ABSTRACT: 2014 ELAM Institutional Action Project Poster Symposium

Project Title: Developing a Pediatric Medical Neighborhood: Model to Deliver Population & Value Care in Children with Diabetes

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Background/Challenge/Opportunity: The predominant fee-for-service system has associated high-costs and not necessarily high-quality care. Pay-for-performance (P4P) is a potential alternative system to deliver triple-aim care. In the P4P, value-based contracts pay providers for hitting quality-improvement metrics and reducing costs that lead to shared savings or incentives. Latest P4P programs have focused on medical neighborhood models in which patient-centered care is shared among subspecialists, PCPs and other health professionals.

Purpose/Objectives: The project purpose is to develop a medical neighborhood model to deliver high-quality sustainable, integrated and shared care to risk-based population of children with diabetes and to collect critical data for implementing a P4P system.

Methods/Approach:

a) Outlined medical neighborhood logistics. *Population:* children (0-16 years) with diabetes risk-clustered based on HbA1c (%) as low-risk: 7.5-8.5% (by age); medium-risk: 7.6-10.9%; high-risk: >10.9%. *Neighborhood contributors:* UNC-Pediatric Endocrinologists; PCPs; Families-patients; CDEs; CDs; School nurses; Mental health providers; UNC-ITS-Carolina-Data-Warehouse; Medicaid-NC-Tracs; CCNC; UNC-HCS-Population-Value-Care;

b) Defined contributors' roles to deliver care through risk-based quality-improvement plans;

c) Established expected risk-based performances outcomes. For high-risk, primary outcome is to decrease

d) hospitalizations and ER-visits by 40%, HbA1c by 1%; medium-risk is to decrease hospitalizations and ER-visits by 50%, HbA1c by 0.5%; low-risk is to implement advanced screenings to 40%;

e) Established database for collecting and comparing quality-care and health-costs data from before (fee-for-service) and after medical-neighborhood implementation (P4P-data);

f) Developed a pilot study that serves as a flywheel in providing continuous energy to the entire project;

g) Leveraged the pilot information to extend the project to Community-Care of North Carolina (CCNC) networks. CCNC operates 15 networks involving 4,500 PCPs and a Medicaid population of 1.1 million in all 100 counties of NC.

Outcomes/Evaluation Strategy:

a) Developed a medical neighborhood platform;

b) Established a pilot medical neighborhood. UNC-Pediatric Endocrinology has partnered with a large PCP practice in NC. Shared-care population of children with diabetes was identified and risk-based clustered (low-risk n=5; medium-risk n=17; high-risk n=12). Neighbor's roles to deliver care through risk-based quality-improvement plans established. Funding (UNC-SOM) to support pilot gathered;

c) Analyses of clinical and claims fee-for-service data from year-2013 performed. Analyses showed that children with medium- and high-risk received less screenings for diabetes-related complications than low-risk (P<0.05). Hospitalizations were also risk-related with 0% in low-risk; 17.6% in medium-risk and 41.7% in high-risk. Total-charges, professional-charges and net-receipts for inpatient-ER services were different among risk categories (p<0.01); respectively 3-4 fold higher in high-risk children compared to medium-risk and none in low-risk;

d) Project has been extended to two major CCNC networks. Population analyses and financial planning are on-going;

e) Pilot analyses to be extended to six- and twelve-months, data compared to fee-for-service data. Data used to develop P4P billing and sharing modalities to be employed in value-contract negotiations with insurers. Neighbors' satisfaction by questionnaires.

Developing a Pediatric Medical Neighborhood: Model to Deliver Population & Value Care in Children with Diabetes

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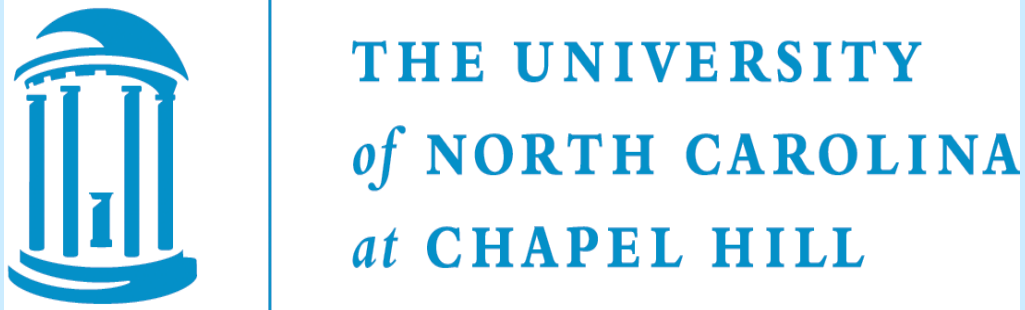
Background-Challenge-Opportunity

