

Impact of Parents' Disorders on the Medical Care Expenditures of Their Children

**Anne Riley, Principal Investigator and Kevin Frick, Co-Principal Investigator
Johns Hopkins University
Bloomberg School of Public Health**

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Introduction

When someone has a chronic illness the whole family is affected. However, most of what we know about how family members are affected by chronic illness comes from research on the impact of children's illnesses on parents or illnesses of elderly parents on their adult children. The effects of parents' disorders on children under 18 years old are much less well studied, although likely to be powerful and long-lasting. The central importance of parents in raising a family suggests that parental chronic illness may affect virtually all aspects of children's health and development. The demands and impairments associated with many chronic conditions are likely to significantly compromise parents' ability to manage the household and their employment, and provide warm, consistent parenting. Medical care is focused almost exclusively on the patient, with very little attention to family members. With the increasing shift to home-based care, there is potential value to the family, but also increased demands on patients and their families. Health policies need to reflect the realities of the effects on families of chronic illnesses.

Although research exploring the ways in which children are affected by their parents' illnesses is limited, it provides a lens for understanding the ways illness affects parents and their children. A significant body of research describes the central influences on child development. Warm, responsive parenting and consistency in routines are central to brain and nervous system development, self-regulation, and health (National Research Council & Institute of Medicine, 2000). Positive parenting is associated with improved child health, not only by reducing the likelihood of negative health behaviors, but also by enhancing coping and resilience, the ability to achieve good outcomes even in the context of significant challenges (Landry, Smith, & Swank, 2003; National Research Council & Institute of Medicine, 2000). As children grow older, parental involvement and monitoring are so critical that low levels are associated with unintentional injuries, high levels of child risk behavior, and children's reduced ability to cope with adversity (Borawski, Ievers-Landis, Lovegreen, & Trapl, 2003; Morrongiello, Corbett, McCourt, & Johnston, 2006).

Parental illness and children's outcomes

The largest body of science describing the relationships between parental illness and children's health and well-being involves the children of mothers and to a lesser extent, fathers, with depression. Children whose mothers experience depression are significantly more likely to have health, mental health, social competence and academic problems and to use higher rates of medical care (Downey & Coyne, 1990; Riley et al., 2009; Weissman et al., 2006). Despite consistent evidence that more than half of the offspring have poor outcomes, this does not mean that depression causes the negative effects, but more likely, it acts indirectly. Parental depression appears to reduce the quality of parents' relationships with children, reduce the consistency and warmth of parenting, and contribute to disruptions of family routines and functioning (Goodman & Gotlib, 1999). Another area of research has focused on the children of parents with chronic pain, which has demonstrated that children are likely to experience less consistent care, more distress, and to take on many tasks that parents would normally carry out (Evans & de Souza, 2008). Both depression and chronic pain have pervasive effects on the patient's mood, ability to enjoy life and children, and the consistency of mental and physical functioning. It is less clear how other chronic diseases affect a family's stress and functioning.

In the aggregate, serious physical illness in parents has been shown to be an epidemiological risk factor for anxiety and depressive symptoms in children, with same sex children and adolescent daughters at highest risk (Barkmann, Romer, Watson, & Schulte-Markwort, 2007). Moreover, youth receiving treatment for emotional and behavioral problems are more likely, often twice as likely, to have a parent with a chronic illness as children in community samples (Barkmann, Romer, Watson, & Schulte-Markwort, 2007; Rutter, 1981). In smaller studies, the associations between early stage breast cancer in mothers on children show increases in the stress in children's lives, and slightly higher than expected rates of anxiety and depression, particularly for adolescent daughters (Edwards et al., 2008; Osborn, 2007). However, it does not appear that the effects of parents' physical illnesses on children are as severe and dramatic as those associated with maternal depression and pain, and not all studies have found associations between maternal illness and children's negative outcomes (Annunziato, Rakotomihamina, & Rubacka, 2007).

The mechanisms by which parental illness may adversely affect children are likely to be through the increases in shared stress and fear, reductions in warm, attentive caring from parents, disruptions in formally predictable supportive actions by parents, and reductions in level of support (Pederson & Revenson, 2005). In addition to such mediators that are in the causal pathway, research has consistently identified moderators such as children's developmental stage (age), severity of illness and factors such as family income and family structure, especially whether there are one or two parents available (Pederson & Revenson, 2005).

