



Results of the National Study of Care Coordination Measurement in Medical Homes

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CATCH and Medical Home

National Conference, July 2004

Definition of Medical Home

- Care that is:
 - Accessible
 - Family-centered
 - Comprehensive
 - Continuous
 - Coordinated
 - Compassionate
 - Culturally-effective
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Definition of Medical Home

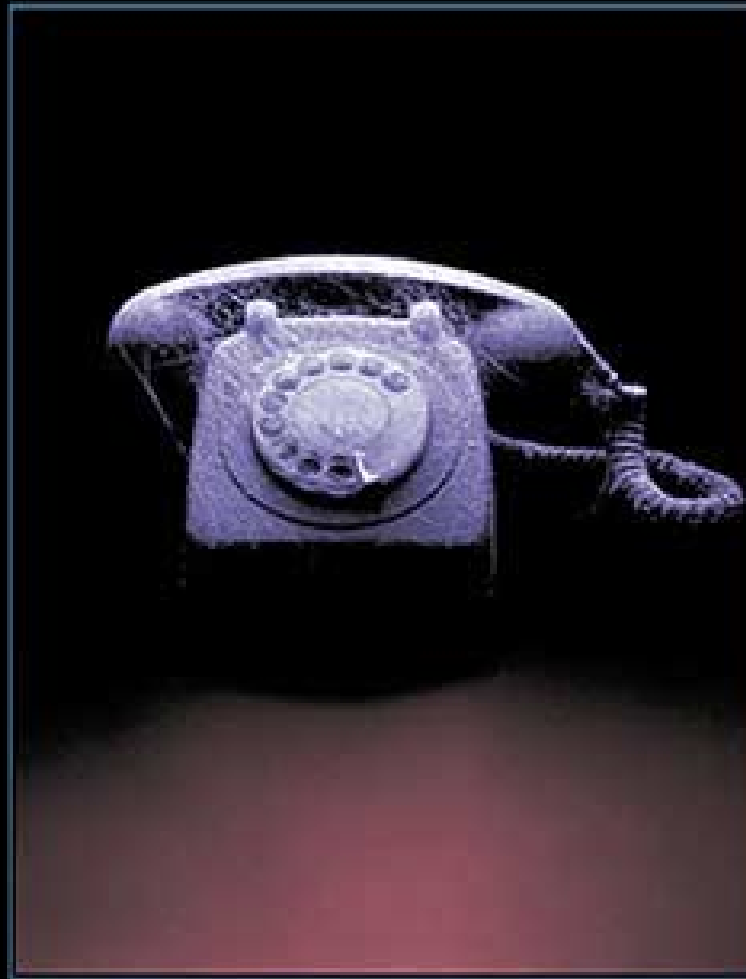
- And for which the primary care physician shares responsibility.

AAP, July, 2002

Care Coordination

Process of developing and implementing specific care plan by team of multiple service providers accessing resources in organized fashion

AAP, 1999



APATHY

IF WE DON'T TAKE CARE OF THE CUSTOMER,
MAYBE THEY'LL STOP BUGGING US.

www.despair.com

Barriers to Care Coordination

AAP Periodic Survey #44
August 2000

	Always	Never	Barriers
Primary Care Coordinator	71%	5%	1. Time
Discuss non-medical needs	41%	14%	2. Staff
Assist with discharge plan	24%	41%	
Contact with school	24%	16%	1. Time 2. Communic.
Post-specialist appointment	19%	28%	1. Time 2. Reimburs.

“If you can’t measure it,
you can’t improve it!”

Corollary

“If you can’t describe it, you can’t measure it!”

Providing a Medical Home:
The Cost of Care Coordination Services in a Community-
Based, General Pediatric Practice

Pediatrics, Supplement, May, 2004

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National Study of Care Coordination Measurement in Medical Homes

- MCHB Funding
 - Six Community General Pediatric Practices
 - VT, PA, WI, NC, CA, VA
 - Stratified by SES, CC Provision Model
 - Prospective Measurement of CC
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Goals of National Study

- To describe and measure precise activities which constitute non-reimbursable care coordination in 6 community-based general pediatric practices
 - To measure the time spent and personnel utilized in performing these CC activities using the CCMT
 - To determine the actual cost of implementing CC under the medical home approach in these six different practices
 - To report on CC strategies used by these medical home practices
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Methodology

