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CARE COORDINATION AS A PREVENTIVE INTERVENTION:  
EFFECTS ON CHILD WELFARE OUTCOMES

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A dissertation submitted to the

School of Graduate Studies

Rutgers, The State University of New Jersey

In partial fulfillment of the requirements

For the degree of

Doctor of Philosophy

Graduate Program in Social Work

Written under the direction of

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And approved by

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New Brunswick, New Jersey

May 2019

## **ABSTRACT OF THE DISSERTATION**

Care Coordination as a Preventive Intervention:

Effects on Child Welfare Outcomes

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**Background:** There is a paucity of information about the physical health needs of children receiving in-home child welfare services, how these needs may affect maltreatment risk, and whether interventions addressing medical needs may reduce abuse, neglect, and removal to substitute care. This dissertation examines care coordination, an intervention addressing the health needs of children receiving in-home child welfare services in ten New Jersey counties.

**Research Aims:** The research aims correspond to the three manuscripts that comprise this dissertation. Research Aim 1 (Manuscript 1) was to explore who was assigned to care coordination to better understand what, if any, risk factors accompany children's health-related needs in families receiving in-home child welfare services and which of these risk factors made caseworkers more likely to refer children to the program. Research Aim 2 (Manuscript 2) was to catalog the need for services addressing the health needs of children receiving in-home child welfare services as perceived and articulated by child welfare staff. Research Aim 3 (Manuscript 3) was to identify the effect of care coordination services on three core child welfare outcomes: case durations, removals to foster care, and new case openings after initial case closures.

**Design and Analyses:** For Research Aims 1 and 3, nurses' records and administrative child welfare data were used. Descriptive statistics, *t*-tests, chi-square tests, and logistic regressions were run to understand differences between children who received care coordination and those that did not (Research Aim 1). In pursuit of Research Aim 2, qualitative data was collected from 30 child welfare staff, including nurses who delivered care coordination and caseworkers and supervisors who referred clients to the service. An inductive, phenomenological approach was taken to capture and describe participants' experiences and how they understand them. For Research Aim 3, children who received care coordination in the ten intervention counties were compared with a propensity score matched sample of children in the state's remaining 11 counties to determine the program's effect on case durations, removals to substitute care, and new case openings following initial case closures.

**Results:** Analyses for Research Aim 1 revealed that domestic violence exposure was associated with significantly lower odds of assignment to care coordination (OR = 0.74,  $p < .001$ ), while having a caregiver with mental health problems increased children's odds of assignment (OR = 1.50,  $p < .001$ ). Increases in both indexed individual (OR = 1.75,  $p < .001$ ) and household (OR = 1.08,  $p < .001$ ) risk were significantly associated with receipt of services. All participants interviewed for Research Aim 2 described an acute need for services addressing the physical health needs of children receiving in-home child welfare services, whose families face multiple, overlapping challenges. Interviewees indicated that such services could improve children's health outcomes, correct an imbalance in child welfare services that prioritizes children in out-of-home care, and support frontline staff in their daily work. Analyses for Research Aim 3 revealed that recipients of care coordination were significantly less likely to have their

cases close within a year of case opening (mean difference = .1507,  $p < .001$ ). No significant effects of care coordination on removals or new case opening after initial case closure were discerned.

**Conclusions:** Findings from this dissertation indicate that services embedded in the child welfare system that target children's health needs in the context of cumulative family challenges may have the potential to mitigate risk for future maltreatment or removal to foster care. Such services may also be a critical support for child welfare staff, who are not trained in identifying or addressing children's specific medical needs. As an intervention targeting the health needs of children receiving in-home child welfare services, however, care coordination had a limited impact on the short-term child welfare outcomes examined in this dissertation. More evidence is needed to determine if care coordination or a program like it can prevent maltreatment or negative child welfare outcomes or improve other markers of child health and well-being.

## **ACKNOWLEDGEMENTS**

This dissertation is dedicated to the many children and families who are its subject. It is my sincere hope that their involvement in this work will benefit many families to come. I also owe my deepest gratitude to the staff of New Jersey's Department of Children and Families and Rutgers School of Nursing who took the time to participate in interviews for the qualitative portion of this work.

In conducting this research, I benefitted tremendously from the committed mentorship of Michael J. MacKenzie, MSW, Ph.D., and I sincerely thank him for his guidance and encouragement these past years. I also wish to thank my committee members, Ramesh Raghavan, M.D., Ph.D., Cassandra Simmel, MSW, Ph.D., and Deborah Daro, MSW, Ph.D. for their contributions to this work.

The studies comprising this dissertation would not have been possible without the engaged involvement of New Jersey's Department of Children and Families. I would especially like to recognize Debra Lancaster, MLER and Mollie Greene, MA for their continued support. From Rutgers School of Nursing, I also thank Mary Weglarz, DNP, RN, APN, CPNP, CPMHS.

Finally, there are many family members and friends who have supported me and contributed to this work in ways large and small. To my husband Andrew, who has been beside me through every success and setback in the course of this research, I have endless appreciation. I also thank my parents, Susan and James Stepleton, who taught me the value of social work and empowered me to pursue it. Lastly, my dear Arden, who gave me the motivation to finish this work, earns my thanks before she can even understand these words.

## **FUNDING**

This dissertation research was supported by a Doris Duke Fellowship for the Promotion of Child Well-Being, provided by the Doris Duke Charitable Foundation. Additional funding was provided by The New York Foundling Vincent J. Fontana Center for Child Protection.

## TABLE OF CONTENTS

ABSTRACT OF THE DISSERTATION .....	ii
ACKNOWLEDGEMENTS.....	v
FUNDING.....	vi
TABLE OF CONTENTS.....	vii
LIST OF TABLES AND FIGURES .....	xi
INTRODUCTION .....	1
Overview of the Program.....	2
Research Aims .....	4
Motivation for Study.....	5
Health Needs among Children Receiving In-Home Child Welfare Services .....	5
Policy Context.....	7
Theoretical Grounding.....	8
Etiology of Maltreatment.....	9
Bi-Directional Relationship Between Physical Health and Maltreatment.....	11
Prevention Science.....	13
Programmatic Approaches to Maltreatment Prevention.....	14
Coordinated Care Approaches .....	16
Description of Papers.....	17
Manuscript 1: Correlates of assignment to a health care coordination program among children receiving in-home child welfare services .....	18
Manuscript 2: Need for programs addressing the physical health needs of children receiving in-home child welfare services: Perspectives of child welfare staff.....	18
Manuscript 3: Health care coordination as a preventive intervention for children receiving in-home child welfare services: Effects on child welfare outcomes.....	19
References.....	21
Manuscript 1 .....	25
Introduction.....	26
Methods.....	33
Data .....	35



Care Coordination Trackers.....	35
Administrative Data.....	35
Sample.....	35
Measures .....	36
Care Coordination Receipt.....	36
Household Risks. ....	37
Individual Health Risks.....	37
Maltreatment Report History. ....	38
Safety Assessment Score. ....	39
Demographic Information.....	39
Sex.....	39
Infancy status. ....	39
Number of siblings.....	39
Primary caregiver age. ....	40
Race.....	40
Hispanic. ....	40
Analysis.....	40
Results.....	41
Descriptive Analyses. ....	41
Predicting Service Receipt.....	42
Discussion .....	43
Limitations .....	51
Future Research .....	52
References.....	59
Manuscript 2 .....	63
Introduction.....	64
Prevalence of Health Needs among Children in Intact Families .....	64
Programs Addressing Health Needs for Children Receiving Child Welfare Services	
.....	66
Policies Addressing Health Needs for Children in Intact Families .....	67
The Current Study.....	68
Methods.....	70

Description of Program.....	70
Study Design.....	71
Approach.....	71
Recruitment and sampling. ....	72
Data collection. ....	74
Data analysis. ....	75
Results.....	76
Need for Services Addressing Health Needs of Children in Intact Families.....	76
Child and family need. ....	77
Families with complex needs.....	77
Gaps in standard health care services. ....	78
Imbalance in resources to support children involved with child welfare. ....	78
Need for frontline staff support.....	80
Filling a gap in expertise.....	80
“Eyes on the family.” .....	81
Strategies for working without a nurse. ....	81
Discussion.....	83
Implications for Families .....	84
Implications for the Child Welfare Workforce.....	87
Implications for Agencies.....	89
Implications for Policy.....	92
Limitations .....	93
Conclusion .....	94
References.....	99
Manuscript 3 .....	102
Background and Literature Review .....	103
Method.....	111
Description of the Program.....	111
Data.....	112
Outcomes .....	113
Case closure within one year .....	113
Removal to substitute care.....	113

New case opened after original case closure. ....	114
Sample.....	115
Analysis.....	115
Propensity score matching. ....	115
Procedure. ....	118
Age.....	120
Having a sibling. ....	120
Race.....	120
Hispanic origin.....	121
Neglect allegation. ....	121
Total number of risk factors.....	121
County removal rate.....	122
Results.....	124
Discussion.....	124
Limitations .....	130
Conclusions.....	134
References.....	141
CONCLUSION.....	145
Findings .....	145
Research Aim 1, Manuscript 1.....	146
Research Aim 2, Manuscript 2.....	148
Research Aim 3, Manuscript 3.....	151
Synthesis .....	154
Implications.....	155
Future Research .....	158
Conclusion .....	160
References.....	162

## LIST OF TABLES AND FIGURES

### MANUSCRIPT 1

Table 1:	Descriptive statistics (N=54,934).....	53
Table 2:	Logistic regression predicting receipt of care coordination, with discrete risks (n=54,934).....	55
Table 3:	Logistic regression predicting receipt of care coordination, with indexed risks (n=54,934).....	57
Figure 1:	Sample selection.....	58

### MANUSCRIPT 2

Table 1:	Sample characteristics.....	96
Table 2:	Themes and subthemes within code, “need for services”.....	97

### MANUSCRIPT 3

Table 1:	Balance statistics for raw and matched sample.....	136
Figure 1:	Boxplots of propensity scores before and after matching.....	137
Figure 2:	Kernel density plots of propensity scores before and after matching..	138
Table 2:	Sample characteristics: Matched recipients of care coordination.....	139
Table 3:	Estimation of effects of care coordination receipt among propensity score matched sample.....	140

## INTRODUCTION

As evidence of the lifelong effects of child maltreatment mounts, the need for interventions that effectively prevent abuse and neglect grows apace. Given the myriad, multilevel factors, interactions, and transactions that affect a child's risk of maltreatment, no single prevention approach will be suited to all cases where abuse and neglect might occur. Likewise, a prevention program that achieves any measure of success must be designed to address the complexity of the problem, even if it is intervening on a limited set of risk or protective factors. These programs are, by virtue of addressing an issue with such convoluted, individualized causes, performing a sort of alchemy. There is an urgent need for more and better evidence about how, for whom, and under what circumstances child maltreatment prevention efforts reduce abuse and neglect. Further, for children who are exposed to maltreatment, it is equally necessary to increase what is known about how to prevent negative sequelae, including but not limited to psychosocial harm and removal from caregivers.

Many children who are maltreated or at risk of maltreatment come to the attention of the child welfare system, and a portion of these receive some complement of services, ranging from assessment of need to removal from caregivers and placement in new, permanent living arrangements. Most of the services provided by the child welfare system to vulnerable families are, in fact, prevention services. When the child welfare system involves itself with a family, its primary aim is to keep children safe. A second aim is to keep families together whenever it is possible to do so without endangering children. If safely maintaining children in their homes is not feasible, they are removed and placed in out-of-home care, also referred to here as substitute care, which can include foster care, kinship care, or placement in a congregate care setting, such as a residential

facility or group home. Of the millions of children who receive child welfare services in the United States in a given year, however, most will never be removed from their caregivers; in recent years this is increasingly so (U.S. Department of Health & Human Services, 2018). In these cases, services are provided to stabilize the existing family unit and address potential risks for maltreatment, keeping the family intact. These services can therefore be understood as indicated or targeted prevention activities, intended to prevent abuse or neglect among families at risk and, in some cases, put supports in place to mitigate the effects of maltreatment or exposure to risk that has already occurred. As the front line of maltreatment prevention for some of the nation's most vulnerable families, child welfare services for intact families require careful attention and evaluation. In this dissertation, a three-part study of one such program, a promising model intended to prevent maltreatment and removal and promote children's well-being through nurse-provided health care coordination, is presented.

### **Overview of the Program**

In 2012, early fall, just as the high vacation season on the New Jersey shore was coming to an end, weather conditions aligned to create one of the most vicious storms to hit the northeast in over a century. Hurricane Sandy, also known as Superstorm Sandy,<sup>1</sup> tore into the coast over several days, devastating some communities and sparing others before finally drifting out to sea. Nearly all of New Jersey's 21 counties suffered damage, but the impact was greatest in ten counties along the coast.<sup>2</sup> Coming on the heels of the

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<sup>1</sup> There is a meteorological distinction between a hurricane and a superstorm, but the term "superstorm" is widely used in reference to Sandy to convey that the storm covered an unusually large area. Officially, the National Hurricane Center classified Sandy as a Post-Tropical Cyclone (National Oceanic and Atmospheric Administration, n.d.).

<sup>2</sup> Atlantic, Bergen, Cape May, Cumberland, Essex, Hudson, Middlesex, Monmouth, Ocean, Union

Great Recession, many of the families living in the state's storm-affected regions faced substantial challenges before the hurricane hit, including poverty, unemployment or underemployment, and substance abuse, among others. Local, state, and national leaders, concerned with the well-being of families, feared that widespread trauma and loss caused by the storm might exacerbate these problems or give rise to new ones, destabilizing families and, in some cases, putting children at increased risk of abuse, neglect, and removal to foster care (New Jersey Department of Human Services, 2013).

To address the anticipated spike in child maltreatment and prevent foster care placement where possible, New Jersey's Department of Children and Families (DCF) installed additional services and interventions where they were thought to be most needed. In the ten coastal counties, Social Services Block Grant funds were allocated to employ nurses providing a service termed "care coordination"<sup>3</sup> to children receiving in-home child welfare services. Between October of 2013 and October of 2015, children in these ten counties with open child welfare cases who remained with their families of origin following a maltreatment report and investigation were eligible to receive the service. During the intake process or in the early weeks of a case, caseworkers, in consultation with their supervisors, decided whether or not to refer children to the care coordination program. Nurses were then empowered to use their discretion in determining which children to serve, and at what intensity. Any of a range of activities may have been undertaken by nurses, including assessing children's health care needs, educating caregivers about children's health, navigating and making referrals to services,

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<sup>3</sup> Although the service in question shared many features of other approaches known as "care coordination," it should not be confused with them. Care coordination undertaken in New Jersey was a separate, though related, intervention.

coaching caregivers to advocate for their children, attending appointments to translate between caregivers and medical providers, and following up with caregivers to be sure they were taking steps to address children's health care needs. The goal of the program was to facilitate identification, assessment, and treatment of children's health-related needs. In this way, care coordination was intended to promote vulnerable children's well-being; in so doing, care coordination may have also contributed to a reduction in risk factors associated with maltreatment, removal from caregivers, and other negative outcomes.

### **Research Aims**

In the three papers that make up this dissertation, I undertake a mixed-methods exploration of care coordination, as delivered in New Jersey's coastal counties between October 2013 and October 2015. Three research aims correspond to the three papers comprising this dissertation. Research Aim 1 was to explore who was assigned to care coordination in order to better understand what, if any, risk factors accompany children's health-related needs in families receiving in-home child welfare services and which of these risk factors made caseworkers more likely to refer children to the intervention. In pursuit of this aim, for Manuscript 1 I investigated the range of challenges that families of children with health needs faced by analyzing risk factors captured in administrative data associated with children's receipt of care coordination. Research Aim 2 was to catalog the need for services addressing the health needs of children receiving in-home child welfare services, as perceived and articulated by child welfare staff. Using primary qualitative data, in Manuscript 2 I report on findings from interviews with 30 child welfare staff, including caseworkers, supervisors, and nurses who delivered care coordination. Finally, Research Aim 3 was to identify the effect of care coordination



services on some core child welfare outcomes. Correspondingly, in Manuscript 3, capitalizing on the naturalistic implementation of the program, I return to the administrative data to identify potential preventive effects of care coordination on case duration, removals to out-of-home care, and new case openings after closure of an initial case. Taken together, these studies comprise a preliminary examination of care coordination services for children with open, in-home child welfare cases who have physical health needs.

### **Motivation for Study**

#### **Health Needs among Children Receiving In-Home Child Welfare Services**

Children who remain at home with their parents or original caregivers following a maltreatment report represent the largest population receiving services from the child welfare system, far greater than the number of children who are removed to substitute care. In 2016, children receiving in-home child welfare services outnumbered children in out-of-home care five to one (U.S. Department of Health & Human Services, 2018). Over time, they have comprised an increasing proportion of the population served, even as the number of children in foster care has decreased or remained relatively steady (U. S. Department of Health and Human Services, 2006-2016). However, the vast majority of child welfare research concerns children in substitute care, and comparatively little is known about the well-being of children receiving in-home services.

While all domains of well-being among children receiving in-home services are understudied, the physical health of this group has been almost entirely overlooked by researchers. What little is known suggests that this population may have significant medical needs, which may, in turn, put them at risk for future maltreatment or more intensive involvement with the child welfare system. The best information about this

population's health comes from the National Survey of Child and Adolescent Well-Being (NSCAW), a nationally representative, longitudinal study of children and families who were the subject of a maltreatment report. NSCAW data suggest that nearly half of all children who remain at home have at least one special health care need over the three years following their initial report of abuse or neglect (Ringeisen, Casanueva, Urato, & Cross, 2008; Stein, Hurlburt, Heneghan, Zhang, Rolls-Reutz, Silver et al., 2013). It should be noted, however, that the studies producing this figure do not distinguish between children who receive ongoing child welfare services and those with no further child welfare involvement following the investigation. It is possible that those deemed at-risk enough to have a case opened have differing rates of medical need. Indeed, one study examining child welfare-involved children under the age of six found that 83% of those who remained at home with a birth parent had at least one medical diagnosis (Schneiderman, Leslie, Arnold-Clark, McDaniel, & Xie, 2011).

There has been scant research examining the extent to which physical health problems may be a risk factor for maltreatment, and findings are mixed. Research has shown that children with behavioral health challenges are at higher risk for abuse and neglect, and a handful of these studies have noted that physical health needs may also increase that risk (Brown, Cohen, Johnson, & Salzinger, 1998; Jaudes & Mackey-Bilaver, 2008; Sullivan & Knutson, 2000). Some evidence from NSCAW data suggests that child welfare-involved children with medical needs may be no more or less likely to be removed from their homes following a maltreatment investigation than children in good health (Stein et al., 2013). Meanwhile, other studies have presented findings indicating that children who have been removed from their homes—presumably those who have experienced more severe abuse or neglect or who are in riskier family contexts—are

significantly more likely to have special health care needs (Ringeisen et al., 2008) or developmental problems (Leslie, Gordon, Lambros, et al., 2005). When children are removed to out-of-home care, children with health-related issues are more likely to experience negative outcomes, including multiple placements and lacking a permanency plan (Seltzer, Johnson, & Minkovitz, 2017). Much more research is needed to address the substantial gaps in the literature describing the health needs of children in intact, child welfare-involved families and the role that those needs play in altering children's risk for abuse, neglect, and negative child welfare outcomes.

### **Policy Context**

Just as most child welfare research is focused on the foster care population, child welfare policies are also disproportionately concerned with children in out-of-home care. This reflects the degree of responsibility that the state assumes when taking children into custody; children who remain with their parents are, first and foremost, the responsibility of their primary caregivers. However, the implications of this policy imbalance are important to consider, especially as a central aim of child welfare in the U.S. is to maintain children safely in their homes whenever possible. Federal policy specifies that states must make "reasonable efforts" to prevent removal for children that come to the attention of the child welfare system, putting services and supports in place to stabilize families such that children can remain at home (P.L. 96-272, 1980). The U.S. Department of Health and Human Services does not define what constitutes reasonable efforts, as they are to be determined on a case-by-case basis and according to standards articulated in state policies (Children's Bureau, n.d.). Broadly, reasonable efforts include assessment of risk and protective factors, accompanied by the provision of or referral to services that mitigate risks and, potentially, strengthen families to protect the safety and well-being of

children. Meanwhile, the Child Abuse Prevention and Treatment Act (CAPTA; as codified in 42 U.S. Code, Chapter 67) emphasizes that states must be prepared to address children's needs across domains, including physical health, whether they are in substitute care or remaining in-home. Specifically, CAPTA encourages linkages between the child welfare agency and community entities addressing public health, substance abuse, mental health, and developmental disabilities "to ensure that a greater number of substantiated victims of child maltreatment have their physical health, mental health, and developmental needs appropriately diagnosed and treated, in accordance with all applicable Federal and State privacy laws" (Title 1, § 105). No further clarity about how these linkages must be structured or how they must measure progress toward improved outcomes for children and families is offered at the federal level.

In order to meet the policy mandate that reasonable efforts be made to keep children safely in their homes before removal becomes necessary, state systems need more and better information about children who remain with their caregivers of origin after a maltreatment investigation. With a dearth of information about the challenges children and families receiving in-home services face, systems may struggle to put responsive services in place for this population. Regarding the physical well-being of children in this group, much more must be known about their health status; how their health needs may affect children's risk of abuse, neglect, or more intensive child welfare involvement; and what approaches for addressing children's medical issues work to reduce future risk for maltreatment or other negative outcomes (Leslie, Gordon, Meneken, et al., 2005). This dissertation is aimed at addressing this gap in knowledge.

### **Theoretical Grounding**

The following dissertation research is grounded in a lengthy tradition of iterative theory development about the causes and consequences of child maltreatment, its sequelae, and their prevention. In the study of maltreatment and its effects, several closely related theoretical frameworks guide specification of variables and hypotheses about their relationships: the bioecological model of human development, developmental psychopathology, and transactional models. Extending these, theory suggests a possible bi-directional relationship between children's physical health and maltreatment. Efforts to mitigate children's medical needs, according to tenets of prevention science, may therefore hold promise in reducing maltreatment and related risk for removal to substitute care or more intensive child welfare involvement.

### **Etiology of Maltreatment**

Any study on maltreatment, its effects, and their prevention must have at its core a theoretical model positing when, why, and under what circumstances abuse and neglect occur. Bronfenbrenner's (2007) widely-used bioecological model, which describes reciprocal relationships between human developmental trajectories and nested layers of the social ecology, is best understood as providing a context for maltreatment and its consequences. The bioecological model is often cited, sometimes called the "social ecological model" referring to earlier iterations of the theoretical frame, in describing how features of a child's relationships and environment shape and are shaped by the course of development (Institute of Medicine, 2014). Recent iterations of the model have emphasized individual factors and proximal processes, those ongoing reciprocal interactions between individuals and their contexts. Many of these attributes of the model are reflected in complementary theories of development.

Factors at each level of the social ecology have been shown to influence the likelihood that an individual child will experience maltreatment. These include but are not limited to: child and caregiver characteristics, family and neighborhood features, community resources, societal norms, and the cumulative effect of factors across these levels of the ecology (MacKenzie, Kotch, Lee, Augsberger, & Hutto, 2011). The vast majority of research in this area seeks to identify factors in two categories: those that increase the risk of abuse and neglect and those that protect against that risk. Dominant theoretical models with empirical support indicate that such factors combine additively, multiplicatively, interactionally, and transactionally to yield a given child's maltreatment risk (Cicchetti & Toth, 1995; Sameroff, 2009; Sroufe & Rutter, 1984).

Risk factors for child abuse that have been identified across studies include parental anger/hyper-reactivity, family conflict, and low family cohesion; risk factors for neglect include parental stress, parent's perception of the child as a problem, parent anger/hyper-reactivity, parent's low self-esteem, and poor parent-child relationship (Stith et al., 2009). Children's social-emotional competence and behavioral issues have also been associated with abuse and neglect, though these may be consequences rather than causes of maltreatment (Stith et al., 2009). However, as with studies enumerating maltreatment's psychosocial consequences, those isolating causes of abuse and neglect are plagued with inconsistencies. Belsky (1993) writes, "Because there is no single cause of the physical abuse and neglect of children, and because these forms of maltreatment arise as a result of a transactional process, involving characteristics of parents, children, and the multiple contexts in which they are embedded, the search for 'main effects' invariably yields sporadic results" (414). As mentioned above, research to date has provided mixed evidence for the extent to which physical health problems clearly

influence children's risk for abuse or neglect. There is some support, however, for a bi-directional relationship between children's health problems and maltreatment, reviewed below.

Factors that protect against abuse and neglect or are associated with a reduction in risk are also located at the child, caregiver, social, and environmental levels. Fulfillment of concrete needs (e.g., housing, food, health insurance), caregivers with positive parenting skills, and supportive social networks have consistently been listed as protective factors against child maltreatment (Horton, 2003; Institute of Medicine, 2014). The literature on protective factors overlaps considerably with research on resilience and protective mechanisms, both of which are concerned with children's responses to adversity when they are faced with it. Many of the factors identified as protecting children from abuse and neglect also serve to buffer them from the sequelae of maltreatment and cumulative risk. The individual contributions of discrete risk and protective factors to maltreatment and its sequelae are just as difficult to disentangle as the unique effects of abuse, neglect, and cumulative risk. Most approaches to understanding the consequences of maltreatment take this complexity into account.