Parents' illnesses may be associated with more significant effects when the single parent is ill. The proportion of single parent families has increased from 15% to 31% in the past three decades, so that now 3 in 100 children now live in a home with only one parent, most often their mother (Shudy et al., 2006). Generally in the U.S., children in single-mother households have worse physical and mental health than those in two parent households or in father-only households (Bramlett & Blumberg, 2007). Single-parent families have fewer resources, typically about 55% of what children in two-parent families enjoy, with four times as many single-parent families living in poverty as two-parent families (Thomas & Sawhill, 2005). Poverty and low resources generally have a negative impact on children's health and well-being (Brooks-Gunn & Duncan, 1997; Chen, Matthews, & Boyce, 2002). In a nationally representative U.S. sample of single mothers, 24% of mothers with children 5-18 years had a chronic illness, among the AHRQ priority conditions. Approximately 1/3 of mothers reported that they were significantly impaired by their illness and the others reported not being impaired. Mothers' illness status was not associated with different rates of emotional or behavioral problems in children, whether reported by mothers or children (Annunziato, Rakotomihamina, & Rubacka, 2007). Children with sick mothers were significantly more likely to have seen a doctor for an emotional or behavioral problem, despite the fact that on average the children of sick and well mothers did not differ in their problem levels (Annunziato, Rakotomihamina, & Rubacka, 2007).

The majority of the limited research on the effects of parental illness on children has focused on psychosocial outcomes. Although this is clearly important and helps to clarify how children are affected, there is little science focused on the economic impacts of parents' illness on children's medical care expenditures. From a policy standpoint, this type of science may be able to have

the biggest impact on improving medical providers attention to the needs of families of parents with illnesses, a call that is made in much of the research on this topic.

Influences on Use of Care for Children

Medical care for children includes the routine preventive care, well-child supervision, as well as care for acute and chronic illnesses and injuries. The utilization of medical care is commonly taken to be a proxy for health status. As preventive care is fairly stable, occurs at low rates, and is not expensive, it is the increased use of non-routine care that is of greatest concern from child health as well as economic perspectives. It is known that children and adolescents with emotional and behavioral problems, whether diagnosed or not, tend to use higher rates of all types of care (Newacheck & Starfield, 1988). In terms of disorders, some research has shown that parents' depression is associated with increased use of medical care by children (Sills, Shetterly, Xu, Magid, & Kempe, 2007), including hospitalizations and emergency care that should be avoidable for children's ambulatory sensitive conditions (Logan, Riley, & Barker, 2008). In addition to the influence of parents' disorders, other structural factors influence rates of medical care use for children. Families with higher numbers of children typically use fewer resources for any one child (Riley et al., 1993; Thomas & Sawhill, 2005).

Family health interrelationships and children's health care use are affected by other shared family circumstances. Some of these have the potential to conflate the factors associated with health care use in both parents and children. These circumstances may be environmental, such as the link between asthma and exposure to indoor allergens (Matsui et al., 2008). Another type of shared experiences are related to a family's socioeconomic situation, particularly when a family lacks resources for sufficient or adequate nourishment of children. As one study demonstrated, children with severe or moderate hunger were at significantly higher risk for chronic illness than other children, even after controlling for confounding variables such as stressful life events (Weinreb et al., 2002). Similarly, in a study of low income families at a community health center in Massachusetts, family hunger was associated with childhood obesity and poor parental health.

The impact of illness in one family member on health care utilization and spending of other family members has been shown.(Altman, Cooper, & Cunningham, 1999; Swensen et al., 2003) Additionally, the level of family stress has been shown to affect the health care use of children with disabilities. (Witt, Riley, & Coiro, 2003)

AHRQ Priority Conditions

The Institute of Medicine recommended that AHRQ use the MEPS data to identify the 15 most expensive medical conditions, which they have labeled 'priority conditions' (Cohen & Krauss, 2003). These conditions may be expensive because of their high prevalence or because the cost of care for the disorder is high. Using the health rating and quality of life data in the MEPS, it has been shown that health related quality of life is reduced by a meaningful amount by these conditions (Nyman et al., 2007).

