AUGUST 17, 2018

Achieving the Triple Aim for Children with Medical Complexity

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Local Problem: Children With Medical Complexity (CMC)

	National Level			Children's Hospital Colorado			
Medicald	# of children	% of children	percent of spend	# of Children	% of Children	Total Spend	
Healthy/ episodic/ chronic (CRG 0-5a)	31 million	94%	60%	596,700	94%	Unknown	
Medically complex (CRG 5b-9)	2 million	6%	40%	38,300	6%	\$649.7M	
CARE Enrolled Population				~ 1600	0.22%	\$73.6M	
Total	33 million	100%	100%	635,000	100%	Unknown	





Note: "Percent of spend" includes <1 year olds with <6 months continuous enrollment. Source: Extrapolated from Truven Marketscan Medicaid claims dataset, 2011.

The CARE Award: A Grant Funded Initiative

Anschutz Medical Campus

Coordinating All Resources Effectively

lere, it's different.



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Patient Registry

- All enrolled children
- Integrated within EHR
- Accessible and transparent

Dynamic Care Team

- · Accessible by parents and PCP
- Integrated
- · Easily revised

Access Plan

- Who and when to call for what symptoms
- Contact info for all team members.

Shared Care Plan

- Patient and family's specific needs
- Short and long term goals
- "Who am I??"

The Change Package

Goals

- Integrated
- Accessible
- Transparent







Baseline Data



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Children's Hospital Colorado

Family Experience

• CAHPS- Patient Access Module (Consumer Assessment of Healthcare Providers and Systems)

Utilization

- ED visits
- Hospitalization (Inpatient days)

Direct Cost

Total cost of care

Measure	n	Baseline Jan-Dec 2014
CAHPS Patient Access Module Score	N=111	69.3
IP Days 1000pts/month	N=1467	297 days
ED visits 1000pts/month	N=1467	80 visits
Total Direct Cost (aggregate population)	N=1481	\$23,405,724 (\$15,804 per pt)

Note: N number for CAHPS reflect number of enrolled families able to be reached by phone to successfully complete both pre and post survey.



Population Defined

- 4 tiers
- Both Medical and Social complexity
- Interventions escalate with complexity
- Change package only for tiers 3 and 4







Health Information Technology Implementation

Initial Gap Analysis

What we needed

- Patient Registry and metrics
- Complexity Score
 - 3M CRG
 - SDOH
 - Homecare Needs
 - ED visits
- Change Package Elements:
 - Care Team
 - Access Plan
 - Care Plan
- □ And one place to store it all...

What we had

- Patient Registry and metrics
- Complexity Score
 - 🛛 3M CRG
 - Social Determinants
 - ✓Homecare Needs
 - ✓ED visits

⊠Change package elements:

- ✓ Care Team
- ☑ Access Plan
- 🛛 Care Plan

⊠And one place to store it all





Clinical Risk Grouper Implementation







Social Determinants of Health Integration

- 13 domain Psychosocial Screen
- Standardized screens also incorporated
- Complexity increases for positive screens

Standard Screening Tools Included

- ASQ (Ask Suicide-Screening Questions)
- CRAFFT (Screening tool for Adolescent Substance Abuse)
- PHQ-9 (Patient Health Questionnaire-9)
- EPDS (Edinburgh Postnatal Depression Scale





Psychosocial Screen: Social Needs Domains

Finding a Medical Home

Barriers to Keeping Appointments

Barriers to Purchasing Medications

Financial Resource Strain

Food Insecurity

Access to Benefits

Education

Housing Instability

Guardianship

Social Isolation

Substance Abuse in Caregiver

Family Violence

Depression/Anxiety in Caregiver

Social Determinants of Health: Clinical Processes





completes independently to promote honesty



Provider reviews with family during visit



MA enters clinical information into the EHR



CDS tools alert additional clinicians once information entered by MA



Social Determinants: Clinical Decision Support

- Clinical decision support tools
 integrated into clinical workflows
- Clinicians notified real time of positive screens needing follow up
- All data reportable and tracked



Positive Psych	o-Social Sc	reen -	Questions 10-1	14
Date 07/27/18 1335	User		Actions Taken Send In Basket Message	Triggers File Doc Flowsheets - Do you feel sad, hopeless, or anxious a lot of the time?: YES

I FAMILY SAFETY ALERT

Family Safety Alert!! Patient / Family member has screened positive for potential abuse or neglect.