The predominant fee-for-service has associated high costs and not necessarily high quality care. The Accountable Care Act is to address the need for triple aim, better health and care at a lower cost. Pay-for-performance (P4P) is a potential alternative method to deliver triple aim care. In the P4P, value-based contracts pay providers for hitting quality improvement metrics and reducing costs that lead to shared savings or incentives. Latest P4P programs have focused on medical neighborhood models in which patient-centered care is shared among HCS-based specialists, PCPs, and other health professionals. Team-based diabetes care leads to quality care improvements. Traditionally, this team approach has been coordinated by the endocrinologist who is facing increased demands for volume-based productivity and less support. UNC-HCS has established the Population & Value Care (UNC-HCS-PVC) program to promote value-care initiatives. The project leverages the UNC-HCS-PVC in developing a medical neighborhood model to deliver triple aim care in children with diabetes.

Purpose

The project purpose is to develop a medical neighborhood model to deliver high-quality sustainable, integrated and shared care to risk-based population of children with diabetes and to collect critical data for implementing a P4P system.

Methods

- Outlined medical neighborhood logistics. *Population:* children with diabetes risk-clustered based on HbA1c (%) as low-risk: 7.5-8.5%; medium-risk: 7.6-10.9%; high-risk: >10.9%. *Neighborhood contributors:* UNC-Pediatric Endocrinologists; PCPs; Families-patients; CDE/CDs; School nurses; Mental health providers; UNC-ITS Warehouse; Medicaid; Community-Care of North Carolina (CCNC)
- Established database for collecting and comparing quality-care and health-costs data from before (fee-for-service) and after medical-neighborhood implementation (P4P-data)
- Developed a pilot study that serves as a flywheel in providing continuous energy to the entire project
- Leveraged the pilot information to extend the project to Community-Care of North Carolina (CCNC) networks. CCNC operates 15 networks involving 4,500 PCPs and a Medicaid population of 1.1 million.

