be receiving interventions comparable to an ESC resident. All of these factors make it difficult to disentangle exactly how the enhanced model differs from the traditional model in terms of outcomes.

Home health aide and home- and community-based services expenditures appeared highest for the group receiving traditional service coordination and lowest for the group

receiving no service coordination. This finding that expenditures were highest for the traditional service coordination group may be a result of the fact that residents in this study group are older and thus may be more disabled. Lowest utilization rates and expenditures for the group receiving no service coordination is likely due to access barriers. Residents who receive no service coordination may not be receiving long-term care services in the community needed to age in place. We suggest that future studies can administer survey questionnaires to residents to assess which service needs are not being met in conjunction with collecting objective utilization and expenditure data to further identify gaps.

Skilled nursing facility expenditures surprisingly did not differ very much across the three points in time. We expected that expenditures and utilization would be lowest for the group receiving ESC. One possible reason for the lack of significant difference in nursing facility expenditures could be the fact that we examined the properties over a short period of time. The cost benefits of the ESC intervention may take much longer to materialize than we could measure in this study.

In addition, some of the differences in our findings may be due to the differing characteristics of the sample. Health care utilization rates were especially low among blacks, which is due in part to a lifetime of discrimination.[3] Lower expenditures and utilization rates among the no service coordination group could be due to such a high proportion of blacks living in the building who cannot obtain needed health care. Furthermore, residents in the group receiving no service coordination were also younger. We did not have information about disability in this sample. However, they may have lower levels of disability than the groups receiving service coordination.

LIMITATIONS, STRENGTHS, AND FUTURE RESEARCH

There are some limitations to the current study. Because MyCare data were not available for this study, all participants were enrolled in fee-for-service Medicare and Medicaid. An obvious limitation to this approach is that non-MyCare counties are predominantly rural. Individuals within these counties may have different characteristics than the larger population. Supplementary analysis that compares the health and demographic characteristics of MyCare and non-MyCare NCR residents (see Appendix B, Tables 1 - 5) shows a lot of similarity between the two groups. However, non-MyCare residents did experience higher levels of COPD, diabetes, and stroke. They also had higher levels of disability and were more likely to need assistance dressing and administering medication. Descriptive statistics of MyCare versus non-MyCare counties using U.S. Census data (see Appendix B, Table 6) also indicate some comparability between the counties. The one noticeable difference was that MyCare counties had a higher proportion of black residents.

Another limitation is that we did not begin our study at the time the ESC program was implemented, as would have been ideal for an impact evaluation. However, as noted in the discussion of the research design, the intervention was already underway at the start of this project, and we did not have access to the data during this time period.

A strength of the study is that it is one of the only existing evaluations of the new ESC model. Furthermore, it is the only study that examines Medicaid expenditures in conjunction with Medicare expenditures. Previous research only examined Medicare expenditures. In addition, virtually no literature has explicitly sought to define ESC or to describe the process of how it is expected to influence utilization and expenditures. Our study is a first step in the direction of further clarifying the ways that ESC is expected to reduce cost. However, more work needs to be done to further explain how this process is expected to work. Additional research is needed before definitive conclusions can be made regarding the efficacy of ESC. One of the most important next steps in research on ESC is an explicit and full articulation of the logic model on which the service is built. The logic model can explicate the actions, outputs, and shorter-term outcomes that must be in place in order to achieve to long-term goals of reduced health care expenditures and enhanced ability to age in place.

LOGIC MODEL OF ENHANCED SERVICE COORDINATION

To help clarify the exact role of the ESC in helping residents age in place, we created a logic model to describe the process that is informed by results from other evaluations of traditional service coordination and ESC programs. In general, a logic model spells out the hypothesized connections among the underlying problem trying to be addressed and the ultimate goals of the intervention; in addition, the logic model articulates the theory of change at each step along the path from problem to solution. For example, we discussed above the ways in which ESC might prevent ER visits related to falls. Achieving this goal requires investments of time, expertise and effort into identification of and outreach to residents at risk, connecting the individuals to a falls prevention program, and change in the individuals' behavior based on that program. The model can fail if any of these links along the causal chain is not strong.

The logic model below is a first step at articulating the assumptions, actions, and potential desired outcomes of ESC. Inputs into the program, shown in the first box on the left, include factors such as funding for the ESC staff (sometimes supported at least partially by HUD), the time the staff have to dedicate to their jobs, and relationships the ES coordinators have with HCBS providers. The funding of medical and long-term care services is provided by Medicare and Medicaid, as residents in this study in government subsidized housing are dual eligible. Policies of funding sources also matter; for example, in one demonstration, tenants lose their unit if they are gone for more than 60 days. This can be prohibitive for the end goal of aging in place, as some residents had

extensive rehabilitative stays at nursing facilities.[4] Another input is technology; some interventions utilize a software system to monitor residents while other interventions do not keep these interactions in a database.

The components of the ESC model are shown in the activities column. The qualitative study in this report examined what specific activities differentiated ESC from traditional service coordination models. Most emphasize the proactive nature of ESC. For example, comprehensive needs assessments are conducted for ESC residents that measure many dimensions of health and well-being. Although traditional service coordination offers care plans, they are not as extensive as those provided in properties with ESC. In addition, the quality of care residents receive is actively monitored in the ESC model. In the case of NCR properties, the residents are monitored using a software program. Service coordinators track meetings that they have with the residents that include discussions about programs or services, wellness programs, assistance with chronic health conditions, and conflict resolution. In NCR properties, each contact with a resident is called a "touch."

Short-term outcomes include an increase in physician utilization and expenditures. The idea behind the ESC intervention is that by encouraging residents to go to physicians before their conditions get serious, more costly ER trips and hospitalizations can be avoided. Primary care is believed to reduce the need for ER use because physicians are more likely to take a holistic approach to health. Thus, they may be more likely to provide counseling such as smoking cessation and weight reduction strategies. Furthermore, the continuity of care provided by a primary care physicians means that the physicians have a longer history with the patient and may be more attuned to psychosocial problems that influence his or her health. Residents may also avoid going to the ER for routine health issues if they are able to see a primary care physician.[5]

Results supporting this assertion that ESC increases physician use are mixed. For example, Castle[6] found that in his evaluation of the Senior Living Enhancement Program, residents receiving the intervention were more likely to obtain regular cancer screening and obtain regular immunizations than residents who were not part of the Senior Living Enhancement Program. Castle and Resnick[7] similarly found that residents in the Staying at Home program were more likely to visit a doctor than residents not receiving the intervention. However, an evaluation of the Support and Services at Home (SASH) program implemented in Vermont did not find a statistically significant difference in physician expenditures between individuals who received the intervention and those who did not.[8] Therefore, more research is needed to further examine these relationships.