I Immediately contact Social Work in your area for a Family Safety Alert Consult.

Notify provider and conduct further assessment as applicable by role.

Acknowledge Reason

Social Work contacted / aware Other - see comment

Wellness Registry and Complexity score elements

- All children seen last 3 years included
- CRG applied to all patients

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Here, it's different."

- Score increases with additional elements
- Once score assigned, tier 3 and 4 children selected for change package interventions ~1600 kids



			_				
Patient	Age	Time	Provider	COMPLEXITY- AMB	CRG	+ Psychosocial So	creen?
0	16y 5m	8:20 AM	Dempsey, Amanda Frisch, M.D.	2	37541	No	
0	13y 10m	8:30 AM	Devoogd, Ruth Susan, CPNP-AC/PC	0	91101		
0	12y 9m	8:30 AM	Miyazawa, Naomi, PA-C	6	51381	Yes	
0	10y 5m	8:30 AM	Fox, David, M.D.	6	55852	No	
 fat Hallou Halart 	15y 3m	8:30 AM	Crane, Susan M, Psy.D.	€	55851	Yes	
0	15y 8m	8:30 AM	Brown, Mark Allen, M.D.	6	51382	Yes	
Loss, Dava Augel	20y 3m	8:40 AM	Washington, Kimberly A, CPNP-PC	4	<mark>90701</mark>	No	
- O SnapShot Report	Plan of Care 🗐	Behavioral He	alth 🗐 Nutrition Risk Score Report	E Type 2 Diabetes Metrics	Bariatric Surger	y Plan of Care	, O
Patient Complexity Scor	re		Psychosocial Screen (since	1/31/2018) 5	Advance D	irectives	
1 point: Healthy 3 2 - 3 Points: Rising Risk 4 Points: Highest Risk Details ≈	Cha	ange: 🕇	Screen positive? ! Ye Trouble with Dr. Appts? Yes	Show Details s	Power of Attorney Liv Not on File No	ing Will Code Status of on File Not on file	Advance Care Planning Jump to the Activity 5
Patient complexity score. Displa years. CRG Score: 51382	iys most recent data in la	ast 2		ate Reviewed: 7/24/2018	Asthma Actio	n Plan Reviewed 5	Show Details
 PT/OT/Speech last 12 mos: Y Moderate Risk social determine 	'es nants: 7/25/2018		Codes: ICD-9-CM: 268.9		Date of Review	7/24/2018 10:	23 AM
+ ASQ suicide screen: 7/30/201	.8		ICD-10-CM: E55.9 Noted - Resolved: 7/24/2018 - Pr	esent	Decoming	Health Maintenance	e K
+ CRAFFT: 7/30/2018 ED Visits: 0			Moderate obstructive sleep apnea				Date Due

Ambulatory View: Longitudinal Plan of Care

Patient	Age	Time	Provider	COMPLEXITY- AMB	CRG	+ Psychosocial Screen?	
	al Plan of Care	8:20 AM	Dempsey, Amanda Frisch, M.D.	2	37541	No	1
schedule		8:30 AM	Devoogd, Ruth Susan, CPNP-AC/PC	0	91101		
Clinicia	ns can choose	8:30 AM	Miyazawa, Naomi, PA-C	0	51381	Yes	
	S 10 800	8:30 AM	Fox, David, M.D.	0	55852	No	
2 Comple elemen	exity Score Its clearly visible	8:30 AM	Crane, Susan M, Psy.D.	0	55851	Yes	
3 Psycho	social screen	8:30 AM	Brown, Mark Allen, M.D.	0	51382	Yes	
accessi	ible from report	8:40 AM	Washington, Kimberly A, CPNP-PC	0	90701	No	
🗕 🛛 🖉 SnapS	Shot Report 📳 Plan of Care 🗐	Behavioral Health	Nutrition Risk Score Report	Type 2 Diabetes Metrics	Bariatric Surgery	Plan of Care	
Patient Comple	exity Score	Psyc	hosocial Screen (since 1	L/31/2018) 5	Advance Di	rectives	
1 point: Hea 3 2 - 3 Points: 4 Points: Hig	althy :: Rising Risk ghest Risk	2 Scree Trout	n positive? ! Yes	3	Power of Attorney Livi Not on File Not	Advar ng Will Code Status Plann t on File Not on file Jump Activi	
Details Patient complexity s years. CRG Score: 51382 - PT/OT/Speech la: + Moderate Risk soo + ASQ suicide scree	score. Displays most recent data in st 12 mos: Yes cial determinants: 7/25/2018 m: 7/30/2018	last 2	roblem List Dat nin D deficiency ides: ICD-9-CM: 268.9 D-10-CM: E55.9 ited - Resolved: 7/24/2018 - Pre	te Reviewed: 7/24/2018	Asthma Action Date of Review	Plan Reviewed 5 Sho 7/24/2018 10:23 AM Health Maintenance 5	
+ CRAFF1: 7/30/201 ED Visits: 0	18	Mode	erate obstructive sleep apnea dec TCD-9-CM- 327-23				