- Sample: Practices were recruited through a public announcement. 25 inquiries were received and 20 practices completed a letter of intent
 - Final Site Selection: Six community-based general pediatric practices were selected; representing a range of practices that differed with regard to:
 - Size
 - Geographic Location
 - Diversity of Patient Population
 - Care Coordination Service Delivery Model
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Measurement Instrument - CCMT

- The Care Coordination Measurement Tool (CCMT) stratified each patient into one of four levels; Non-CSHCN or CSHCN with or without complicating family or social problems. The tool documented:
 - Time spent
 - Focus of Encounter
 - Care Coordination Need
 - Activities Performed
 - Outcome of the CC Encounter
- Only care coordination services not eligible for reimbursement were measured

Practice Descriptor Questionnaire

- This questionnaire was designed to capture the characteristics of each practice, including:
 - Staff composition
 - Payer mix
 - Patient population
 - Demographics
 - Components of the medical home which relate to the provision of care coordination
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Medical Home Care Coordination Measurement Tool[©]

Site Code: ____

Form# ____ of ____

Patient Name	Date	Patient Study Code And Age	Patient Level	Focus	Care Coordination Needs	Activity Code(s)	Outcome(s)		Time Spent*							Staff	Clinical Comp.	Initials
							Prevented	Occurred	1	2	3	4	5	6	7			

<u>Patient Level</u>	<u>Care Coordination Needs</u> (choose all that apply)	<u>Activity to Fulfill Needs</u> (choose all that apply)	<u>Outcome(s)</u>
<p><u>Level</u> <u>Description</u></p> <p>I Non-CSHCN, Without Complicating Family or Social Issues</p> <p>II Non-CSHCN, With Complicating Family or Social Issues</p> <p>III CSHCN, Without Complicating Family or Social Issues</p> <p>IV CSHCN, With Complicating Family or Social Issues</p> <p><u>Focus of Encounter</u> (choose ONLY ONE)</p> <p>1. Mental Health 2. Developmental / Behavioral 3. Educational / School 4. Legal / Judicial 5. Growth / Nutrition 6. Referral Management 7. Clinical / Medical Management 8. Social Services (ie. housing, food, clothing, ins., trans.)</p> <p>Rev-03/20/03</p>	<p><u>Time Spent</u></p> <p>1 – less than 5 minutes 2 – 5 to 9 minutes 3 – 10 to 19 minutes 4 – 20 to 29 minutes 5 – 30 to 39 minutes 6 – 40 to 49 minutes 7 – 50 minutes and greater* (*Please NOTE actual minutes if greater than 50)</p> <p><u>Staff</u> RN, LPN, MD, NP, PA, MA, SW, Cler</p> <p><u>Clinical Competence</u> C= Clinical Competence required NC= Clinical Competence not Required</p>	<p><u>Time Spent</u></p> <p>1 – less than 5 minutes 2 – 5 to 9 minutes 3 – 10 to 19 minutes 4 – 20 to 29 minutes 5 – 30 to 39 minutes 6 – 40 to 49 minutes 7 – 50 minutes and greater* (*Please NOTE actual minutes if greater than 50)</p> <p><u>Staff</u> RN, LPN, MD, NP, PA, MA, SW, Cler</p> <p><u>Clinical Competence</u> C= Clinical Competence required NC= Clinical Competence not Required</p>	<p>1. As a result of this care coordination activity, the following was PREVENTED (choose ONLY ONE, if applicable):</p> <p>1a. ER visit 1b. Subspecialist visit 1c. Hospitalization 1d. Visit to Pediatric Office/Clinic 1e. Lab / X-ray 1f. Specialized Therapies (PT, OT, etc)</p> <p>2. As a result of this care coordination activity, the following OCCURRED (choose all that apply):</p> <p>2a. Advised family/patient on home management 2b. Referral to ER 2c. Referral to subspecialist 2d. Referral for hospitalization 2e. Referral for pediatric sick office visit 2f. Referral to lab / X-ray 2g. Referral to community agency 2h. Referral to Specialized Therapies 2i. Ordered prescription, equipment, diapers, taxi, etc. 2j. Reconciled discrepancies (including missing data, miscommunications, compliance issues) 2k. Reviewed labs, specialist reports, IEP's, etc. 2l. Advocacy for family/patient 2m. Met family's immediate needs, questions, concerns 2n. Unmet needs (PLEASE SPECIFY) 2o. Not Applicable / Don't Know 2p. Outcome Pending</p> <p style="text-align: right;">R. Antonelli, MD, FAAP Supported by grant HRSA-02-MCHB-25A-AB</p>