As a result of the ESC intervention, it is also expected that residents will have increased utilization of home- and community-based services (HCBS). This outcome is ideal, as

most people desire to remain in their homes as they age. In fact, the Cranston-Gonzalez National Affordable Housing Act of 1990 clarified that one of the main purposes of Section 202 housing is to help older adults age independently within their own homes.[9] The original research on traditional service coordination indicates that it is indeed effective in assisting residents in federally subsidized housing to access services.[10]

The Congregate Housing Service Program (CHSP), which currently offers grants to provide meals and supportive services to older adults in congregate housing, was initially funded as a demonstration program. An evaluation of the demonstration indicated that residents reported that the services helped them remain independent in their own homes, that program staff provided them with appropriate services, and that they were satisfied with their experience with service coordination.[11] The Robert Wood Johnson Foundation instituted another large-scale demonstration in the 1980s. Results from this program, called the Supportive Services Program in Senior Housing (SSPSH), also indicated that service coordinators were effective in connecting residents with needed resources.[12] Due to the success of traditional service coordination programs in connecting people to HCBS services, it is expected that benefits will be even greater in the proactive ESC model.
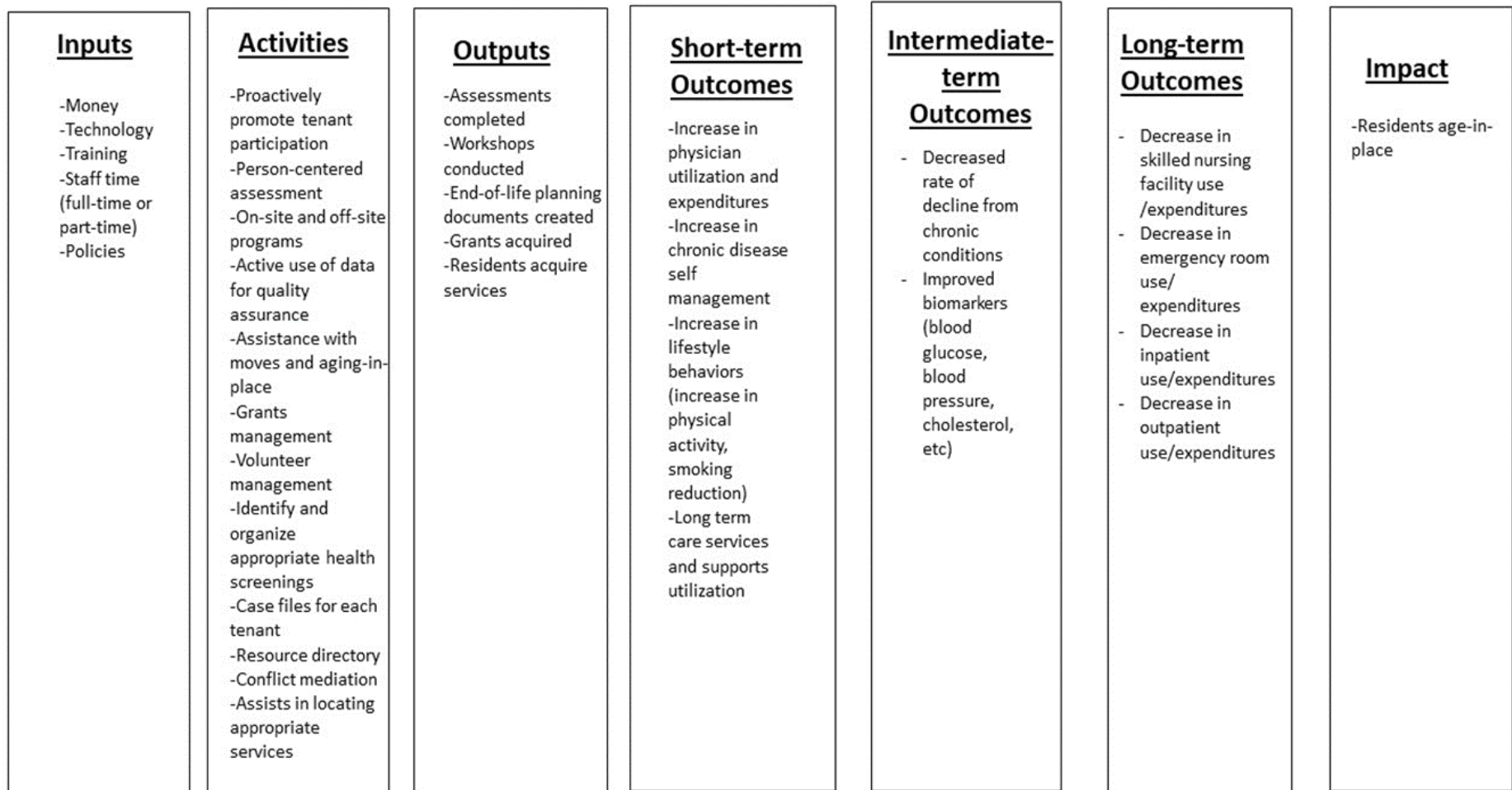
An intermediate outcome is that residents will improve certain biomarkers such as blood glucose. Although not frequently assessed, the study by Castle[13] supports this claim. Residents who received the ESC intervention had lower LDL cholesterol and systolic blood pressures. In addition, residents are expected to experience a slower rate of decline from their chronic conditions.

One long-term outcome of the intervention is a decrease in skilled nursing facility use and expenditures, which is due to the improved health of the residents and their ability to receive home- and community-based services (HCBS). Most people desire to remain in their homes as they age; in addition, nursing facilities are more expensive than care received in the community. One study of the general population aged 65 and over found that a $1,000 increase in Medicaid home expenditures avoided 2.75 days in nursing facilities, which subsequently reduces Medicaid expenditures.[14] There is some debate on this topic, however; some scholars argue that by increasing home care availability, overall Medicaid expenditures will increase due to people "coming out of the woodwork" to receive services (e.g., [15]). Limited research has examined nursing facility expenditures or utilization as a result of the ESC program. The Castle and Resnick[16] study found that nursing facility utilization was reduced with the intervention, although no estimations about the reductions of cost were made.

An additional expected long-term outcome of the program is that residents will have less inpatient, outpatient, and ER utilization and expenditures. This is hypothesized to be

due to the improved health of the residents caused by the utilization of primary care and the participation in healthy behaviors. However, the evaluation of the SASH program indicated that ER expenditures were actually higher for SASH participants. Hospital outpatient expenditures did not differ. In another Pittsburg study, older residents living in high rise buildings who participate in the Staying at Home program had fewer ER visits and hospital stays than residents in subsidized housing that were not in the program and did not receive service coordination.[17] Additional research is needed to more fully articulate the logic model underlying the program, to gather more evidence for the causal pathways at each step in the model, and to determine the effectiveness of the intervention in achieving long-term goals.