### **Bi-Directional Relationship Between Physical Health and Maltreatment**

Although there is scant research examining children's physical health problems as a risk factor for abuse or neglect, it is unlikely that the presence of medical need reduces a child's risk for maltreatment. When children come to the attention of the child welfare system because of unmet health needs, it is likely that there are other risk factors in the social ecology impeding caregivers' capacity to ensure timely and appropriate medical care is in place. Contextually, the children's health care system in the U.S. is a complex patchwork of programs, services, and policies that is difficult for caregivers to navigate

under the best of circumstances (Russ, Garro, & Halfon, 2010). When parents struggle with challenges beyond those associated with their children's health, understanding and securing necessary medical services may be even more difficult. For children receiving in-home child welfare services, many of the common issues system-involved families face, including domestic violence, caregiver substance use problems, and caregiver mental illness, are among the family-level issues that may contribute to an underutilization of health care services (Schneiderman & Villagrana, 2010). Lacking appropriate medical care, children's health needs may increase, and child welfare involvement may become more likely if medical neglect is suspected. However, medical neglect is extremely difficult to prove, and substantiated cases are quite rare. For families facing multiple challenges, a child's health needs may contribute to cumulative risk and stress, placing them at greater risk for other types of maltreatment as well, including physical abuse, sexual abuse, or non-medical neglect.

Meanwhile, there is evidence that abuse, neglect, and household dysfunction increase children's risk for physical health problems, suggesting that there may be a bi-directional or transactional relationship between maltreatment and children's health. The Adverse Childhood Experiences Study has repeatedly demonstrated a clear relationship between a range of early, negative experiences and adult health problems. Ten types of adverse childhood experiences have been examined, including physical and sexual abuse, neglect, and several types of household dysfunction (e.g., living with a caregiver with mental illness). Adults who reported having multiple types of adverse experiences before the age of 18 have been found to have elevated rates of illness, including cancer, heart disease, liver disease, chronic lung disease, and others (Anda et al., 2006; Felitti et al., 1998). Recently, research has begun to examine the connection between adverse



childhood experiences (ACEs) and physical maladies within childhood, finding that children under the age of 12 who were exposed to multiple ACEs were more likely to have health complaints and illnesses requiring a doctor (Flaherty et al., 2009). Similarly, children who were the subject of maltreatment reports have been found to have a 74-100% greater risk of hospital treatment by the time they reached 18 years of age (Lanier, Jonson-Reid, Stahlschmidt, Drake, & Constantino, 2010). Presuming a bi-directional relationship between maltreatment and children's physical health, especially in the presence of other caregiver challenges, interventions that seek to mitigate children's medical risk factors may help to interrupt this relationship and potentially prevent maltreatment.

### **Prevention Science**

Efforts to prevent abuse, neglect, and poor psychosocial functioning are premised on the theoretical concepts presented above. Care coordination represents one such effort, intended to reduce the likelihood of maltreatment among children with health needs and prevent more intensive child welfare involvement. Such interventions have their roots in the field of public health. Prevention science concerns the systematic search for, dissemination, implementation, and evaluation of interventions that “prevent or moderate major human dysfunctions” (Coie et al., 1993). Reiss & Price (1996) articulate the “hubs” for prevention research as follows: First, prevention science seeks to identify malleable risk and protective factors associated with a given outcome. A subsequent task is to suggest and test strategies for reducing risk factors and increasing protective factors, shifting the balance such that the outcome is avoided. Finally, these strategies are deployed, tailored, and systematically evaluated.

Regarding abuse and neglect, prevention science targets maltreatment as an outcome in its own right, but also as a risk factor for future dysfunction. Factors that increase or decrease a child's likelihood of experiencing abuse or neglect are identified and addressed through intervention. Most recently, child maltreatment prevention research and intervention have shifted away from a historical emphasis on risk factors to focus more on those family strengths, child characteristics, and contextual factors that protect against abuse and neglect (Stagner & Lansing, 2009). A central aim of the field has been to develop, disseminate, and implement with fidelity interventions that have demonstrated effectiveness in preventing maltreatment.

### **Programmatic Approaches to Maltreatment Prevention**

Research has examined several maltreatment prevention programs, some rigorously, others less formally. Those seeking to prevent abuse or neglect before they occur fall into the categories of universal and indicated prevention approaches. The former include population-level approaches, such as public education campaigns, while the latter target families thought to be at greater risk for maltreatment. Several meta-analyses have found that, among those programs that have been more thoroughly evaluated, home visiting, parent education, and child sex abuse prevention programs are the most consistently effective across studies (Geeraert, Van den Noortgate, Grietens, & Onghena, 2004; MacMillan, Wathen, & Barlow, 2009; Mikton & Butchart, 2009; Selph, Bougatsos, Blazina, & Nelson, 2013). More substantial effects appear to be achieved with programs that are delivered earlier in a child's life and those that have a longer duration (MacLeod & Nelson, 2000). Many programs that aim to prevent maltreatment also target protective factors and family well-being and have been shown to yield positive results in these areas as well (Geeraert et al., 2004; MacLeod & Nelson, 2000).

In many cases, parents' peers and paraprofessionals deliver maltreatment prevention interventions; in others, specialty providers are deployed. In the case of care coordination, the subject of this dissertation, nurses, a highly specialized group of professionals, are used to deliver the intervention. The need for specialty providers to support maltreatment prevention efforts under some circumstances is apparent in light of the varied risk factors that have been shown to contribute to child maltreatment. For instance, as noted above, children with complex physical or behavioral health needs are at greater risk for abuse or neglect than their otherwise healthy peers (Brown et al., 1998; Jaudes & Mackey-Bilaver, 2008; Sullivan & Knutson, 2000). Some parents may be overwhelmed or simply unequipped to meet the needs of sick, disabled, or maladjusted children. To mitigate the risk of maltreatment in these cases, intervention by someone with thorough, accurate medical knowledge may be needed. Yet the providers of child welfare services, often social workers (Barth, Lloyd, Christ, Chapman, & Dickinson, 2008), are not likely to have this depth of knowledge, and the system does not demand it. Here allied professionals must be enlisted to prevent maltreatment stemming from medical risk factors. Indeed, doctors and nurses have been identified as prevention agents (Flaherty & Stirling, 2010; Olds, 2006), and in one well-known example, the Nurse-Family Partnership (NFP) program, a manualized, home visiting intervention provided by nurses has been shown to reduce the incidence of child abuse and neglect for young, first-time mothers (Olds, 2006). Although NFP has an exceptionally strong evidence base, community implementation outside of the research context has given rise to challenges common among large-scale prevention initiatives, including low retention rates and difficulties working with families with compounding needs across multiple domains (Olds et al., 2013).

Even as evidence in support of maltreatment prevention interventions grows, much research in this area has suffered from a variety of methodological limitations (MacMillan et al., 2009), challenging the efforts of policymakers and practitioners to integrate maltreatment prevention programs into the social service array. Although research has clearly demonstrated that the causes and consequences of maltreatment are numerous and entangled, those programs with the most robust outcomes tend to be those targeting a narrow set of causal processes, limiting their impact with diverse populations (Daro, Barringer, & English, 2009). Even when a policy's target population is restricted to a particular group, such as intact families with open child welfare cases, they must be flexible enough to meet the needs of a wide range of caregivers and children.

### **Coordinated Care Approaches**

At the time of writing, there are no published studies examining the effects of care coordination or similar approaches on prevention of maltreatment and negative child welfare outcomes on children receiving in-home child welfare services. However, one study has explored how a casework approach characterized by hands-on assistance in managing children's health care may support improved health outcomes among child welfare-involved children (Cheng & Lo, 2016). Such "collaborative engagement" was associated with improved health status for most children, though Hispanic children, younger children, children living in low-income families, and children cared for by nonbiological parents did not experience such improvements (Cheng & Lo, 2016). Meanwhile, coordinated or collaborative health care interventions have been mounted outside of the child welfare context and demonstrated effectiveness in supporting patients' health, improving the quality of health care services, and decreasing some costs to the health care system (Peikes, Chen, Schore, & Brown, 2009). Characterized by

information sharing, shared decision-making, education, coaching, navigation of services, and follow-up (Agency for Healthcare Research and Quality, August 2018; American Academy of Pediatrics Committee on Children with Disabilities, 1999), coordinated or collaborative care has shown promise in bettering health outcomes for patients with complex health care needs. Adults with co-occurring physical and mental illness (Katon, Lin, Von Korff, Ciechanowski, Ludman, Young et al., 2010; Unützer, Katon, Callahan, Williams, Hunkeler, Harpole et al., 2002) and children with special health needs (Homer et al., 2008) have benefitted from such approaches to health care delivery. The care coordination program that is the subject of this dissertation shared certain features of these promising or evidence-based approaches. By supporting caregivers in ensuring their children's health needs were met, and potentially contributing to improvements in children's health needs, it is reasonable to ask how care coordination, as delivered in New Jersey, operated and whether it had a preventive effect on child welfare outcomes. These are the questions at the core of this dissertation.

### **Description of Papers**

The three papers comprising this dissertation explore care coordination, delivered in New Jersey's ten coastal counties between October 2013 and October 2015, as a preventive intervention. While no explicit theory of change was articulated for this implementation of the program, the aim of the service was to shift the balance of risk and protective factors in families receiving in-home child welfare services, such that children's physical health was managed, caregivers' barriers to meeting children's health needs were addressed, and parents developed greater efficacy in securing necessary medical care for their children. Building on the theoretical frameworks described above and employing tenets of prevention science, the program was hoped to have stabilized

families, reduced maltreatment, and prevented more intensive child welfare involvement for the population served.

**Manuscript 1: Correlates of assignment to a health care coordination program among children receiving in-home child welfare services**

With the first paper, I sought to describe the families who received care coordination. My aim was to address a gap in the literature about the health-related needs of children who receive in-home child welfare services. Existing research—of which there is very little—treats the physical health of this population in isolation from other family challenges. In Manuscript 1, I used administrative child welfare data and records kept by nurses delivering the intervention to examine the individual and household-level risk factors associated with assignment to services for children in intact, child welfare-involved families in the treatment counties. Here, assignment to care coordination can be seen as a rough proxy for children’s health needs, as caseworkers were not likely to refer physically healthy children to the nurses (unless referring a sibling with health needs). Results of this study suggest which individual- and household-level risks may be more likely to be manifested in the homes of children with health-related needs; they also point to which risk factors caseworkers weighted most heavily in determining which children to refer to services. These risk factors may be those that are more likely to impair caregivers’ capacity to ensure children’s health needs are being met in an appropriate and timely manner.

**Manuscript 2: Need for programs addressing the physical health needs of children receiving in-home child welfare services: Perspectives of child welfare staff**

For the second paper, I conducted in-depth, semi-structured interviews with thirty child welfare staff, including caseworkers, supervisors, and nurses delivering care

coordination. Interviewees were asked to describe the children and families who received care coordination services, explaining both the children's health needs and other challenges facing children's caregivers. They were also invited to reflect on whether and to what extent the intervention was useful, both in supporting families and helping child welfare caseworkers do their jobs. Presented here is a descriptive exploration of their perceptions of the need for child welfare interventions like care coordination that target the physical health of children receiving in-home services. Results complement quantitative data suggesting that children in intact, system-involved families have health-related needs by providing rich information about how and why services targeting these needs might be a necessary component of child welfare services. The findings of Manuscript 2 are particularly relevant in program and policy contexts, where qualitative findings can be used to help explain the mechanisms behind certain phenomena, such as why care coordination may or may not prevent negative child welfare outcomes.

**Manuscript 3: Health care coordination as a preventive intervention for children receiving in-home child welfare services: Effects on child welfare outcomes**

Finally, for Manuscript 3, I returned to the administrative data and nurses' records to explore whether receipt of care coordination affected three core child welfare outcomes: how long cases remained open, removals to out-of-home care, and new case openings after initial cases were closed. As findings from Manuscript 1 suggested that children with certain individual- and household-level risk factors were more likely to be assigned to care coordination, comparing recipients with non-recipients, without any adjustment for these baseline differences, would yield biased results. To address this problem, propensity score matching was used to derive a comparison group that more closely resembled children who were assigned to care coordination before treatment

effects were estimated. Results represent a preliminary examination of care coordination's effects on child welfare outcomes, though certain data limitations precluded drawing definitive conclusions about the program.

Taken together, these three papers comprise a preliminary, mixed-methods exploration of care coordination as a targeted preventive service for children receiving in-home child welfare services. Findings may contribute to the extant literature in several important ways. First, they highlight the need for greater attention to the physical health needs of children in intact, child welfare-involved families. With such little research in this area, it will be beneficial for scholars, policymakers, and practitioners to better document the extent of health concerns in this population and to begin to identify how children's health problems may affect their experiences in the child welfare system. Second, these studies may begin to build a case for services targeting children in intact families with complex or chronic health conditions. Where systems have explicitly addressed the health needs of system-involved children, they have tended to focus their efforts on children in substitute care. This is understandable, as these children are the legal responsibility of the state, and their health needs are the responsibility of the child welfare department. However, charged with attending to the overall well-being of all children served, including those receiving in-home services, there is a strong argument to be made that child welfare systems ought to attend more to the physical health of children in intact families. The second paper in this dissertation, which explores how child welfare staff perceive the need such services, outlines this argument in providers' own words. Third, these studies, dependent on their findings, are intended to begin establishing an evidence base for care coordination as a promising practice for use with child welfare-



involved populations, specifically children in intact families with complex or chronic health conditions. Care coordination may impact a range of family risk and protective factors and influence many child welfare outcomes, all of which could not be examined here. However, this study's initial exploration of characteristics associated with assignment to the intervention and estimation of some effects of care coordination lay a foundation for future research unpacking the intervention's operation. Implications for child welfare systems and policies are presented in the synthesis at the end of this dissertation.

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**MANUSCRIPT 1**

CORRELATES OF ASSIGNMENT TO A HEALTH CARE COORDINATION  
PROGRAM AMONG CHILDREN RECEIVING IN-HOME CHILD WELFARE  
SERVICES

by

KATHERINE S. STEPLETON

Manuscript 1 of 3 of a dissertation entitled:

CARE COORDINATION AS A PREVENTIVE INTERVENTION:  
EFFECTS ON CHILD WELFARE OUTCOMES

A dissertation submitted to the  
Graduate School—New Brunswick  
Rutgers, The State University of New Jersey

In partial fulfillment of the requirements

for the degree of

Doctor of Philosophy

Graduate Program in Social Work

Written under the direction of

Michael J. MacKenzie

## Introduction

Children receiving services in their home (referred to as “in-home services”) with their family of origin, as opposed to those in out-of-home foster care, are the largest population served by the child welfare system in the United States (U.S. Department of Health & Human Services, 2018); in many states, the proportion of system-involved children getting in-home services is growing while the proportion of children in foster care shrinks. These young people have open child welfare cases, either involving protective services or other support services, but they have not been removed to out-of-home care. They remain at home with their original caregivers, usually including at least one biological parent. A subset of this population has chronic or complex medical needs (Ringeisen, Casanueva, Urato, & Cross, 2008; Schneiderman, Leslie, Arnold-Clark, McDaniel, & Xie, 2011), which may or may not have been a contributing factor in the maltreatment report that brought the family to the attention of the system. In either case, having a child with greater-than-average medical needs may, in part, stem from (e.g., neonatal abstinence syndrome resulting from mother’s substance use), and also reciprocally contribute to as an additional stressor, the constellation of risk factors that families receiving child welfare services may face, especially in cases where caregivers are unequipped or unable to manage those needs. Thus, services that support parents’ capacity to meet the health-related needs of their children may help stabilize families, keeping children from being removed to foster care and allowing their open child welfare cases to be closed sooner.

The current study represents the first step in the examination of an intervention provided to the families of children with medical needs receiving in-home child welfare services in ten of New Jersey’s 21 counties. Nurses offered services under the umbrella

of “care coordination,” engaging in a range of activities intended to ensure that children’s medical needs were met. These services were not clinical; rather they included assessments, referrals, education, coaching, and follow-up, among other activities. While all families involved in in-home services were eligible to receive care coordination, caseworkers and nurses were able to use their professional judgement in determining which families to refer to the program. Additionally, the availability of the service was limited by the number of nurses delivering it; one to two nurses served each county. The aim of the present study is to identify family characteristics including but not limited to children’s health concerns associated with caseworker’s assignment of children to the intervention. Where the literature generally treats the health-related needs of children involved with the child welfare system in isolation from the other risk factors that their families face, this study expands what is known about the range of transactional, or bidirectional, issues that may contribute to initial and ongoing child welfare involvement for families of children with complex or chronic medical needs. This study also lays the groundwork for future investigation of the intervention and its effects on child and family outcomes in child welfare.

U.S. child welfare systems are mandated to attend to the well-being, including the physical health, of children receiving services, who are likely to have more complex health care needs than those who are not involved with the system (Lanier, Kohl, Raghavan, & Auslander, 2014). Research has demonstrated that maltreatment and household dysfunction, factors that bring children to the attention of the child welfare system, have negative effects on physical health. Seminal studies of the accumulation of ecological risk (Sameroff, 2009; Sameroff & MacKenzie, 2003) and adverse childhood experiences (ACEs) and subsequent related research have shown a clear, graded

relationship between the number of types of adversity experienced before age 18 and later health problems, including cancer, heart disease, pulmonary diseases, liver disease, and more (Anda et al., 2006; Felitti et al., 1998). More recent work has found evidence of a link between early adversity and poor health outcomes in childhood. In one study, exposure to multiple ACEs was associated with more health complaints, illnesses requiring visits to the doctor, and somatic complaints by age 12 among children in a high-risk sample; the effect was stronger for ACEs experienced between the ages of 6 and 12 than for ACEs experienced in the first six years of life (Flaherty et al., 2009). Here, the effects of more proximal risk may be stronger than those experienced in the more distant past. Maltreatment before the age of 12 has also been associated with a 74-100% higher risk of hospital treatment by age 18 (Lanier, Jonson-Reid, Stahlschmidt, Drake, & Constantino, 2010). Examining differences between children enrolled in Medicaid with and without maltreatment reports to child protective services, Campbell and colleagues (2016) found that children with a maltreatment report incurred higher Medicaid expenditures than those who were not known to the child welfare system, suggesting greater use of medical services, and possibly of medical need, over time. It should be noted that none of the children in that study were removed to foster care during the observation period.

Children's health conditions may bring them to the attention of the child welfare system if their medical needs are not being adequately met. The health care system for children is a patchwork of services, policies, and programs that is difficult for parents to navigate under the best of circumstances (Russ, Garro, & Halfon, 2010), made all the more challenging when families face additional barriers. Caregivers who become involved with child welfare often face multiple challenges, many of which may impede



their ability to understand their children's health needs or follow through on attaining suitable medical care for them. For instance, children with health problems who are involved with child welfare are likely to have parents in poor health as well (Rienks, Phillips, McCrae, Bender, & Brown, 2017). Only 45% of child welfare-involved biological parents participating in a nationally-representative, longitudinal survey reported that they were in "Good" or "Excellent" health, compared to 61% of foster parents surveyed (Ringeisen, Casanueva, Smith, & Dolan, 2011). Additionally, one quarter of biological parents scored in the clinical range for depression, 10% reported harmful alcohol consumption, 25% had suffered from interpersonal violence in the past 12 months, and 33% reported involvement with criminal justice in the past year (Ringeisen et al., 2011). In work reviewed by Schneiderman and Villagrana (2010), in-home caregivers were also reported to be likely to be younger, less educated, and have lower incomes than foster parents. Evidence indicates that such an array of challenges may play a part in underutilization of health services among families involved with child welfare (Schneiderman, Smith, Arnold-Clark, Fuentes, & Kennedy, 2016; Schneiderman & Villagrana, 2010).

It is unclear the extent to which medical need alone increases a child's risk for child welfare involvement and removal. One study found that children with poorer health were not more likely to be in out-of-home placements at baseline following a maltreatment report (Stein et al., 2013). However, children in out-of-home care have been shown to have much higher rates of health problems and health care utilization than the general population (Ringeisen et al., 2008). In addition to increased risk for physical health problems, children removed from their homes are also at higher risk for having developmental problems than children who remain with their families (Leslie et al.,

2005). It has been hypothesized that higher reported rates of health problems among children in out-of-home care may be the result of increased surveillance by trained caregivers and service providers who are equipped to recognize children's health needs (Schneiderman & Villagrana, 2010). While it is unclear whether medical problems increase the likelihood that children will be removed, once in out-of-home care, children with chronic or complex health conditions are also more likely than their peers to experience negative placement outcomes, including having multiple placements and lacking permanency plans (Seltzer, Johnson, & Minkovitz, 2017).

Among children who are removed from their homes into substitute care as a result of child welfare system involvement, the use of medical services has been relatively well-documented. This is likely because the majority of this population is categorically eligible for Medicaid, making their claims and expenditure data available for examination by researchers. Rather less is known about the health, health-related needs, and service use of children who remain in their homes while receiving child welfare services. While many of these children are Medicaid beneficiaries—most recent figures suggest 84% have health coverage through Medicaid (Libby et al., 2008)—many have private insurance. Data about medical needs and service use among this population are therefore largely drawn from longitudinal or cross-sectional surveys. In a survey of families involved with child welfare in a large, urban jurisdiction, researchers found that 83% of children under the age of 6 who remained at home with a birth parent had at least one medical diagnosis (Schneiderman, Leslie, Arnold-Clark, McDaniel, & Xie, 2011). Children receiving in-home child welfare services have also reported poorer physical health on a general measure of well-being than did their counterparts in a normative sample (Lanier et al., 2014).

Some of the richest information about the health status of children who have not been removed from their homes comes from the National Survey of Child and Adolescent Well-Being (NSCAW), a longitudinal, nationally-representative study of children and families who were reported to child protective services for suspected maltreatment. The second iteration of the survey, NSCAW II, contains data suggesting that up to 49% of children who were never removed from their parents following the initial maltreatment report had a chronic health condition or special health care need (Ringeisen et al., 2008; Stein et al., 2013). However, it should be noted that these studies do not distinguish between children who received ongoing, in-home child welfare services and those who had no further system involvement following their initial maltreatment report.

Given the level of health-related needs among children receiving child welfare services and the possibility that children's chronic or complex health conditions may affect their case trajectory, addressing children's medical needs quickly and appropriately, as well as mitigating other risk factors that limit caregivers' capacity to ensure children's health needs are met, may be a powerful strategy to allow children to remain safely in their own homes. Child welfare systems are positioned to play a critical role in the coordination of health care for the children they serve, both those who have been removed from their parents and those who receive in-home services. However, child welfare workers are not necessarily equipped to help caregivers manage children's health conditions, as this may require specialized medical knowledge and ongoing interaction with the health system. When serving families receiving in-home child welfare services, this work must also be done in the context of a range of family needs that may or may not be contributing to the caregiver's inability to address the health needs of their child.

Therefore, there is a need for interventions targeting families involved with child welfare whose children have chronic or complex medical needs before removal takes place. Such interventions must be sensitive to the multiple needs that these families face. While there are some well-supported approaches to addressing the health needs of children with histories of abuse and neglect, few have been applied in settings where children are still living with their biological families (Leslie et al., 2005).

The care coordination intervention provided to children and families with in-home child welfare cases in New Jersey, described below, is related to several service delivery models designed to improve physical and mental health outcomes for children and adults. In primary care settings, care coordination typically refers to the sharing of information and decision-making among multiple care providers and the patient, with the aim of delivering high-quality, patient-centered care and improving health (Agency for Healthcare Research and Quality, August 2018; American Academy of Pediatrics Committee on Children with Disabilities, 1999). Relatedly, a collaborative care model, in which nurses used motivational and encouraging coaching to help adult patients manage co-occurring mental and physical illnesses, has also demonstrated effectiveness (Katon et al., 2010). Nurses delivering care coordination in New Jersey similarly provided education and coaching to caregivers who were often coping with multiple challenges, but with the aim of helping them improve their children's health rather than their own. The program also contains aspects of healthcare navigator programs, which help direct clients to services including but not limited to medical services to better outcomes for low-income patients (Rogers & Purnell, 2012). Within child welfare, New Jersey's care coordination approach shares features of "collaborative engagement," a casework approach that involves child welfare caseworkers helping caregivers apply for services,

making appointments for caregivers, accompanying families or children to services, or following up with caregivers after service delivery; this approach has been associated with improved physical health outcomes for children receiving child welfare services (Cheng & Lo, 2016).

The current study begins to examine New Jersey's care coordination approach, delivered with the purpose of increasing caregivers' efficacy to address children's health needs, thus potentially stabilizing families receiving in-home child welfare services and preventing removals. The current analysis explores the range of risks faced by child welfare-involved families of children with complex or chronic medical needs who received the intervention, offering insight into the factors that interventions targeting children's health needs in this population must take into account.