National Study of Care Coordination Measurement in Medical Homes

Practice Characteristics

	A	B	C	D	E	F
Size	Small Group - 2 MD's	Lg Group - 9 MD's	Mid-Size - 4 MD's	Mid-Size - 5 MD's	Lg. Group - 11 MD's	Lg. Group - 11 MD's
Reporting MD's	2 MD's	1 MD	1MD	4 MD's	3.5 MD's	1 MD
Region of USA	New England	North East	Mid-West	West	South East	South
Urban/Rural	50% Rural 50% Suburban	100% Suburban	20% Suburban 80% Urban	100% Rural	20% Rural 65% Suburban 15% Urban	100% Rural
Ethnicity	Primarily Caucasian	90% Caucasian 5% African Amer 4% Hispanic 1% Asian	40% Caucasian 40% African Amer 10% Hispanic 10% Asian	58% Caucasian 1% African Amer 40% Hispanic 1% Asian	65% Caucasian 25% African Amer 5% Hispanic 5% Asian	45% Caucasian 35% African Amer 20% Hispanic
SES	Middle	Low to Mid	Low to Mid	Mixed	Low to Mid	Mixed
Payer Mix	18% Medicaid 82% Commercial	5% Medicaid 1% Uninsured 94% Commercial	21% Medicaid 6% SSI 73% Commercial	33% Medicaid 3% Uninsured 1% SSI 63% Commercial	12% Medicaid 5% Uninsured 5% SSI 78% Commercial	30% Medicaid 15% Uninsured 55% Commercial
CC Model	Ad Hoc	PT RN specified DX	Ad Hoc	FT SW and MA's	Parent Advoc & MD's	RN for Medicaid & MD's
# Data Collectors	8	28	4	22	17	13

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Calculation of Cost:

In order to obtain the ‘cost’ of the measured CC encounter time, this study used the Occupational Employment and Wages data for 2002 gathered by the U.S. Department of Labor, Bureau of Labor Statistics (BLS) (www.bls.gov/oes/2002/.htm). It is the most recent, large, national sample and contains all of the staff types measured in this study. The following chart lists the occupational code and hourly wage used for cost calculation in this study.

<u>Staff Type</u>	<u>BLS Code</u>	<u>BLS Description of Staff Position</u>	<u>Hourly Mean Wage</u>
MD	29-1065	Pediatricians, General – Physician Office	\$71.47
NP	29-1071	Physician Assistants - Physician Office	\$30.50
RN	29-1111	Registered Nurses – Physician Office	\$23.66
LPN	29-2061	Licensed Practical Nurses – Physician Office	\$14.44
Clerical	43-6013	Medical Secretaries – Physician Office	\$12.73
MA	31-9092	Medical Assistants – Physician Office	\$12.02
SW	21-1022	Medical Social Workers	\$18.71

For the Parent Advocate, actual wage data was used, as there was not a comparable BLS position.

PA “Medical Home Plus Resource Director” or “Parent Advocate” \$27.50 / hr actual wage

Bureau of Labor Statistics data for Employer costs for employee compensation determined the total benefits percentage for 2003 to be 28% (<http://data.bls.gov/cgi-bin/surveymost>).

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Aggregate Data

Study Period - 3/5/03 to 10/3/03

3855 Care Coordination (CC) Encounters

3172 Patients

50,108 CC Minutes

CC Data recorded for 220 office days (range of 31 - 45 days per practice site)

92 Data Collectors - 12.5 MDs also RNs, LPNs, NPs, Clerical, MAs

Parent Advocate (PA) and Social Worker (SW)

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Aggregate Data – Numbers of CC Encounters and Time Spent by Staff Type

Staff Type*	# Enc	% Enc	# Minutes	% Total Time
MD	634	16%	8999.5	18%
NP	70	2%	722.5	2%
RN	1243	32%	16685	33%
LPN	221	6%	2001	4%
Clerical	1229	32%	12606	25%
MA	279	7%	4018.5	8%
SW	141	4%	3596	7%
PA	38	1%	1479	3%

*The mix of staff type varied at each site. Sites with a dedicated CC had a substantial amount of the CC time provided by that staff member.