Figure 2. Preliminary Logic Model for Enhanced Services Coordination

Inputs	Activities	Outputs	Short-term Outcomes	Intermediate-term Outcomes	Long-term Outcomes	Impact
-Money -Technology -Training -Staff time (full-time or part-time) -Policies	-Proactively promote tenant participation -Person-centered assessment -On-site and off-site programs -Active use of data for quality assurance -Assistance with moves and aging-in-place -Grants management -Volunteer management -Identify and organize appropriate health screenings -Case files for each tenant -Resource directory -Conflict mediation -Assists in locating appropriate services	-Assessments completed -Workshops conducted -End-of-life planning documents created -Grants acquired -Residents acquire services	-Increase in physician utilization and expenditures -Increase in chronic disease self management -Increase in lifestyle behaviors (increase in physical activity, smoking reduction) -Long term care services and supports utilization	- Decreased rate of decline from chronic conditions - Improved biomarkers (blood glucose, blood pressure, cholesterol, etc)	- Decrease in skilled nursing facility use /expenditures - Decrease in emergency room use/ expenditures - Decrease in inpatient use/expenditures - Decrease in outpatient use/expenditures	-Residents age-in-place

APPENDIX A. MEDIAN AND RANGE OF MEDICARE AND MEDICAID EXPENDITURES OF NRC AND COMPARISON PROPERTIES ACROSS THREE POINTS IN TIME

Table 1. Median and Range of Medicare and Medicaid Expenditures of the NCR and Comparison Properties Across Three Points in Time (Per-Member, Per-Year)									
	Time 1			Time 2			Time 3		
Expenditure Category	Enhanced *n* = 379	Traditional *n* =173	No SC *n* = 108	Enhanced *n* = 379	Traditional *n* = 173	No SC *n* = 108	Enhanced *n* = 379	Traditional *n* = 173	No SC *n* = 108
Inpatient									
Median	$0	$0	$0	$0	$0	$0	$0	$0	$0
Median of those with expenditures	$9,174	$11,599	$13,208	$10,269	$8,357	$12,397	$11,720	$8,965	$7,859
Range	[$0, $103,213]	[$0, $161,956]	[$0, $104,025]	[$0, $90,246]	[$0, $83,621]	[$0, $59,568]	[$0, $128,115]	[$0, $51,408]	[$0, $31,448]
Outpatient									
Median	$1,215	$1,210	$947	$1,384	$1,334	$756	$477	$463	$343
Median of those with expenditures	$1,128	$1,367	$1,161	$1,645	$1,620	$943	$767	$843	$697
Range	[$0, $44,128]	[$0,$ 31,818]	[$0, $12,072]	[$0, $110,827]	[$0, $34,854]	[$0, $25,416]	[0, $35,983]	[$0, $23,435]	[$0, $7,695]
Physician									
Median	$2,811	$2,632	$1,774	$2,997	$2,699	$1,609	$1,129	$1,260	$857
Median of those with expenditures	$2,863	$2,658	$1,830	$3,091	$2,808	$1,806	$1,343	$1,385	$1,106
Range	[$0, $32,096]	[$0, $43,554]	[$0, $18,776]	[$0, $57,379]	[$0, $30,310]	[$0, $21,018]	[$0,$31,693]	[$0,$ 22,368]	[$0, $13,109]
Home Health Aide									
Median	$0	$0	$ 0	$0	$37	$0	$0	$0	$0
Median of those with expenditures	$4,978	$4,905	$6,711	$5,587	$4,949	$6,601	$2,968	$2,950	$3,382
Range	[$0, $42,791]	[$0, $39,810]	[$0, $28,305]	[$0, $55,710]	[$0,$30,441]	[$0, $24,394]	[$0, $23,190]	[$0, $28,613]	[$0, $14,052]
HCBS									
Median	$0	$0	$0	$799	$4,239	$1,903	$0	$0	$0
Median of those with expenditures	$7,118	$8,130	$7,506	$7,153	$8,356	$7,054	$3,858	$4,006	$4,332
Range	[$0, $65,387]	[$0, $73,542]	[$0,$ 41,625]	[$0, $73,116]	[$0, $66,751]	[$0, $35,924]	[$0, $37,281]	[$0,$41,675]	[$0,$ 20,287]
Skilled Nursing Facility									
Median	$0	$0	$0	$0	$0	$0	$0	$0	$0
Median of those with expenditures	$10,728	$11,292	$10,524	$16,645	$15,889	$17,634	$20,598	$13,281	$26,143
Range	[$0, $66,695]	[$0, $41,062]	[$0, $41,754]	[$0, $63,959]	[$0, $53,396]	[$0, $54,798]	[$0, $47,341]	[$0, $47,294]	[$0, $37,545]

APPENDIX B. SUPPLEMENTARY ANALYSIS COMPARING HEALTH AND DEMOGRAPHIC CHARACTERISTICS OF MYCARE AND NON-MYCARE NCR RESIDENTS

	Time 1		Time 2		Time 3
Table 1. Comparison of the Health Statuses of MyCare and Non-MyCare NCR Tenants in Ohio, MyCare Compared to Non-MyCare Recipients					
Condition	**MyCare**	**Non-MyCare**	**MyCare**	**Non-MyCare**	**MyCare**
Cancer	20.3	22.7	18.5	22.5	19.4
Congestive Heart Failure	21.9	20.6	22.1	21.8	22.5
High Blood Pressure	70.8	71.8	72.8	70.9	73.0
Diabetes	38.0**	44.0**	38.8**	43.0**	39.2**
COPD	21.8*	29.8*	23.5*	29.9*	25.4*
Chronic Pain	46.2	45.0	48.6	44.8	48.5**
Dementia or Alzheimer's	2.2	2.9	2.8	2.9	3.5
Stroke TIA	8.3*	12.0*	9.6*	13.1*	10.0*
Stroke CVA	9.8	7.6	10.7	8.7	10.7
Renal Disease	7.4	6.4	8.1	8.5	7.8
Chronic Liver Disease	1.9	2.1	2.9	2.3	3.1
Health Care Encounters					
Called 911 in past 12 months	34.7	37.7	34.7	37.7	31.3
Visited ER in past 12 months	46.8	45.2	36.0	39.3	32.0

(*N* in MyCare Counties = 591; *N* in Non-MyCare Counties = 366)