If analyses were based solely on priority medical condition they would fail to take into account use by parents who do not have an identified priority condition, but who do have less common, but potentially burdensome conditions. Research has described patterns of medical care use by

people with specific medical conditions, and age and gender characteristics. This science has allowed algorithms to be derived for estimating the intensity of medical resource needs by individuals. One such validated system is the Resource Utilization Band method. Using reports of visits or administrative claims data, people's outpatient visits are classified based on diagnostic data into one of multiple diagnostic groups, which differ in terms of their severity and usual demand for medical care. This classification uses the Ambulatory Diagnostic Group (ADG) system (Weiner, Starfield, & Lieberman, 1992). In a second step, people are categorized into one of six categories (bands) of likely level of resource utilization.

Medical expenditures

Healthcare costs are conventionally used as a primary outcome in health services research because of their inherent importance as a target for care management, the ease with which they can be calculated using administrative data, and their close relationship with major health events. The most commonly used variable to forecast future costs is prior costs, which has good predictive accuracy (Meenan et al., 2003). Expenditures are a direct indicator of the intensity of medical care use and an indirect indicator of health and medical problems. Expenditures are an imperfect measure of medical care need, however, in that they reflect availability of and access to medical resources, especially for children who are dependent on their parents to get them the medical care they need.

Study Purpose and Hypotheses

This study uses a cross-sectional design to investigate how the medical expenditures of children over a two-year period are associated with the presence (or absence) of medical conditions or high medical resource use by their parents during the same two-year period.

We expect to find that when a parent has a priority medical disorder or factors associated with a high level of resource utilization (a high RUB), the average medical expenditure of each child will be significantly higher than expenditures of children whose parents do not have one of the priority conditions or high medical resource use. In two-parent families, we expect that illnesses in the mother will be associated with higher expenditures by the children than will illnesses of the father, and that mothers' illnesses impact fathers' expenditures to a greater degree than fathers' illnesses impact mothers. Finally, when both parents have a chronic condition or have a high level of resource utilization, children's medical expenditures will be higher than when only one parent is affected.

Methods

The data were obtained by combining six rounds of data from the household component of the Medical Expenditure Panel Surveys conducted between 2000 through 2005 (Agency for Healthcare Research and Quality, 2007). The Medical Expenditure Panel Survey is a continuous, nationally representative, in-person survey of the civilian, noninstitutionalized population. The sampling frame is the National Health Interview Survey, which oversamples households headed by Hispanic and African-Americans. Information is collected during five rounds of interviews spaced 4 to 5 months apart, to provide longitudinal data over a 24-month period. Families can be linked based on a common identifier to build a family-level dataset.

The full-year response rates for the 1996-2005 Medical Expenditure Panel Survey range from 61.3% to 70.7%. (Agency for Healthcare Research and Quality, 2008) The MEPS data are collected by interviewing an adult respondent about themselves and other family members. Individual files are created for each member of the family, each linked by a common identifier. The respondent reports sociodemographic characteristics, monthly insurance coverage, general health status, and medical care use for each person in the family. The initial interview identifies the current health conditions of each person in the family. Subsequent interviews ask about medical care utilization in the period between interviews and whether each person experienced any new health conditions since the previous interview.

A 'reliability sample' of medical care providers identified by respondents are contacted to verify use and obtain additional information about diagnosis, charges, payments, and specific services provided. Insurance coverage is verified during the household interviews by checking insurance cards.

Samples

Two sub-samples were identified from each of six MEPS datasets, 2000-2005, using the following inclusion criteria: 1) households with married parents between the ages of 18-55 living with at least one of their own biological, adopted or foster children under the age of 18 years (N=16,526 families; 33,554 children), and 2) mother-only families with children meeting the same description (N=7,492 families; 13,730 children). Households headed by anyone else were omitted. Households excluded because of a different parental structure comprise less than 10% of the sample in the various MEPS datasets. Only families with the same family members throughout the full two-year period were included. No grandchildren or grandparents are included in either sample. Families headed by two married parents and single mothers were studied because they represent the vast majority of households with children in the U.S. (). Continuous presence in the home over the MEPS data collection period was required in order to ensure comparable exposure to parental illness.

The responsible University institutional review board determined that human subjects research approval was not required because no individuals can be identified from these publically available datasets.