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Aggregate Data –

Patient Level	# Enc	# Patients	# CC Minutes	Min/Enc
Level I	1932 (50%)	1792 (56%)	18161 (36%)	9.4
Level II	559 (15%)	461 (14%)	9862 (20%)	17.6
Level III	813 (21%)	617 (20%)	11446 (23%)	14.1
Level IV	551 (14%)	302 (10%)	10639 (21%)	19.3

CSHCN (Levels III and IV) = 30% of the study patients
= 35% of the CC Encounters
= 44% of CC Minutes

50% of the CC Encounters involved Non-CSHCN with no social stressor, while 50% involved CSHCN and Non-CSHCN with Social Stressors.

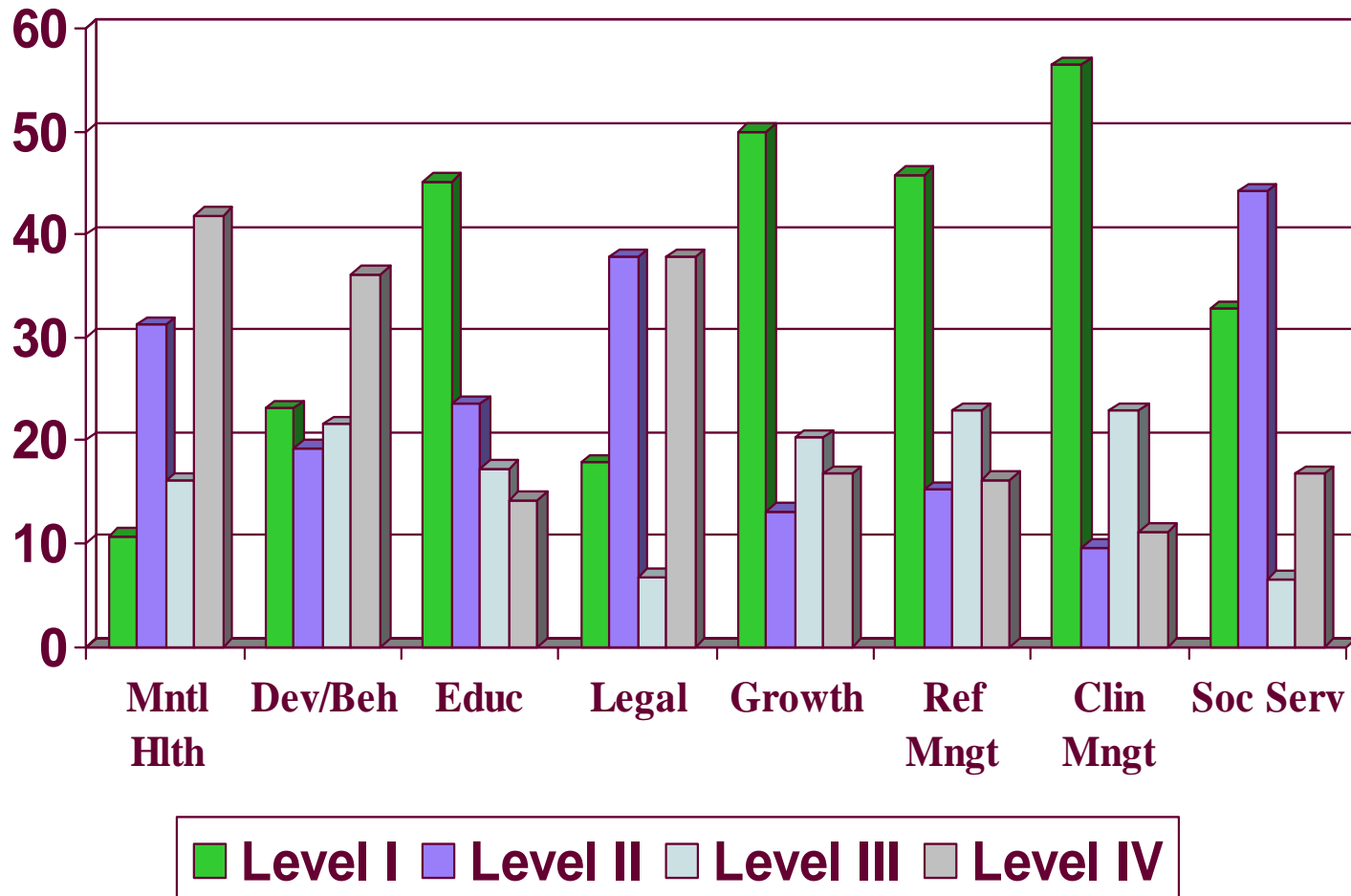
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Focus of Encounter – Aggregate Data –