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Care Team, Care Plan and Access Plan: Integration

🖓 Care Team 5

Elias, Ellen R, M.D. PCP - General, General Pediatrics Started 5 years ago

Louch, Glenda, PNP PCP - General, Pediatrics Started 6 years ago

Ali, Shad, MD Resident, Psychiatry Started 1 month ago

Carson, Jenny Care Coordinator, Nursing Started 1 year ago

Savin, Daniel M, MD Consulting Physician, Psychiatry Started 1 month ago

Shea, Stephanie Anne, PA-C Physician Assistant, Neurology

Started 7 years ago

Care Coordination Notes 5

Narrative Summary: is a 6 year old with G6PD defiency, possible stroke, CP, seizure, umbilical hernia, feeding problems, sleep disordered breathing, constipation, learning problems, behavior problems and allergic rhinitis.

Patient Highlight: adoptive mother laughter. likes to ride his bike and scooter, be outdoors, play with his dog Misty, dance, and sing.

Patient Centered Goals

Date: 10/12/2016

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Goal: Continue to address Developmental Delays + regression, Mixed receptive-expressive language disorder, and feeding issues through therapy support Action: currently has the following therapy

supports: 1. Hippotherapy- Karen (also Speech Therapist) (720)

The appeared by Training and the appeared the appeared by (120

Professional Pediatrics Home Care, ph:

- OT/Speech- Nicki

- PT- Kari

- 3. CHCO- Lisa Martin- Speech Therapist
- 4. ABA Therapy- Dr. Butterfield
- 5. PT/OT/Speech at Arkansas Elementary

6. Augmentative Communication Device- Nova Chat 8 Person Responsible: Therapists, family, and Jenny Carson- Nurse Care Coordinator available to assist in coordination of goals of care Time Frame: Ongoing Status: ongoing Access Plan- Special Care Clinic Local chart Special Care Clinic

Not recorded

Special Care Clinic Call 911 if it's an emergency Hours: M-F 8am-5pm

Main: 720-777-6739 There is a nurse and provider on call 24 hours a day.

Case Management/Care Coordination: 720-777-2950

Fax: 720-777-7143

Special Care Phone Tree:

Option #1- Scheduling Our Patient Service Family Coordinators (PSFC) can assist you with complex scheduling needs

Option #3- "Speak to a Nurse"

 Option 1- "My Child is Sick" for the nurse triage line to speak with highly trained advice nurses who are available to help you and often can save you a trip to the doctor.

- Option 2- Case Management Office to speak with our team of RNs, MAs, and DME coordinator

Option #4- Prescription Refills and Assistance with Referrals

Snapshot of "Who am I?"