Table 2. Comparison of IADL Status and Self-Reported Health of MyCare and Non-MyCare NCR Tenants in Ohio						
	Time 1		Time 2		Time 3	
Measures	MyCare	Non-MyCare	MyCare	Non-MyCare	MyCare	Non-MyCare
Self-Rated Health						
Poor	6.5	5.2	15.0	16.4	14.2	17.8
Fair	26.5	26.7	7.0	5.2	7.2	6.9
Good	51.1	45.9	44.4	41.9	45.7	41.3
Very Good	11.2	12.5	29.8	24.6	30.3	23.5
Excellent	4.7	9.7	3.8	11.9	2.6	10.4
Vulnerable Elder Survey						
Yes	64.6	67.8	61.0	66.3	65.4**	72.0**
IADLs (Need Assistance %)						
Shopping						
Don't Do	4.8	7.9	3.5	6.9	4.1	7.9
No	68.6	65.1	67.0	65.3	65.4	63.1
Yes	26.6	27.0	29.6	27.7	30.5	29.0
Managing Money						
Don't Do	2.9	5.7	1.7	4.5	2.0	5.2
No	84.2	81.1	85.3	82.7	84.5	82.2
Yes	12.9	13.2	13.1	12.9	13.5	12.6
Walking Across the Room						
Don't Do	3.3	2.0	2.3	2.0	2.7	2.7
No	78.3	80.0	71.6	76.0	69.5	72.3
Yes	18.3	18.1	26.1	22.0	27.8	25.0
Light Housework						
Don't Do	3.9	4.2	3.8	5.5	4.8	7.2
No	71.0	67.8	63.9	68.0	61.2	65.3
Yes	25.1	28.0	32.3	26.6	33.9	27.5
Bathing/Showering						
Don't Do	1.4*	1.5*	0.9	0.5	0.8	1.2
No	68.8*	56.7*	68.4	54.3	64.8	51.1
Yes	29.9*	41.8*	30.7	45.2	34.5	47.6

*** Significance at $p<.001$; ** significance at $p<.01$; * significance at $p<.05$

(*N* in MyCare Counties = 688; *N* in Non-MyCare Counties = 422)

Table 3. Comparison of the ADL Status of MyCare and Non-MyCare NCR Tenants in Ohio						
	Time 1		**Time 2**		**Time 3**	
Measures	**MyCare**	**Non-MyCare**	**MyCare**	**Non-MyCare**	**MyCare**	**Non-MyCare**
ADLs (% Needs Assistance)						
Grooming	15.4*	22.0*	16.7	21.6	16.9*	24.3*
Dressing	10.8	13.3	11.5	13.5	11.6**	16.5**
Transferring	37.3**	47.9**	40.8***	54.0***	41.6***	56.7***
Ambulation	10.9*	17.1*	15.7	22.4	17.8**	23.2**
Eating	40.5	45.2	46.3	51.9	49.4	49.8
Mean number of ADLS	1.15***	1.45***	1.31***	1.63***	1.38***	1.70***
Other						
Meal Preparation	31.7	36.5	37.9	41.8	38.3**	45.7**
Medication Administration	16.1***	26.8***	17.5***	28.9***	18.5***	30.1***

*** Significance at p<.001; ** significance at p<.01; * significance at p<.05
(*N* in MyCare Counties = 664; *N* in Non-MyCare Counties = 408)

Table 4. Comparison of Fall-Risk of MyCare and Non-MyCare NCR Tenants in Ohio						
	Time 1		**Time 2**		**Time 3**	
	MyCare	**Non-MyCare**	**MyCare**	**Non-MyCare**	**MyCare**	**Non-MyCare**
Fall Risk (Yes)	60.4	68.1	56*	62.7*	52.8	54.2

*** Significance at p<.001; ** significance at p<.01; * significance at p<.05
(*N* in MyCare Counties = 653; *N* in Non-MyCare Counties = 402)

Table 5. Comparison of Depressive Symptoms of MyCare and Non-MyCare NCR Tenants in Ohio						
	Time 1		**Time 2**		**Time 3**	
	MyCare	**Non-MyCare**	**MyCare**	**Non-MyCare**	**MyCare**	**Non-MyCare**
Depression	7.7	90.3	2.9	5.2	1.6*	5.1*

*** Significance at p<.001; ** significance at p<.01; * significance at p<.05
(MyCare *N* = 363; Non-MyCare *N* = 237)

Table 6. Population Characteristics Comparing MyCare Versus Non-MyCare Counties, United States Census		
Measures	**MyCare Counties**	**Non-MyCare Counties**
Female (% 65+)	57.38	59.90
Race/Ethnicity (%, all ages)		
White	74.70	91.46
Black	15.36	2.93
Hispanic	3.81	2.20
Other	6.13	3.41
Less than a high school education (% 65+)	17.04	19.73
Disability		
With 1 or more disability (%65+)	33.36	35.23
With 1 or more disability (%75+)	48.08	49.61
Marital Status (%65+)		
Married	53.59	57.73
Widowed	27.49	27.96
Divorced	13.68	10.70
Never Married	5.24	3.61
Households below poverty (% households with head age 65+)	9.46	9.60

APPENDIX C. COMMUNICATION TO HEALTH PLANS REQUESTING REVIEW AND RESPONSE TO PROPOSED OUTCOME MEASURES

For Information and Comment

Below is the list of outcome measures that we discussed in the last couple of weeks. For each measure listed, we would like to receive the average and the range for each measure per property. The averages (and the range) to be calculated based on the number of person months, where person month is defined as the total number of months all tenants of the building (listed in your request form from us) were enrolled in MyCare with your health plan. We believe we can identify those who opt-out of the Medicare part of MyCare, if so we will identify those as well. We are seeking a single amount (irrespective of what funding source contributed to that, i.e., don't separate by Medicare & Medicaid). Although we discussed in detail what to include in tests, DME, and medication, after reviewing other studies in this field we prefer to obtain a total expenditure amount that encompasses not only the three items above, but also anything that is left off all the above categories.

Measures Requesting for Housing with ESC Impact Evaluation					
Outcome Measures We are Evaluating	**Aetna**	**Buckeye**	**CareSource**	**Molina**	**United Health Care**
Total Hospital Inpatient Expenditures					
Total amounts covering services similar to lines 30 - 76 of CMS 2552 - 10					
No of Hospital Admissions					
No of Days in Hospital					
Total Hospital Outpatient Expenditures					
Total amounts covering services similar to lines 88 - 101 of CMS 2552 - 10					
Number of Emergency Room Visits					
Total Nursing Facility Expenditures					
Total amounts covering services similar to lines 30 - 74 of CMS 2540 - 10					

Measures Requesting for Housing with ESC Impact Evaluation					
No of Days in Nursing Facility					
Total Home Health Services					
Total amounts covering services similar to lines 6 - 14 in CMS 1728 - 94					
Total Hospice Expenditures					
Total amounts covering services similar to what summed up in line 21 CMS 1984 - 14					
Total Physician Expenditures					
Sum of the amounts for services similar to lines 23 - 36 form 224 - 14					
Total Amounts of All Health & LTSS					
Total Number of Person Months					

Evaluating Enhanced Service Coordination in Ohio's Housing for Low-income Older Adults and People with Disabilities

Detailed Impact Evaluation Chronology for August 2015 through May 2017
This chronology documents various issues that arose regarding research design and data availability during specific time periods of the project. Some of the challenges that arose at during one time period were resolved during later phases of the project. The resolutions are described during the specific time period in which they occurred.