Figure 1. Medical Neighborhood Platform

Primary Care Physician · Endocrinologist 24/7 · Triage Nurse · School Nurse · Dietician CDE · Communication Technology · Information Technology Service · Pay for Value Cost Analysis Incentives · AAP-NCMHI · Insurer Partner · Medicaid Initiative · Population & Value Care · Outcome Measures Risk-Based · Quality · Costs → Value · Reduce Costs · Reduce ER-Hospitalizations · Improve HbA1c · Screen Complications
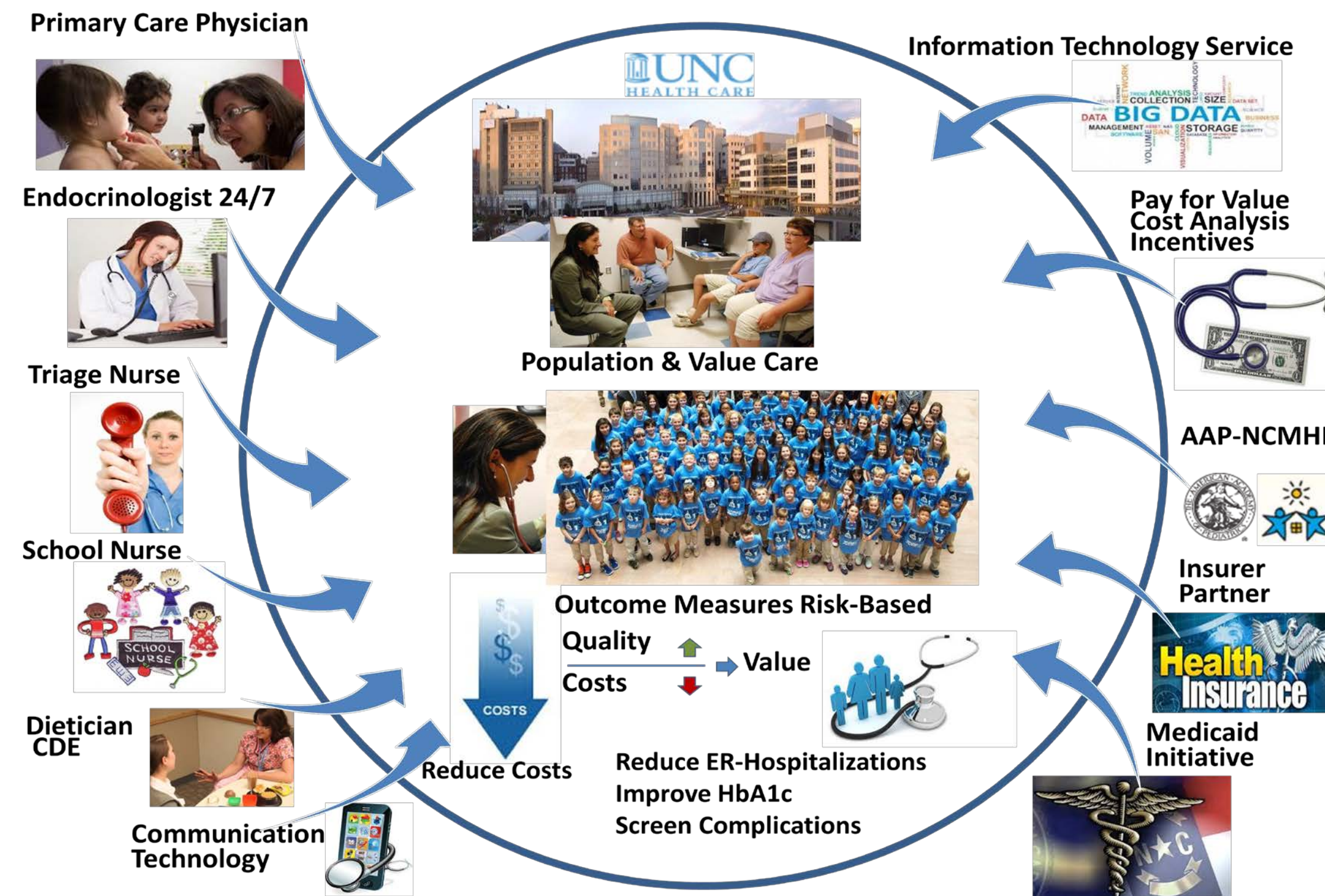
Figure 2. Neighbor's Roles and Delivered Quality Care

Medical Neighborhood Quality Care	UNC Peds Diabetes	Primary Care Physician	Families-Patients	School Nurses
Blood sugars UNC Ped Diab	2 weeks		2 weeks	2 weeks
	4 weeks		4 weeks	4 weeks
	As needed		As needed	As needed
Clinic visits –HbA1c	2 months		2 months	
	3 months	Biannual	6 times	
	Biannual	Biannual	4 times	
Diabetic educator CDE	2 months		2 months	
	3 months		3 months	
	As needed		As needed	
Nutritionist	Biannual	Biannual	4 times	
	Biannual	Biannual	4 times	
	Annual	Annual	2 times	
Screening celiac, thyr, microalb	Annual		Annual	
	Annual		Annual	
	Annual		Annual	
Screening depression >10 yrs	Ann Shar	Ann Shar	Annual	
	Ann Shar	Ann Shar	Annual	
	Ann Shar	Ann Shar	Annual	
Screening fasting lipid		Annual	Annual	
		Annual	Annual	
		Annual	Annual	
Flu Shot	Ann Shar	Ann Shar	Annual	Ann Shar
	Ann Shar	Ann Shar	Annual	Ann Shar
	Ann Shar	Ann Shar	Annual	Ann Shar
Referral eye exam	Ann Shar	Ann Shar	Annual	
	Ann Shar	Ann Shar	Annual	
	Ann Shar	Ann Shar	Annual	
Counseling Smoking-Drugs	Visit Shar	Visit Shar	Visit	Visit Shar
	Visit Shar	Visit Shar	Visit	Visit Shar
	Visit Shar	Visit Shar	Visit	Visit Shar

Outcomes

- Developed a medical neighborhood platform (Figure 1)
- Defined neighbor's roles to deliver care through risk-based quality improvement plans (Figure 2)
- Established expected risk-based performances outcomes. For high-risk, primary outcome is to decrease hospitalizations and ER-visits by 40%, HbA1c by 1%; medium-risk is to decrease hospitalizations and ER-visits by 50%, HbA1c by 0.5%; low-risk is to implement new screenings to 40%
- Established a pilot medical neighborhood. UNC-Pediatric Endocrinology has partnered with a large PCP in NC. Shared-care population of children with diabetes identified and risk-based clustered. Project received funding through SOM
- Analyses of clinical and claims data from year 2013 (fee-for-service data), showed that hospitalizations were risk-related (Figure 3).