### **Methods**

Between October 2013 and October 2015, nurses in ten of New Jersey's counties delivered care coordination services to children and families receiving in-home child welfare services.<sup>4</sup> The care coordination services were contracted by the state, and nurses, who were employed by a third-party entity, were stationed in the intake units of local child welfare offices in the ten participating counties. Referral to care coordination took place at intake, during or shortly after the investigation of initial maltreatment reports that brought children and families to the attention of the child welfare system. Caseworkers, in consultation with their supervisors, would determine whether to refer a case for care coordination based on family needs, including children's medical needs, identified during

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<sup>4</sup> The program was implemented following Hurricane Sandy with emergency Social Service Block Grant funds intended for the counties hit hardest by the storm. The ten counties selected for care coordination were therefore located along the coast.

intake. While there were no formal policies stipulating which cases should be referred to the nurses, some guidance was provided, encouraging caseworkers to use the nurses' services when they encountered families with young children, young parents, or substance-exposed newborns. However, caseworkers were empowered to use their professional judgement in referring in-home cases to the nurses whenever they felt it was necessary, and as such, families with a range of needs received care coordination. As noted earlier, services were limited in availability by the number of nurses employed to deliver them; as a result, caseworker and nurse discretion in determining whom to refer was also intended to target the intervention to the children most in need. Of all eligible children (N = 54,934), 2.4 percent were referred to and received care coordination. After receiving a family's referral from a caseworker, nurses provided a range of services tailored to families' needs in the course of delivering care coordination. The intervention was not structured or manualized; rather it allowed nurses to determine—within certain defined limits—what they would do on a case-by-case basis, according to their evaluation of families' needs. Activities comprising the care coordination intervention included: acquiring and interpreting medical records, including records of immunizations; meeting in-person or by phone with family members to assess needs, medical or otherwise; providing anticipatory guidance on general health issues, such as safe sleep for newborns; educating caregivers on children's health needs; locating and referring caregivers to resources for meeting children's health needs; assisting caregivers in making health care appointments; communicating with doctors and other medical staff on behalf of children and their parents; attending health care appointments with families; following-up to check that caregivers were able to bring their children to their necessary appointments; and participating in team meetings and case conferences with child welfare staff. Which

activities were performed, how frequently the nurse interacted with a family, and how long the nurse kept a case open were informed by the nurse's assessment of each family's needs.

This study was undertaken with the approval of the Institutional Review Board of the author's institution and of New Jersey's Department of Children and Families.

## **Data**

**Care Coordination Trackers.** Nurses kept monthly records identifying each family and each child who received care coordination. As the nurses were contracted service providers, these "trackers" were kept independent from the administrative data described below; however, nurses were able to access case records in the administrative data system to review and enter contact notes. Families and children receiving care coordination were listed in the trackers using individual and case identification numbers drawn from the state administrative data.

**Administrative Data.** A second source of data for this study was a dataset pulled from New Jersey's client-level case management system for child welfare, NJ SPIRIT (Statewide Protective Investigation, Reporting, and Information Tool), which meets federal SACWIS (Statewide Automated Child Welfare Information System) standards. All case-related information is entered into NJ SPIRIT, including data describing individual demographic indicators, history of involvement with the child welfare system, the health status of each individual associated with a case, and a range of social and environmental risk factors. Unique identifiers are assigned at the individual and case level (as well as other levels not used for identification in the current study).

## **Sample**

Broadly, all children who received in-home child welfare services in the ten participating counties during the period in which care coordination services were available, beginning in October 2013 and ending in October 2015, are included in the study population. Although the services were first made available in the state in October 2013, counties could only begin offering them once a nurse had been hired to serve their area; as such, children were only included in the sample once care coordination became available in their county. A child was identified as receiving in-home services if he or she had a case opened for services following investigation without any removal within 15 days of the case's opening. Cases were required to have been assigned to a local child welfare office and categorized for receipt of child protective services or other support services, rather than given another administrative designation in the data. From this sample, 137 children were removed because they died before, during, or after their case was opened. Deceased children were excluded from the study as their cases are considered especially severe and therefore not strictly comparable to the majority of children's child welfare cases. The final analytic sample included 54,394 children with complete data on all study variables. Figure 1 illustrates how cases were eliminated according to exclusionary criteria to yield the final analytic sample.

## **Measures**

**Care Coordination Receipt.** Receipt of care coordination is the dependent variable in the regression analyses below. Children who received services were listed in the nurses' trackers by individual identification number (a unique indicator assigned to each person) and case identification number (an indicator assigned to each case; multiple people on a case shared the same case identification number).



**Household Risks.** From an ecological perspective, it is necessary to account for risk factors that may be present in a child's environment when examining individual outcomes (Bronfenbrenner & Morris, 2007). Therefore, several family- or household-level risk factors were included in the regression models. In the course of conducting their regular risk, safety, and strengths and needs assessments, caseworkers identified household-level risks and recorded them in the administrative data. A binary indicator was created for each of the following risks: domestic violence, housing problems, financial problems, caregiver substance use, caregiver mental health problems, child substance use, and child mental health problems. A household risk index was also computed, summing the number of risks flagged on each child's record, ranging from zero to seven risks. It should be noted that if an individual child had a given household risk factor noted in his or her record, it indicated that the problem was present at the family-level, not necessarily the individual level. For example, if child substance abuse was noted at the household level in a child's record, the child's sibling may have been using drugs or alcohol, not necessarily the target child themselves. It is a limitation of the data that it is not possible to discern whether such an issue affected the target child or a sibling of the target child. However, the presence of any child with substance use problems, be it the target child or the target child's siblings, was considered an environmental risk factor for the target child. Substance abuse and mental health problems were also included at the individual level. For some children, this results in double-counting such risk factors; however, the limitations of the data make this unavoidable.

**Individual Health Risks.** While most risks were tracked at the household level, some individual-level health risks were captured by the high-level medical record kept in

the administrative data. These risks included alcohol use, drug use, behavior problem, emotional problem, learning disability, intellectual disability, physical disability, vision or hearing impairment, and the need for other special care. These risks were then consolidated into five categories to increase interpretability. The five categories were: (1) behavior or emotional problem; (2) intellectual disability or learning disability; (3) substance abuse, which included drug or alcohol abuse; (4) physical disability, which also included vision or hearing impairment; and (5) other special care. An index of individual health risks was also computed for each child in the analytic sample, with a possible range from zero to nine risks.

**Maltreatment Report History.** Researchers have attempted to identify specific pathways through which distinct types of child maltreatment lead to certain psychosocial sequelae (Briere & Elliott, 2003; Hildyard & Wolfe, 2002). However, a growing literature suggests that the number of different types of maltreatment experience may have a greater bearing on outcomes than any single type alone (Edwards, Holden, Felitti, & Anda, 2003; Finkelhor, Ormrod, & Turner, 2007). More germane to the current study, maltreatment type has been linked to receipt of services, with those children who were removed from their homes for sexual abuse being more likely to receive behavioral health services than those removed for physical abuse or neglect (Garland, Landsverk, Hough, & Ellis-MacLeod, 1996). As such, it was important to include as control variables in this study's analysis information about the type(s) of maltreatment to which children were exposed. Three binary variables were constructed, indicating whether children had been listed in a maltreatment report alleging physical abuse, neglect, or sexual abuse in the 12 months prior to their case being opened. Reports of maltreatment rather than substantiations were used as proxies for exposure following research finding

that outcomes for children with unsubstantiated and substantiated reports do not differ significantly (Hussey et al., 2005; Kohl, Jonson-Reid, & Drake, 2009).

**Safety Assessment Score.** To control for the severity of the case, a score from the caseworker's safety assessment was included in the analyses. The assessment includes twelve questions about specific hazards to children's safety with possible yes or no responses. The total score is the sum of all yes responses, with a possible range from zero to twelve. It should be noted that this tool is used to inform decisions about whether to remove children from their caregivers, and as such, is used conservatively by caseworkers, yielding very low average total scores. This is especially likely to be true for cases where children have not been removed, as with the cases included in this study. For children with multiple safety assessments, the assessment conducted closest to the date of case opening was selected.

**Demographic Information.** Several demographic variables were included in the analysis to determine their role in assignment to care coordination:

***Sex.*** The child's sex was indicated as male or female.

***Infancy status.*** As informal guidance to caseworkers encouraged referral of very young children to care coordination, infancy status was included as a binary independent variable. A child was considered an infant if he was under the age of 1 year at the time of case opening.

***Number of siblings.*** Child outcomes have been shown to vary by the number of children living in the household (Baydar, Hyle, & Brooks-Gunn, 1997; Lawson & Mace, 2010). Each child's number of siblings was calculated by adding the number of other children listed as part of the child's child welfare case.

**Primary caregiver age.** Guidance to caseworkers also stressed that children of young parents should be considered for referral to care coordination. The age of the primary caregiver identified in the administrative data was calculated at the time of case opening.

**Race.** Child's race was defined as white or non-white to ascertain the effect of being a racial minority on treatment assignment.

**Hispanic.** Ethnicity was similarly dichotomized into Hispanic and non-Hispanic, as recorded in the administrative data.

In addition to the predictors of interest, two additional sets of dummy variables were included in the regression analyses. The county in which the case was opened was included to control for geographic variation in county makeup and case practice. Likewise, the child's living arrangement (e.g., single-parent household, two-parent household) was included to control for family structure.

**Analysis.** The trackers were matched to the administrative data to flag those children who received care coordination services. A one-to-one match using individual identification numbers and case identification numbers was conducted using the `-merge-` command in Stata 15.1 (StataCorp, 2017). From the trackers, 3,109 cases were matched (before the study's exclusionary criteria were applied). Because nurses entered the identification numbers into the trackers by hand, typos in a very small number of cases may have kept children who should have been flagged as care coordination recipients from being matched. However, the data do not allow for identification of these cases; this is a limitation. Descriptive statistics were run, and *t*-tests and chi-square tests were conducted to identify differences between the group of children who received care coordination and the group that did not. Correlations between risk variables were

examined for collinearity. Subsequently, two specifications of a logistic regression model were run to predict receipt of care coordination. In the first, discrete household and individual health risks were examined to identify their individual effect on assignment to treatment. In the second, the numbers of total household risks and total individual health risks were used as independent variables to explicate the additive effect of family-level and individual-level risks on care coordination receipt. All analyses were performed using Stata, version 15.1 (StataCorp, 2017).

## Results

**Descriptive Analyses.** Sample characteristics are presented in Table 1. Just over two percent of the analytic sample received care coordination services during the study period. This low rate of receipt reflects the very narrow reach of the program, delivered by a small number of nurses across the 10 counties. Given how limited delivery of care coordination was, it is all the more important to understand which household- and individual-level risk factors motivated caseworkers to refer children to the program. Although risks are often co-occurring, examination of the correlation matrix of risk variables did not indicate collinearity problems. A greater proportion of recipients were infants ( $\chi^2 = 699.47; p < .001$ ) and had younger primary caregivers ( $t = 11.77; p < .001$ ) when compared to nonrecipients. They were also likely to have more siblings than nonrecipients, averaging nearly four brothers or sisters ( $t = -49.10; p < .001$ ). There were no significant differences in the racial makeup of the groups, though more care coordination recipients were Hispanic than non-recipients ( $\chi^2 = 50.72; p < .001$ ). While they were no more or less likely to have been named in a maltreatment report alleging physical abuse or sexual abuse, nearly 16% of recipients had been named in a report of neglect, compared to 12% of non-recipients ( $\chi^2 = 16.53; p < .001$ ).

Children who were assigned to care coordination had significantly more risk factors, both at the household ( $t = -25.47$ ;  $p < .001$ ) and at the individual ( $t = -8.33$ ;  $p < .001$ ) levels, identified in their case record. Recipients had, on average, 2.53 household risks, compared to 1.47 risks noted for non-recipients. Each discrete household risk was significantly more common among children who got care coordination services. Individual health risks, while infrequently observed in the overall sample, were nearly twice as common among care coordination recipients. All group differences by individual risk type were significant.

**Predicting Service Receipt.** Two specifications of a regression model were run to determine the separate and cumulative effects of household and individual risks, respectively, as well as other child characteristics, on assignment to care coordination. In the specification containing discrete risks, two risk factors were significantly associated with service receipt: domestic violence and caregiver mental health. Children whose case records indicated domestic violence exposure displayed significantly lower odds of being assigned to services ( $OR = 0.74$ ,  $p < .001$ ). Meanwhile children who had a caregiver with mental health problems had 50% greater odds of receiving care coordination ( $OR = 1.50$ ,  $p < .001$ ). As might be expected, the presence of most individual health risks was associated with greater odds of service receipt, with the exception of behavioral and emotional problems. Intellectual disability or learning disability ( $OR = 1.96$ ,  $p < .001$ ) and substance abuse ( $OR = 1.95$ ,  $p < .01$ ) each nearly doubled a child's odds of receiving care coordination. Needing other special care increased the odds of receiving services more than threefold ( $OR = 3.34$ ,  $p < .001$ ), while having a physical disability had the most dramatic effect on assignment to care coordination, making a child's odds of receiving services nearly five times higher ( $OR = 4.84$ ,  $p < .001$ ).

In the model specification regressing assignment to care coordination on cumulative household and individual health risks (Table 3), increases in both indexed variables were significantly associated with services at  $p < .001$ . Specifically, each additional individual health risk contributed to children having 75% greater odds of receiving services. Meanwhile the additive effect of household risk factors was weaker, with each additional risk increasing children's odds of assignment to care coordination by eight percent.

In each regression specification, several additional variables were significantly associated with service receipt. Odds ratios and significance levels were largely unchanged between the differently-specified regressions. Infants had between four and four-and-a-half-times greater odds of receiving care coordination than children who were over the age of one. With each additional sibling, children also had greater odds of being assigned to services (OR = 1.59,  $p < .001$ ). Children in riskier environments had greater odds of service receipt as well, with each one-point increase in safety assessment score associated with a 25-to-26-percent increase in the odds of receiving care coordination. Meanwhile, children who were non-white, children who were Hispanic, children with older primary caregivers had decreased odds of assignment to care coordination, even when controlling for risk levels. Regarding maltreatment type, only reports of neglect within the last 12 months were associated with care coordination receipt; children who had been listed in a neglect report had lower odds of receiving services than those who had not.

## **Discussion**

This study aimed to identify child and family characteristics associated with referral to a nursing intervention targeting children receiving in-home child welfare

services. Results of this study indicate that, in general, children in riskier environments and children with more challenging health-related conditions were more likely to receive nurse-provided care coordination services between October 2013 and October 2015. In the model specifications assessing the impact of cumulative risk on service receipt, increases in the number of both household-level and individual-level risks elevated children's likelihood of getting services. Higher safety assessment scores, which denote riskier family environments, were also associated with service receipt. Having more siblings also appears to be a loose proxy for risk, possibly pointing to a diminished capacity of caregivers to fully attend to each child's needs when tasked with caring for multiple children (Downey, 2001). That children with higher risk levels would be receiving services is to be expected, and the results of this study indicate that, in general, the decisions caseworkers and nurses were making in assigning children to care coordination were appropriate, funneling services to children who could benefit more from them. It is likely that many more children and families could have been helped by the intervention, but staff appear to have been targeting the limited service to those with the greatest perceived need.

In determining whether to assign children to services, it is clear, however, that some risks mattered more than others to caseworkers and nurses. For instance, children with caregivers who had mental health problems had greater odds of receiving care coordination. Mental illness or intellectual disability may limit parents' capacity to understand their children's health needs or see to it that they are adequately met (Schneiderman et al., 2016; Schneiderman & Villagrana, 2010). As such, the availability of a medical professional providing support services specifically aimed at improving



parents' efficacy in responding to children's health-related needs may have been seen as especially beneficial for this group.

Meanwhile, having domestic violence as a household risk factor significantly decreased children's likelihood of receiving care coordination, though it is unlikely that children with cases involving domestic violence are less likely to have health needs than other children with open child welfare cases. While coping with domestic violence could also diminish a parent's capacity to adequately respond to the needs of a child with complex or chronic health needs, certain features of New Jersey's child welfare system may have diverted these cases from the nurses providing care coordination. Specifically, each of the state's local child welfare offices is staffed with a domestic violence liaison who is tasked with coordinating specialized services for parents experiencing intimate partner violence. Extensive caseworker training has firmly established the practice of referring any case involving domestic violence to the liaison (DiBella et al., 2017). Because the domestic violence liaison is involved with these cases, caseworkers may feel less need to bring in an additional specialized staff person to coordinate services for the family.

Nearly all child-level, individual health risks also increased the likelihood that a child's case would be assigned to care coordination. Certainly, it is to be expected that children with notable health risks would be referred to the nurse providing care coordination services. What constitutes appropriate care for children's complex or chronic conditions falls outside of the scope of most caseworkers' expertise, the majority of whom are trained as social workers (Barth, Lloyd, Christ, Chapman, & Dickinson, 2008). Having the support of a medical professional can efficiently fill the gaps in this knowledge. With the help of a nurse, caseworkers can be confident that families are

receiving accurate, timely information and instrumental support for meeting their children's health care needs. Children with physical disabilities and other special health care needs were especially likely to be referred to care coordination, suggesting that the nurse's services were seen as particularly useful for these children.

However, one individual health risk, behavior or emotional problems, did not affect whether or not children were referred to care coordination, even as children receiving child welfare services have high levels of behavior and emotional challenges. In one study, nearly half of all children between the ages of 2 and 14 with completed child welfare investigations were found to have clinically significant behavioral problems (Burns et al., 2004). It is possible that the frequency with which caseworkers encounter children with behavioral or emotional challenges affords child welfare staff greater familiarity with available resources and appropriate recommendations for caregivers, obviating the need for additional support. Children with more severe emotional and behavioral problems may also be more likely to be in out of home care (Casanueva, Tueller, Smith, Dolan, & Ringeisen, 2013). Alternatively, caseworkers and supervisors in this study may view psychosocial and physical health needs as fundamentally different, seeing the nurse's services as more appropriate in cases involving the latter. Intellectual disabilities, however, which are not strictly physical health problems, increased children's odds of service receipt. Additional research is needed to more fully explain why all individual risks except behavioral and emotional problems are associated with referral to the intervention.

Other child characteristics and case features increased the odds that a child would receive care coordination. Infants were far more likely than children over the age of one to be assigned to services. This is aligned with informal guidance provided to

caseworkers and supervisors, recommending the use of care coordination on cases with very young children. It is also possible that child welfare staff view babies as being inherently at greater risk than children one year old or older and see their parents as needing more support. Delivery of the service to infants may maximize its capacity to prevent negative outcomes, as many of the most successful maltreatment prevention interventions are those that target very young children (MacLeod & Nelson, 2000).

Reflecting the findings of research on service disparities in child welfare, children who were non-White and children who were Hispanic were less likely to be referred to care coordination, even when controlling for other factors, like individual health risks. Despite being overrepresented in the system (Summers, 2015), non-White children receive fewer services than White children upon involvement with child welfare (Courtney & Maluccio, 1999). Although levels of need among White and non-White children are comparable, non-White children are far more likely to receive behavioral or developmental services than their counterparts (Burns et al., 2004; Stahmer et al., 2005). More broadly, racial disparities in health care receipt generally, even when controlling for access, income, and insurance-status, have been widely reported. Such inequities have been attributed to provider biases and uncertainty; systemic pressures, such as cost containment; language and cultural barriers on the part of patients; and, to a much lesser extent, patient refusal of services (Smedley, Stith, & Nelson, 2003). The disproportionately small share of non-White and Hispanic children receiving care coordination may reflect an extension of some of these phenomena, though further research is needed to fully understand why non-White and Hispanic children were less likely to receive care coordination services.

Holding all else constant, children who had maltreatment reports involving neglect in the year prior to their child welfare case opening had lower odds of being referred to care coordination, even as neglect allegations were more common among service recipients than non-recipients. This suggests that perhaps it is not neglect in and of itself that is associated with a child's assignment to services, but rather the other risk factors that may accompany or contribute to neglectful caregiving. In this study, analyses suggest that caregiver mental health problems and the accumulation of risks are among these factors. This finding aligns with research suggesting that the presence of multiple risks may be more influential in effecting outcomes for children than any single factor alone (MacKenzie, Kotch, & Lee, 2011).

Findings of this study have several implications for child welfare services. First, for children with health-related needs who are involved with the child welfare system, it may be helpful for workers and families to have someone with medical expertise available to advise them on what constitutes necessary, adequate, and timely health care. That caseworkers likely viewed these services as helpful in such cases is supported by their assignment of children with greater individual-level health needs to services. When a case involves a child with a chronic or complex health condition, a caseworker who is unfamiliar with that condition may be forced to rely on resources found on the Internet to advise caregivers. Regular medical providers may also offer consultation, but they are not likely to be familiar with the workings of the child welfare system, including its timelines, or the families it serves (Stepleton, 2018). With the availability of care coordination services, caseworkers were able to refer cases to medical providers co-located in child welfare offices and serving child welfare-involved families exclusively. The nurses' combination of medical expertise and child welfare fluency appears to have

carried added benefits in the eyes of caseworkers with cases involving children with chronic or complex health conditions, especially physical disabilities and other special care needs.

Second, using assignment to care coordination as a rough proxy for health care need (a safe assumption given that children's individual medical risks increased their odds of receiving the health-related intervention), the findings from this study suggest that children involved with the child welfare system who have health-related needs have higher levels of household risk than children without health needs. It is clear that this is a population facing significant challenges, and these risks are not limited to those related to individual medical problems. This study represents an expansion of the extant literature exploring the needs of children with health conditions involved with child welfare, which, previously has treated these children's health needs in isolation, without considering the array of household risks that surround them. Child welfare systems seeking to address children's health care needs must also take risks—and strengths—in a child's family ecosystem into account when providing services. Certainly, child welfare services should address factors like caregiver mental health and substance abuse in their own right, but they should also be considered in the context of parents' ability to ensure that their children's health care needs are adequately met.

Third, while children in the group assigned to care coordination had higher levels of individual health problems, there were many children in the non-recipient group whose case records noted these problems as well. Health risk was not the sole deciding factor in whether children received services in all cases. Regression results suggest that the accumulation of risks at household and individual levels also affected whether children were referred to care coordination. Previous research has shown that cumulative risk has

a powerful impact on outcomes for children involved with child welfare, above and beyond the effect of any singular risk or maltreatment alone (MacKenzie, Kotch, Lee, Augsberger, & Hutto, 2011). For children with medical needs, the accumulation of risk may have particular detrimental effects, as suggested by research linking adverse childhood experiences to poor adult health outcomes (Anda et al., 2006; Felitti et al., 1998). Therefore, child welfare systems implementing programs to address children's health care needs should also recognize and respond to the compounding impact of multiple risks on children's well-being. It is essential that comprehensive assessments be conducted and that the identification of needs is followed with links to concrete services. Additionally, nurses or other providers delivering services targeting children's health must be able, either themselves or through consultation with families' caseworkers, to connect families with programs that address the range of challenges they face.

Certain implications for child welfare policy may also be drawn from this study. Other studies have shown that a significant proportion of children receiving in-home child welfare services have chronic or complex health conditions (Ringeisen et al., 2008; Schniederman, Leslie, Arnold-Clark, McDaniel, & Xie, 2011). While the current study does not provide information about the prevalence of health needs in the in-home population, that caseworkers targeted the service toward children with high levels of individual and household risk suggests that they saw a need for the health-related intervention for children living in higher-risk environments. States are not currently required to have systems in place for identifying or addressing health needs in the in-home population; however, these findings indicate that a greater emphasis on these needs, directed at the policy level, may be prudent. Such policies should require assessment of children's health needs in the context of broader evaluations of children's well-being.

## Limitations

Some limitations of the current study should be noted. First, nurses entered information about their cases into their trackers by hand. When linking children to the NJ SPIRIT data by individual identification number and case identification number, a very small number of records could not be matched. These were likely the result of minor typographical errors in data entry in the trackers. As a result, a small number of children in the administrative data may have been categorized as non-recipients of care coordination when they did in fact receive services. Given the way the nurses' records were kept, it is not possible to know the exact number of cases. However, if any incorrect categorization occurred, it would have the effect of making the regression estimates more conservative, meaning that the effects of the predictors included in the models are stronger than reported here. A second limitation is that there is likely caseworker and office-level variation in practice within counties regarding referring children to care coordination, though it is not possible to know the extent. For instance, staff located in the same office may have been more or less likely to refer cases with certain features to the nurses than staff sharing another office. A dummy variable for the county where children's cases were opened was included in the regression models to account for some of this systematic variation and county-level effects (not shown in the table), but limitations of the administrative data did not allow for more fine-grained control at the caseworker or office level. Third, because they were measured at the household level and the individual level, child mental health needs and child substance abuse needs may have been double-counted for some children. Household-level risks in these categories may have applied to children or their siblings. It was not possible to identify for how many children this was the case. Finally, as only 2 percent of the population accessed care

coordination, findings about child and family characteristics associated with children's health needs are limited in generalizability. This study is best interpreted as an exploration of factors associated with receipt of a limited nursing intervention targeting children with chronic or complex health needs.

### **Future Research**

This study represents the first step in a thorough examination of care coordination services delivered in ten New Jersey counties between October 2013 and October 2015. The current study's exploration of factors associated with assignment to services reveals that children with health needs face significant risks, both related and unrelated to their health-conditions. Caseworkers referred children with more household- and individual-level health needs to services, suggesting that the services were seen as potentially helpful for these children. Further research includes a qualitative inquiry into how caseworkers made decisions about which cases they referred to care coordination, seeking their reflections about whether and why the factors associated with assignment to treatment in the current study influenced their practice. Additionally, further quantitative and qualitative analyses will explore the effects of care coordination receipt on core child welfare outcomes, including case duration, case reopening after closure, and removals to foster care.