"Who to call for what"

Patient / family specific

- Available to community providers, homecare companies and school through web portal
- Family accessible through patient portal





Parent View: Longitudinal Plan of Care

Care realin		Action Plan	view from the online
Jelinek-Berents, Christine T, M.D.	PCP - General, Hospital Medicine	Access Plan Child Health Clinic:	Parent Web portal
303-338-4545		onne ricellar onne.	
Ivy, David Dunbar, M.D.	Cardiology	Call 911 if it's an emergency	
720-777-6820		Office Hours:	
Bakel, Leigh Anne, M.D.		Friday – 8am – 5pm	
720-777-5070		Main Phone Number: 720 777 2740	
Boggus, Kristin J, B.S.N.	Care Coordinator, Nursing	Fax: 720-777-7149	
720-777-2680		There is a nurse and provider on call 24 hours child is sick. During business bours, they may	a day. They are here to help you and often can save you a trip to the doctor if you be able to schedule an appointment for the same day.
Abromowitch, Minnie, M.D.	Unknown	child is sick. During business hours, they may	be able to schedule an appointment for the same day.
402-955-3950		Option #1- Scheduling Our Patient Schedulers can belo you with your	scheduling needs
Grandmother		our raicht ocheduicht can nep you war your	screading recus.
Stille, Christopher J, M.D.	Consulting Provider, General Pediatrics	Option #3- Speak with a Nurse Experienced, caring pediatric nurses are availa	able 24/7 to help answer your health questions
720-777-2740		Experienced, caring pediatric narioes are available	
		Option #4- Prescription refills and Assistance	with Referrals
		Construction of the second state of the sec	
Goals		Option # 9- For Spanish Speakers	
Diet		Option # 9- For Spanish Speakers If the clinic is closed:	
Goals Diet Eat breakfast every day		Option # 9- For Spanish Speakers If the clinic is closed: Call 720-777-2740 to speak to an afterhours m	urse
Goals Diet Eat breakfast every day Action: Set a timer in morning to remind me Person Responsible: ZZTest Time Frame: 3 months	to eat breakfast in the morning	Option # 9- For Spanish Speakers If the clinic is closed: Call 720-777-2740 to speak to an afterhours m Preferred Home/External/Community Provid	ders Show Details
Goals Diet Eat breakfast every day Action: Set a timer in morning to remind me Person Responsible: ZZTest Time Frame: 3 months	to eat breakfast in the morning	Option # 9- For Spanish Speakers If the clinic is closed: Call 720-777-2740 to speak to an afterhours m Preferred Home/External/Community Provid Skilled NURSING	ders Show Details ABC Home Health, Pueblo, CO (719-543-2700, fax 709-543-2704)
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Goals Diet Eat breakfast every day Action: Set a timer in morning to remind me Person Responsible: ZZTest Time Frame: 3 months Preferred Pharmacy Walgreens Drug Store 12855 - BROOKLYN, NY - 151	to eat breakfast in the morning 1 86TH ST AT NEC OF 15TH AVE & 86TH ST	Option # 9- For Spanish Speakers If the clinic is closed: Call 720-777-2740 to speak to an afterhours no Preferred Home/External/Community Provid Skilled NURSING PRIVATE DUTY NURSING CERTIFIED NURSING ASSISTANT ENTERALS	ders Show Details ABC Home Health, Pueblo, CO (719-543-2700, fax 709-543-2704) Continuum Pediatric Nursing (303-997-7411, fax 866-495-2577) (no home care anymore) Amerita (303-355-4745, fax 303-322-7022)
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Results



Children's Hospital Colorado Here, it's different."



University of Colorado Anschutz Medical Campus

High level outcomes

Measure	n	Baseline Jan-Dec 2014	n	Post Implementation Jan-Dec 2017	% change
CAHPS Patient Access Module Score	n=111	69.3	n=111 Fall-Spring 2016-2017	81.0	个16% p<0.05
IP Days 1000pts/month	n=1467	297 days	n=1588	123 days	↓58.6%
ED visits 1000pts/month	n=1467	80 visits	n=1588	54 visits	↓32.5%
Direct Cost per Adjusted Volumes/year	n=1481	\$23,405,852 (Aggregate population)	n=1529	\$14,221,683	↓39.4%



Affiliated with University of Colorado Anschutz Medical Campus <u>Note</u>: Patients were enrolled during the first full year of the collaborative. Pre-implementation N reflects # patients enrolled in June 2015. Post implementation N reflects total number enrolled at end or collaborative, accounting for new enrollees during first year and deaths.

Process Measures: Care Team, Access Plan, and Care Plan

Change Package Implementation

Care team and Access plan automated in EMR

Care plan required 1:1 intervention with families resulting in longer implementation times.