Independent Variables

Each parent's reported medical conditions and injuries were used to construct two types of independent variables. Five high frequency disorders identified by the Department of Health and Human Services as 'priority conditions' were examined, diabetes, asthma, hypertension, joint pain, and depression. The prevalence of other priority conditions, heart disease, stroke, emphysema, arthritis, was studied but occurred too infrequently in this relatively young sample to permit inclusion in this study.

In order to estimate the overall level of each parent's medical resource use level, the Resource Utilization Band (RUB) was assigned based on their age, gender and all disorders reported during the 2-year period. The RUB system assigns one of six levels, from 0 (no medical disorders) to 5 (multiple chronic conditions and intense use of medical care).

Outcome Measures

The primary outcome measure is the average annual excess medical expenditure for each child in a family, compared to the expenditures for children of healthy parents. This is computed in 2005 dollars.

Analyses

Survey Linear Regression was used to compute the coefficients for the average annual excess expenditures by a single child associated with parents having one of the five priority conditions and having a moderate to high level of medical resource use, compared to the sample of parents who were 'healthy.' The coefficients produced in these analyses can be directly converted into 2005 dollars. The estimates of children's average medical expenditures were controlled for the following child factors in order to reduce potential confounding: age group (0-1 year, 2-5, 6-11, 12-17), gender, health status rating (Excellent/Very Good vs. Good, Fair & Poor), insurance status (private/public vs. none) and number of children in the family.

Results

Table 1 summarizes the characteristics of the family members in both the two-parent and single parent families in the sample. The mothers and children in the two samples differ substantially in terms of their demographics, insurance status, and parent rated health. Interestingly, despite the lower maternal education and family income levels of the mother-only families, medical expenses are slightly lower among the mother-only families. Children's average annual medical expenditures range from \$1,100/year in single mother families to \$1,249 in two-parent families.

Rates of moderate to high use of medical resources

Table 2 provides the distribution of the RUB levels among parents in the two-parent and mother-only families. Fathers are least likely and single mothers are most likely to have moderate to high medical resource use, with only 26.43% of fathers being in the moderate/high use group, 46.96% of mothers in two-parent families being in this group, and 53.47% of single mothers using moderate to high levels of medical care. Conversely, fathers are most likely to use no care (18.91%) while single mothers are least likely to be in this category (7.1%).

Tables 3a and 3b summarize the U.S. population weighted percentage of children whose parents have each of the five priority conditions and who have a moderate to high RUB level but not the specific disorder. The rates of children affected by each parental disorder are lower than might be expected based on prevalence rates among adults in national samples, but parents with children under 18 are significantly younger than U.S. adult population samples. The highest rate is seen for 'Joint Pain,' i.e. disorders that cause joint pain including a number of specific disorders as described above. In two-parent families 8.25% of children have a mother and 6.40% of children have a father with one of the pain-related disorders, indicating that close to 14% of children in two parent families are affected by a parent with a pain-related joint disorder, when the other parent does not have any of the five conditions and does not have a moderate/high level of medical care use. Single mothers have disorder rates that are two-three times higher than those of married mothers, with for example, 27.55% of children in mother-headed families

having a mother who reports a disorder that causes joint pain. The lowest rate is for depression, which is actually more common for women in this age group than diabetes and hypertension, with depression prevalence of 13% in women (Kessler & Wang, 2008), with diabetes and hypertension much less prevalent in this age group (Cohen & Krauss, 2003). This discrepancy is likely explained by two facts. First, as many as half the cases of depression are undetected, and those who are aware they have depression are much less likely to report it due to the stigma associated with the disorder (Miranda & Cooper, 2004).

Medical Expenditures for children when parents have a disorder or high use of medical care
Tables 4a and 4b describe the average annual per child excess expenditures in two-parent and single mother families associated with having a mother or a father with a specific disorder, and possibly a moderate to high use of medical care, when the other parent (in two-parent families) does not have that disorder or use a moderate-high level of medical care. The “excess” expenditure is the amount spent per child that exceeds the average for a child in a comparable family in which both parents are ‘healthy.’ ‘Healthy’ parents are those who do not have any of the five disorders and are not in a moderate-high RUB category, meaning that they do not have other disorders associated with a moderate-high use of medical resources. Of course, the amount spent by these children varies based on their own age, gender, and health status, as well as their insurance status.