**Table 1.** Descriptive statistics (N=54,934).

	Received Care		Did Not Receive		$\chi^2$ test
	Coordination		Care		
	(n=1,291)		Coordination		
			(n=53,103)		
	n	%	n	%	Sig.
Sex: Female (vs. male)	644	49.9	26,438	49.8	
Infant (vs. non-infant)	455	35.2	5,958	11.2	***
Race: Non-White (vs. White)	538	41.7	26,323	49.6	
Hispanic (vs. not Hispanic)	348	27.0	19,439	36.6	***
Maltreatment allegation(s) in 12 months prior to case opening					
Physical abuse (any)	51	4.0	2,108	4.0	
Neglect (any)	203	15.7	6,368	12.0	***
Sexual abuse (any)	20	1.5	593	1.1	
Household risks					
Domestic violence	300	23.2	9,565	18.0	***
Housing need	256	19.8	4,874	9.2	***
Financial problems	501	38.8	9,301	17.5	***
Caregiver mental health	729	56.5	16,696	31.4	***
Caregiver substance use	708	54.8	18,100	34.1	***
Child mental health	690	53.4	18,055	34.0	***
Child substance use	88	6.8	1,445	2.7	***

## Individual health risks

Behavior or emotional problem	83	6.4	3,963	7.5	***
Intellectual disability or learning disability	87	6.7	1,862	3.5	***
Substance use	30	2.3	475	0.9	***
Physical disability	29	2.2	154	0.3	***
Other special care	104	8.3	1,188	2.2	***
	Received Care Coordination (n=1,291)		Did Not Receive Care Coordination (n=53,103)		<i>t</i> -test
	m	sd	m	sd	Sig.
Number of siblings	3.88	2.01	1.63	1.62	***
Primary caregiver age	32.44	8.18	35.17	8.22	***
Safety assessment score	0.23	0.52	0.12	0.42	*
Total household risks (0-7)	2.53	1.68	1.47	1.48	***
Total individual medical risks (0-8)	0.27	0.61	0.15	0.48	***

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m = mean; sd = standard deviation

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

**Table 2.** Logistic regression predicting receipt of care coordination, with discrete risks (n=54,934).

	OR	Lower CI	Upper CI	Sig.
Sex	1.05	0.93	1.19	
Infant (ref. non-infant)	4.50	3.59	5.19	***
Number of siblings	1.59	1.55	1.63	***
Primary caregiver age	0.97	0.96	0.98	***
Race: Non-White (ref. White)	0.62	0.54	0.71	***
Hispanic (ref. non-Hispanic)	0.54	0.46	0.62	***
Safety assessment score	1.25	1.12	1.38	***
Maltreatment allegation(s) in 12 months prior to case opening				
Physical abuse	1.12	0.85	1.54	
Neglect	0.84	0.71	1.00 <sup>a</sup>	*
Sexual abuse	1.20	0.74	1.95	
Household risks				
Domestic violence	0.74	0.64	0.86	***
Housing need	.089	0.75	1.07	
Financial problems	1.07	0.92	1.25	
Caregiver mental health	1.50	1.30	1.71	***
Caregiver substance use	1.12	0.79	1.27	
Child mental health	1.15	1.00	1.32	
Child substance use	1.04	0.79	1.38	
Individual health risks				

Behavior or emotional problem	0.83	0.63	1.08	
Intellectual disability or learning disability	1.96	1.50	2.58	***
Substance use	1.95	1.21	3.16	**
Physical disability	4.84	2.99	7.83	***
Other special care	3.34	2.58	4.33	***
Constant	.02	.16	.04	***

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<sup>a</sup> Odds ratio is rounded up and does not include 1.00.

Adjusted pseudo R-squared = .23

Coefficients for dummy variables representing county and living arrangement are not shown.

OR = Odds Ratio; CI = Confidence Interval

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

**Table 3.** Logistic regression predicting receipt of care coordination, with indexed risks (n=54,934).

	OR	Lower CI	Upper CI	Sig.
Sex	1.06	0.94	1.20	
Infant (ref. non-infant)	4.07	4.08	5.42	***
Number of siblings	1.59	1.55	1.63	***
Primary caregiver age	0.97	0.96	0.98	***
Race: Non-White (ref. White)	0.60	0.52	0.69	***
Hispanic (ref. non-Hispanic)	0.52	0.44	0.60	***
Safety assessment score	1.26	1.14	1.39	***
Maltreatment allegation(s) in 12 months prior to case opening				
Physical abuse	0.99	0.72	1.35	
Neglect	0.84	0.71	1.00 <sup>a</sup>	*
Sexual abuse	1.17	0.72	1.90	
Total household risks	1.08	1.04	1.12	***
Total individual health risks	1.75	1.59	1.92	***
Constant	.02	.02	.04	***

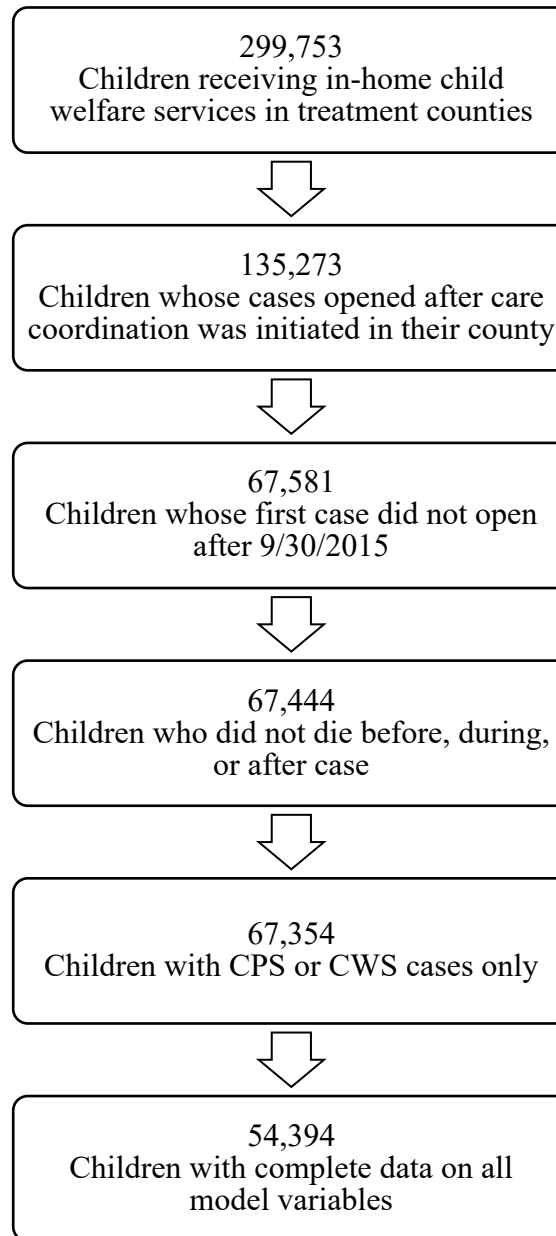
<sup>a</sup> Odds ratio is rounded up and does not include 1.00.

Adjusted pseudo R-squared = .22

Coefficients for dummy variables representing county and living arrangement are not shown.

OR = Odds Ratio; CI = Confidence Interval

\*  $p < .05$ ; \*\*\*  $p < .001$



**Figure 1.** Sample selection.

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**MANUSCRIPT 2**

NEED FOR PROGRAMS ADDRESSING THE PHYSICAL HEALTH NEEDS OF  
CHILDREN RECEIVING IN-HOME CHILD WELFARE SERVICES:

PERSPECTIVES OF CHILD WELFARE STAFF

by

KATHERINE S. STEPLETON

Manuscript 2 of 3 of a dissertation entitled:

CARE COORDINATION AS A PREVENTIVE INTERVENTION:

EFFECTS ON CHILD WELFARE OUTCOMES

A dissertation submitted to the

Graduate School—New Brunswick

Rutgers, The State University of New Jersey

In partial fulfillment of the requirements

for the degree of

Doctor of Philosophy

Graduate Program in Social Work

Written under the direction of

Michael J. MacKenzie

## **Introduction**

When a child comes to the attention of the child welfare system in the United States, the system is obligated to assess the child's safety and well-being across multiple domains, including the physical health of the child. If a case is opened for services, the system must further ensure that the child's health care needs are being met and, if necessary, put services in place to meet those needs. Although federal and state policies regarding the physical health of child welfare-involved children are overwhelmingly focused on the system's responsibilities to those in foster care, child welfare agencies must also attend to the health-related needs of those children who are receiving services but have not been removed from their parents. These children comprise the largest group receiving child welfare services in the U.S. and represent a growing proportion of children served by the system (U.S. Department of Health & Human Services, 2018). Evidence suggests that they have similar health care needs as children in out-of-home care (Leslie et al., 2005; Schneiderman, Leslie, Arnold-Clark, McDaniel, & Xie, 2011). In general, however, there is a paucity of research examining physical health and health care needs among children receiving in-home child welfare services; a similar gap in policy direction exists. As such, there are few programmatic approaches to assessing and addressing these needs exists. This paper explores, from the perspectives of child welfare and nursing staff, the nature of health-related need among child welfare-involved children in intact families and the necessity of programs to address such need.

### **Prevalence of Health Needs among Children in Intact Families**

Compared to the volume of research reporting the prevalence of health-related needs among children in foster care, relatively little is known about the physical health of children receiving in-home child welfare services. What has been published suggests that

children in this group are more likely to have medical diagnoses or special health care needs than children in the general population (Lanier, Kohl, Raghavan, & Auslander, 2014). The National Survey of Child and Adolescent Well-Being (NSCAW), a longitudinal, nationally-representative study of children who are the subject of child maltreatment investigations, offers some information about health concerns among children in this group. According to NSCAW data, nearly half of all children who come to the attention of the child welfare system had at least one special health care need across three waves of data collection; 27% had at least one health condition that was chronic (Ringeisen, Casanueva, Urato, & Cross, 2008). These children were more likely to be male, older, and receiving special education services; they were no more or less likely to be in out-of-home care than other children in the sample (Stein et al., 2013). Other work has also suggested that rates of health problems among children receiving in-home child welfare services are similar to those among children in foster care (Leslie et al., 2005; Schneiderman et al., 2011).

Health concerns affecting children receiving in-home child welfare services are prevalent among children of all ages and developmental stages. In their study of child welfare-involved children under the age of six, Schneiderman and colleagues (2011) reported that 83% of those living with at least one biological parent had one or more medical diagnoses. These included a wide range of ailments, the most common of which were head- and neck-related, dermatological, and respiratory. Latency-age children with in-home child welfare involvement have also been found to have higher rates of health problems than children in a normative sample (Lanier et al., 2014). Indeed, evidence suggests that the complexity of health concerns increases with age (Rienks, Phillips, McCrae, Bender, & Brown, 2017).

The health issues examined in the aforementioned studies cover a wide range, including chronic and acute medical, developmental, and weight problems. However, another issue affecting children's health deserves additional attention here, as it is of particular concern to child welfare systems. Prenatal exposure to drugs or alcohol results in child welfare involvement for many newborns and infants, who may present with significant health needs at and after birth. Depending on the substance, effects of prenatal exposure can include low birthweight (which itself is associated with physical and developmental problems), withdrawal symptoms, impaired growth, socio-emotional problems, and cognitive delays (Behnke & Smith, 2013). According to the Centers for Disease Control, the incidence of neonatal abstinence syndrome, marked by postnatal withdrawal from drugs, has been steadily increasing (Ko et al., 2016). As a result, child welfare systems are increasingly charged with meeting the health-related needs of drug-exposed babies (National Center on Substance Abuse and Child Welfare, n.d.).

### **Programs Addressing Health Needs for Children Receiving Child Welfare Services**

Although there is evidence that many children receiving in-home child welfare services have health problems that could be beneficially addressed with services, there is virtually no example in the peer-reviewed literature of programs to address health needs in this population. Where systems identify a role for nurses serving child welfare-involved children and families, it is overwhelmingly targeted towards children in foster care. Programs in Utah (Utah Department of Health, 2018), Baltimore (Health Care Access Maryland, n.d.), New Jersey (Rutgers School of Nursing, 2018), and California (Schneiderman, 2006), among other jurisdictions, have embedded nurses in child welfare systems or assigned nurses to children in foster care to assess health needs and coordinate services. Nurses in the role of providing health-related case management to foster

children articulate a desire to provide comprehensive care, linking mental and physical health care services, noting that the multiple causes of health problems for these children pose significant challenges (Schneiderman, 2008). These nurses do not serve children receiving in-home services, however, and no study to date has examined how nurses or child welfare staff understand the role of nurses in serving children in intact families. Recommendations related to utilizing nurses to improve the health of children served by the child welfare system similarly focus almost exclusively on the out-of-home population (Zlotnik, Scribano, Wood, & Noonan, 2014).

### **Policies Addressing Health Needs for Children in Intact Families**

The dearth of programmatic responses to health needs among children receiving in-home services follows from a lack of policies motivating states to take action. On balance, federal child welfare policy addressing children's physical health has spoken to the state's responsibility to children in foster care, remaining relatively silent on how systems are obligated to address these needs among children receiving in-home services. However, since the passage of the Adoption and Safe Families Act of 1996 (ASFA; P.L. 105-89), an aim of federal child welfare policy has been to keep children safely in their homes whenever possible; removal to foster care is to be used as a last resort to protect the safety and well-being of children. That physical health is an element of a child's well-being is undisputed, so it is understood that child welfare systems will take steps to assess and, if necessary, respond to the health needs of children in intact families in order to prevent removal. To the extent that this articulated in federal policy, the Child Abuse Prevention and Treatment Act (CAPTA; as codified in 42 U.S.C., chapter 67) encourages linkages between the child welfare agency and community entities addressing public health, substance abuse, mental health, and developmental disabilities "to ensure that a

greater number of substantiated victims of child maltreatment have their physical health, mental health, and developmental needs appropriately diagnosed and treated, in accordance with all applicable Federal and State privacy laws” (Title 1, § 105). The U.S. Department of Health and Human Services may require states to present evidence of these linkages in order to receive federal grant funding to support services for child welfare-involved children and families. States have a great deal of discretion in structuring these linkages, as they do in designing any policies or programmatic approaches for meeting children’s health-related needs.

Regarding substance-exposed infants, however, federal legislation is more precise. In its 2003 reauthorization, CAPTA stipulated that medical professionals treating babies who were prenatally exposed to drugs were required to notify the child protection agency (P.L. 108-36). Whether to open an investigation or classify prenatal substance exposure as a form of child maltreatment has been left to the states, and, as of 2018, 22 states consider prenatal substance use to be child abuse under statute (Guttmacher Institute, 2018). In keeping with ASFA’s emphasis on maintaining children safely in their homes whenever possible, CAPTA’s 2016 reauthorization clarifies that states must make efforts to ensure the safety and well-being of substance exposed infants, including addressing the health and substance-related issues of the child and caregiver (P.L. 114-198). While other factors may contribute to a decision to remove an infant from a parent who used substances prenatally, many children who are born drug-exposed are not removed and instead remain with their parents, receiving in-home child welfare services.

### **The Current Study**

In light of high levels of health-related need among children in intact, child welfare-involved families and policy mandates requiring attention to children’s physical



health, child welfare agencies must ensure children's medical needs are met. However, the frontline child welfare workforce is not generally equipped to do so. Client-facing child welfare staff, on the whole, do not have the medical expertise to assess children's specific health needs, especially when children have complex or chronic conditions. In the absence of federal requirements supporting approaches to help caseworkers fill these gaps in knowledge and address health needs among children receiving in-home services, agencies may develop their own policies or programs on a state-by-state or locality-by-locality basis. The lack of policies and programs addressing medical needs among children in intact families may stem from the paucity of research cataloging need in this population.

The current study explores, from the perspective of child welfare staff, whether there is such a need for child welfare systems to pay increased attention to health concerns of children receiving in-home services. A broad research question is explored: How do child welfare staff perceive and describe the need for programs targeting the physical health of children in intact, child welfare-involved families? In this qualitative study, I draw on the perspectives of caseworkers, supervisors, and nursing staff involved with the delivery of one such program, made available in a New Jersey through deployment of nurses providing what was termed "care coordination."<sup>5</sup> Need for the program or others like it is approached in two ways. First, I examine need on the part of children and families coping with health concerns as reported by child welfare staff ("evaluated need," per Anderson (1995)); second, I explore child welfare staff's need for support in addressing these concerns with the families they serve. In so doing, this paper

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<sup>5</sup> Although the intervention shares a name and certain features of other approaches known as "care coordination," it should not be mistaken for them.

can inform child welfare agencies seeking to understand why such programming may be necessary and support those seeking to develop well-designed programs that address health-related issues among children receiving in-home child welfare services.

## **Methods**

### **Description of Program**

Beginning in October, 2013, New Jersey's Department of Children and Families deployed nurses in ten of 21 counties to provide care coordination to families whose children had health-related needs and who were receiving in-home child welfare services. Children's needs included chronic and acute conditions, developmental problems, or lack of regular, recommended health care (e.g., missing well-child visits, missing immunizations). Caseworkers and supervisors referred cases to the nurses for voluntary services during the investigation and intake process. During their work with families, nurses assessed children's health needs and aimed to identify any barriers keeping children's parents or guardians from meeting those needs. These barriers were structural and logistical, such as a lack of insurance or transportation to medical appointments. Parents might also have lacked information about the steps that are necessary to ensure that children's health needs are being met (e.g., not understanding that multiple treatments may be needed in the course of managing certain chronic conditions). Issues that may have contributed to the family's involvement with the child welfare system, such as a parents' mental health or substance abuse problems, may also have kept children from getting the health care they needed. Nurses addressed these issues alongside caseworkers as part of the family's support team, engaging in any of a range of activities, based on their assessment of need. Care coordination activities included: acquiring and interpreting medical records, including records of immunizations; meeting

in-person or by phone with family members to assess needs, medical or otherwise; providing anticipatory guidance on general health issues, such as safe sleep for newborns; educating caregivers on children's health needs; locating and referring caregivers to resources for meeting children's health needs; assisting caregivers in making health care appointments; communicating with doctors and other medical staff on behalf of children and their parents; attending health care appointments with families; following-up to check that caregivers were able to bring their children to their necessary appointments; and participating in team meetings and case conferences with child welfare staff. In most of the participating counties, services were terminated in October, 2015, when funding for the program was no longer available.

The research questions explored in this paper were part of a broader study intended to identify and explicate the effects of care coordination for children and families receiving in-home child welfare services. The study received approval from the Institutional Review Board of Rutgers University and from New Jersey's Department of Children and Families.

### **Study Design**

**Approach.** The aim of this study was to explore the need for nurse-provided care coordination for children and families receiving in-home child welfare services, from the perspectives of caseworkers and supervisors who utilized the services on their cases and nurses who delivered the services. As such, an inductive, phenomenological approach was taken, which was intended to capture and describe people's experiences and how they understand them (Patton, 2015). Specifically, this study was focused on how caseworkers, supervisors, and nurses perceive and express the needs of children on their

caseloads. How and to what extent child welfare staff<sup>6</sup> understand the needs of the families they serve, and the degree to which they believe these problems can be ameliorated, affect decisions that are made about the trajectories of cases. These decisions include whether to remove children from their homes, whether to keep cases open for further investigation or services, and whether to seek additional supports for families; all of these choices have profound impacts on children and families. As such, the perceptions driving worker decisions are worthy of scrutiny and understanding.

**Recruitment and sampling.** Participant selection was purposeful, with the intention of sampling for information-rich cases to best examine the perceptions of those who were directly involved in using or delivering care coordination. Staff targeted for inclusion in the survey were to have experience either delivering or making somewhat regular use of the program, such that they could knowledgeably speak to their perceived need for care coordination services. Three groups were included in the study: child welfare caseworkers, their supervisors, and the nurses who delivered care coordination services. Caseworkers were involved in maltreatment investigations and intake for cases that were opened during the period in which care coordination services were available. They typically worked directly with families for sixty days, and up to ninety days in some circumstances, conducting assessments of need and arranging services to meet those needs, until cases were closed or moved to another department for long-term child welfare services. Their supervisors oversaw groups of four to five caseworkers in the intake unit, providing consultation and guiding practice; they did not work with children

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<sup>6</sup> Although the nurses delivering care coordination were not directly employed by the child welfare department, for the purposes of this paper, they are included in references to “child welfare staff.”

or families directly. Nurses were contracted service providers employed by a large nursing school in the state and placed in the intake unit, available to consult or receive referrals from caseworkers for families getting in-home child welfare services.

Recruitment and interviewing ended when saturation was reached within each group. Ten participants from each group were interviewed, for a total sample of thirty subjects. No incentive was offered for participation, as state regulations prohibit state employees from accepting such compensation. Limited demographic information was collected from participants, including gender and the length of their employment with the Department of Children and Families (see Table 1).

All eleven of the nurses involved in the delivery of care coordination were contacted and invited to participate. Names, e-mail addresses, and phone numbers were provided through the state's child welfare department. Each nurse on the list received at least one e-mail; those who did not respond to the first message received several follow-up e-mails and at least one phone call. Ultimately, ten of the eleven nurses agreed to take part in an interview. The eleventh nurse did not respond to any outreach efforts.

In the course of delivering care coordination, nurses kept records of the families they served, including documentation of the caseworkers and supervisors assigned to their cases. From these records, it was possible to derive a list of caseworkers and supervisors, ranked by the number of cases they referred to a nurse. As sampling for this study sought participants with rich knowledge of the care coordination program, caseworkers and supervisors who used the nurses the most were prioritized for selection. However, to avoid collecting data only from those staff who may have been unusually inclined toward referring cases to the nurses and therefore likely to provide more positive assessments of the program or greater representations of need for it, some randomization

was employed in the recruitment process. From the full list of caseworkers, names and e-mail addresses the 50 staff who used the care coordination services on the most cases were extracted into a separate list. The order of this list was then randomized, and workers were e-mailed in batches of seven to ten, with at least two weeks elapsing between batches. This procedure was replicated for the supervisors. Some staff responded immediately; others received up to two follow-up e-mails. Recruitment for each group was stopped once ten participants, respectively, agreed to take part in an interview. In total, 47 caseworkers and 31 supervisors were contacted.

**Data collection.** Semi-structured, in-depth interviews were conducted with all participants. Each interview lasted between 30 and 90 minutes, with interviews averaging 45 minutes in length. All but three were conducted in-person; the three remaining interviews were conducted by phone.

The semi-structured interview guides for caseworkers and supervisors were designed to support a broader investigation of care coordination and its effects on child welfare outcomes, of which the current study is a part. As such, the interview guide was developed to elicit “causal process observations,” qualitative findings that are particularly suited to unpacking the processes linking hypothesized causes and observed effects in natural experiments or similar studies of the effects of treatments (Collier, Brady, & Seawright, 2010). Dunning’s (2012) typology of causal-process observations was used to structure the interview guides. For caseworkers and supervisors, the guide was divided into the following sections: general information, utilization of care coordination, services (what nurses provided) and mechanisms (how services affected families), organizational issues, and concluding questions. Nurses’ interviews included different but related sections: general information, work as a nurse providing care coordination, decision-

making about which services to offer, services and mechanisms, organizational issues, and concluding questions. Each section was comprised of open-ended questions, with prompts to probe for further detail if deemed necessary. The questions were designed to be somewhat repetitive, approaching similar topics in different ways to increase the likelihood that participants would provide complete information. Participants were asked about their perceptions of the need for care coordination services during the first half of the interview, though many offered descriptions throughout. Immediately after each interview, memos capturing the interviewer's reflections and initial interpretive thoughts were written. All interviews were recorded and subsequently transcribed.

**Data analysis.** All coding was completed by a single coder (author). To begin, the transcripts were closely read to build familiarity with the data. Three rounds of coding followed, beginning with open coding guided by sensitizing concepts. Although open coding is a method most often associated with the early phases of conducting a grounded theory study (Glaser & Strauss, 1967), in the case of this content analysis, it was employed to support the creation of classifications for use in the development of a coding scheme for subsequent rounds of coding. The sensitizing concepts were the broader study's central research questions: (1) How did nurses affect the identification, assessment, and treatment of health and behavioral health problems for children in intact families; and (2) how and to what extent did the involvement of nurses affect case outcomes for those children and families? Following open coding, the transcripts were loaded into NVivo 11 for Windows (QSR International, 2016), a software program for qualitative data exploration, for further analysis. A second round of coding was then conducted to specifically identify themes that emerged during open coding, according to the coding scheme. Finally, selective coding within thematic areas was undertaken to

uncover subthemes in the data. To make sense of the themes and subthemes, they were considered both within and across subject groups, aiming to identify areas of convergence and divergence.

Throughout execution of the study's design, several steps were taken to increase the confirmability of the findings. Triangulation across multiple groups of informants, including caseworkers, supervisors, and nurses allowed for the consideration of multiple perspectives on the delivery of care coordination for families receiving in-home child welfare services. Member-checking was employed during each interview, with the researcher confirming that her understanding of the participant's comments was accurate during the conversation (Lincoln & Guba, 1985). Additionally, a detailed audit trail was kept, documenting each stage of the research process, from conceptualization to recruitment to data collection and through analysis. Themes and subthemes exploring the need for services that address children's health-related needs while receiving in-home child welfare services are presented in Table 2 and explored below.

## **Results**

### **Need for Services Addressing Health Needs of Children in Intact Families**

All caseworkers, supervisors, and nurses expressed the need for care coordination services to support families receiving in-home child welfare services. Two broad themes were identified in their discussion of this need. First, they described how the particular nature of child and family needs among the population called for supports embedded in the child welfare system that specifically target health-related concerns. Here, many also emphasized that there is an imbalance in the availability and delivery of child welfare services that prioritizes children in foster care while disadvantaging those who remain in



the home with their families of origin. Second, they articulated benefits to frontline child welfare staff associated with the availability of such services.