Suzanne Kunkel, PhD
Shahla Mehdizadeh, PhD
Kate de Medeiros, PhD
Ian M. Nelson, MGS
Cassandra Hua, MGS

Scripps Gerontology Center
Miami University
July 2018

Aug. to Oct. 2015:
Getting to Know Service Coordination and Affordable Housing

Although we were familiar with service coordination in the affordable public housing for older people, we were not certain how the concept of ESC is defined across the industry. Further, the benefits of having ESC as illustrated by some housing management agencies were anecdotal and we were not sure how to systematically measure and compare across properties. For these reasons we embarked on a series of conversations with the affordable public housing managers, housing authorities, health plans, and service coordinators. Our goal in these conversations was to learn more about the functions that service coordinators perform and the availability of measurable outcomes by all housing properties. In addition, we sought to identify properties to compare with a selected number of buildings that employed ESC. Through these conversations, a clearer picture of what kinds and collection of services constitute *enhanced* service coordination emerged. The impact evaluation design also evolved during this time period as we explored access to the outcome measures collected by the property management agencies and the funding agencies.

We established monthly conference calls with housing providers and other stakeholders. In the first call with providers we had several objectives: 1) identify services and activities that differentiate service coordination from enhanced service coordination; 2) determine how coordinators monitor health status and care needs of residents; 3) find a mechanism to identify comparison properties; 4) assess level of desire and willingness of the MyCare health plans to participate in the study; and 5) explore the measurable outcomes and the entities that collect them. The major providers (or management agencies) of affordable housing properties (Episcopal Retirement Homes [ERH], Grace Work Housing Services [GWHS], Jennings Center for Older Adults [JCOA], and National Church Residences [NCR]) in Ohio were invited to attend the call and provide input.

The representatives spoke of the activities provided by ES coordinators as "touches." There were a wide range of activities, not always documented by all providers systematically. Some of the outcome measures were equally challenging to document. For example, provider representatives stated that in properties with ESC there are fewer emergency room visits and 911 calls, but when asked if this was documented, they revealed that this belief was based on receptionist or front office staff recollection or from viewing security cameras.

We learned that there were a variety of approaches used to identify and track residents' needs. Coordinators in NCR owned or managed properties performed regular assessments that they entered into a custom designed software program. GWHS also reported using a software program to enter resident assessments. JCOA expressed that

they perform paper assessments but had no easy way of compiling residents' needs or outcomes to share with us. ERH reported a more informal assessment and care plan, making it harder to identify and track residents' needs and outcomes. It was not at all clear if the properties used similar assessment tools if they evaluated all aspects of resident's well-being, or if the assessments occurred in similar time periods. We requested a copy of each property's assessment tools for review.

Health plans were generally enthusiastic about the project and indicated willingness to participate, dependent on the final project design and what outcome measures they would be asked to provide. We were advised to identify specific outcome measures, and finalize the study design before arranging a meeting with health plan representatives.

In our efforts to identify comparable housing properties, we were introduced to many ways that a property could be completely or partially designated for low income individuals. However, we could not identify a systematic way of determining the level of service coordination offered in the properties.

Based on what we learned from the first conference call, we decided to make several inquiries prior to the next call regarding the age range of residents (some properties had residents as young as age 30), the uniform assessments that other entities such as health plans use, and the possibilities of their release to us. We also began investigating identification of comparable properties. After reviewing different housing designations and financing mechanism, assessment forms, and ESC/traditional service coordination activities we reached the conclusion that many of the property characteristics, ESC activities, and assessment forms were not common across properties. This required us to design a study that took advantage of whatever common features we could observe to reduce outcome variability due to structural and environmental differences in the baseline samples. Further, we determined that the comparable properties needed to be in the same counties as study properties; be Section 8 or Section 202, and have a HUD-financed (directly or through budget allocation) service coordinator. The range of outcome measures that were suggested by service coordinators were: 1) increased length of occupancy; 2) service coordination program satisfaction; 3) improved atmosphere and morale among residents and staff; 4) vital social and emotional support; and 5) general facilitation of independent living. Because none of these outcomes were measured at the resident level and were based on the general understanding of service coordinators and property managers, we decided that analyzing the outcomes mentioned above was not an option. This ruled out the possibility of conducting a quality of life survey of residents.

Nov. 2015 – Jan. 2016:
Finding Common Ground among Affordable Housing Properties in Ohio

All housing property managers shared a copy of the aggregate resident and building data used for their semi-annual HUD reports. Although the data were very limited, they provided us a glimpse of each property's resident demographic characteristics, level of frailty, flow of residents in and out of properties, and duration of stay. Qualifications and training of the traditional service coordinators and ES coordinators were also provided and ranged from high school diploma with a year of training to STNA with LSW training, to MSW. The data also included the ratio residents to service coordinators within each property. The number of individuals with Medicaid, Medicare, and both Medicare and Medicaid enrollment in each property varied widely, ranging from one or two to over 40 in NCR properties.

After reviewing the information we received from properties and reflecting on their differences, we established several parameters to guide the study design. These parameters would allow us to reduce variation in the study sample and comparable sample to attribute changes in the outcomes to the presence and efforts of enhanced service coordinators beyond what traditional service coordinators provided. The major parameters we discussed were: 1) the study design should be limited to properties that have similar, relatively low resident to service coordinator (full time equivalent) ratio; 2) although the proposed contract expected the study to occur in MyCare counties and include MyCare residents only, we should consider non-MyCare, even non-dual eligible residents, to boost the number of potential residents in the study; 3) the samples should be limited to properties that perform similar functions, and the service coordinators that have similar knowledge, background, and training, and 4) the study should be limited to properties with electronic data entry and management in order to facilitate data extraction and transfer to the research team.

Feb. - April 2016:
Selecting Properties with ESC to Be Used for Study Sample

After establishing the characteristics that we were seeking in the study sample, NCR properties emerged as being in a unique position to meet most, if not all, of the desired characteristics. Further, to minimize contextual variabilities that might be impacting outcome, we determined that it might be best to limit the study sample to a few properties with a large number of residents. We asked NCR for information on the number of dual eligible residents as well as other types of residents on their properties. Thirteen NCR owned and/or managed properties were identified to constitute the study sample each with 25 or more dual eligible residents. Together, these properties were home to 345 dual eligible residents and all had Section 202 or Section 8 HUD

designation. Considering that not all of these residents would be there for the entire study period, might leave before the end of the study, or might decline to participate, we again sought to boost the study sample. Although, we were not certain we would be able to get information from Center for Medicare and Medicaid Services (CMS), we decided to forge ahead and include Medicare-only residents as a second group in the study sample.

Our next task was to identify properties that could be used as comparison to the collection of properties that constituted the study sample. These properties needed to be as similar as possible to the study sample except they would employ traditional service coordination rather than ESC. To keep differences at a minimum, we discussed selecting comparison properties with about the same number of units, in the same ZIP Code as the study properties. This proved to be more challenging than we anticipated for several reasons: 1) to capture enough properties to compare them with the study properties, we needed to expand our search beyond the same ZIP Code to up to 15 miles away; 2) since the original goal of the study was to use residents as the unit of analysis, we needed a much larger number of properties to select residents that live in similar counties and environments, and were also similar in their abilities and needs; and 3) after selecting about 100 properties to match the residents in the 13 NCR properties, we then had to determine whether these properties employed traditional service coordination ESC, or no service coordination at all.