Tables 4a shows that in two-parent families, depression and diabetes in mothers is associated with the highest level of excess medical care/expenditures for children, \$821 and \$740 higher, on average, than the amount typically spent by children of healthy parents. In contrast, when fathers have either of these disorders children’s expenditures are not significantly different from the level expended by children of healthy parents. Only when asthma affects fathers are the expenditures for children significantly increased. For that condition, having either a mother or father with asthma is associated with approximately \$300 of excess expenditures for children. All analyses assume the parent without the chronic condition is ‘healthy.’

The lower half of Table 4a shows the increased expenditures associated with either the mother or father having a moderate to high level of medical resource care use, but not having the disorder listed in each column. Several points are noteworthy. First, the amount of excess expenditures by children is significantly higher than that of children of healthy parents for both mothers and fathers. The amount of excess expenditures is much more similar for each group, which do not actually differ much in their composition as it is the frequent users who do not have a particular disorder. The most salient point here is that when parents have a disorder and other characteristics associated with a moderate-high level of medical care, children’s expenditures increase quite significantly and to fairly similar levels. This is presumably because the family and children are experiencing very similar levels of burden.

Among families headed by a single mother (Table 4b), when mothers have a condition the pattern of significantly different expenditures for children is similar to that of children of mothers in two-parent families. The range of excess expenditures across the five conditions is again lowest for hypertension (\$385) and highest for depression (\$1,016, and marginally significant), as compared to the \$173-\$821 range of excess expenditures for children with mothers with different conditions in two parent families. Expenditures by children when their mother has

moderate-high medical care use but the absence of each disorder are several hundred dollars higher than those of similar children of healthy single mothers.

Using data from the regression models to construct a general example, a healthy 5 year old in a two-parent family has average annual medical expenditures of about \$600/year. When one parent has a medical condition, the child's expenditures would be about \$900/year. A 5 year old in fair/poor health, according to the parent, spends approximately \$1,250/year, but if one parent is ill, average medical expenditures increase to \$1,550/year. The expenditures for healthy 5-year-olds are among the lowest for any age, as their routine care is minimally expensive, they would not use much acute care and have no chronic medical care use. As children get older, their rates of injuries and resultant medical care increases, as do their expenditures.

Discussion

This study demonstrates in a nationally representative sample that the presence of a chronic condition in the mother (in either single parent or two parent families) significantly and, in many cases, dramatically, increases the average annual health care expenditures of each child in the family. Fathers' poor health is also sometimes associated with higher expenditures, but poor health for mothers is associated with much larger increase in expenditures for children.

The results supported the hypothesis that the severity and burden typically associated with each of these disorders would be reflected in different levels of medical care used by their children (the excess expenditures). Hypertension in two-parent families provides a good example. Treating hypertension is not particularly complicated, no pain or chronic distress is associated with it, and it does not interfere with participating in work, parenting, or other activities. Among people younger than 55 it is not likely to co-occur with the chronic and burdensome disorders that often develop later. As predicted for low burden disorders, it is not associated with significantly higher expenditures for children in two-parent families, whether the mother or father has hypertension. All other maternal disorders are associated with significantly higher child expenditures in these families. It is important to note that mothers' hypertension is associated with significantly higher expenditures for children in single mother families.

Although increases in expenditures by children are not dramatically different for children in two-parent or single parent families when the mother has a chronic condition or frequent care use, it is important to recall that single mothers are significantly, and for joint pain and asthma, dramatically more likely to have a chronic condition. Additionally, moderate-high use of medical care is almost twice as common among the single mothers.

This study uses the data on children's expenditures for medical care as a proxy for the burden shared by all family members when a parent has a chronic condition and/or a moderate to high use of medical care. The conceptual basis for expecting children's medical care expenditures to increase when parents have a burdensome condition rests on two hypothesized mechanisms, a family stress effect and a health services familiarity effect. Chronic conditions and moderate to high use of medical care are associated with concern and worry, certainly by the parents and possibly by children in the family. Moreover, illness and frequent health care use disrupts parental and family routines and may cause impairments and activity limitations, including

reduced involvement with children. These direct effects are stressful and are likely to be experienced by virtually all families when parents have a disorder that demands a moderate-high use of medical resources. This stress occurs at the family level as well as in the life of the ill parent, creating demands on the children that tax their coping resources. The chronic stress associated with parents' serious disorders is thus likely to be associated with increased physical, emotional, and behavior problems among children that require medical care.