**Child and family need.** Asked how they made decisions about which families to refer to the nurses for care coordination services, caseworkers identified a few particular populations as having the greatest need for support in meeting children’s health care needs: those with infants, those with children who had chronic or complex medical conditions, and those with drug-exposed newborns. Across interviews, the majority of caseworkers and supervisors reported that their decision to refer a case for care coordination was largely automatic, triggered by their recognition of some medical risk associated with a child’s age, substance exposure, or a diagnosed health condition.

***Families with complex needs.*** Participants recognized that the families they served often faced multiple challenges in addition to issues related to children’s health needs. According to caseworkers, supervisors, and nurses, the families who needed the care coordination services were those whose ability to seek out and secure adequate health care for their children was compromised by the presence of other struggles, including substance abuse, mental health issues, and financial distress. A nurse described how families with complex needs who are receiving in-home child welfare services may find themselves overwhelmed, unable to address children’s health care needs:

They’re struggling with keeping food on the table and roof over their head and just living every day, so these families are just surviving. Sometimes not even from today to the next day, sometimes from this morning to tonight. And social services are being cut constantly, right, and the things that are available to them are just disappearing. . . And now you start throwing in health-related issues that can be really complicated, and they just can’t handle it, and what—and that’s what falls, right, it’s the healthcare of the kids.

This reinforces a main finding from other work examining the state’s care coordination program, that the families likely to be referred for services were those with more

household risk factors, including housing need, financial problems, caregiver mental health concerns, and caregiver substance use (Stepleton, 2018a).

***Gaps in standard health care services.*** Participants described the families receiving in-home child welfare services as living in complex contexts, characterized by multiple needs, as described above, and therefore necessitating services beyond standard pediatric health care. The need for providers who are able to meet with families in their homes to assess their living situations and the impact of environmental conditions on child health was emphasized by a supervisor, commenting, “The pediatrician—pediatrician’s never been to the home, does not know where the folks live. But if you have somebody who goes out there, it could be something as simple as like, ‘You know what, maybe you need an air filter in this room.’” Another supervisor echoed this concern, suggesting that the assessments of regular care providers may be incomplete because providers lack a comprehensive understanding of the child’s needs:

‘Cause there’s a lot of situations where we don’t know what—what’s going on, and like pediatricians, they don’t go to homes. A lot of—I’ve seen a lot of things fall through the cracks with just a regular pediatrician where they, they don’t know what, like the specialists are doing or if there’s a specialist need.”

According to this study’s participants, routine health care that does not fully account for complexity in children’s living environments may not be sufficient when it comes to addressing the needs of those receiving in-home child welfare services. Without an in-home component to medical services, efforts to meet health needs for these children may be inadequate.

***Imbalance in resources to support children involved with child welfare.*** In articulating the need for specific services aimed at addressing children’s health-related needs, several caseworkers, supervisors, and nurses expressed frustration about what they perceived as a lack of resources available for children who remained at home with their

families of origin. They found this lack especially problematic when compared to the relative availability of services for children who had been removed to foster care, for which they felt there were abundant resources. In particular, their comments suggested that they believed the comparative dearth of services for the in-home population was out of step with the system's call to maintain children in their homes whenever safely possible. They expressed a feeling that, if more supports were available, fewer children would have to be removed to foster care. A nurse gave voice to this concern:

Because it's on the bookends with the biological family that those services are really needed, but yet we're giving them—we're pulling families apart and then giving all of these services while they're in [foster] care, and it just doesn't make sense to me. I think it's, it's those—that energy and that level of support really needs to be happening on the front end, 'cause I feel like if we really give that same support to our families that are with their parents, we can save families...

It is worth noting that this state has nursing units in each local child welfare office dedicated to ensuring that the health needs of children in foster care are met (Rutgers School of Nursing, 2018); in fact, many of the nurses interviewed for this study were employed in those units either before or after their time providing care coordination to children in intact families. For them, the distinction between the levels of care available to these separate groups of children was especially stark. A supervisor also referenced this disparity in her remarks:

—because we tend to kind of neglect—we pay more attention to our out-of-home placement kids that are no longer in the care of their parents, you know, we...their medical needs are like top of the line. Because we get everything done. But the ones that are home, you know, we need someone to really also see them because we don't want them to end up in, in our out-of-home placement.

For participants in this study, the need for care coordination services was directly tied to the prevention of removal to foster care for children who could otherwise remain in their homes.

**Need for frontline staff support.** A second broad theme identified in the data related to the perceived benefit of care coordination to child welfare staff. Caseworkers and supervisors, along with some nurses, described how the availability of a nurse to oversee the medical aspects of a case supported frontline staff in their efforts to meet their responsibilities as agents of the child welfare system.

*Filling a gap in expertise.* Many participants were quick to point out that frontline child welfare staff lack the specialized knowledge necessary to adequately assess children's health needs and make appropriate recommendations to caregivers. In the absence of such knowledge, a nurse noted, "It shouldn't be the responsibility of a social worker to figure out a medical situation." Another nurse commented on the potential liability for child welfare systems if caseworkers lacking medical training are called to testify in court about a child's well-being and asked to provide their professional assessment of the extent to which the child's health care needs are being met.

While social workers in frontline child welfare roles may be equipped to understand and begin to assess the severity and scope of other issues families face, participants noted that medical problems pose a different type of challenge for caseworkers. A level of familiarity with certain individual and interpersonal challenges, like domestic violence and substance abuse, is standard among social workers and required for child welfare staff; however, this is not the case for health concerns, where the range and variation in potential medical needs among children is so vast that workers are expected to draw on the expertise of others when making their assessments and recommendations. A worker described how, in contrast with services available to caseworkers to serve families in other areas, the nurses were equipped to provide this expertise, filling a crucial gap in staff knowledge:

...we get training in domestic violence. We get training in sex abuse. We get training in substance abuse. We know signs and symptoms. It's not a foreign world to us. Our domestic violence counselors are great, and they can work in different ways with our clients. But we have a basic understanding. We go over the same things with them. The cycle of violence and the safety planning. We have a foundation for it, to do it in an emergent basis on our own. We have no foundation for some of this [medical] stuff.

The worker continued to distinguish between the supports offered by other specialists and by the nurses, emphasizing that the nurses meet a need that is less acute in other areas:

So they're [the nurses] working with us in something we have no knowledge on, which is—so I think as great as the other services we have are, and they definitely help our clients and us, I think the nurses are even more needed because they're—sometimes they ask questions we wouldn't even know to ask.

Several workers and supervisors echoed these reflections when describing cases involving children with rare, complex, or serious medical conditions. A supervisor noted, "...there's no amount of training that a worker can have to be well-prepared on some of these medical cases."

***"Eyes on the family."*** Related to staff's lack of expertise regarding children's healthcare needs, workers and supervisors expressed a desire to have other personnel involved in the case to help them be sure they were not missing anything in their assessment or treatment planning. A supervisor described feeling that children receiving in-home child welfare services necessitated the involvement of additional team members, saying, "I'm not the person who's parenting these kids, but if something happens, it's like it falls back on me. . . So it always made me feel like I needed to have more eyes on the family or the child, especially." By getting to know the family and taking responsibility for a facet of the case, nurses were an additional source of supervision of and engagement with in-home families, easing the concerns of staff.

**Strategies for working without a nurse.** Nearly all of the caseworkers and supervisors who participated in the study had been in their position both when care

coordination was available for in-home cases and after it was discontinued. As such, they were able to reflect on the differences in their experiences working with families with medical needs, and to describe how they filled the gaps in their expertise to adequately assess whether children's health care needs were being met when they could not refer cases to an in-house nurse. One strategy was to rely on medical professionals outside of the child welfare system, including pediatricians, specialists, and the staff of diagnostic centers to provide materials, answer questions, and suggest courses of action to be recommended to families. This approach, while it yielded accurate information about children's health needs and appropriate treatments, could move slowly, delaying the progression of a case. External medical providers have many competing obligations and may lack familiarity with the child welfare system. A supervisor explained:

...this case that's been lingering for six months now, and there's nothing we can do. So, all we can do is wait for medical records, stacks and stacks of stuff that we, what are we reading it for? Because we don't understand it, so now we have to get somebody outside to look at that, to interpret it for us, to tell us if they think it was, you know, anything suspicious in any of it anywhere at any time. Like things like that, you know, it could have maybe been the nurse who could have looked at those things to explain it.

Here, the supervisor's description illustrates the perceived need for services like care coordination, as they can improve the efficiency with which staff are able to accurately assess family needs.

Asked how they handled cases involving a child with medical needs in the absence of a nurse providing care coordination, caseworkers and supervisors also identified a second strategy: consulting the Internet. Several participants described typing conditions into search engines to learn more about them so they could give recommendations to caregivers and make decisions about the case. Describing a case involving a diabetic child, a caseworker noted, "I don't know how often you need to test

your blood. I don't know what the numbers mean. And there's nowhere to get that other than Wikipedia or something if we don't have a nurse." Meanwhile, a supervisor remarked on the dangers of consulting the World Wide Web for answers:

...they listed all these like medical terms, like, I had to Google them just to find out what they even meant and I couldn't even repeat them to you now. And I wish there was just somebody I could just show it to and say, you know, what does this mean, and is this like, you know, like—'Cause they [doctors] have, they'll have a medical term for like seasonal allergies and it looks, like, horrible. And it could be sitting right next to something else that, like, something that could be really deadly.

While web searches may yield information quickly, the reliability of what workers find is questionable. When using the care coordination nurses' services, however, workers felt confident that the information that they got was trustworthy and medically accurate.

### **Discussion**

The aim of the current study was to present child welfare staff perspectives about a program intended to address health concerns among children in intact, child welfare-involved families. Specifically, it explored whether and how nurses, caseworkers, and supervisors in New Jersey's child welfare system perceive a need for such services. Participants expressed unanimous agreement that both families and child welfare workers themselves had need for care coordination or something like it. Care coordination delivered by nurses was seen as helping families support their children's well-being and allowing caseworkers to do their jobs more efficiently and effectively. According to participants, families receiving in-home child welfare services needed this support because they lacked the capacity to adequately address their children's health care needs while simultaneously coping with the many other interlocking challenges they faced in their day-to-day lives. Services that extended beyond standard, office-based pediatric care were necessary to help caregivers understand their children's health-related needs and

take steps toward meeting them. Care coordination for families who had not experienced the removal of a child to foster care also addressed a perceived imbalance in the service array that neglected this population in favor of programs for children in out-of-home care. This imbalance was seen as especially troubling in light of the child welfare system's emphasis on keeping children with their families of origin whenever safely possible. Meanwhile, participants also expressed the utility of care coordination in their own work, as it helped them meet their responsibility to assess and address children's needs in regard to physical well-being. According to interviewees, the nurses offered invaluable expertise, efficiently providing accurate information when caseworkers and supervisors did not have the medical knowledge needed to adequately understand the health care needs of children, especially those with chronic or complex medical conditions. In the absence of a nurse providing care coordination, participants reported being left to seek answers to their medical questions from outside professionals or the Internet. Caseworkers and supervisors also reported confidence in knowing that there were more "eyes on the family" for in-home cases, where they otherwise worried that potential risks might be overlooked. Implications of these results for families, child welfare staff, agencies, and child welfare policies are discussed below.

### **Implications for Families**

These findings build on research that suggests that children who are receiving in-home child welfare services have substantial health-related needs, similar to levels of need among children who are in out-of-home care (Leslie et al., 2005; Ringeisen et al., 2008; Stein et al., 2013). Caseworkers, supervisors, and nurses working with this population perceived this need and expanded upon it, offering their perceptions about why families could benefit from specialized services targeting children's physical health.



In particular, they emphasized that caregivers facing multiple challenges may struggle to attend to even routine health care needs of their children, let alone the needs associated with chronic or complex conditions requiring ongoing diagnosis and treatment. Substance abuse, domestic violence, and mental illness are among the challenges that are common in this group (Stepleton, 2018a), often in combination, that may impede caregivers' capacity to provide adequate care for their children, bringing them to the attention of the child welfare system. They have also been found to be barriers to utilization of pediatric health care services among child welfare-involved families (Schneiderman & Villagrana, 2010). Additionally, the accumulation of multiple risk factors across the social ecology has been shown to increase children's risk for maltreatment and negative outcomes more than any single exposure alone (MacKenzie, Kotch, Lee, Augsberger, & Hutto, 2011). Care coordination was not explicitly implemented to address these caregiver issues, and indeed, families generally have other services in place targeting these problems, such as substance abuse treatment services. However, nurses delivering the program worked to ensure that these challenges did not act as barriers to parents meeting the health-related needs of their children.

By virtue of their child welfare involvement and experience of multiple, overlapping challenges, caregivers described by this study's participants benefitted from support in meeting their children's health-related needs beyond what is offered in routine, office-based pediatric care. Compared to pediatricians, care coordination nurses were able to develop a more comprehensive understanding of families in context and thus provide the type of care that they, along with caseworkers and supervisors, felt that families needed. According to interviewees, several features of the service facilitated its usefulness with these complex families. First, subjects in this study underscored the

importance of nurses' ability to see families in their own homes, building rapport and assessing the environment in ways that most pediatric health care providers are not able. In so doing, the nurses felt that they were able to provide a higher quality of care, and caseworkers and supervisors were confident that they were not missing critical information in their assessment of cases. Interview subjects emphasized the nurses' ability to go into families' homes and evaluate the environment as being critical to their helpfulness, echoing research on the effectiveness of nurse home visiting in improving health and well-being outcomes for vulnerable families (Olds, 2006). Home visitation, which was a component of care coordination for many recipients, may be especially effective in addressing children's health needs in intact, child welfare-involved families.

Second, participants emphasized the utility of having professionals with medical expertise embedded in the child welfare system available to caseworkers and supervisors working with children and families. While outside professionals were available to staff when care coordination was not, staff consistently indicated that the nurses were able to provide much more useful support. The nurses' familiarity with the child welfare system and the issues child welfare-involved families face, along with their exclusive focus on active in-home cases in their offices, allowed workers to get the accurate information they needed in a timely fashion, while being assured that families needing more hands-on assistance were having their children's health needs met. Embedding medical professionals in child welfare offices may be a promising feature of programs addressing the health needs of children receiving in-home child welfare services. This is similar to collaborative care models involving co-location of services, such as have been implemented across physical and mental health care settings, and may yield positive results for families (Unützer et al., 2002).

Third, interviewees described the nurses' role in helping families navigate the health care system and encouraging information-sharing between medical providers and child welfare staff as especially helpful. These activities, embedded in other evidence-based approaches to coordinated or collaborative care, have been associated with improved health outcomes for patients (Katon et al., 2010; Rogers & Purnell, 2012; Unützer et al., 2002). Although not presented in this paper, interviewees also described how they believed these features of care coordination allowed nurses to build rapport and increase caregiver engagement in services (results available upon request). These impressions resonate with research suggesting that such enhanced engagement with caregivers related to their children's health care may improve children's health (Cheng & Lo, 2016). Findings from this qualitative study, along with the body of literature cataloging positive effects of similar approaches, imply that care coordination may improve certain aspects of health care service delivery for families receiving in-home child welfare services, potentially leading to better health outcomes for children.

Regarding child welfare outcomes, participants described how they believed that care coordination services could possibly stabilize families and keep children from being removed to foster care. They hypothesized that, if the risks associated with children's health concerns were ameliorated, children could remain safely in their homes. While the current study cannot speak to the effects of care coordination, additional research examines whether and to what extent the program affected child welfare outcomes, including removals (Stepleton, 2018b), as speculated by the caseworkers, supervisors, and nurses who participated in this qualitative exploration.

### **Implications for the Child Welfare Workforce**

In addition to supporting parents and children, care coordination was also described as providing valuable assistance to workers and supervisors as they went about their jobs. The availability of a nurse made trustworthy, case-specific medical consultation easily accessible, such that child welfare staff could be confident that the physical health needs of children on their caseload were being addressed. In the absence of such a service, workers and supervisors described feeling at a loss as to how they would efficiently access the accurate information they needed to complete their assessments and provide recommendations to families about necessary health care treatment for their children. In this manner, workers expressed an improved sense of on-the-job efficacy when care coordination was available.

This finding has implications for efforts to recruit and retain the child welfare workforce. The literature in this area focuses on the effects and causes of high rates of worker turnover in the high-stress, low-resource climate of child welfare and other human service agencies (Mor Barak, Nissly, & Levin, 2001; J. L. Zlotnik, DePanfilis, Daining, & McDermott Lane, 2005). Poor retention of caseworkers may lead to staff shortages, resulting in higher caseloads, leaving child welfare workers feeling as though they are rushed through their work with families (U.S. Government Accountability Office, 2003). When assessments and treatment planning take place under these conditions, workers may not have the time to make careful, reasoned decisions about the best course of action in each case. Likewise, disruptions in worker continuity may slow the progression of cases (U.S. Government Accountability Office, 2003). The quality of child welfare services that children and families receive when turnover is high may suffer, increasing the likelihood of poor outcomes. As such, a substantial body of research has been conducted to identify the causes of worker turnover. Organizational

factors (e.g., workload, salary), supervisory features (e.g., quality of supervision, training for supervisors), and individual characteristics (e.g., personal commitment, job satisfaction, job stress) have been examined and linked to workers' intent to leave their jobs (DePanfilis & Zlotnik, 2008; Strolin et al., 2008). Others have found that the most influential determinants of intent to stay include career satisfaction and satisfaction with paperwork, over and above factors explored in previous studies (McGowan, Auerbach, & Strolin-Goltzman, 2009). Juby and Scannapieco (2007) have also noted that the availability of resources to ensure that children and families can receive the services they need also affects how child welfare staff feel about the manageability of their workload and, in turn, their intention to remain on the job. Knowing that they can refer families to necessary supports to achieve their case goals may help caseworkers and supervisors feel an increased sense of efficacy, which has also been linked to child welfare staff's intent to stay (Ellet, 2009). The current study suggests that the availability of care coordination for families receiving in-home child welfare services may improve workers' sense of efficacy, thereby positively affecting worker retention.

### **Implications for Agencies**

At the agency level, this study has additional implications. Across the country, child welfare systems have sought to decrease their reliance on out-of-home care, providing services to safely stabilize children at risk of removal in their families of origin. This is aligned with the stated goal of federal child welfare policy, and data reflect this trend toward the provision of in-home services (U. S. Department of Health and Human Services, 2006-2016). Indeed, the number of children in foster care on the last day of the Federal Fiscal Year trended steadily downward since the passage of ASFA, with a slight increase in recent years as the effects of the Great Recession have been felt

(U. S. Department of Health and Human Services, 2004-2014). Meanwhile, the number of children receiving in-home services has increased (U. S. Department of Health and Human Services, 2006-2016). As such, system leaders have had to reconsider the alignment of the service array such that, for many children, well-being, including physical health, is being supported in the home before a removal becomes necessary. Several strategies have been employed to prevent removals to foster care, including differential response and efforts to improve family engagement in services (Institute of Medicine, 2014). For certain populations, creating targeted services to addresses specific needs threatening to result in a child's removal may also be successful. This is a method that many state systems have employed; for instance, recent decades have seen the rapid development of programs to serve caregivers with substance use problems without removing children from their parents' care (Werner, Young, Dennis, & Amatetti, 2007). Care coordination, which seeks to ensure that children's physical health care needs are met, likewise was deployed to allow children to remain safely with their caregivers of origin. However, the range of challenges that families face over and above discrete risks may complicate such targeted prevention efforts, if left unaddressed (Daro, Barringer, & English, 2009).

In designing programs to address the health needs of children in intact families, agencies can draw insights from the perspectives shared by nurses, caseworkers, and supervisors in this study. As described above, participants indicated that embedding nurses in the local child welfare offices, adjacent to caseworkers, was especially useful. Systems seeking to implement programs to address the health needs of children in intact families should consider co-locating specialized medical staff to support caseworkers in addressing the physical health aspects of children's well-being. If placing specialized

medical staff in child welfare offices is not possible, agencies could aim to build workers' competence related to children's health with training on the identification of common conditions and conduct of routine health and developmental assessments.

Participants also noted that it was essential to the program's success that nurses were empowered to visit families in their homes, evaluating caregivers and children in their environment. Agencies seeking to design and implement programs to mitigate children's health care needs while they are in intact families should not underestimate the utility of delivering such services in families' homes. The increasing adoption of evidence-based home visiting programs affecting a range of well-being outcomes, including nurse home visiting programs (Olds, 2006), points to the power of this approach.

Interviewees also understood children's health to be just one of many aspects of well-being; similarly, when children had health needs that called for care coordination, they viewed these needs as one challenge of many that families faced. As discussed above, caregivers may struggle to address their children's health needs when they themselves are coping with substance abuse, mental health, or domestic violence issues, among others. Efforts to mitigate the health care concerns of child welfare-involved children living with their families of origin may benefit from approaches that do not address these concerns in isolation, but rather take into consideration the interrelated nature of the many other challenges caregivers and children are facing. It is therefore necessary that nurses or other staff charged with attending to the medical needs of children work closely with caseworkers and their supervisors, sharing information and joining in case planning. If caregiver or household challenges that might impede children's access to necessary care are identified, complementary services must be

available to address them, and relevant service providers should also be in close consultation with the case team.

### **Implications for Policy**

A broad implication for child welfare policy can also be drawn from this study. All participants articulated a clear need for programs, like the care coordination program examined here, that attend to the health-related needs of children receiving in-home child welfare services. According to the subjects interviewed for this study, there are sufficient health care needs among children in intact families to warrant focused attention from child welfare systems, and workers experience significant benefit with respect to their ability to go about their day-to-day work with families. Still, federal and state child welfare policies are quite vague about the system's responsibility to assess children's physical health and ensure that their medical needs are being met. Few program approaches exist, and fewer have been subjected to rigorous evaluation of their effects, either on children's health or child welfare outcomes. Explicit support of programs addressing the needs that nurses, caseworkers, and supervisors articulated here could facilitate the creation and rigorous evaluation of state and local strategies, moving toward the development of evidence-based interventions to ensure that children's health needs are met while they are receiving in-home child welfare services. This support could take the form of discretionary grants or waiver demonstration projects funded under Title IV-B of the Social Security Act. As more research is undertaken, if an evidence base for approaches like care coordination grows, agencies may also be able to support them via provisions of the Family First Prevention Services Act of 2018, recent legislation passed as part of the President's Budget that moves to shift child welfare funds to evidence-based prevention services.



There is an exception to the dearth of policy guidance regarding the physical health of children receiving in-home child welfare services: federal policy clearly articulates the system's responsibility to address the health-related needs of substance-exposed infants and children. Care coordination, which takes the many interrelated needs of child welfare-involved families into account, may be especially useful with this population. As caregivers work to manage their problems with drugs or alcohol, the support of a care coordination nurse may be beneficial in ensuring their children's health-related needs are being met. Programs like care coordination may help child welfare systems meet their obligation to attend to the health needs of substance-exposed children and their families.

### **Limitations**

This qualitative study provides valuable insight into how child welfare staff perceive the need for services that address the health care needs of an often-overlooked population, children receiving in-home services. It must be noted, however, that the nature of qualitative methodology is to allow for rich, individualized descriptions of phenomena; as such, conclusions drawn from the data do not lend themselves to broad generalization without careful thought. The context in which participants were interviewed and the data were analyzed must be considered when evaluating the transferability of findings. Here, all participants worked in a single state, and all had extensive experience with the program in question, care coordination. There is no reason to suspect that children and families in that state have vastly different needs than those in other U.S. states, but the policy and program contexts in other jurisdictions are most certainly not identical. As such, the reader must evaluate the extent to which the findings reported here are transferable to other child welfare settings based on his or her own

knowledge. It should also be noted that no caregivers or children were interviewed for this study. Their descriptions of their perceived need for services addressing children's health needs will be necessary to construct an even more complete picture of the phenomena in question. Future research should seek to explore caregivers' experiences navigating medical systems to meet their children's needs while receiving in-home child welfare services.

It should also be noted that participation in the study was entirely voluntary, and sampling could not be described as completely random. As such, staff who elected to participate may have been more likely to have positive assessments of the program than those who did not. Likewise, because the caseworkers and staff who were the most frequent users of care coordination services were targeted for recruitment into the study, the results presented here do not reflect the perceptions of staff who made less use of the program. It is possible that these caseworkers and supervisors felt less need for such services; however, it is also possible that they were less aware that care coordination was available to them, or that their caseload involved fewer families with children who had complex or chronic health needs.

Finally, the use of a single coder, who was also the interviewer, is a limitation of this study. However, the use of member-checking throughout the interviews and the face validity of the codes can increase the reader's confidence in the confirmability of the findings. Additionally, the researcher took care to maintain objectivity throughout the study, allowing interpretation of findings to remain flexible until all data had been collected and synthesized.

## **Conclusion**

Although children receiving in-home services comprise a substantially larger proportion of the population served by child welfare systems than those in foster care, their health-related needs are poorly understood. Even so, quantitative research and the current qualitative study suggest that children in this group have substantial medical needs. In contrast to their counterparts in out-of-home care, these children remain home with their caregivers of origin, who likely struggle with a range of challenges as they work to ensure their children's basic needs are met. As such, it is all the more important that child welfare systems seeking to maintain children safely in their homes develop strategies to support these parents in meeting the health-related needs of their children, preventing removal when medical issues are insufficiently addressed. According to the participants in this study, care coordination offers a promising approach that both addresses the needs of families and facilitates the demanding work of frontline child welfare staff. Further research is needed to more fully understand how and to what extent care coordination and similar approaches may function as preventive services, affecting outcomes for children and families receiving in-home child welfare services. Likewise, additional studies should explore the mechanisms through which the availability of care coordination allows workers to feel more efficacious in their jobs serving this population.