May - July 2016:
An Evolving Project Design

Although outcome measures and data sources were not yet finalized, we had learned enough from our conversations with stakeholders to begin designing the study. Drawing on some existing literature from other states and input from a coalition of LeadingAge Ohio housing providers we hypothesized that fully developed on-site service coordination and resident monitoring can impact health and long-term service utilization, both lowering costs and improving residents' outcomes.

Defining Study Population and Sample Selection

The initial design of the study was intended to examine health and long-term services and supports utilization and cost of care for the Medicare beneficiaries and the dual (Medicare & Medicaid) eligible residents enrolled in MyCare Ohio in select number of the National Church Residences buildings in Ohio urban counties with sizable number of Medicare and dual eligible residents. The plan was to request resident level data from the health plans and participating buildings, and also extract data from Medicare and Medicaid claims for those residents that consented to participate.

The proposed outcome measures included total medical and long-term services and supports expenditures, total Medicare and Medicaid expenditures, total hospital inpatient expenditures, emergency room visits, total nursing facility expenditures, physician visits and lab work expenditures, and medication expenditures. In addition, information regarding resident's participation in educational seminars and disease prevention, and health management classes related to their health conditions would be collected from the properties. The outcome variables that would be used to measure the impact of ESC in study sites were to be extracted from Medicare (and Medicaid) claims data for those in Medicare fee-for-service or requested from the health plans, if the participant was dual eligible. The study would examine Medicare utilization and expenditures, Medicaid and out-of-pocket/third party expenditures (if applicable) beginning July 1st, 2014 to June 30, 2015 to establish baseline expenditure and utilization level and then for 18 months until December 31th 2016, for a total study period of 18 months. The study was expected to be extended from the original proposed dates to allow additional time for data collection.

Since 2014, the enhanced service coordination concept has been implemented in buildings designated for low-income older individuals or people with disability owned or managed by National Church Residences (NCR) across Ohio. In these properties, participants who were either Medicare beneficiaries or dual eligible (both Medicare and Medicaid eligible) would be asked to participate in the study (a total of 702 individuals as of February 2016). The impact of the ESC would be assessed by a series of outcome variables measuring health and long-term care services and supports expenditures and utilization from Medicare and/or Medicaid claims or their designated health plans encounter data. Individuals who are Medicare beneficiaries could be enrolled in Medicare fee-for-service or a managed Medicare plan. In Ohio, individuals who are eligible for Medicaid in addition to Medicare and don't have a developmental disability are required to enroll in an Integrated Care Delivery System (ICDS). The ICDS (MyCare Ohio, managed by health plans) is a system of managed care plans that coordinates all aspects of health and long-term care services and supports needs of individuals over the age of 18. One unique feature of our original study design was inclusion of individuals who were both Medicare & Medicaid eligible and already participating in the Integrated Care Delivery System (MyCare Ohio). The health and long-term care service utilization and expenditures for this group of participants would come from the health plans participating in MyCare Ohio in each county, pending residents' consent.

Establishing a Method

The outcome measures for the Medicare beneficiaries and dual eligible residents of specific NCR owned or managed properties located in certain urban counties with MyCare implementation would be compared to a propensity score matched sample of

residents of affordable public housing properties without access to ESC, in the same counties and ZIP Codes, if possible. The gold standard for evaluation research is to randomly assign individuals to an intervention group and a control group. However, because the intervention had been in practice at NCR buildings for some time now, such a design was not feasible. Rather we would select a control group by propensity score (PS) matching Medicare beneficiaries residing in buildings with "regular" housing coordinator to those residing in NCR building with ESC. The criteria for matching would be the beneficiaries' county of residence, age, sex, race, and whether the beneficiary was also Medicaid eligible or not.

Since the comparison group may differ from the intervention group in terms of other characteristics not matched, all descriptive statistics and outcome analysis would be re-weighted using weights from a PS model. PS weights attempt to balance the study sites' and control sites' participants with respect to baseline characteristics to reduce the potential for bias in the estimate of the intervention effect.

Descriptive analyses would present unweighted and weighted for participants' characteristics at baseline, where baseline was defined as the first 12 months of this study (July 1st, 2014 - June 30th, 2015). Variation between study sites' participants and the control sites' participants would be quantified using standardized differences. We also planned to report average outcomes per sample by payer type (Medicare only and Medicare & Medicaid) semi-annually for the duration of the study. The study would utilize administrative data to provide summary statistics for study sites, and the control sites, as well as by payer type. A comparison of the summary statistics would be made to determine whether there were significant differences in the average semi-annual health and long-term care expenditures and utilization between the study sites and the control sites by payer type after adjustment for residents' condition and county of residence.

The outcome evaluation involved data management and analysis of three sets of secondary data: 1) Medicare claims (billing data) obtained through the Ohio Department of Medicaid from the Centers for Medicare and Medicaid Services; 2) Medicaid claims data downloaded monthly via a secure file transfer protocol, under an earlier business agreement with Ohio Department of Medicaid; and 3) the encounter data from the health plans responsible for providing health and long-term care services and supports to dual eligible residents. In addition, the NCR management would be asked to provide resident's service utilization data to establish the extent of the intervention. If feasible, summary residents' characteristics for buildings in the control group would be collected from online sources or from housing authorities to establish building profiles.

Resident Recruitment for Participation in the Study Sample

We planned to recruit residents for the study through a series of meetings arranged by the NCR managers and ES coordinators. In the meetings, we intended to explain to the residents the intent of the study, what similar studies have found, and what we hoped to learn. Residents would be given the opportunity to read a simple description of the project and ask questions. At the end of the meetings, interested Medicare or dual eligible residents would be asked to sign a consent form indicating their agreement to participate.

Aug. – Oct. 2016:
Data Requests, Collection, and Challenges

In the following section the issues that affected the proposed study design are highlighted. After a lengthy process, we learned that Ohio Department of Medicaid (ODM) would assist us in obtaining Medicare claims data. This was a major accomplishment, since we had proposed to study the outcomes for Medicare-only and dual eligible residents. We then learned that we would be downstream users of a Data Use Agreement (DUA) between ODM and CMS. This particular DUA allows ODM to evaluate the effectiveness of the MyCare Ohio demonstration and to assist with updating the capitation rates. MyCare participants, by design, are only dual eligible persons in Ohio, thus based on this DUA we were not permitted to study Medicare beneficiaries. Although we could independently request Medicare claims data from CMS for all Medicare beneficiaries in the state of Ohio, there were several concerns about taking that action: 1) we were not certain we would get a positive reply; 2) the cost of acquiring the data might be prohibitive; and 3) we had no guarantee of receiving a response to our request within the study timeline.