The second hypothesized pathway is that parents with chronic conditions have much better knowledge of the medical care system which makes it easier to access the system for their children. Moreover, those who frequently use health care for themselves are almost certain to have the resources, including insurance, that allow their children to access care if it is deemed necessary. No data are available to directly test these hypothesized pathways. Further research is needed to more fully explore them.

To return to the discrepancy in children's expenditures associated with hypertension when mothers have it in two-parent or single mother families, the effect in single parent families may be experienced more directly by children as they may be more aware of their mother's health problems and may also have more concern about the well-being of their only parent. Alternatively, hypertension among single mothers may be more likely to co-occur with other more burdensome disorders with more powerful impacts at the family level.

Several considerations are important when interpreting these results. First, the data are based on respondents' reports of parents' disorders and expenditures for children's health care and are subject to reporting biases. The frequent assessments points of the MEPS help address these biases, especially recall bias, by not requiring respondents to remember for longer than approximately six months. The large sample sizes also help address the problems associated with outliers.

In sum, the results of this study show that when parents have a chronic condition that are burdensome such as diabetes, asthma, conditions that cause joint pain, and depression, their children are likely to use much more medical care than children of the same age, gender, health status, and health insurance, whose parents are healthy. Although the associated expenditures do not appear to be much different for children in single mother families, the rates of disorder and frequent-high levels of medical care use are generally twice as common in these families. The expenditures associated with parents' illnesses suggests that medical and nursing providers who care for parents and children should take this into consideration in planning the care of the parent with a chronic condition and caring for children whose parents have such conditions. There is a predictable family level effect of chronic parental conditions. This has significant health policy and practice implications. Providers who are aware of this relationship and communicate with parents about the knowledge and planning their spouse and children may need to effectively cope with the transient and long-term accommodations to the illness may help prevent or reduce the need for additional medical care for their children. This has quality of life implications for the whole family, as well as economic implications for the health system.

Table 1: Characteristics of the Population (2000-2005)

	Nuclear Families			Single Mother Families	
	Fathers (n=16,526) (% or Mean and SE)	Mothers (n=16,526) (% or Mean and SE)	Children (n=33,554) (% or Mean and SE)	Mothers (n= 7,492) (% or Mean and SE)	Children (n= 13,730) (% or Mean and SE)
Race/Ethnicity					
White	85.42	85.58	85.30	66.11	60.87
Black	7.97	7.10	7.87	29.07	33.09
Asian/Pacific Islander	5.41	5.87	4.66	2.52	2.19
Other	1.19	1.45	2.17	2.30	3.85
Hispanic	16.31	16.13	17.23	17.02	19.53
Age	40.20 (0.11)	37.70 (0.10)	8.56 (0.06)	35.34 (0.19)	8.90 (0.83)
Education					
Less than HS	15.54	13.76	-	22.20	-
HS	30.96	28.47	-	37.04	-
More than HS	53.50	57.77	-	40.76	-
Insurance					
Any private	83.38	82.74	77.25	57.90	44.96
Public only	4.17	5.90	15.89	26.92	47.67
Uninsured	12.46	11.36	6.86	15.18	7.37
Health is rated Fair or poor	6.95	7.67	1.58	13.70	3.32
Total medical expenses	1,670 (58.39)	2,979 (70.34)	1,249 (38.25)	2,931 (94.12)	1,104 (63.67)
Employed	96.42	75.79	-	84.66	-
Work days lost (for those employed)	3.39 (0.18)	5.43 (0.21)	-	6.61 (0.33)	-
Male			51.28		50.50
Avg income (2005\$)	49,377 (0.06)	30,845 (0.04)	-	28,350 (592.96)	-
Family Income	80,679 (0.09)			28,350 (592.96)	

Table 2. Percentage of Parents in Two-Parent Families and Mother-Only Families at each RUB Level – (MEPS data)

RUB Level		Two-Parent Families				Single Mother Families	
		Fathers		Mothers		Mothers	
		Percent	Cum Percent	Percent	Cum Percent	Percent	Cum Percent
No Medical Care Use	0	18.91	18.91	8.21	8.21	7.10	7.10
Low RUB	1	24.75	43.66	19.22	27.44	15.86	22.96
	2	29.91	73.57	25.61	53.05	23.57	46.53
Moderate/ High RUB	3	24.75	98.32	43.31	96.35	48.30	94.83
	4	1.53	99.85	3.45	99.80	4.72	99.55
	5	0.15	100.00	0.20	100	0.45	100

RUB = Resource Utilization Band

Table 3a. Percent of Children Whose Mother or a Father Has Each Condition and Percent Whose Mother/Father Does Not Have any of the Five Conditions but Has a Moderate-High Use of Medical Resources in Married, Two-Parent Families (N Households =16,526; N Children=33,554).