**Table 1.** Sample characteristics.

	Nurses	Caseworkers	Supervisors
Total (n)	10	10	10
Gender			
Men	0	4	1
Women	10	6	9
Average Years Worked for			
Department	<sup>a</sup>	9.1	15.8

<sup>a</sup> Not reported, as nurses were employed by a third party, not the Department.

**Table 2.** Themes and subthemes within code, “Need for Services.”

Theme	Subthemes	Description
Children’s health needs	Families’ complex needs	Descriptions of challenges that affect caregivers’ capacity to ensure that children’s health care needs are met
	Gaps in standard health care services	Descriptions of ways in which routine pediatric or other medical care may be inadequate for serving children with complex or chronic health needs who are involved with the child welfare system
	Imbalance in resources to support children involved in child welfare	Discussion of unequal distribution of services and supports for children receiving in-home services and those in out-of-home care
Child welfare workers’ need for services to support families with children’s health needs	Filling a gap in expertise	Descriptions of lack in child welfare worker knowledge sufficient to assess children’s individualized health needs and make appropriate recommendations

Having “eyes on the  
family”

Statements about the need to  
have someone other than the  
caseworker and supervisor  
attending to families with in-  
home child welfare cases

Strategies for working  
without a nurse

Explanations of how  
caseworkers and supervisors  
addressed the health needs of  
children receiving in-home  
services when the care  
coordination nurse was not  
available

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**MANUSCRIPT 3**

HEALTH CARE COORDINATION AS A PREVENTIVE INTERVENTION FOR  
CHILDREN RECEIVING IN-HOME CHILD WELFARE SERVICES: EFFECTS ON  
CHILD WELFARE OUTCOMES

by

KATHERINE S. STEPLETON

Manuscript 3 of 3 of a dissertation entitled:

CARE COORDINATION AS A PREVENTIVE INTERVENTION:  
EFFECTS ON CHILD WELFARE OUTCOMES

A dissertation submitted to the

Graduate School—New Brunswick

Rutgers, The State University of New Jersey

In partial fulfillment of the requirements

for the degree of

Doctor of Philosophy

Graduate Program in Social Work

Written under the direction of

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## Background and Literature Review

Though they comprise the majority of children served by the child welfare system (U.S. Department of Health & Human Services, 2018), children receiving in-home services—those who have open child welfare cases but have not been removed to out of home placement—are a comparatively understudied population. Research establishing the evidence base for services provided to intact, child welfare-involved families has slowly increased, with an emphasis on practices to prevent maltreatment and removal to foster care (Pecora et al., 2010). There is some evidence that services aimed at improving the well-being of child welfare-involved children or those at risk of becoming involved with the child welfare system can reduce negative child welfare outcomes. For instance, high-quality home visiting programs supporting the development of positive parenting skills have been shown to prevent abuse and neglect (Olds, 2006; Prinz, Sanders, Shapiro, Whitaker, & Lutzker, 2009), limit removals to out-of-home care (Chiayachati, Gaither, Hughes, Foley-Schain, & Leventhal, 2018) and reduce child welfare recidivism (M. Chaffin, Hecht, Bard, Silovsky, & Beasley, 2012). However, the evidence base for a broader array of services for intact child welfare-involved families is in urgent need of expansion as systems work to reduce their reliance on out-of-home care. Recent legislation, the Families First Prevention Services Act of 2018, solidifies this shift toward family preservation services by allowing states to draw down funding in support of evidence-based services that prevent maltreatment and removal to foster care. The current study is a preliminary examination of a care coordination<sup>7</sup> service intended to support families receiving in-home child welfare services and improve caregivers' capacity to

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<sup>7</sup> Although the intervention shares a name and certain features of other approaches known as “care coordination,” it should not be mistaken for them.

ensure children's health needs are met, thereby improving children's health and preventing more intensive child welfare involvement. Capitalizing on the naturalistic implementation conditions of the intervention, the program's effect on three core child welfare outcomes—case duration, removals to foster care, and new case openings after initial case closure—were examined.

Particularly little is known about the physical health or the health care services that children comprising the in-home population receive. What evidence exists suggests that these children may experience a greater number of medical needs and more acute health concerns than their counterparts who are not involved with the child welfare system. Compared to a normative sample, research has found that children receiving intensive in-home child welfare services reported poorer physical health on a multidimensional measure of well-being (Lanier, Kohl, Raghavan, & Auslander, 2014). According to the National Survey of Child and Adolescent Well-Being, Wave 2 data (NSCAW II), nearly half (49%) of all children who were the subject of a maltreatment report but never removed from their parents had at least one special health care need in the three years following the initial report (Ringelsen, Casanueva, Urato, & Cross, 2008; Stein et al., 2013). It should be noted, however, that these NSCAW II findings do not distinguish between children who went on to have child welfare cases opened following the initial report and those who had no further contact with the system. The percentage of children receiving in-home child welfare services with special health care needs may in fact be higher than this estimate. When obesity was included among potential health concerns, and when the sample was restricted to children with open child welfare cases, including both children living in their homes and those who had been removed to substitute care, researchers examining health status of child welfare-involved children

served in a pediatric clinic have found that 83% of those living with their biological parents had at least one medical diagnosis (Schneiderman, Leslie, Arnold-Clark, McDaniel, & Xie, 2011).

Further, there is evidence that child welfare-involved children who remain at home with their families of origin may demonstrate health-related needs at levels approaching those of children placed in out-of-home settings. NSCAW II data indicate that 27% of children had at least one chronic health condition, regardless of whether they were living with biological parents or in foster care (Ringeisen et al., 2008). Children with chronic health conditions in the NSCAW II sample were no more likely to be in substitute care than any other placement setting (Stein et al., 2013). Another study of child welfare-involved children under the age of six found no statistically significant difference in the number of medical diagnoses by initial placement type (Leslie et al., 2005).

Just as there is scant research describing the prevalence of health-related needs among children served by the child welfare system, there has been little exploration of the reasons why children—including children who remain at home with their families of origin—have more numerous and acute medical concerns than children who are not system-involved. A rapidly growing body of evidence, however, not specific to children served by the child welfare system, suggests that exposures to maltreatment, household dysfunction, and cumulative risk in childhood and across the lifespan can have negative effects on both physical and psychosocial health. The Adverse Childhood Experiences (ACE) study has provided compelling data linking poor health outcomes to a range of early risk exposures, including interpersonal violence, parental substance use, parental mental illness, and parental incarceration (Anda et al., 2006). Evidence indicates that

each additional ACE exposure before the age of 18 increases one's lifetime risk for myriad chronic and complex health conditions, many of which can lead to early death (Felitti et al., 1998). A growing literature suggests that the impact of adverse childhood experiences may also be felt within childhood. By age 12, exposure to multiple ACEs has been associated with increases in children's health complaints and illnesses requiring a doctor's treatment; these effects were particularly strong for adversities experienced in the second six years of life (Flaherty et al., 2009), though this may indicate that proximal experiences are more influential than distal ones. Recently, research has also begun to document intergenerational effects of ACEs. In a study of parent-child dyads, each additional reported parental ACE was associated with a decrease in children's overall health status and an increase in asthma incidence (Lê-Scherban, Wang, Boyle-Steed, & Pachter, 2018). Similarly, a linear relationship has been observed linking maternal ACE exposure with poorer infant health status; in one study, the accumulation of risk was more influential than any single type of parental exposure to adversity (Madigan, Wade, Plamondon, Maguire, & Jenkins, 2017). This finding echoes literature demonstrating that the impact of cumulative risk has stronger effects on outcomes than the type or severity of any single event or exposure (MacKenzie, Kotch, Lee, Augsberger, & Hutto, 2011).

The household dysfunction that contributes to poorer health outcomes for children may also act as a barrier to children's receipt of appropriate medical care. Parents who are struggling with domestic violence, drug or alcohol abuse, mental health challenges, their own medical problems, or intellectual deficits may have difficulty understanding their children's health needs and navigating the patchwork of systems, services, and policies that comprise children's health care delivery in the U.S. (Russ, Garro, & Halfon, 2010; Schneiderman, Smith, Arnold-Clark, Fuentes, & Kennedy, 2016; Schneiderman &

Villagrana, 2010). These challenges are quite common among parents of children known to the child welfare system. For instance, only 45% of birth parents participating in NSCAW II reported that they were in “Good” or “excellent health; 25% scored in the clinical range for depression, 25% reported experiencing interpersonal violence in the past year, and 10% indicated harmful alcohol consumption (Ringeisen, Casanueva, Smith, & Dolan, 2011). Among children receiving in-home child welfare services, those with health concerns may be exposed to even greater levels of risk than their counterparts without medical needs. Another examination of the intervention that is the subject of the current study found that children assigned to receive services targeting their health needs—a rough proxy for health need itself or for having a sibling with health needs—experienced a greater number of household risks; among these, having a caregiver with mental health problems was significantly more common for children receiving the intervention (Stepleton, 2018a). Cumulative household risk likely both increases children’s risk for poor outcomes and decreases the likelihood that they will receive appropriate and timely medical treatment, creating the potential for a downward spiral in children’s health and well-being.

As part of their federal mandate to safeguard the well-being of all children served, child welfare systems must attend to the health-related needs of children receiving in-home services. If a child does not receive the routine or specialized medical services that are needed, there is a risk that he may move deeper in to the child welfare system via removal to out-of-home care. Once in substitute care, children who have complex or chronic health conditions are more likely to experience negative placement outcomes, including multiple moves and lacking a permanency plan (Seltzer, Johnson, & Minkovitz, 2017). Similarly, if a child’s case is closed but medical needs remain, or if a caregiver

lacks the capacity to access appropriate health care for a child, the family may have repeated contacts with the system. These are outcomes that child welfare systems work to avoid whenever possible; therefore, addressing children's health needs while increasing parents' capacity to secure their children's health care may be a promising strategy for preventing ongoing system involvement for a subset of children and families.

Frontline child welfare staff, however, are not likely to be equipped with the medical expertise necessary to assess children's individual health needs and recommend appropriate courses of action. To do so requires specialized medical knowledge and, at times, intensive work with representatives of the health care system. While most frontline child welfare staff have at least a four-year degree, and many have social work training (Barth, Lloyd, Christ, Chapman, & Dickinson, 2008), they are unlikely to have the time or the breadth of medical expertise needed to address the wide range of children's health problems that they encounter while also meeting the many other requirements of the job. In another study examining the intervention that is the subject of the current article, child welfare workers and supervisors were asked about how they might ensure children's health needs are being met during the course of their maltreatment investigations when the intervention was not available. They reported that they relied on one of two insufficient strategies. First, they might seek consultation from outside medical entities, including pediatricians or diagnostic treatment centers, though these providers were often slow in responding and lacked familiarity with the exigencies of the child welfare system. A second strategy was to consult the World Wide Web, which workers understood ran the risk of surfacing inaccurate information (Stepleton, 2018b). Having access to timely, expert consultation about the physical health needs of children in intact families in the



form of care coordination was viewed as an essential—and otherwise unavailable—support to caseworkers, with a positive impact on children and families served.

As a strategy to improve health outcomes, care coordination has shown promise. While the term does not apply to a single, specific approach, care coordination generally includes elements of information sharing, shared decision-making among patients and health care providers, coaching, patient education, and navigation of health care services (Agency for Healthcare Research and Quality, August 2018; American Academy of Pediatrics Committee on Children with Disabilities, 1999). Such approaches, which include collaborative care the use of medical homes, have been deployed to improve health outcomes among patients with chronic health conditions (Peikes, Chen, Schore, & Brown, 2009), co-occurring physical and mental illnesses (Katon et al., 2010; Unützer et al., 2002), and children with special health care needs (Homer et al., 2008). Coordinated care provided in pediatric medical homes for children receiving child welfare services may support improvements in child welfare and well-being outcomes (Rienks, Phillips, McCrae, Bender, & Brown, 2017).

While there is promising evidence in support of interventions that address the health-related needs of children with maltreatment histories, very little research has explored such approaches in settings where children are still living with their families of origin (Leslie et al., 2005). The current study examines one such program, care coordination, implemented by New Jersey's Department of Children and Families to provide enhanced health supports to children receiving in-home child welfare services and their families. New Jersey's care coordination program presents a unique opportunity for study owing to how the service was made available in the state. Rather than installing nurses statewide, the child welfare department was only able to extend care coordination

services to children receiving in-home services in 10 of New Jersey's 21 counties. The program was supported by emergency Social Service Block Grant funds, provided to the state in the aftermath of Hurricane Sandy, which wreaked havoc along the coast in the fall of 2012. State and local officials were concerned that families, already vulnerable in the wake of the Great Recession, might be at greater risk for child abuse, neglect, or removal to foster care due to the damage and trauma caused by the storm, and sought to extend stabilizing child welfare services to those in need (New Jersey Department of Human Services, 2013). Funds were to be allocated to those counties most affected by Hurricane Sandy, determined to be the 10 counties along the coast. However, storm damage was not limited to these counties, and there was significant variation within both coastal and inland counties in the extent of physical devastation. In fact, families were most likely to be adversely affected by the storm if they were already facing certain risks, including having low income, regardless of whether they lived in an area where damage was severe (Halpin, 2013). As children and families across the state with child welfare involvement faced similar levels of risks unrelated to the disaster before and after Sandy made landfall (Child Welfare and Well-Being Research Unit & Institute for Families, 2015), those in inland and coastal counties may have been more alike than different. These naturalistic implementation conditions allow for the current study's examination of the effect of care coordination receipt on three core child welfare outcomes: case duration, removals to foster care, and case re-openings. These outcomes were selected based on the understanding that effective in-home child welfare services ought to stabilize families and support their self-sufficiency in an efficient manner, limiting ongoing involvement with the child welfare system whenever possible. Children who received care coordination in the coastal counties are compared with a matched sample of

children in inland counties who did not to estimate the impact of the program on these three outcomes. Certainly, shorter case durations, fewer removals, and fewer new case openings would suggest that care coordination is preventing more intensive child welfare involvement for recipients; however, opposite effects would not necessarily denote harm. As such, this study should be seen as exploratory, beginning to quantify the effects of care coordination to be understood with ongoing research.

## **Method**

### **Description of the Program**

Between October 2013 and October 2015, nurses were co-located in local child welfare offices in 10 New Jersey counties to deliver a form of care coordination services, assessing children's health needs and helping their caregivers understand and navigate the health care system on behalf of their children. Caseworkers referred children and their families to the nurses when chronic or complex medical needs were identified in the course of their investigations or during intake into child welfare services. Many caseworkers also reported referring families when there were concerns about caregivers' capacity to ensure that children's routine or specialized healthcare needs were met (Stepleton, 2018b). Once a case was opened, nurses could assess families' needs and provide any of a range of services tailored to address children's medical issues and increase caregivers' capacity to access necessary care for their children. Activities, which were not manualized, included: acquiring and interpreting medical records, including records of immunizations; meeting in-person or by phone with family members to assess needs, medical or otherwise; providing anticipatory guidance on general health issues, such as safe sleep for newborns; educating caregivers on children's health needs; locating and referring caregivers to resources for meeting children's health needs; assisting

caregivers in making health care appointments; communicating with doctors and other medical staff on behalf of children and their parents; attending health care appointments with families; following-up to check that caregivers were able to bring their children to their necessary appointments; and participating in team meetings and case conferences with child welfare staff. Any of these services might be offered, in any amount, according to nurses' assessments of what families needed.

### **Data**

Two data sources were used to construct the dataset for this study: care coordination "trackers" and state administrative child welfare data. Nurses kept the former to record information about the children and families they served, independent from the data collected in the administrative case records. By hand, nurses maintained monthly lists of the children and families on their caseload, identifying them with the unique individual identification numbers and case identification numbers used in the state's administrative data. Case identification numbers were shared by every individual associated with a case. These identification numbers were used to match records, identifying those children who received care coordination in the administrative data.

The second data source was the state's client-level case management information system, kept in accordance with federal SACWIS (Statewide Automated Child Welfare Information System) standards. Caseworkers enter all case-related information in children's records, including demographic data, history of child welfare involvement, limited medical information, and the presence of a range of social and environmental risk factors. Each individual involved in a case is assigned a unique numeric identifier, and each case is given an identification number; these are the same numbers the nurses used to identify service recipients in their records. These numbers were used to match data

from the trackers to identify children who received care coordination. A one-to-one merge was conducted, flagging children in the administrative data who appeared in the nurses' trackers. Administrative data from October 2012 through September 2016 were available, spanning the period in which care coordination was delivered.

## **Outcomes**

The effects of care coordination on three outcome variables were examined.

**Case closure within one year.** In the course of qualitative interviews conducted as part of a broader evaluation of care coordination services, caseworkers and supervisors described how having a nurse providing care coordination allowed them to make their determinations and put services in place efficiently, closing cases sooner than they would be able to otherwise. With the involvement of a nurse, they felt they could be confident that children's health-related needs were being met (Stepleton, 2018b). Thus, the current study seeks to quantitatively examine whether care coordination resulted in cases being closed sooner than they would otherwise. A binary outcome variable was constructed indicating whether a child's case closed within one year of opening. One year was selected as a natural cutoff, though it should be noted that there is no distinct policy reason for this decision. It should also be noted, of course, that it is not possible to know, using administrative data, whether the closure of a case is appropriate or not, or whether it is in the best interest of the child. However, there is general agreement that child welfare involvement should be limited to the shortest amount of time necessary to address the needs of children and their families; in-home services should not carry on indefinitely if a family is stable and children are no longer at risk of abuse or neglect.

**Removal to substitute care.** An aim of care coordination was to stabilize families at risk of having a child removed to substitute care as a result of unmet medical

need, thereby eliminating the need for out-of-home placement. This is in keeping with the child welfare system's overarching goal to maintain children in their homes as long as it is safely possible. Removals were denoted with a binary variable; a child was given a value of one if he or she was removed from the home of origin at any point 15 days or more after case opening. The 15-day threshold was used to exclude children for whom caseworkers made the decision to remove early in the case, likely as a result of clear safety concerns. These cases were more aptly categorized as out-of-home cases from the start. In comparison, cases involving removals after the 15-day mark were more likely to be opened as in-home cases and transitioned to out-of-home status as safety issues were discovered further along in the course of the investigation or family circumstances changed.

**New case opened after original case closure.** Ideally, care coordination services would stabilize a family by ensuring a child's health-related needs were met and caregivers could continue to acquire adequate care for their children. One would hope these effects would persist even after cases are closed. However, children and families may again come to the attention of the child welfare system if the stability cannot be maintained once the system has ceased its involvement. Thus, in exploring care coordination's effects, it is important to understand whether receipt of services affected the likelihood that children would have repeated child welfare contacts over time. Again, it is important to bear in mind that coming to the attention of the child welfare system again after an initial case closure does not necessarily indicate that the services, including care coordination, delivered during the original case were poor or that it is unmet health needs precipitating the subsequent case opening. The administrative data used in this study did not allow for identification of the reason a new case was opened. However,

having children return to the child welfare system after services have concluded is considered a poor outcome and thus merits exploration. To examine this third outcome, another binary variable was constructed, indicating whether children had new cases opened after their original cases were closed. Their original cases were those during which they received care coordination.

### **Sample**

Children were included in the sample if they had child welfare cases opened for in-home services between October 2013 and October 2015, when care coordination services were available. To fall into this category, children could not have been removed to foster care within the first 15 days of their case opening. Further, only cases opened for child protective services or other support services were included; cases with other administrative designations (e.g., post-adoptive services) were excluded, as these are substantively different from the majority of opened child welfare cases. Children were also excluded from the analysis because they died before, during, or after their case was opened. These cases were considered especially severe, and, as such, these children were not strictly comparable to the others in the sample.

From the treatment counties, the ten counties where care coordination was available, only those children who received care coordination services were included in the sample (n=1,436). Children comprising the comparison group (n=64,486) were drawn entirely from the counties where care coordination services were unavailable.

### **Analysis**

**Propensity score matching.** Effects of care coordination on child welfare outcomes were estimated after using propensity score matching to identify an appropriate population of children to compare to those who were assigned to the program. In order to

determine the effects of an intervention, such as care coordination, it is necessary to overcome a fundamental problem of causal inference: to truly know how each subject would respond to a treatment, one would need to know how that same subject would respond without the treatment (Rosenbaum & Rubin, 1983). In the case of a binary treatment, where participants can either receive or not receive the intervention, there are two potential outcomes for each subject: their outcome if treatment is received, and their outcome if treatment is not received. For all participants in a study, ideally, the researcher would want to know outcomes under both treatment conditions, providing a clear counterfactual to use in the calculation of treatment effects (Holland, 1986). However, in all cases, observing the true counterfactual for each subject is impossible; for example, in the current study, a child could not both receive and not receive care coordination. When possible, randomization in the assignment of subjects to treatment and control conditions allows researchers to address this problem. Done properly, randomization ensures that receipt of the treatment under study is not associated with subjects' potential outcomes by equalizing the distribution of observable and, in theory, unobservable characteristics between the treatment and comparison groups. Under these circumstances, the ignorable treatment assignment assumption is satisfied, a necessary condition for the accurate inference of causal effects (Guo & Fraser, 2015; Rosenbaum & Rubin, 1983). In a study where assignment to treatment is randomized, the comparison group, being similar to the treatment group in all ways that might affect assignment to the intervention, provides a plausible counterfactual to the treatment group. When randomization to treatment conditions is not possible, however, as is the case in observational studies, researchers must take other steps to assure the comparability of treatment and comparison groups.



Propensity score matching provides a method for identifying a suitable comparison group in studies where assignment to treatment may be associated with certain observable characteristics among subjects. Selection bias is reduced by modeling the process through which subjects are assigned to treatment, conditional on observed covariates (Guo & Fraser, 2015). A propensity score is generated, which describes the likelihood that each member of a population would be assigned to treatment, a probability ranging from zero to one. Each subject who received the treatment is then matched with at least one subject who did not, based on the similarity in magnitude of their propensity scores. If matching using propensity scores has been successful, the treated and matched comparison groups will be balanced, both in propensity scores and, consequently, observed covariates, satisfying the ignorable treatment assignment assumption and allowing for the estimation of causal effects based on the difference in outcomes between the two groups. For the current study, children were generally assigned to care coordination because they had chronic or complex health conditions (or a sibling with a chronic or complex health condition), setting them apart from most eligible children who did not receive the intervention. They also were exposed to higher levels of household risk than non-recipients (Stepleton, 2018a). Comparing outcomes for children who received care coordination with those who did not, without accounting for these differences associated with assignment to treatment, would yield biased results. As such, propensity score matching offered a method for identifying those non-recipients in inland counties who were most similar to children receiving care coordination in coastal counties, but who never had the opportunity to get the service, to use in the estimation of treatment effects. Comparing these two groups in this manner, while it cannot

demonstrate causality, provides strong evidence about the likely effects of care coordination on the outcomes under study.

Studies examining outcomes in child welfare settings may be especially suited to the use of propensity score matching to estimate the effects of interventions. Child welfare systems have limited resources with which to provide services, and, as a result, services are often targeted to those children and families who are most in need. When this sort of triaging takes place, recipients of a given service are likely to be worse off at baseline than those who do not receive the service. Clearly, the ignorable treatment assignment assumption is not satisfied under these conditions, as treatment and comparison groups will differ in ways that affect the likelihood that they were assigned to receive the treatment. Propensity score matching is better able to address the systematic ways in which the treatment and comparison groups differ, allowing for more accurate estimation of treatment effects, than controlling on observed covariates via standard regression modeling (Guo, Barth, & Gibbons, 2006; Koh & Testa, 2008). Additionally, propensity score matching allows for the examination of multiple outcomes without respecifying the statistical model once balance has been achieved between the treatment and comparison groups (Koh & Testa, 2008). This is useful, as child welfare researchers are often interested in a range of outcomes that may be associated with a given intervention.

**Procedure.** All analyses were conducted using Stata, version 15.1 (StataCorp, 2017). The first step in propensity score matching is to model each subject's likelihood of assignment to treatment conditional on observed covariates, generating the propensity score. Covariate selection is driven by theory, knowledge of the program under study, and what has been reported in the literature. To the extent possible, covariates should be

associated with the outcome of concern and not the treatment, in order to reduce bias (Brookhart et al., 2006). For the current study, potential covariates were selected based on their availability in the administrative data and a previous examination of factors associated with receipt of care coordination (Stepleton, 2018a). Covariates were entered into the logit model estimating propensity scores in a stepwise fashion, and balance of propensity scores and covariates was assessed each time. The model was respecified until adequate balance was achieved. Respecification involves transforming variables, including interactions, and dropping variables that are less theoretically important or highly correlated with other included covariates (Austin, 2011).