<u>Primary Focus</u>	<u>% Encounters</u>
Clinical / Medical Management	67%
Referral Management	13%
Social Services (ie. Housing, food, clothing...)	7%
Educational / School	4%
Developmental / Behavioral	3%
Mental Health	3%
Growth / Nutrition	2%
Legal / Judicial	1%

Aggregate Data

Percent Distribution of Focus of Encounter by Patient Level



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Care Coordination Needs – Aggregate Data –

There were 4942 Total Needs identified for 3855 CC Encounters.

<u>Need</u>	<u># Identified (% all Needs)</u>	<u>% Encounters with CC Need</u>
Make Appointments	633 (13%)	16.4%
Referrals	645 (13%)	16.7%
Orders	1150 (23%)	29.8%
Reconcile Discrepancies	834 (17%)	21.6%
Coordination Services	1680 (34%)	43.6%

Total Number of Needs Identified on the CCMT within Each CC Encounter

<u># Needs / Encounter</u>	<u># Encounters</u>	<u>% Total</u>
1	2951	76%
2	717	19%
3	165	4%
4	21	<1%
5	1	<1%

Time Spent – Aggregate Data time spent per CC encounter –

<u>Time Range in Minutes</u>	<u># CC Encounters</u>	<u>% Total CC Encounters</u>
Less Than 5 Minutes	340	8.8%
5 – 9	1862	48.3%
10 – 19	1027	26.6%
20 – 29	392	10.3%
30 – 39	101	2.6%
40 – 49	63	1.6%
Greater or Equal to 50 Minutes	70	1.8%

75% of all CC Encounters fell within the 5-19 minute range. Overall Mean time per CC Encounter was 13 Minutes. In the category of Greater or Equal (GE) to 50 Minutes, staff were instructed to specify the exact number of minutes. These values are as follows:

<u>If GE 50, # Actual Minutes</u>	<u># CC Encounters</u>
50	1
55	1
60	18
65	6
70	5
75	10
80	10
85	1
90	8
95	2
100	1
110	4
120	3

Activity to Fulfill Needs – Aggregate Data –

There were 7968 recorded activities for 3855 CC Encounters.

<u>Activity</u>	<u># Recorded</u>	<u>% Total Activities</u>
Telephone	4639	58.3%
Confer with PCP	1266	15.9%
Chart Review	609	7.6%
Forms Processing	609	7.6%
E-Mail	260	3.3%
Meetings/Case Conferences	224	2.8%
Letters / Reports	215	2.7%
Pt. Research / Care Plans	146	1.8%

Telephone Activities – Broken down by sub-categories

Parent/Family	39.4%
Patient	19.6%
Pharmacy	18.4%
Hospital / Clinic	7%
Consultant	5%
Agency	4%
School	2.8%
Payer	2.5%
Home Care/Voc Tr.	1.3%

Outcome Prevented – Aggregate Data

The CCMT allows only one outcome prevented per encounter. 1232 (32%) of total 3855 CC encounters had something prevented.

Of the 1232 CC Encounters where prevention was noted as an outcome:

<u>Outcome Prevented</u>	<u># CC Encounters</u>	<u>Percentage</u>
Visit to Pediatric Office / Clinic	714	58%
Emergency Department Visit	323	26%
Subspecialist Visit	124	10%
Hospitalization	47	4%
Lab / X-Ray	16	1%
Specialized Therapies	8	1%

62% of RN CC Encounters prevented something.