Effectively, this revelation limited the participants in the study to dual eligible residents only, and to dual eligible residents not in Medicare advantage. In addition, we learned that the monetary value of the medications would not be part of the Medicare data available to us. Upon inquiry, we were informed that the Medicare data requests facilitated through the State Data Resource Center (SDRC), as this request was, required care coordination and program integrity to be the main factor, not finances or cost-saving measures. Thus all of our outcome measures including the value of medications (total medical and long-term services and supports expenditures, total Medicare and Medicaid expenditures, and medication expenditures used by residents) had to be altered, as not all outcome variables would be measurable.

After a review of the information provided on the CMS website, we also suspected that Medicare claims data does not have all the claim details for individuals enrolled in

Medicare managed care. MyCare, in principle, is a coordinated, managed Medicare and Medicaid program, therefore Medicare claims data will not provide all the information related to the health and long-term care services used by residents of affordable housing in MyCare. To verify our suspicions and learn about how to access encounter data from managed care health plans we asked SDRC for clarification. We were informed by SDRC that "Through the SDRC process, encounter data is not available, and we are not aware of other sources." Next, we turned to ODM for help in this regard. Our partners at ODM met and concluded that the encounter data they receive from health plans would not be helpful to us as even their staff had faced multiple challenges working with the data., In the absence of encounter data, we had to consider the possibility of limiting the study to only residents in Medicare fee-for-service, which would further reduce the number of residents that could be included in the sample.

Reaching out to Health Plans

While we were exploring the possibility of obtaining encounter Medicare data from ODM we also reached out to the health plans asking for their assistance. In March 2016, we had a discussion with them regarding our needs to access encounter and preventative care data and their requirements for privacy and confidentiality. The health plans articulated that they needed a signed consent for every resident for which we requested data. A consent form encompassing the general legal wording of all health plans was developed and included in the Institutional Review Board application to Miami University, which was submitted for approval in June 2016.

Exploring All Possibilities

We reached out to SDRC via ODM for clarification once again. Given that the entire state of Ohio's Medicare beneficiary claims data for those in traditional Medicare and some of the Medicare beneficiaries in Medicare advantage were in the file that we would be receiving, we sought illumination on whose data we were permitted to access and any applicable conditions and limitations. We were informed that "The Medicare data requested by Ohio and approved to be shared with Scripps Gerontology Center is limited to dual eligible beneficiaries (Medicare-Medicaid enrollees) living in the state (including those not partaking in the MyCare demonstration.)" Further, we learned that "SDRC is not aware of any consent requirements from CMS/MMCO. In other state request packages, we do not recall seeing consent language or requests. As such, we believe this question should be directed to Ohio." Scripps Gerontology Center has an outstanding business agreement with ODM allowing us to use Medicaid utilization data without reaching each Medicaid customer for consent. Therefore, we concluded that we do not need the consent from each resident selected for the study, provided we comply with all the required safety, security, and confidentiality requirements of CMS, ODM, and Miami University Institute Review Board (IRB) in protecting identifiable data.

This was a positive development. We would be receiving Medicare data for all dual eligible residents in the state, although we were not certain how much Medicare encounter data, if any, for MyCare participant would be included. The fact that we did not need individual residents' consent was a relief as some service coordinators had expressed concern over asking residents for their Social Security or Medicare number. Although we had scheduled site visits to all buildings in the study sample to introduce the project and ask for their participation, we canceled the remaining meetings after visiting one well-attended property meeting because it was not necessary to explain the project and get individual consent for participation.

Medicaid Data

We wanted to ensure that the study design met the parameters of the already established business agreement between Scripps Gerontology Center and ODM to use Medicaid claims data. Between August to October 2016, we reached out to our project director at ODM and called her attention to our concerns in relation to the control group that would be selected from Medicare Basic data file in the same county and ZIP Codes that the National Church Residences are located and our plans to match individuals by age, sex, and race to the study sample. The plan was to extract Medicaid utilization from the BIAR (Medicaid Vendor's file) without written consent from the control group residents. The ODM legal team acknowledged that our plan appeared to be allowable within the wording of the agreement, but stated that they would further investigate the issue. While we awaited a response from ODM, we made some physical changes to the office and the cabinet that would hold the incoming Medicare data, and actively worked to establish a secure file transfer protocol with the ODM information technology department (IT). As noted later in this document, these issues were resolved by the end of the reporting period.

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Nov. 2016 – Jan. 2017:
Study Design Modification and Refinement

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We now knew that we would only be studying individuals who were dual eligible and in MyCare counties. And, because these individuals were in managed care, we very likely would not have access to their Medicare, and possibly Medicaid, utilization data. It was time to rethink the study design, so we considered two options: 1) give up the focus on MyCare counties and limit the study to counties that residents are using Medicare and Medicaid fee-for-service only; and 2) use aggregate data for properties with ESC and compare them with aggregate data in non-ESC properties in MyCare counties, provided that health plans agree to supply the aggregate per building data for certain measures.

We had abandoned the idea of seeking resident consent, so requesting resident-level encounter data from health plans was not an option. We reached out to health plans representatives in MyCare counties again to assess and affirm their willingness to provide per-member, per-month utilization of certain health care services by property. Particularly, we asked for the average monthly utilization of about 15 - 20 major health care services use per property for a selected number (less than 100) of properties.

**Jan - April 2017:
Finalizing the design, collecting data, and planning for Year 3**

During this time period, we made good progress on securing Medicare, Medicaid, and CareGuide data from NCR. In summary:

Medicare Parts A & B: We received approval for downloading, and downloaded almost all the files via a secure line that we established with ODM; in October we received permission to use this data for the housing project.

Medicaid data: We had access to Medicaid claims data from an ongoing study of long-term care utilization and expenditures and a previous contract with ODM. After identifying the specific residents of the housing properties in the study we would be able to isolate and extract the subset of Medicaid claims for these residents. Our project managers would continue looking into whether the current wording of our Business Associate Agreement with ODM covered this data selection process.

From National Church Residences: We received 30 months of data from NCR CareGuide (the software that assesses, develops care plans, and records type of assistance residents have received from the service coordinators) for all dual eligible residents of all of NCR owned or managed properties in the state of Ohio. NCR implemented ESC in all their properties (owned or managed) in early 2014.

From HUD-based on the GAO report (Elderly Housing: HUD Should Do More to Oversee Efforts to Link Residents to Services): We had a list of housing properties included in this study identified by whether they had service coordination (via a grant from HUD to add a service coordinator, or had budgeted to have a service coordinator on site) or did not have service coordination. The limitation of this list was that it did not identify the level of service coordination (ESC or traditional service coordination).

From various websites: We identified and created a data set of all public housing designated for older people or people with disability (Section 202 or Section 8) in Ohio. We planned to use this file for selecting comparable properties with no service coordination, or service coordination that was not enhanced (traditional service coordination).