Balance is evaluated first by subdividing the dataset into the number of quantiles necessary to achieve nonsignificant difference on the propensity score between treatment and comparison groups within each quantile (Garrido et al., 2014). For the final model specification, the dataset was divided into fourteen quantiles. Next, covariate balance between groups within each quantile is examined, with the aim of achieving minimal difference at each level. As a first step, *t*-tests were used to explore mean differences. There is no consensus about what constitutes an acceptable amount of imbalance at this stage, though it should be noted that imbalance is more tolerable on less theoretically important variables and at the tails of the propensity score distribution (Garrido et al., 2014). Within four of the fourteen quantiles, one covariate was imbalanced; in total the amount of imbalance was less than what would occur by chance (less than 5%). It is also recommended that standardized differences in covariates within quantiles be examined, as these are not sensitive to sample size (Austin, 2009). Again, there is no agreed-upon threshold for the size of standardized difference indicating unacceptable imbalance, though recommendations range from 0.1 to 0.25 (Austin, 2009). For this study, a

threshold of 0.25 was used to identify potentially problematic covariates and quantiles. The majority of standardized differences in the first quantile surpassed this threshold, so treatment cases (n=4) in this group were dropped. The final model included the following covariates:

***Age.*** Informal policy guidance on the use of care coordination encouraged caseworkers to refer cases involving newborns and infants for services. Indeed, according to earlier analysis, infants had substantially greater odds of receiving care coordination than older children (Stepleton, 2018a). For the estimation of propensity scores, each child's age, in years, was calculated by subtracting his or her birthdate from the date their case was opened.

***Having a sibling.*** When assigned a case, nurses provided services to all children in a family, not only the child or children with immediate health concerns. Having a sibling, as a result, increased children's odds of receiving services (Stepleton, 2018a). In fact, nearly all recipients of care coordination had a sibling. The small number who did not were ultimately excluded from the analysis when treated cases in the first quantile were dropped. Data limitations did not allow for the identification of the child or children in each family with health problems. However, all children receiving care coordination should be seen as either having unmet health needs or living in families where their caregivers struggled to meet children's health needs.

***Race.*** Children were categorized as either white or nonwhite, following previous analysis indicating that children in minority racial groups were less likely to be assigned to services (Stepleton, 2018a).

***Hispanic origin.*** Likewise, Hispanic origin was included as a binary covariate following results showing that Hispanic children were less likely to receive care coordination (Stepleton, 2018a).

***Neglect allegation.*** Earlier analysis revealed that children who were the subject of a neglect allegation in the 12 months prior to their case opening had decreased odds of being referred to services, where physical abuse and sexual abuse allegations had no effect (Stepleton, 2018a). Any allegation, rather than any substantiation, for neglect was included, as evidence indicates that outcomes do not differ for children depending on whether or not their maltreatment reports are substantiated (Hussey et al., 2005; Kohl, Jonson-Reid, & Drake, 2009).

***Total number of risk factors.*** Both household-level and child-level risk factors were shown to influence whether children were assigned to care coordination services (Stepleton, 2018a). These factors were identified in children's case records based on the ongoing assessments of caseworkers conducting maltreatment investigations and intake into child welfare services. Household-level risks included domestic violence, housing problems, financial problems, caregiver substance use, caregiver mental health problems, child substance use, and child mental health problems. At the household level, if child substance use or child mental health problems were indicated, it did not necessarily mean that a given child was the subject of those concerns. Rather, it indicated that at least one unspecified child on the case, either the given child or at least one of his siblings, had these challenges. Limited information about child-level risks were noted in the high-level medical record included in each child's case file, identifying physical and behavioral health needs. These included alcohol use, drug use, behavior problem, emotional problem, learning disability, intellectual disability, physical disability, vision or hearing

impairment, and the need for other special care. Information on the severity of these conditions or overall acuity of health need was not available in the data. For the current study, an index of total risks was computed, ranging from zero to 16. Caseworkers tend to use the risk assessment tool conservatively, as it contributes to the decision about whether a child ought to be removed from the home. As a result, children who remain in their homes tend to have lower risk scores than those that are removed. Indeed, the distribution was highly skewed, with most children in the current study having very low total risk scores. As such, the variable was log-transformed for inclusion in the model estimating propensity scores.

***County removal rate.*** Some systematic differences in child welfare practice across the state are to be expected, and these differences may have affected the outcomes of interest in the current study. In particular, some counties have higher removal rates than others. To control for these county-level fixed effects, a variable describing removal rates was included in the model estimating propensity scores. Average removal rates per 1,000 children over the four years between October 2012 and October 2016 were computed, and a median split divided counties into two groups: those with removal rates above the median and those with rates below the median. The resulting binary variable, with values of 1 denoting counties with higher removal rates and 0 marking counties with lower removal rates, yielded better balance between treated and untreated subjects than did county-specific removal rates. There were five counties with higher removal rates in the treatment counties and five counties with high removal rates in the comparison counties.

Stata's `-teffects psmatch-` command was used to conduct the matching once sufficient balance between treated and untreated subjects was achieved. Many matching

strategies are possible; for the current study, one-to-one, nearest neighbor matching within a caliper equaling .2 of the standard deviation of the logit of the propensity score (Austin, 2009) was conducted (Garrido et al., 2014; Guo & Fraser, 2015; Holmes, 2014). That is, each treated subject was matched with the single untreated subject with the most similar propensity score, within the specified caliper range. Matching was conducted with replacement, meaning that untreated subjects could be matched with multiple treated subjects if their propensity scores were the closest. All treated cases were on support, but only treated cases with full information could be matched. As such, 122 observations were dropped from the analysis because they were missing data either on either the race or Hispanic origin variables; 1,314 recipients of care coordination were matched.

After matching, balance between the treated and untreated groups was assessed again. Box plots and kernel density plots illustrating the overlap in propensity scores for the groups before and after matching were examined; substantial overlap was observed after matching (see Figures 1 and 2). Standardized differences in covariate means and variance ratios were inspected for further evidence that the propensity score matching procedure yielded balanced groups. After matching, standardized differences should be close to zero, and variance ratios should be close to one (Garrido et al., 2014). Table 1 displays standardized differences and variance ratios for all covariates before and after matching, all meeting these criteria.

Having achieved suitable balance between treated subjects and matched, untreated subjects, the average treatment effect on the treated (ATT) was estimated for each of the three outcomes. To calculate the treatment effect, the difference in the proportion of treatment group members and matched comparison group members experiencing a given binary outcome is computed. The `-teffects psmatch-` command accounts for the fact that

the propensity score is an estimated value and corrects the standard errors accordingly (Garrido et al., 2014).

## Results

Descriptive statistics for the treatment group are presented in Table 2. Balance between the treatment and comparison groups, as evidenced in Table 1, indicates that these statistics are also representative of the matched children who did not receive care coordination. Children were an average of 5.42 years-old (standard deviation = 5.35), with an average of 2.76 identified risk factors (standard deviation = 1.86). They were majority nonwhite and not Hispanic. In the 12 months before case opening, 15% of children had been indicated in a maltreatment report alleging neglect. Most lived in counties with removal rates below the state median; 38% lived in counties with removal rates above the median.

Estimated effects of care coordination on the three outcomes of interest are presented in Table 3. Among matched recipients of care coordination, 45.89% saw their cases close within one year, 15.14% were removed to foster care, and 5.18% had a new case open after initial case closure. Meanwhile, 60.96% of nonrecipients experienced case closure within one year, 15.55% were removed to foster care, and 5.64% had a new case open following the closure of their initial case. The treatment effect is the mean difference; for binary outcomes, the mean difference represents the difference between the frequency of the outcome in the treated and untreated groups. Recipients of care coordination were significantly less likely to have their cases close within a year of case opening (mean difference =  $-.1507$ ,  $p < .001$ ). No significant effects of care coordination on removals or new cases opening after initial case closure were discerned.

## Discussion



The current study explored whether and to what extent receipt of care coordination affected three core child welfare outcomes: case duration, removal to foster care, and new case opening after initial case closure. Results indicate that children who received care coordination and those who did not had similar removal rates and were no more or less likely to have new cases open after their original case had been closed. However, it appears that the cases of children who got care coordination services lasted somewhat longer than those of children who were not exposed to the intervention. Given the individualized nature of each child's case, it is not possible to know whether the extended case duration among recipients of care coordination was beneficial or not. Yet, that there were no differences in removal rates or new case openings between groups suggests that, at minimum, the longer length of cases among children in the treatment group was likely not associated with a decline in family stability that might result in more intensive child welfare involvement, such as removal to foster care.

Simply having an additional person involved with a family may have increased the likelihood that a child's case would remain open longer. Nurses may have identified needs that caseworkers would be less likely to recognize; indeed, an aim of the program was to improve the assessment of children's medical needs and better address issues keeping caregivers from ensuring that appropriate health care was obtained. In a qualitative exploration of the perceived need for services addressing the health-related needs of child welfare-involved children in intact families, caseworkers and supervisors expressed an appreciation for having more "eyes on the case" to help them be sure they were not missing anything in their assessment of family needs (Stepleton, 2018b). The identification of more problems as the case progressed would reasonably necessitate referrals to additional services, increased coaching, and extra follow-up, all of which

might extend the duration of a case. Regarding the design of this observational study, the finding that care coordination recipients were less likely to have their cases close within one year may, therefore, be the result of surveillance bias. Put simply, surveillance bias describes a phenomenon where “the more you look, the more you find” (Haut & Pronovost, 2011). In studies involving the examination of child welfare outcomes, the presence of surveillance bias can violate the assumption of independence of outcomes and assignment to treatment, a necessary condition for sound causal inference (Chaffin & Bard, 2006). Compared to children who did not receive care coordination, children in the treatment group may have had more of their needs identified during their case because the nurse served as an additional assessor, thus extending the duration of families’ cases. Typically, propensity score matching would allow investigators to address the problems posed by surveillance bias. In the case of this study, propensity score matching balanced these groups on the number of risks identified in their case file in an attempt to identify a comparison group with a similar level of need as children who received care coordination. However, as discussed below, data constraints limited the precision of this matching and, potentially, the comparability of the two groups on need.

The effects of increased surveillance, in the form of care coordination services, may also explain why there were no discernable differences between groups in removal rates and new case openings. It is possible that care coordination affects these outcomes, but in heterogeneous ways, washing out any distinguishable effects. For instance, nurses delivering the intervention may identify needs that would otherwise go unnoticed, and these needs may be severe enough to warrant a removal for some children. Alternatively, for other children, the identification of challenges may lead to the installation of useful services that help stabilize families and in fact obviate the need for removal to foster care.

The same is true for new cases opening after the closure of original cases. Services put in place by nurses may allow some caregivers to competently meet their children's needs on an ongoing basis after the child welfare system has ceased involvement; for others, the involvement of additional service providers may increase the likelihood that concerns will be identified and brought to the system's attention, resulting in the opening of a new child welfare case. If the program affected outcomes differently for discrete groups of children, the true effects for the treatment group could be obscured. Further research examining the effects of care coordination should include subgroup analyses to explore whether the intervention operated differently for certain groups of children, such as older versus younger children and children with differing health conditions. As nonwhite children were less likely to receive care coordination in the first place (Stepleton, 2018a), any potential racial disparities in outcomes among recipients should also be explored.

There is another possible explanation for the identification of no significant differences in removals and new case openings as a result of care coordination: these outcomes may be too far removed from the services that were delivered to be substantially affected by the intervention, or changes in these outcomes may be too modest to prevent placement. Although launched in the hopes of minimizing removals to care, care coordination services would have done so by affecting more proximal outcomes to reduce family risks. For instance, nurses worked closely with caregivers to help them build the skills they needed to ensure their children's health care needs were met. Increases in parental efficacy in this area and attendant improvements in securing necessary medical services for children may decrease the likelihood of removal or a new case opening. However, the current study did not assess whether care coordination influenced efficacy or other more proximal outcomes, nor did it examine whether such

effects mediate the relationship between care coordination and the child welfare outcomes explored here. Further examination of care coordination's proximal outcomes, as well as its effect on distal outcomes via more proximal ones, may be profitable in developing a better understanding of the intervention's operation.

Heterogeneity in the delivery of care coordination may also have limited the intervention's measurable impact on removals and recidivism. Maltreatment prevention interventions that have been shown to be effective generally have clearly-defined outcomes and an explicit theory of change (Daro, Barringer, & English, 2009), along with strict, manualized procedures and fidelity measures. Care coordination was implemented without these hallmarks of effective evidence-based practice and instead allowed providers a great deal of latitude in determining how to best serve each family, within certain constraints. Differences in practice across nurses and among families served by each nurse may have diluted the impact of effective elements of care coordination.

It is also possible that other family characteristics are far more influential in determining whether children are removed to foster care or return to the child welfare system after initial case closure. As noted, child welfare-involved families of children with health needs are likely to face multiple challenges (Schneiderman & Villagrana, 2010; Stepleton, 2018a), many of which may increase the likelihood of removal or recidivism independent of their effect on children's health. More broadly, the causes of maltreatment and related negative child welfare outcomes are varied, interacting and transacting in complex ways that vary among families (Belsky, 1993; Cicchetti & Toth, 1995; Sameroff, 2009; Sroufe & Rutter, 1984). Prevention programs, targeting such

varied and complex causal processes, struggle to achieve significant results at a population level.

Even so, as noted above, care coordination may hold promise as a preventive service for children with health needs receiving in-home child welfare services. That care coordination is not associated with an increase in removals or new case openings suggests that the intervention did not push children into more intensive involvement with the child welfare system. Recipients may have had their cases remain open longer, but this extended involvement does not appear to have been accompanied by an increased likelihood of removal or return to the system after case closure. It is possible that these children were receiving or being linked to services they otherwise would not have accessed, which may have helped to stabilize their families, preventing further, more intensive engagement with the child welfare system. Additional research is needed to better understand the extent to which such mechanisms may have contributed to the program's potential effectiveness.

Although results of the current study are preliminary and decidedly mixed, some implications for child welfare systems and services for children in intact families can be drawn. First, nurse-provided care coordination services may support the identification of and response to the health-related needs of children receiving in-home child welfare services, thus potentially driving improvements in children's health. In a qualitative exploration of care coordination, child welfare staff, including nurses providing the intervention, clearly articulated that such programs benefit intact families and support workers serving them (Stepleton, 2018b). That recipients of care coordination had slightly lengthier cases without corresponding increases in removals or new case openings suggests that, at minimum, the service did not effect these generally negative

outcomes. With more research, it will be possible to better understand if the increase in case duration corresponded to improvements in children's health. If care coordination proves to be a promising preventive service, child welfare systems should seek to support its expansion, maximizing effectiveness by targeting the service to those children and families most likely to benefit.

Second, as discussed below, there are serious limitations in administrative data describing the needs of children and families receiving in-home services. Despite evidence that these children have health needs that their caregivers may struggle to meet (Ringeisen et al., 2008; Schneiderman & Villagrana, 2010; Schneiderman et al., 2011), these needs were not well catalogued in New Jersey's data system. Likewise, information about receipt of health care services was not documented in a readily explorable format. Without accessible information about the health needs and health care services used, child welfare systems are lacking important data that could drive decisions about changes to the service array that may improve children's well-being. If it is not possible to modify child welfare information management systems or require caseworkers to collect more detailed information about children's health, it may be profitable to explore how the integration of electronic health records or Medicaid data can augment existing child welfare data. Such integration would support much-needed investigation of how health problems may affect child welfare outcomes for children receiving in-home services. Similar efforts examining the effect of child support payments (Cancian, Cook, Seki, & Wimer, 2017) and TANF receipt (Marshall, Beall, Mancuso, Yette, & Felver, 2013) on case outcomes have driven policy changes aimed at improving the well-being of children served by the child welfare system.

### **Limitations**

A limitation of this study, alluded to earlier, must be noted, as it may circumscribe the validity of inferences drawn about the effects of care coordination. During the course of acquiring the administrative data necessary for this study, it came to light that the state's information management system did not allow for the capture of data about the health status of children receiving in-home child welfare services in any reliable detail. Limited information was tracked in the high-level medical record, as reflected in the list of individual risk factors used along with household risks to calculate a total risk score. However, no information is available about the severity of medical issues, children's overall health, or the time during the case at which an individual risk factor was identified. As such, children in the comparison and treatment groups could not be fully matched on health status, which was likely one of the most influential factors in assignment to the intervention; this may have contributed to omitted variable bias. Children who received care coordination can reasonably be assumed to have higher rates of health problems (or to have had a sibling with health problems) than non-recipients, but, lacking the capacity to match children on health status, it is not possible to draw this conclusion about the children in the comparison group. This is true regarding other unobservable characteristics as well. Such an omission of a covariate associated with treatment assignment amounts to an unmeasured confounder and may bias the estimation of treatment effects (Brookhart et al., 2006). Despite this, substantial balance on observed covariates was achieved between the groups. Additionally, to the extent that there is bias resulting from unmeasured health status, the findings in this study may be conservative, and effects may in fact be more pronounced. If there is imbalance on health status, it is likely that children in the comparison group have less severe health challenges than those in the treatment group, as receipt of care coordination in and of itself can be considered a

loose proxy for the presence of health need (or having a sibling with health needs). While evidence does not clearly indicate that children with health problems are more likely to be removed to foster care or return to the child welfare system with new cases, it is highly unlikely that their elevated risk in this area makes it *less* likely that they will experience these outcomes. Therefore, the findings that rates of removals and new case openings did not differ between the treatment and comparison groups, if biased, likely understate the effects of care coordination.

This discussion highlights the need for improvements to child welfare data collection as it pertains to the physical health of children who are receiving in-home child welfare services. In general, children served by the child welfare system who are not in foster care are vastly understudied; their health is among the least understood aspects of their well-being. Little is known about the overall health status of children in this population, let alone how their health is related to child welfare outcomes. More refined data would permit much-needed exploration of these issues, as well as more precise evaluation of interventions like care coordination.

Some other limitations of this study should be noted as well. First, this investigation was restricted to New Jersey, constraining the generalizability of results. In U.S. states with different demographic, geographic, and political features, the effects of care coordination may diverge. Likewise, where child welfare policy and program climates differ from New Jersey's, implementation of care coordination might yield distinct effects. Compared to other states, New Jersey may also be more inclined to invest in the health and well-being of children served by the child welfare system. For instance, the state's Department of Children and Families has an in-house nursing unit that serves all children in foster care, ensuring they are receiving necessary preventive care as well



as overseeing the treatment of any special healthcare needs (Rutgers School of Nursing, 2018). This program is held up as an exemplar of coordination between child welfare and health care systems (Zlotnik, Scribano, Wood, & Noonan, 2014).

Second, care coordination was not a manualized intervention with defined activities and fidelity measures. Rather, nurses were empowered to use their discretion in determining whom to serve, what to offer families, and in what amount. While this allowed for the delivery of individualized, tailored services, it may have also diluted treatment effects. Isolating the impacts of the program may be challenged by the fact that children received different services in different dosages. However, even as this study is not an exploration of a rigid, manualized intervention, it provides insight into the effects of a flexible service delivered to a range of children served by the child welfare system. Such a program is representative of many child welfare services, which must be widely implemented and responsive to the varied needs of many children and families. Without careful subgroup analysis, discerning significant results with substantive effect sizes is likely to be difficult in studies of programs with such a range of implementation options.

Third, it is possible that, even after matching, there may be unmeasured differences between the treatment and comparison groups beyond potential imbalance in health status, as previously mentioned. All theoretically important variables available in the administrative data were included in the matching model (or included in early iterations of the matching model but dropped because they were highly correlated with other variables), but there may be other germane constructs that were not captured by the state's information management system. As discussed above, omitted variables may bias results, and different specifications of the propensity score matching model may have yielded alternative findings (Guo et al., 2006).

Finally, the administrative data alone do not allow observers to identify whether longer case durations, removals, and new case openings were appropriate, or represented negative outcomes, for individual children. In cases where a child would fare better outside of the home, for example, a removal to foster care may in fact be the preferable outcome. This is emblematic of the core dilemma of child welfare: without knowing how each decision will affect each child, it is impossible to act with certainty in each child's best interest. Some removals will invariably result in a net benefit to children; others will cause greater harm. In general, however, child welfare systems aim to keep children in their homes whenever safely possible, support caregivers in caring for their children, and minimize the system's involvement in family life. Services that are provided through the child welfare system, including care coordination, have these goals. The selection of outcomes for this study, therefore, aligns with these core child welfare aims. However, interpretation of the findings should be couched in the understanding that, for some of the children included in the study, longer cases, removals to foster care, and returning to the system's attention may in fact be protective.

### **Conclusions**

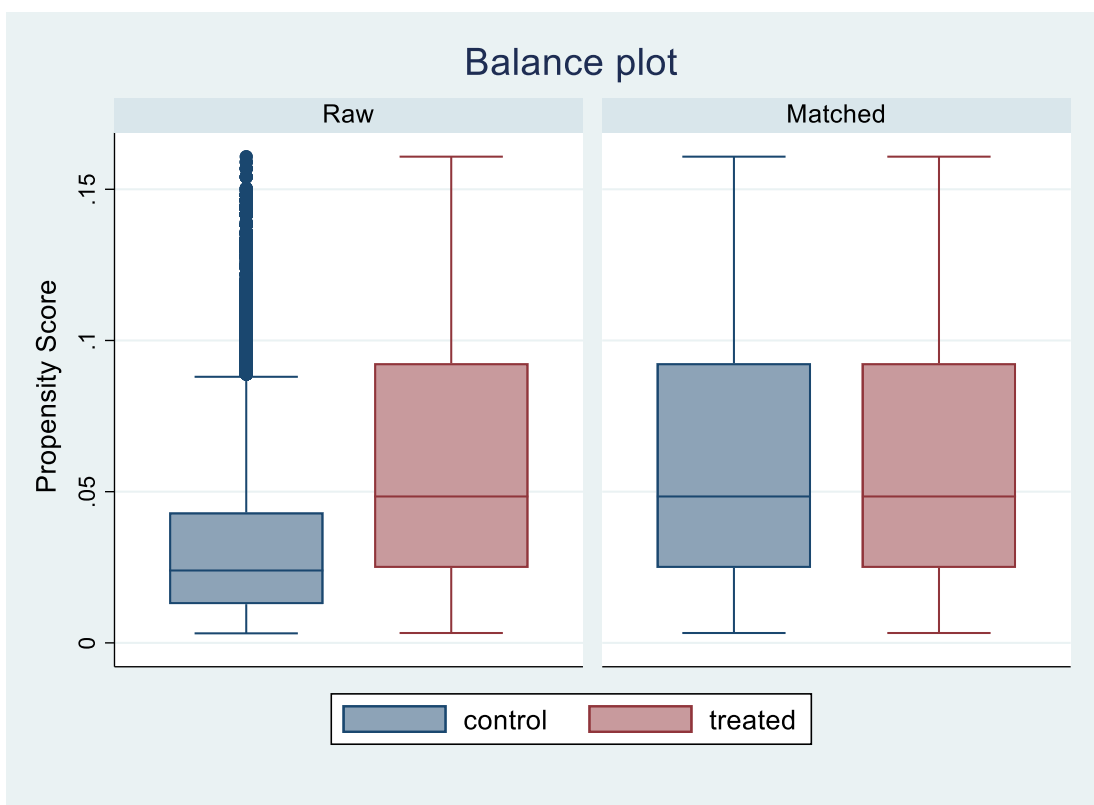
The current study provides somewhat inconclusive results about the effects of care coordination on child welfare outcomes, including case duration, removal to foster care, and new case openings after initial case closure. Care coordination may increase the length of children's in-home child welfare cases, but it does not make them any more likely to be removed to foster care or to return to the child welfare system after their original case is closed. Limitations in the administrative data prevented matching children in the treatment and comparison groups on health status, a variable that was likely highly associated with assignment to receipt of care coordination. However, to the extent that

the results described here may be biased, they present a more conservative picture of the effects of the program; that is, data limitations may have contributed to an underestimation of effects. To better understand the effects of care coordination, as well as the mechanisms through which care coordination may alter child welfare trajectories for recipients, further research is needed. A randomized control trial, in which children with health-related needs receiving in-home child welfare services are randomly assigned to receive care coordination services or services as usual, offers the most promise for discerning the program's effects.

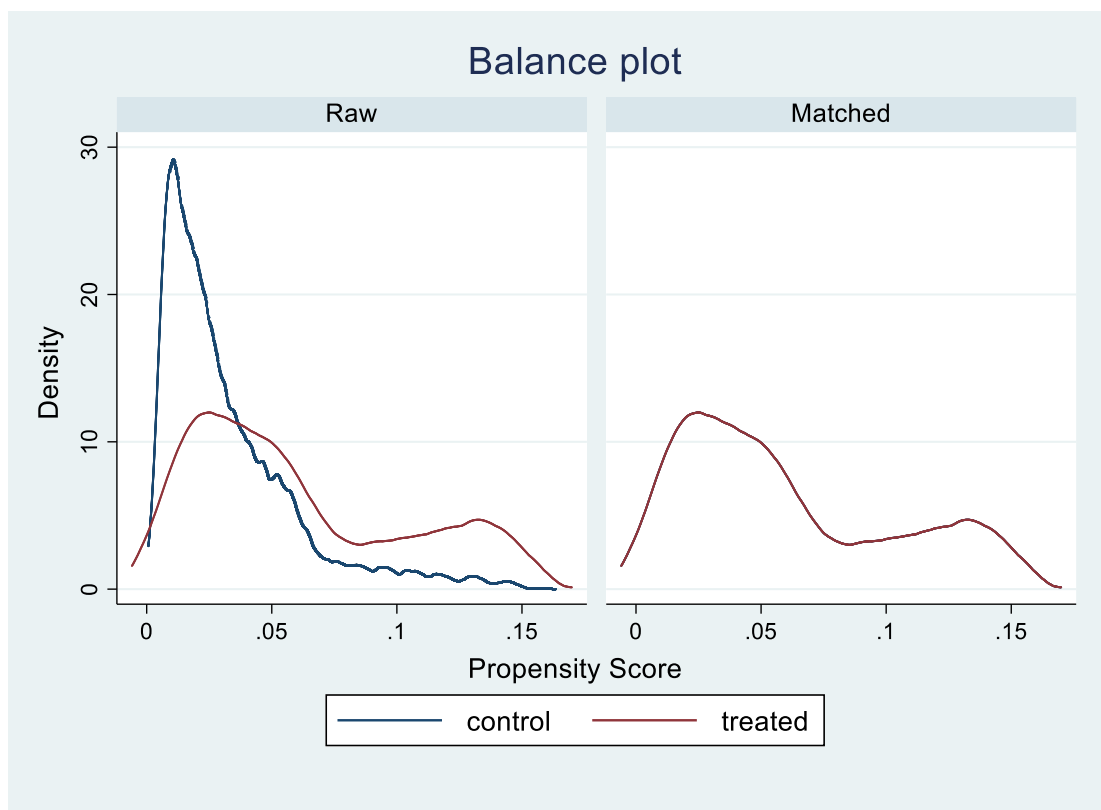
More broadly, the fact remains that children with child welfare involvement who remain with their caregivers of origin are vastly understudied, and their needs are poorly understood. In particular, there is very little information available about the health-related needs or medical care of children in this population. If the child welfare system is to truly attend to all facets of the well-being of the children it serves, including those who are not in foster care, greater effort to understand and address the health needs of this overlooked population is needed. Further research should aim to better quantify the extent of medical need among children receiving in-home child welfare services, while also exploring the ways in which children's health need may influence their risk for ongoing or more intensive child welfare involvement. With a better understanding of these issues, exploration of interventions targeting children's health needs as a strategy to maintain children safely in their homes may be prioritized.