Percent of Children Whose Mothers Have the Condition					Percent Mothers Without Condition
Diabetes	Asthma	Hypertension	Joint Pain	Depression	High/Moderate RUB (n=4,890)
1.28	5.01	5.06	8.25	0.36	14.40
Percent of Children Whose Fathers Have the Condition					Percent Fathers Without Condition
Diabetes	Asthma	Hypertension	Joint Pain	Depression	High/Moderate RUB (n=1,074)
1.56	2.45	6.19	6.40	1.49	3.43

Table 3b. Weighted Percent of Children with Mothers who Have Each Condition in Single Mother Families (N Households =7,492; N Children=13,730)

Percent of Children Whose Mothers Have the Condition					Percent Without Condition	
Diabetes (n=563)	Asthma (n=1,863)	Hypertension (n=1,718)	Joint Pain (n=3,654)	Depression (n=196)	High/Moderate RUB (n=3293)	No Use/Low RUB (n=4,730)
3.26	13.40	12.02	27.55	1.49	25.26	32.99

Table 4a: Excess Average Annual Expenditures per Child in Families with a Mother or Father with a Specific Condition or Moderate/High RUB; all Healthy Parents as Reference Group. Married two-Parent Families. (N Households =16,526; N Children=33,554).

N=15,223

	Diabetes (n=14,509)		Asthma (n=14,484)		Hypertension (n=14,417)		Joint Pain (13,727)		Depression	
	Coefficient	P Value	Coefficient	P value	Coefficient	P value	Coefficient	P Value	Coefficient	P value
M1 Mother has condition (and possibly a high RUB) , father has neither	740.30	0.054	301.18	0.001	173.12	0.110	522.21	0.000	820.52	0.012
D1 Father has condition (and possibly a high RUB), mother has neither	-121.48	0.452	316.46	0.039	238.77	0.181	147.72	0.051	41.08	0.846
Moderate to High Medical Resource Utilization Only										
M2 Mother has high RUB only, father has neither	438.76	0.000	441.92	0.000	423.00	0.000	450.61	0.000	448.17	0.000
D2 Father has high RUB only, mother has neither	341.57	0.004	325.32	0.010	198.74	0.017	299.57	0.002	328.74	0.003

- Reference group is children whose parents are ‘healthy,’ that is, do not have any of the 5 priority conditions or a high RUB
- One parent has the condition and possibly a moderate/high resource use (RUB) and the other has neither the condition nor a high RUB vs parents with none of the five conditions nor a high RUB.
- Coefficient is children’s annual medical expenditures in excess of expenditures by children with mothers who are healthy (do not have any of the five conditions or a moderate/high RUB). 2005 \$.
- M1 and D1 (or M2 and D2) are independent variables in the model, along with age, gender, child health status, insurance status of child and parent.

Table 4b – Excess Average Annual Medical Expenditures per Child in Families with a Mother with a Specific Condition or a Moderate/High Resource Utilization Level; all Healthy Single Mothers as Reference Group. Single Mother Households (N Households =7,492; N Children=13,730).

	Diabetes		Asthma		Hypertension		Joint Pain		Depression	
	Coefficient	P value	Coefficient	P Value	Coefficient	P value	Coefficient	P Value	Coefficient	P value
M1 Mother has condition (and possibly a high RUB)	606.24	0.004	444.76	0.001	385.40	0.015	615.72	0.000	1015.99	0.063
M2 Mother has high RUB only	362.92	0.000	328.43	0.711	337.19	0.001	233.08	0.037	371.22	0.000

-Coefficient is children's annual medical expenditures in excess of expenditures by children with mothers who are healthy (do not have any of the five conditions or a moderate/high RUB). 2005 \$.

-M1 and M2 are independent variables in the model, along with age, gender, child health status, insurance status of child and parent.

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