They also showed that children with medium- and high-risk received less screenings for diabetic complications (Figure 4). Total and professional charges and net-receipts for inpatient-ER services were higher in medium-high risk categories (Figure 5)

- Project has been extended to two major CCNC networks(Figure 6).
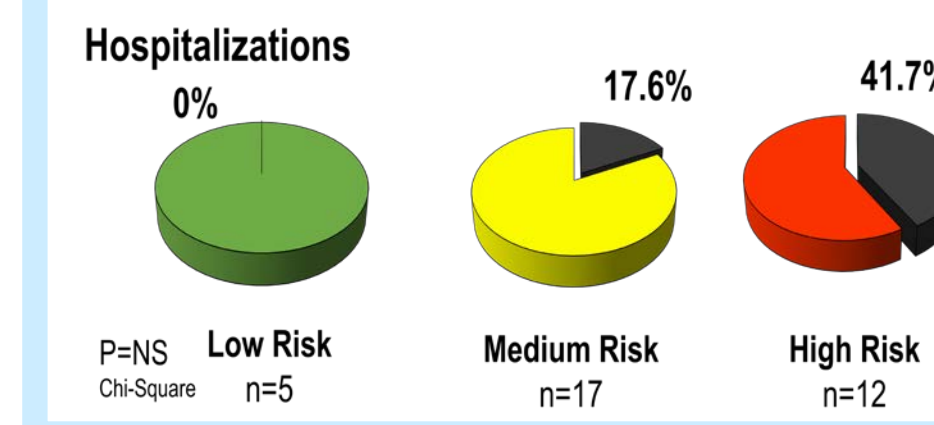
Figure 3. Hospitalizations

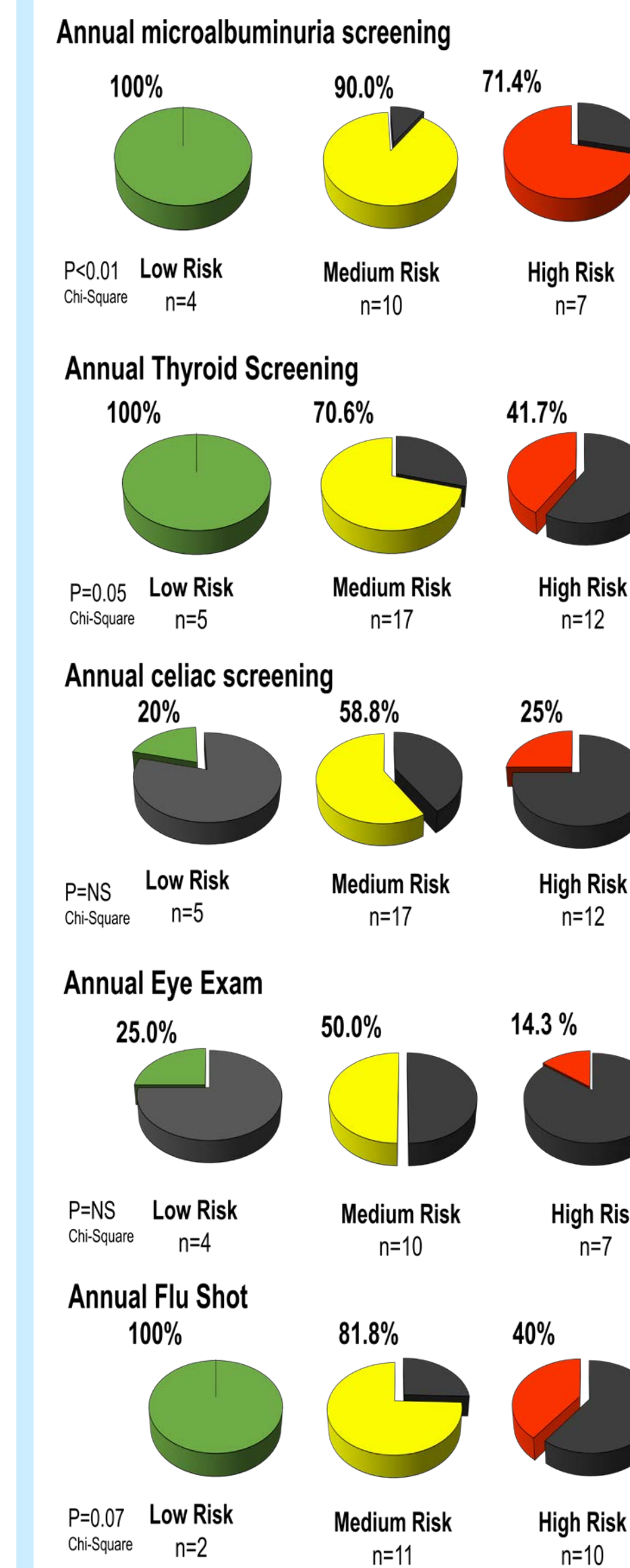Hospitalizations · 0% Low Risk n=5 · 17.6% Medium Risk n=17 · 41.7% High Risk n=12 · P=NS Chi-Square