33% of MD CC Encounters prevented something.

RNs are responsible for coding 81% of the Emergency Department preventions and 63% of the sick office visit preventions.

Outcomes Occurred – Aggregate Data

There were 6507 recorded outcomes across all sites.

<u>Outcome Occurred</u>	<u># Outcomes Coded</u>	<u>% Outcomes</u>	<u>% Encounters</u>
Referral	1428	22%	37%
Met Family Needs	1290	19.8%	33%
Orders	1101	16.9%	29%
Advise Home Mgmt.	876	13.5%	23%
Reconcile Discrepancies	618	9.5%	16%
Advocacy for Family	525	8.1%	14%
Outcome Pending	382	5.8%	10%
Reviewed Labs, etc.	274	4.2%	7%
Unmet Needs	13	.2%	<1%

Referrals – Broken Down into Sub-Categories

Subspecialist	548	38%
Pediatric SOV	425	30%
Lab / X-Ray	137	10%
Community Agency	124	8%
Specialized Ther.	120	8%
Emergency Room	37	3%
Hospital	37	3%

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Cost Per Care Coordination Encounter

<u>Practice Site</u>	<u>% MD CC Time</u>	<u>% RN CC Time</u>	<u>Cost Per CC Encounter</u>	<u>Mean Time Per CC Enc.</u>
A	20%	57%	\$7.52	11 minutes
B	6%	31%	\$4.39	10 minutes
C	13%	87%	\$12.00	19 minutes
D	7%	2%	\$5.76	14 minutes
E	41%	34%	\$12.86	14 minutes
F	16%	46%	\$7.76	13 minutes
Aggregate	18%	33%	\$7.78	13 minutes

Practice A – Cost (salary and benefits) of CC Time

Staff Type	# Enc	% Enc	# Minutes	% Total Time	Cost for 39 days
MD	84	14%	1333.5	20%	\$ 2,030.89
NP	14	2%	111.5	2%	\$ 74.18
RN	314	52%	3950	57%	\$ 1,992.74
LPN	139	23%	748	11%	\$ 231.04
Clerical	51	9%	722	10%	\$ 195.53
					<u>\$ 4,524.38 Total</u>
		\$ 30,163	Per Year		
		\$ 15,081	Per FTE MD per year		

Practice D – Cost (salary and benefits) of CC Time

Staff Type	# Enc	% Enc	# Minutes	% Total Time	Cost for 35 days
MD	108	11%	991	7%	\$ 1,509.45
NP	20	2%	179	1%	\$ 117.12
RN	26	3%	322.5	2%	\$ 163.53
LPN	7	1%	81.5	1%	\$ 25.88
Clerical	374	39%	4481	33%	\$ 1,217.19
MA	279	29%	4018.5	30%	\$ 1,030.84
LSW	141	15%	3596	26%	\$ 1,436.93
					<u>\$ 5,500.94 Total</u>
		\$ 40,864	Per Year		
		\$ 10,216	Per FTE MD per year		

Practice E – Cost (salary and benefits) of CC Time

Staff Type	# Enc	% Enc	# Minutes	% Total Time	Cost for 45 days
MD	240	29%	4790	41%	\$ 7,300.24
NP	12	1%	121.5	1%	\$ 78.08
RN	480	58%	4052.5	34%	\$ 2,044.22
LPN	0	0%	0	0%	\$ -
Clerical	57	7%	1276	11%	\$ 347.07
Parent Adv.	38	5%	1479	13%	\$ 865.92
					<u>\$ 10,635.53 Total</u>
		\$ 61,450	Per Year		
		\$ 17,557	Per FTE MD per year		

Implications for Policy or Practice

- To modify and improve physician behavior, we must re-examine the traditional, office-based interaction
 - Change the view of the service unit for primary care to include CC
 - The medical home based service unit must integrate the care offered in the face-to-face, office-based encounter with a mechanism for providing supports connecting CSHCN with community resources
 - This is the essence of CC in a medical home model
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Opportunities for Future Work

- Extend use of CCMT to other primary care models
 - Apply CC measurement techniques to subspecialist activities
 - Apply methodologies to document CC performed by families of CYSHCN
 - Develop QI techniques at practice, family, community, and system levels for CC
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