CAHPS Survey: Access Scores

Patient Access Module Score, Converted to Percentage 100.0 81.0 80.0 **69.3** 60.0 40.0 20.0 Childen's Mech Hospital Kanses CiVI. The Children's Hospita of Philosophia. Portugie Packard Childrens. Children's halona heatcal center (m/56) Circimal Childen's Hospital (n.S. 1) Cook Children's Medical Center (nuts) Nate Children's Hospital UCLA INTAD 5. Joseph's Childen's Hospital Inc. 100 Wolfsons Children's Hospital (m/53) Childen's Hospital Colorado (mr.111) Final Affiliated with G **Children's Hospital Colorado** University of Colorado 26 Anschutz Medical Campus Here, it's different."

Patient Access: Results by Site

Children's Colorado **ONLY** site with a statistically significant improvement!

Whole Collaborative



Utilization



Emergency Department Visits per1000 patients/month



Relationship: ED visits and Change Package elements

As more change package elements are implemented, ED rate drops.



Note: Graphic obtained from Children's Hospital Association





Direct Costs: Did we change anything?

Direct Cost per Unique Patient by Patient Type \$10,000 \$8,881 **Direct Cost per Unique Patient** \$8,000 \$6,000 \$5,292 \$5,007 \$4,822 \$4,940 \$4,009 \$4,000 \$2,000 \$0 2017 2015 2016

Inpatient Outpatient

	2015	2016	2017	%Δ
Inpatient	\$8,881	\$5,007	\$4,009	↓ 55%
Outpatient	\$4,940	\$4,822	\$5,292	↑7.1%
Total	\$13,821	\$9,829	\$9,301	↓ 33%
total patients	1,591	1,578	1,529	

55% cost of Inpatient care per enrolled patient (2015-2017)

7.1%
cost of Ambulatory Care per enrolled patient (2015-2017,ED costs are included in ambulatory setting)

total direct cost per patient per year

Cost Assessment

Eliminating the age progression factor



- Graph represents 391 Tier 4 patients enrolled in the collaborative
 - **Blue line:** 125 tier 4 patients with a completed care plan by end of collaborative
 - **Red line**: 266 tier 4 patients without completed care plans by end of collaborative.

- Due to resources, not all patients were able to receive a care plan during the 3 year project
- Tier 4 patients that *did* receive a care plan appeared to have a faster decline in costs than those that did not receive a care plan.
- More data should be evaluated on larger population to determine if trend continues with expansion

Project Goals and Overall Outcomes:



Lessons Learned:

Get interdisciplinary team and parent feedback frequently during build process Technical build requires multiple iterations... Validate often! Social determinants of health integration critical to successful tiering of medically complex kids

1



Designing effective care coordination solutions for children with medical complexity is *very difficult*...

2



But not impossible

Conclusions

- IP hospital days, ED visits, and total direct cost were decreased in a population of medically complex kids after targeted care coordination interventions
- Satisfaction increased for both families and providers





Moving Forward

- Expand implementation in all ambulatory clinics
- Expand Social Determinants to community practices
- Collaborate with local health systems for shared care across the continuum
- Share EHR based solutions with other children's health systems across the country





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Thank you



Children's Hospital Colorado Here, it's different."

Appendix



Children's Hospital Colorado





Social Determinants of Health Integration

Psychosocial Screen
Positive Psychosocial Screen?
Do you need help finding a doctor or clinic for yourself?
Concerns/problems that make it hard to keep your child's Dr. appointments or manage their health care?
In the last 3 months, have you felt stressed about making ends meet?
In the last 3 months, have you worried that your food would run out before you had money to buy more?
In the last 3 months, did your food ever not last and you didn't have money to get more?
Are you worried about benefits right now?
Do you have concerns about your child's education needs?
Do have concerns about your housing or becoming homeless?
Do you need help with guardianship of a minor child or disabled adult?
Do you want to talk to someone about feeling alone or needing someone to rely on when you have problems?
Do you or anyone else in your home have a problem with alcohol or marijuana?
Do you, or anyone else in your home use medicine not prescribed to you, or any other type of drugs (such as
In the past year, has anyone threatened, hit, slapped or touched you or your child in an unwanted way?
Do you feel sad, hopeless, or anxious a lot of the time?
Psychosocial Screen Comments