Figure 4. Screenings

Annual microalbuminuria screening · 100% Low Risk n=4 · 90.0% Medium Risk n=10 · 71.4% High Risk n=7 · P<0.01 Chi-Square

Annual Thyroid Screening · 100% Low Risk n=5 · 70.6% Medium Risk n=17 · 41.7% High Risk n=12 · P=0.05 Chi-Square

Annual celiac screening · 20% Low Risk n=5 · 58.8% Medium Risk n=17 · 25% High Risk n=12 · P=NS Chi-Square

Annual Eye Exam · 25.0% Low Risk n=4 · 50.0% Medium Risk n=10 · 14.3% High Risk n=7 · P=NS Chi-Square

Annual Flu Shot · 100% Low Risk n=2 · 81.8% Medium Risk n=11 · 40% High Risk n=10 · P=0.07 Chi-Square

Figure 5. In-patient Services Cost-Analyses

Total charges (facility-professional) P<0.05 Kruskal-Wallis · Professional charges P<0.05 Kruskal-Wallis · Net receipts P<0.05 Kruskal-Wallis · n=0 · n=3 · n=5 · Dollars
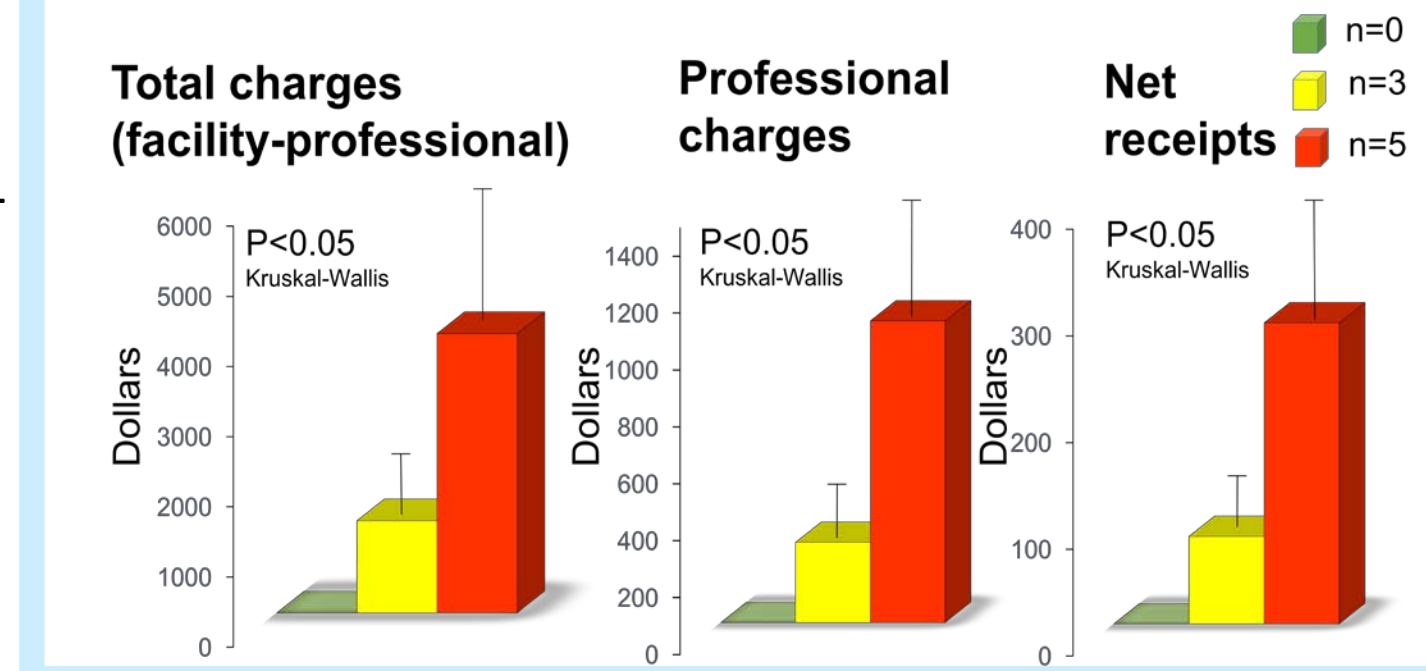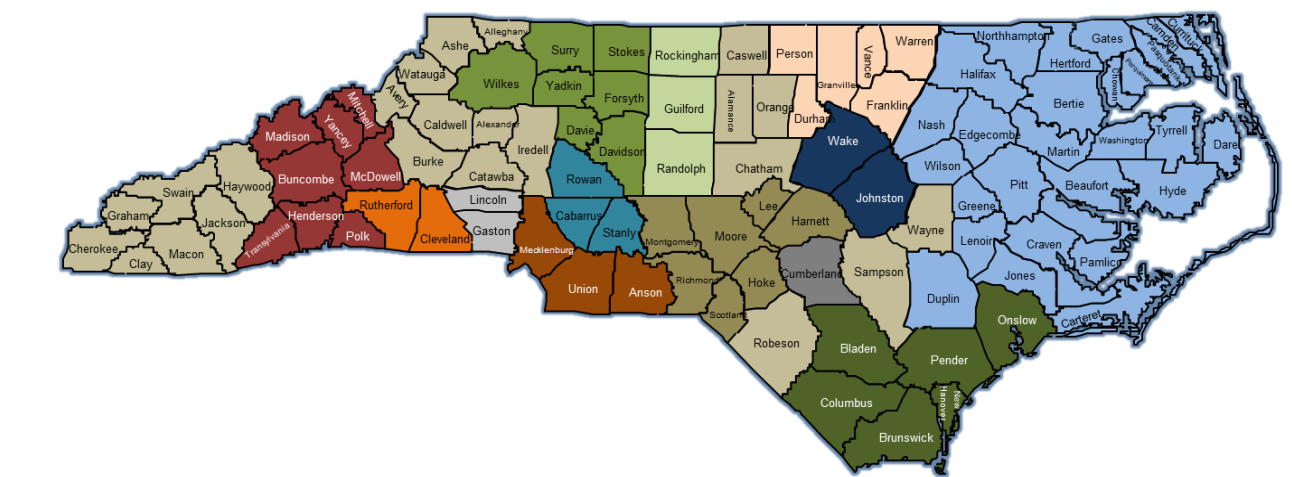
Figure 6. CCNC Networks

Discussion

We have developed a neighborhood platform to deliver sustainable and quality care in risk-based population of children with diabetes. The project through the pilot and the extended UNC-CCNC initiative will provide valuable metrics for developing evidence-based standardized care pathways centered on medical neighborhoods to eliminate waste in care processes, improve quality care and sharing savings. The financial and quality care analyses will provide metrics for implementing the P4P system within the HCS to: 1) support value contract negotiations with insurers; 2) create financial mechanisms that bring into line incentives and share savings.

Next Steps

- Pilot analyses to be extended to 6 and 12-months; neighborhood data to be compared to fee-for-service
- Neighbors' satisfaction assessed by questionnaires
- Educational components of the neighborhood
- Data used to develop P4P billing and sharing modalities to be employed in value-contract negotiations with insurers
- Population analyses and financial planning of the medical neighborhood partnering UNC-HCS with CCNC are on-going

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