From MyCare health plans: At the time we received approval from CMS to receive Medicare claims data for this study, through SDRC, we also learned that Medicare claims data from CMS, most likely, would not include encounter data for those Medicare beneficiaries who were enrolled in a Medicare managed care (thus MyCare) plan. This study was designed, by ODM request, to study the same people that the Medicare claims data would exclude. This revelation presented a conundrum. We had spent a considerable amount of project time and resources to gain access to this data and most likely the data that we would receive access to would not have the very information that we needed for the study. Our only other avenue to get access to some measure of health care utilization was through MyCare health plans. The health plans had shown willingness to share data, but we were stuck in the details. Since we would not have a signed consent from each resident, they were reluctant to provide individual level data. It appeared that some health plans wanted us to sign a Business Associate Agreement (BAA). The Executive Director of LeadingAge Ohio suggested that we sign each health plans' BAA rather than trying to come up with one that encompassed all five. We started the process of collecting these BAAs to consult with Miami University's legal team.

The conference calls with the health plans on what type of data they could provide us were not very helpful. We had requested that they explore whether they could generate a list of 15 utilization measures (provided by us) per-member, per-month, per-property for each of the three time periods of the study. Our request was intended to get per-person, per-month (PMPM) by selected properties from each plan per each time period. The health plans had further questions, and as we needed identical data from all five health plans, we worked to clarify what we needed and what was feasible for the plans to produce. With the help of the plans that participated in the conference calls, we constructed a list of outcome measures and forwarded the list to all the plans for their final approval; requesting a response by May 4th. As of June 27, 2017 (the date of completion of the draft of this report), we had not yet received responses from all the plans. The list of outcome measures forwarded to the health plans is included in Appendix D.

Seriously Considering the Alternative Plan

While we waited for a response from the health plans, we considered and then pursued examining the impact of ESC for residents that were not part of a managed care. Most likely these individuals would be in non-MyCare counties. Our plan was to identify NCR properties in non-MyCare counties, find comparable properties without any service coordination or with traditional service coordination (as opposed to ESC) in the same vicinity, and make a comparison of average expenditures between those dual eligible residents residing in properties with ESC versus those who did not.

To proceed with this plan we had already started examining NCR data and creating a subset of properties that were in non-MyCare counties. Utilizing website information, we also created a comparable property list and attempted to identify each property's level of service coordination (no service coordination, traditional service coordination, or ESC.) The NCR data records each resident's encounter with their service coordinator as an update to health history and updates to their care plan with the specific activity that took place. We explored how to create a profile of the NCR residents and how to score the extent of assistance the residents received from their service coordinator. Because the service coordinators called their encounters with residents "touches," we examined how to score these "touches," assuming those who resided in properties with no service coordination or traditional service coordination had a value of "0" for the sum of their "touches."

Activities identified for the remaining months of the funding cycle:

1) Continue downloading the Medicare data
2) Learn to read and process both Medicare and Medicaid claims data
3) Proceed with creating a profile of residents in affordable housing for older people, or people with disability in non-MyCare counties
   a. Process both Medicare and Medicaid claims data for this subset of residents
   b. Create the profile of residents in non-MyCare counties from NCR data
   c. Update the research plan to submit to Miami University Institutional Review Board for reconsideration based on changes
   d. Continue engaging health plans to have a BAA signed with each plan
   e. Continue discussion with health plans to determine what kind of aggregate utilization measures, by property, they can all provide.

Plan for the one year extension:

1) Complete the non-MyCare county analysis comparing ESC properties to the matched non-ESC properties
2) Analyze appropriate data on demographic, health status, and health care utilization from non-MyCare counties and from state and national data sets to establish context and generalizability for the impact analysis.

Changes in analysis plans

Since we were not seeking, or receiving, resident consent for accessing their Medicare and Medicaid data; all dual eligible residents of a property would be included in the study. However, all records would be blind records and we would only present, in aggregate, the average expenditures or utilization or "touches." Accordingly, all NCR data we requested and received were blind records and would be presented in aggregate format. In such a circumstance the concept of propensity score matching was

irrelevant, since we would not be performing any analysis at resident level and we did not have residents' demographics to find their match. The initial analysis would be limited to residents of NCR properties as a whole. Since most non-MyCare counties are rural, and there are fewer affordable housing properties in rural counties, sometime the comparable property would be one or more counties away. If that was the case, we would use Medicare fee schedules to adjust Medicare expenditures. More information regarding fee schedules can be found in the following websites:

https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/PhysicianFeeSched/Medicare-PFS-Locality-Configuration-and-Studies.html
https://www.cms.gov/center/provider-type/all-fee-for-service-providers-center.html

END NOTES

[1]Weiss, L. J., Malone, M., & Kerry Walsh, B. (2015). *Value of Enhanced Service Coordination for American Association of Service Coordinators.* Powell, Ohio. Retrieved from https://www.servicecoordinator.org/default.aspx

[2] Ibid.

[3] Sharma, A. (2012). Health Disparities in Later Life A Simultaneous Equations Analysis of Utilization. *Journal of Aging and Health*, *24*(8), 1421-1448.

[4] ASPE. (2012). The "value added" of linking publicly assisted housing for low-income older adults with enhanced services: A literature synthesis and environmental scan. Washington, DC: U.S. Department of Health and Human Services (HHS), Office of Disability, Aging and Long-Term Care Policy (DALTCP).

[5] Starfield, B., Shi, L., Macinko, J. (2005). Contribution of primary care to health systems and health. Milbank Quarterly 83(3), 457-502.

[6] Castle, N. G. (2008). Service enriched housing and the senior living enhancement program. *Journal of Housing for the Elderly*, *22*(3), 263-278.

[7] Castle, N., & Resnick, N. (2016). Service-enriched housing: The staying at home program. *Journal of Applied Gerontology*, *35*(8), 857-877.

[8] LeadingAge. (2014). *Support and Services at home (SASH) Evaluation: First Annual Report.* Retrieved January 30th from https://aspe.hhs.gov/report/support-and-services-home-sash-evaluation-first-annual-report

[9] Haley, B. A., & Gray, R. W. (2008). *Section 202 Supportive Housing for the Elderly: Program status and performance measurement.* U.S. Department of Housing and Urban Development, Office of Policy Development and Research.

[10] See reference 4.

[11] Griffith, J., Greene, A., Steward L., & Wood, M. (1996). *Evaluation of the New Congregate Housing Services Program.* Washington, DC: U.S. Department of Housing and Urban Development. Retrieved from: http://www.huduser.org/portal/publications/suppsvcs/interim.html.

[12] See reference 4.

[13] See reference 6.

[14] Guo, J., Konetzka, R, and Manning, W. 2015. The causal effects of home care use on institutional long-term care utilization and expenditures. *Health Economics*, 24(1), pp. 4-17.

[15] Weissert, W. G., & Frederick, L. (2013). The woodwork effect: estimating it and controlling the damage. *Journal of Aging & Social Policy*, *25*(2), 107-133.

[16] See reference 7.

[17] See reference 7.