**Table 1.** Balance statistics for raw and matched samples.

	Standardized Differences		Variance Ratio	
	Raw	Matched	Raw	Matched
Age (years)	-.56	.00	1.01	1.00
Nonwhite	-.08	.00	.98	1.00
Hispanic	-.03	.01	.97	1.01
Any neglect allegation in 12 months prior to case opening	.07	-.00	1.17	1.00
Total number of risk factors (log transformed)	.34	.01	.66	.99
County with high removal rate	-.39	.00	.96	1.00
Having a sibling removed because of collinearity (all member of treatment group had a sibling)				



**Figure 1.** Boxplots of propensity scores before and after matching.



**Figure 2.** Kernel density plots of propensity scores before and after matching.

**Table 2.** Sample characteristics: Matched recipients of care coordination  
(N=1,314).

	M (SD)
Age (years)	5.42 (5.35)
Total number of risk factors	2.76 (1.86)
	%
Nonwhite	41
Hispanic	23
Any neglect allegation in 12 months prior to case opening	15
County with high removal rate	38

**Table 3.** Estimation of effects of care coordination receipt among propensity score matched sample.

	% among					95%	95%
	% among	matched		Robust		CI:	CI:
	matched	Non-	Mean	Standard		Lower	Upper
	Recipients	Recipients	Difference	Error	p	Bound	Bound
Case closed	45.89	60.96	-.1507	.01	.000	-.1755	-.1259
within							
one year							
of							
opening							
Removal to	15.14	15.55	.0041	.01	.670	-.0147	.0229
foster care							
New case	5.18	5.64	-.0046	.01	.494	-.0179	.0087
opened							
after							
original							
case							
closure							



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## CONCLUSION

The three preceding papers comprise a preliminary, mixed-methods exploration of the care coordination intervention delivered in ten New Jersey counties between October 2013 and October 2015 to a subset of children receiving in-home child welfare services and their families. The need for this research is clear. Not only are children receiving in-home child welfare services vastly understudied given their representation in the system, where they now comprise the majority of system-involved children, their physical health—an irreducible aspect of their overall well-being—is even more poorly understood. What literature exists suggests that health needs in this population may be significant (Lanier, Kohl, Raghavan, & Auslander, 2014; Ringeisen, Casanueva, Urato, & Cross, 2008; Schneiderman, Leslie, Arnold-Clark, McDaniel, & Xie, 2011; Stein et al., 2013). Further, children with health needs who are removed to out-of-home care may be subject to poorer case outcomes than those who do not have medical conditions (Seltzer, Johnson, & Minkovitz, 2017). It is unknown the extent to which health needs may increase children's risk for abuse, neglect, or repeat maltreatment, though these needs may be a source of additional stress on families already facing other challenges, contributing to cumulative risk for maltreatment and other negative outcomes (MacKenzie, Kotch, & Lee, 2011). Programs that address the health needs of children receiving in-home child welfare services, therefore, may have the potential to prevent abuse, neglect, and more intensive child welfare involvement for some children.

## Findings

The findings of this dissertation are presented below, corresponding to the research aims addressed. Each Research Aim is associated with one paper in the dissertation.

**Research Aim 1, Manuscript 1**

The first Research Aim was to understand who was assigned to receive care coordination. More broadly, with assignment to the program serving as a rough proxy for medical need, examining characteristics that were associated with service receipt sheds light on the complement of demographic and risk factors that may accompany, or even affect, children's health needs. It also highlights which of these risk factors caseworkers and their supervisors weighted most heavily in determining which children were referred, possibly because those factors most affected caregivers' capacity to ensure children's health needs were met. In the first paper presented here, a quantitative analysis compared children who received care coordination with those who did not to identify demographic and case characteristics associated with assignment to services. Two model specifications were tested: one exploring the influence of specific risk factors and another using an indexed measure to examine the role of cumulative risk. The latter specification revealed that children with more individual-level health risks and non-health-related household-level risks were more likely to receive care coordination. That children with more health concerns would have greater odds of being assigned to services is unsurprising and suggests that the program was being appropriately targeted to those with medical needs. Meanwhile, in keeping with a bio-ecological understanding of human development, the accumulation of risk at multiple levels of the social ecology appears to be affecting children's overall risk (Bronfenbrenner & Morris, 2007; Sameroff, 2009; Sameroff & MacKenzie, 2003) as assessed by child welfare staff determining who was referred to care coordination. Here, the accumulation of risk makes children especially vulnerable in the eyes of caseworkers and supervisors responsible for referring them to care coordination, aligning with a body of literature demonstrating that experiencing multiple

risk factors may be more predictive of negative outcomes than the presence of any single factor alone (MacKenzie, Kotch, Lee, Augsberger, & Hutto, 2011). The finding that more household-level risks increased children's odds of service receipt also echoes research suggesting that caregivers facing multiple challenges, as is more often than not the case in child welfare-involved families (Rienks, Phillips, McCrae, Bender, & Brown, 2017; Ringeisen, Casanueva, Smith, & Dolan, 2011), may struggle to ensure that their children receive appropriate and timely health care (Schneiderman, Smith, Arnold-Clark, Fuentes, & Kennedy, 2016).

However, some factors did appear to matter more than others in the assignment of children to care coordination. Nearly all individual-level child health risks were associated with increased odds of service receipt, again suggesting that the program was being targeted to its intended recipients, children with health needs. At the household level, children who had a caregiver with mental health problems had 50% greater odds of receiving care coordination than those who did not, holding all else constant. Caregivers with mental illness may have difficulty understanding and addressing the health needs of children with chronic or complex health conditions (Schneiderman et al., 2016; Schneiderman & Villagrana, 2010). In these circumstances, nurses providing expert medical assessment and supporting, often educating parents in navigating the health care system appear to have been viewed as an especially valuable resource by the caseworkers and supervisors making referrals to care coordination (this is made explicit by subjects interviewed for the second paper in this dissertation (Stepleton, 2018)). Meanwhile, two risk factors were significantly associated with children's decreased odds of assignment to services, controlling for other factors: exposure to domestic violence and individual mental or behavioral problems. In each of these cases, caseworkers have dedicated in-

office resources to consult to ensure that these specific issues are addressed; this may limit reliance on nurses providing care coordination, a program potentially viewed as responding primarily to children's physical health needs.

This study calls attention to the need for further definition and quantification of the problem of physical health need among children receiving in-home child welfare services. There exists a paucity of literature in this area. At the most basic level, the extent of these needs is poorly known; there are few estimates of the percentage of children in this population with serious or unmet medical needs. Where researchers have explored the physical health of children in intact, child welfare-involved families, they have, for the most part, treated children's health problems in isolation. This singular focus omits consideration of how multiple family challenges may interact to affect children's health, in spite of research suggesting that household dysfunction is detrimental to health in the short- (Flaherty et al., 2009) and long-term (Anda et al., 2006; Felitti et al., 1998). Extending the literature in this area, this study uses assignment to care coordination as a loose proxy for medical need and begins to look at the multiple, intersecting risk factors in the environments of children with physical health needs. Findings indicate that these children are living in riskier contexts than their peers and lays the groundwork for the investigation of bi-directional or transactional relationships between household risk, children's health, and maltreatment.

## **Research Aim 2, Manuscript 2**

The second Research Aim was to describe, using primary qualitative data, how child welfare staff, including the nurses who delivered the intervention, understand and articulate the need for services and supports that address health-related needs among children receiving in-home services. In pursuit of Research Aim 2, for the second paper



of this dissertation, semi-structured, in-depth interviews were conducted with ten caseworkers, ten supervisors, and ten nurses who delivered care coordination in coastal counties between October 2013 and October 2015. While the interviews covered a range of topics related to the program, this paper explored how these informants articulated the need for care coordination or similar services that address health problems among children receiving in-home child welfare services. Without exception, interviewees observed that care coordination was a useful and necessary service. Need for such a program was operationalized in two ways: first, the paper lays out how participants described their clients' need for health-related supports; second, it presents data about how workers themselves felt that they needed the program to help them do their jobs effectively.

Regarding intact, child welfare-involved families' need for supports to address children's health needs, workers described care coordination as addressing a significant gap in the service array. Echoing an implication of findings from the first paper in this dissertation and other research (Schneiderman & Villagrana, 2010), participants noted that caregivers in this population may not be able to adequately address their children's health care needs as they struggle with multiple other challenges. Several respondents also indicated that the standard pediatric care system may be ill-equipped to meet the unique needs of families with child welfare involvement facing many additional hardships on top of children's chronic or complex health conditions. Although primary care providers have been identified as agents in identifying and addressing child maltreatment (Flaherty & Stirling, 2010; Olds, 2006), the current study speaks directly to their capacity to fully meet the health-related needs of children in intact, child welfare-involved families. Without the making home visits or possessing specific knowledge

about the child welfare system, interviewees argued, pediatricians could not fully grasp the complexity of the home environment and its impact on children's health. A care coordination nurse, however, combined medical expertise, child welfare knowledge, and often deep engagement with clients to assess and address the ways in which household risks might impede caregivers' capacity to ensure children received appropriate and timely medical care. Many study participants reported that this positioned nurses to fill a gap in health care services for families receiving in-home child welfare services.

Child welfare staff interviewed for the second paper also spoke of how they themselves felt the need for services to which they could refer families in the in-home population with children who had health-related problems. It is not practical or feasible for caseworkers and supervisors to have the expansive medical knowledge required to assess and make recommendations about the range of health conditions children on their caseloads may face; as such, many felt the care coordination nurses helped them manage children's physical health needs when they arose. Reflecting on times when the care coordination nurse was not available, either before the program was implemented or after it was discontinued, several respondents described how they had to consult sources that were slow (e.g., doctors with other obligations) or inaccurate (e.g., the World Wide Web) when seeking to understand the needs of children with chronic or complex health conditions. They felt that these strategies took time away from handling other aspects of cases, or worse, increased the likelihood that they might miss something critical in their assessment or case planning. The availability of the care coordination nurses gave respondents confidence that children's health, a fundamental aspect of well-being, was being adequately and efficiently addressed.

By exploring the health and health service needs of children receiving in-home child welfare services, this second paper again expands the limited literature in this area. At the time of writing, it appears that there has been no peer-reviewed qualitative exploration of these needs from the perspective of the child welfare workers who serve this population, though public health nurses in child welfare settings have been the subject of qualitative study (Schneiderman, 2006). Even in the absence of a reliable estimate of the percentage of children in intact, child welfare-involved families in New Jersey with health needs, it is clear that workers perceived this as a significant issue. Moreover, they expressed the necessity of services addressing this area of need, both for the sake of the families served and themselves, that has not been articulated in the extant literature. More broadly, this paper includes workers' articulation of a sense of imbalance in the service array that does not align with the child welfare system's stated goal of supporting families so that children can remain safely in their homes whenever possible. Federal policy encourages greater emphasis on prevention services that limit the need for foster care (Children's Bureau, 2012; Family First Prevention Services Act, 2017), and research indicates that investments in front-end child welfare services will both improve outcomes and save money (Ringel et al., 2017). Yet systems struggle to establish a service array that is not heavily weighted toward addressing the needs of the out-of-home population. Presenting, in workers' own words, the need for a more balanced set of services, including prevention services addressing children's health needs while receiving in-home services, represents a contribution to the child welfare field as it shifts ever more toward an emphasis on prevention and family preservation services.

### **Research Aim 3, Manuscript 3**

The third and final goal of this research was to identify the effects of care coordination on three core child welfare outcomes, beginning to explore the program's effects as a preventive intervention (Research Aim 3). Investigating Research Aim 3, in the third dissertation paper, I capitalized on the naturalistic implementation conditions for care coordination—deployment in ten coastal counties, even as families across the state's 21 counties faced similar hardships before and after Superstorm Sandy struck (Halpin, 2013)—to quantify the intervention's effects on three core child welfare outcomes: case duration, removals to foster care, and new case openings after initial case closure. The selection of these outcomes was based on their importance in child welfare practice and policy. In general, child welfare systems aim to provide services to families that target specific needs, stabilize families, and limit ongoing system involvement when children's safety and well-being are protected. Systems have also moved to reduce their reliance on out-of-home care, keeping children in their families whenever it is safely possible. For the study, propensity score matching was employed to identify a matched comparison group of children in inland counties who were similar to care coordination recipients in the coastal counties on several measures. These measures were taken directly from the first paper in this dissertation, which identified individual and household characteristics associated with assignment to care coordination. By balancing the treatment and comparison groups in this manner, it was possible to make plausible arguments about the effect of care coordination on the outcomes of interest.

Findings indicated that children who received care coordination were no more or less likely to be removed to foster care or to have a new case open after their initial case had closed. It is possible that care coordination had no measurable effect on these outcomes, or that the intervention had heterogenous effects across groups of children,

obscuring the impact of the service. For instance, while care coordination may have prevented removal for some children, some recipients of care coordination may have been more likely to be removed as nurses identified serious unmet health needs, health or other, that would have otherwise gone unnoticed. The lack of discernable differences between groups on these outcomes may also indicate that care coordination's targets were too broad or loosely defined, a feature of many prevention programs that fail to produce evidence in support of their effects (Daro, Barringer, & English, 2009). It is also possible that the intervention operates on more proximal outcomes, such as caregiver efficacy or children's health status, and that the outcomes studied here were too far removed from the intervention itself. Data limitations may have also obscured the intervention's effects.

Meanwhile, children in the treatment group had slightly lengthier cases than children in the comparison group. The analyses did not allow for further investigation of why the cases of recipients of care coordination remained open longer, though there are several possible explanations. First, it is possible that nurses were identifying additional needs among the children and families they served, and that these needs necessitated further services. Surveillance bias (Haut & Pronovost, 2011) may have played a role here, whereby having additional personnel (the nurses and additional service providers brought onto the case through the nurses' referrals) attending to the case led to the identification of more problems than caseworkers alone would have otherwise noted. Relatedly, nurses may have connected children to services that they would have otherwise not received, and child welfare staff may have been disinclined to close cases until these services terminated. Importantly, findings from this study suggest that, while recipients of care coordination remained involved with the child welfare system for longer periods of time, this extended involvement did not come with attendant increases in the likelihood of

removal or return to the system after case closure. This may indicate that these families received beneficial stabilizing services (care coordination and/or others), but that the provision of these services to families of children with complex or chronic health conditions may have taken somewhat longer.

While results are mixed, this paper represents an expansion of the extant literature. Even as there are examples of interventions to address the health needs of children in foster care (Health Care Access Maryland, n.d.; Rutgers School of Nursing, 2018; Schneiderman, 2006; Utah Department of Health, 2018), there is scant information about approaches with the in-home population (Leslie et al., 2005). Clearly more research is needed in this area, and further exploration of care coordination in New Jersey may be profitable in expanding the evidence base.

### **Synthesis**

Taken together, the findings indicate that there is a need for services addressing the health needs of children receiving in-home child welfare services. This need was unanimously expressed by nurses, caseworkers, and supervisors interviewed for the dissertation study. Echoing what research exists in this area (Ringeisen et al., 2008; Schneiderman et al., 2011; Stein et al., 2013), these informants clearly perceived that many children receiving in-home child welfare services face health challenges. They also described the range of additional challenges that were barriers to families securing appropriate, timely health care for their children, again bolstering the limited scholarship that exists on the topic (Schneiderman & Villagrana, 2010). Quantitative analysis confirmed that there were more individual- and household-level risk factors affecting families receiving care coordination services than families who did not. Qualitative findings indicate that care coordination was especially appreciated among child welfare

staff because it was delivered by nurses who understood this complexity characterizing the cases of child welfare-involved families whose children had health needs. Child welfare staff also expressed that care coordination was necessary because it helped them to do their jobs more effectively and efficiently. While care coordination targeted children's health, it had limited impact on the child welfare outcomes examined in this dissertation. Analyses were not able to discern an effect on removals to foster care or child welfare recidivism; however, the cases of children who received care coordination remained open slightly longer than their matched counterparts who did not get the service. On balance, the findings of this dissertation suggest that care coordination holds promise in the eyes of practitioners, though more evidence is needed to determine if it—or some version of the program—can prevent maltreatment or negative child welfare outcomes. Broad implications for child welfare practice and policy are presented below, along with directions for future research.

### **Implications**

Along with previous scholarship, these papers suggest some implications for child welfare research, policy, and practice. First, children receiving in-home child welfare services have physical health needs that require attention. Where statistics are available, they suggest that children in intact, child welfare-involved families have health needs at rates similar to those found among children in foster care (Ringeisen et al., 2008; Schneiderman et al., 2011; Stein et al., 2013). In order to meet their policy mandate to attend to the well-being of all children served, child welfare systems must be responsive to the physical health needs of children receiving in-home services as well as those in out-of-home care. At minimum, there is a need for child welfare systems to better capture the health needs of children in the in-home population to develop a greater understanding

of the scope and impact of these needs. Caseworkers (or medical staff, such as nurses, working with caseworkers) should include an assessment of children's physical health at intake and throughout cases, and training should support the identification of common medical needs. Just as workers have some familiarity with the hallmarks of domestic violence and substance abuse problems that they frequently encounter, it may be possible to enhance their competency around assessing children's physical health.

Correspondingly, administrative data systems should allow for more systematic cataloging of these needs. With better information, policymakers can assess the extent to which programmatic responses are necessary.

In addition to a dearth of information about the health needs of children receiving in-home child welfare services, what data exists treats these health needs as independent of other risks a child and their family might face. Findings from this dissertation indicate that children in intact families who were assigned to care coordination, a loose proxy for the presence of health concerns or a sibling with health concerns, are likely to live in families where multiple risks are present. Caregiver mental health problems, caregiver substance use issues, domestic violence exposure, housing problems, child mental health challenges, and child substance use were all more common among care coordination recipients than non-recipients; and most of these risks increased the odds that a child would be referred to care coordination services. These issues may pose challenges for caregivers as they work to ensure their children's health needs are met (Schneiderman & Villagrana, 2010); they may also increase the likelihood that children will experience negative child welfare outcomes, including maltreatment (MacKenzie, Kotch, Lee, et al., 2011) and removals to foster care. As systems seek to better attend to the health-related needs of children receiving in-home services, it will be important for them to consider the



range of challenges that families of children with complex or chronic health conditions face. Efforts that target children's health needs alone without addressing challenges that impede caregivers' capacity to meet those needs will not be successful. A strategy that holds promise in treatment of clients with such complex cases is co-location of personnel (Unützer et al., 2002), in this case child welfare and medical personnel, facilitating information sharing and collaboration. Nurse home visiting has also proven to be a powerful approach to maltreatment prevention and promotion of child well-being (Olds, 2006). Care coordination incorporates each of these strategies. Programs aimed at improving children's health must likewise be part of a complement of coordinated preventive services, as poor health is one of a range of risk factors for maltreatment that system-involved children face (Ringeisen et al., 2011). It is unlikely that any one of these risk factors alone results in abuse or neglect, but rather that some family-specific combination, accumulation, or transaction effects negative outcomes (Belsky, 1993; MacKenzie, Kotch, & Lee, 2011).

Care coordination may have had unintended positive effects on a surprising domain: caseworkers' sense of efficacy. Caseworkers, who do not themselves deliver services to address the range of needs that families face (e.g., substance use, mental health problems, poor or unstable housing, and domestic violence), must be able to refer caregivers to programs that can support recovery and stabilization, such that children can remain with their caregivers whenever safely possible. According to child welfare staff interviewed for this dissertation, care coordination appears to have filled a perceived gap in the service array for children with chronic or complex health conditions. Reflecting on periods when care coordination was not available, they described feeling at a loss when in-home cases involved children with chronic or complex health problems. When the

service was available, however, workers described feeling more confident about the care children on their caseload received. Care coordination, or another service specifically targeting children's health in intact families, may allow workers to feel that their job is more manageable (Juby & Scannapieco, 2007), which may increase their sense of efficacy and intention to remain on the job (Ellet, 2009). Child welfare agencies, which struggle to retain frontline staff (Mor Barak, Nissly, & Levin, 2001; U.S. Government Accountability Office, 2003; Zlotnik, DePanfilis, Daining, & McDermott Lane, 2005), should not neglect the potentially positive impact on worker satisfaction when considering implementing services to address health needs among children in intact families.

Finally, although this study showed little to no effect of the program on high-level case outcomes, care coordination may still hold promise as a preventive intervention, though additional research is needed. Importantly, investigation into the service's impact on children's health outcomes is needed. If future research yields evidence that care coordination or similar services for children in the in-home population have a positive effect on children's health or child welfare outcomes, child welfare systems should seek to expand their availability. As child welfare policy has increasingly emphasized maltreatment prevention and family preservation services, child welfare systems may be able to use federal funding vehicles to support such services. For example, under the Family First Prevention Services Act of 2017, states can draw down Title IV-E dollars to fund a range of evidence-based prevention services. It must be underscored, however, that much more evidence in support of care coordination as a preventive approach is needed before widespread expansion or federal funding can be pursued.

### **Future Research**

Following from this study and the implications outlined above, some directions for future research are indicated. First, it is clear that far too little is known about the health needs of children receiving in-home child welfare services and how these needs may affect their risk of maltreatment, child welfare involvement, or child welfare case trajectories. Much more basic research is needed in this area to simply catalog health concerns among children in the in-home population and explore how and to what extent they affect child welfare outcomes. With better information, it will be possible to explore how interventions, such as care coordination, targeting health problems among children receiving in-home services can affect children's health and, potentially, alter their child welfare trajectories.

Care coordination itself merits additional study. However, some modifications to the program ought to be made to maximize the likelihood that rigorous research could clearly document the program's effects. As noted several times throughout this dissertation, care coordination was a relatively unstructured intervention. Where research-supported interventions are typically manualized and have specific measures to track fidelity of implementation, care coordination was far less formalized. Nurses could deliver any of a range of activities, using their discretion and professional judgment to determine how each family and child would be served. It is possible that this flexibility, which allowed nurses to tailor their services to meet families' specific needs, was beneficial to recipients of the intervention. However, the lack of a consistent approach may have diluted the effects of certain practices. The intervention also did not have a clearly-articulated theory of change, and it did not target clearly-defined outcomes, as the most successful preventive programs do (Daro et al., 2009); again, this lack of clarity may have limited the effects of the approach studied here. With more clearly articulated

practices and clear fidelity measures, care coordination's effects might be better captured in a research study. It is possible that the program did effect other health and well-being outcomes of import, but better data will be needed to fully explore such impacts. Ideally, a randomized control trial of a more defined version of care coordination could shed light on the usefulness of such a program as a preventive intervention.

### **Conclusion**

Over 1.25 million children received child welfare services following a maltreatment investigation in 2016; four-fifths of these were never removed from their caregivers (U.S. Department of Health & Human Services, 2018). Instead, these children and their families were provided with a range of supports to address issues that may have contributed to child maltreatment in the past or would increase the risk for it in the future. Although children in this population are deemed safe enough to remain in their homes of origin, their families often still struggle with significant challenges, from domestic violence to substance abuse to mental illness. While child welfare systems aim to address these and other problems to stabilize families and prevent abuse and neglect, all too little is known about what works, when, and for whom. As policymakers increasingly demand that funded services have a clear and convincing evidence base demonstrating effectiveness, research into prevention services delivered to child welfare-involved families grows ever more essential.

Regarding services targeting the physical health needs of children receiving in-home child welfare services, the dearth of knowledge is even more stark. As this dissertation has shown, child welfare systems ought to—and indeed are mandated to—attend to children's health regardless of their placement status. At the most basic level, the system bears some responsibility for ensuring the well-being of all children served,

including those who remain at home with their caregivers of origin. This includes attending to any physical health or health care needs they may have. Additionally, addressing these needs in the in-home population may reduce the risk of future maltreatment in some cases, and therefore merits effort. Much more evidence is needed to guide systems in providing services in this area, however. Careful, rigorous trials of clearly-specified approaches targeting children's health needs, among others, are necessary to best serve this vulnerable, understudied population. With this essential information, child welfare systems will be more fully equipped to fulfill their fundamental mandates to keep children safe and promote well-being while preserving families.

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